

ST. JOHNS COUNTY, FLORIDA  
South Ponte Vedra Beach, Vilano  
Beach, and Summer Haven Reaches

COASTAL STORM RISK MANAGEMENT PROJECT  
DRAFT INTEGRATED FEASIBILITY STUDY AND  
ENVIRONMENTAL ASSESSMENT

**APPENDIX G**  
**Environmental**

March 2017



**US Army Corps  
of Engineers**  
Jacksonville District

**U.S. ARMY CORPS OF ENGINEERS  
JACKSONVILLE DISTRICT**

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**APPENDIX G-1**  
**SECTION 404(B)1 DETERMINATION**

**St. Johns County, Florida**  
**Coastal Storm Risk Management Project**  
**South Ponte Vedra Beach, Vilano Beach, and Summer Haven Reaches**  
**SECTION 404(B) EVALUATION**

**I. PROJECT DESCRIPTION**

**A. Location**

The project is located in St. Johns County on the Atlantic Coast of Florida approximately 34 miles south of the mouth of the St. Johns River. The South Ponte Vedra Beach and Vilano Beach study reaches are located north of the St. Augustine Inlet, while the Summer Haven reach is located approximately 14 miles to the south of the inlet, south of Matanzas Inlet.

**B. General Description**

The Tentatively Selected Plan (TSP) includes dredging shoaled material from within the St. Augustine Inlet and placing that material onto the beach between Florida Department of Environmental Protection range monuments (R-Monuments) 102.5 and 117.5, which includes 1,000 foot tapers at the north and south ends. Several offshore sand sources were also evaluated for potential use in the future.

**C. Authority and Purpose**

The St. Johns County Coastal Storm Risk Management (CSRМ) feasibility study with integrated Environmental Assessment evaluates the project to determine if there is a Federal interest in cost-sharing in the construction of the project.

**D. General Description of Dredged or Fill Material**

*1) General Characteristics of Material*

The materials in the St. Augustine Inlet system are generally moderately well sorted, quartz-rich, fine to medium-grained sand with varying amounts of shell fragments, and grey or light grey in color. The ebb and flood shoals are composed almost entirely of beach-quality sand.

The materials in the North Offshore Borrow Area (NOBA) consist principally of quartz sand, having fine to medium-grained sand-sized particles, with varying amounts of shell fragments. The moist Munsell color of the material is predominately a value of 5 or lighter (gray to grayish brown); occasionally, there are some samples at deeper locations that are darker than 5.

The materials in the South Offshore Borrow Area (SOBA) consist primarily of quartz-rich, fine-grained sand with varying amounts of shell fragments. The moist Munsell color of the materials is predominately a value of 5 or lighter; occasionally there are some samples at deeper locations appear darker than 5.

### 2) *Quantity of Material*

Approximately 1.31 million cubic yards of material will be placed in the fill template of the TSP for the initial construction, and future nourishments would place approximately 866,000 cubic yards of material every 12 years.

### 3) *Source of Material*

The TSP uses the St. Augustine Inlet system as the primary sand source for the project.

## **E. Description of the Proposed Discharge Site**

### 1) *Location and Size*

The project includes nourishment of a 60-foot beach berm over 2.6 miles of shoreline with 1,000-foot tapers. The initial construction includes the reconstruction and planting of the existing dune feature; however, future nourishments do not include dune construction or planting.

### 2) *Type of Site*

The project site is a sandy beach with some existing, eroding dune features.

### 3) *Type of Habitat*

The laboratory analyses characterize the existing sediments at South Ponte Vedra Beach and Vilano Beach as shelly, poorly sorted, fine to medium-grained sand-sized quartz and carbonate material. In general, these materials have a high shell content and are coarser than the potential sand source materials. Samples collected at the mid-berm and at mid-tide locations have especially high shell contents caused by deposits from the Anastasia formation, which also cause the typical brownish grey color of St. Johns County beaches.

### 4) *Timing and Duration of Discharge*

Dredging and disposal is expected to begin as early as the winter of 2020, and is expected to take approximately four months.

## **F. Description of Disposal Method**

Material would likely be discharged from a pipeline attached to a hydraulic dredge; however, a mechanical dredge could also be utilized for the dredge operations.

## **II. FACTUAL DETERMINATION**

### **A. Physical Substrate Determination**

#### 1) *Substrate Elevation and Slope*

Top elevation of the construction beach fill will be +8.0 feet North American Vertical Datum 1988 (NAVD 88). The equilibrium profile for the beach fill will vary along the project beach depending on wave/current distribution of the fill material. Generally, the width of the beach above the mean high water line will narrow over time, and the beach slope will become slightly steeper than the constructed beach as the beach equilibrates.

## 2) *Sediment Type*

The sediment from the St. Augustine Inlet system is predominantly fine quartz sand with varying amounts of shell. The fines content is less than 2% overall, within the state regulations.

## 3) *Dredge/Fill Material Movement*

The fill material will be subject to erosion by waves with the net movement of fill material to the south toward St. Augustine Inlet.

## 4) *Physical Effects on Benthos*

The fill will bury some infaunal benthic organisms in the beach. Most organisms in this high energy wave ecosystem are adapted for existence in an area with considerable substrate movement, and some will be able to burrow up through the fill material. Material placed on the beach will be similar to that of the existing beach, and the fill placement area is relatively small as compared to similar adjacent habitat. This minimizes impacts to infauna such as the coquina clam and mole crab, which play an important role in the food web (specifically to foraging birds). Full recovery should begin within 1 year, as has been documented with previous projects.

## **B. Water Circulation, Fluctuation and Salinity Determination.**

### 1) *Water*

The placement of fill on the beach will increase turbidity in the nearshore area. Because the immediate nearshore area is a high energy system and subject to naturally-occurring elevated turbidity, increases due to the project will not be significant. Fill placement will have no long-term or significant impacts, if any, on salinity, water chemistry, clarity, color, odor, taste, dissolved gas levels, nutrients or eutrophication.

### 2) *Current Patterns and Circulation*

Currents in the project area are both tidal and longshore. Net movement of water due to the longshore current is from the north to the south. Placement of the fill on the beach will have no effect on the currents.

### 3) *Normal Water Level Fluctuations and Salinity Gradients*

Tides in the project area are a mixture of semi-diurnal and diurnal types. During part of each month two high and two low tides occur each day, and during the balance of the month only one high and one low tide occur each day. The mean tide level is 1.8 feet, referenced to mean low water (MLW). Salinity is that of ocean water. Fill placement will not affect normal tide fluctuations or salinity.

### **C. Suspended Particulate/Turbidity Determinations**

#### *1) Expected Changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Disposal Site*

There will be a temporary increase in turbidity levels in the project area during discharge. Turbidity will be short term and localized and no significant adverse impacts are expected. Turbidity will be monitored per State standards. If at any time the turbidity standard is exceeded, those activities causing the violation will cease.

#### *2) Effects on the Chemical and Physical Properties of the Water Column*

(a) Light Penetration. Light penetration will decrease during discharge in the immediate area where sand is being deposited on the beach. This effect will be temporary and will have no significant adverse impact on the environment.

(b) Dissolved Oxygen. Dissolved oxygen levels will not be altered significantly by this project due to high-energy wave action and associated adequate re-aeration rates.

(c) Toxic Metals, Organics, and Pathogens. No toxic metals, organics, or pathogens will be released by the project.

(d) Aesthetics. Aesthetic quality will be reduced during that period when work is occurring. There will be a long-term increase in aesthetic quality of the beach once the work is completed.

#### *3) Effects on Biota*

(a) Primary Productivity and Photosynthesis. Primary productivity is not a recognized, significant phenomenon in the surf zone, where a temporary increased level of suspended particulates will occur. There will be no effect on the nearshore productivity as a result of the proposed beach re-nourishment.

(b) Suspension/Filter Feeders. There will be no long-term adverse impact to suspension/filter feeders.

(c) Sight feeders. There will be no long-term adverse impact to sight feeders.

### **D. Contaminant Determinations**

Deposited fill material will not introduce, relocate, or increase contaminants.

### **E. Aquatic Ecosystem and Organism Determinations**

The fill material that will be placed on the beach will consist primarily of fine to medium grained sand-sized quartz that is similar enough to the existing substrate so that no impacts are expected.

#### *1) Endangered and Threatened Species*

Sea turtle nesting could occur in the project area during the time of the dredging and beach disposal. A nest relocation program will be implemented to discover, mark and relocate these nests. All sea turtle nests discovered within the beach disposal area will be removed and relocated to a nearby self-release beach hatchery. All relocation and incubation efforts will

conform to the guidelines in the “Manual of Sea Turtle Research and Conservation Techniques”, Second Edition, 1983, prepared for the Western Atlantic Sea Turtle Symposium and distributed by the Florida Department of Environmental Protection.

2) *Hardbottom Habitat*

No hardbottom habitat is known to exist in the project area.

**F. Proposed Disposal Site Determinations**

1) *Mixing Zone Determination*

The fill material will not cause unacceptable changes in the mixing zone specified in the Water Quality Certification in relation to depth, current velocity, direction and variability, degree of turbulence, stratification, or ambient concentrations of constituents.

2) *Determination of Compliance with Applicable Water Quality Standards*

The work will be conducted in accordance with the Water Quality Certification that will be issued for this project.

3) *Potential Effects on Human Use Characteristics*

(a) Municipal and Private Water Supplies. No municipal or private water supplies will be impacted by the implementation of the project.

(b) Recreational and Commercial Fisheries. Recreational and commercial fisheries may be temporarily impacted by the dredging of material and the placement of the material on the beach, but these impacts should be minimal and no long-term impacts are anticipated.

(c) Water Related Recreation. Water related recreation will be temporarily impacted during construction, but will be preserved and enhanced by the nourishment of the beach. Depending on the portion of the St. Augustine Inlet system that is dredged, recreational vessels may benefit from improved navigation.

(d) Aesthetics. The stabilization of an eroding beach will improve aesthetics.

(e) Parks, National and Historic Monuments, National Seashores Wilderness Areas, Research Sites, and Similar Preserves. Anastasia State Park is located along the southern shoreline of the St. Augustine Inlet. Historic dredging of the inlet has caused

**G. Determination of Cumulative Effects on the Aquatic Ecosystem**

There will be no cumulative impacts that result in a major impairment of water quality of the existing aquatic ecosystem as a result of the placement of fill at the project site. Subsequent re-nourishment events will occur approximately every 12 years. The impact of depositing material on the beach during these events will be minor.

**III. FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS OF DISCHARGE**

A. No significant adaptations of the guidelines were made relative to this evaluation.

- B. No practicable alternative exists which meets the objectives of re-nourishment of the beach that does not involve placing fill into waters of the United States.
- C. The discharge of fill materials will not cause or contribute to, after consideration of disposal site dilution and dispersion, violations of any applicable State Water Quality Standards for Class III waters. The discharge operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.
- D. The disposal of dredged material on the beach will not jeopardize the continued existence of any species listed as threatened or endangered or result in the likelihood of destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973, as amended.
- E. The placement of fill material will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic species and other wildlife will not be significantly adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values will not occur.
- F. On the basis of the guidelines, the proposed disposal site for the discharge of dredged material is specified as complying with the requirements of these guidelines with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.