

## **APPENDIX B**

### **ESSENTIAL FISH HABITAT**

**TYBEE ISLAND SHORE  
PROTECTION PROJECT,  
GEORGIA  
2015 RENOURISHMENT**

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

**DECEMBER 2013**

## **1.0 INTRODUCTION**

The purpose of this assessment is to fulfill obligations written in the 2005 Limited Reevaluation Report (LRR) for Tybee Island, Georgia which states that “Conduct of an environmental assessment during the Plans and Specifications stage will provide an opportunity to assess the project’s impact on Essential Fish Habitat” and complies with the Savannah District’s commitment in the FONSI for the 934 Project to “address environmental concerns present at the time of successive renourishments.”

This evaluation is conducted in accordance with Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (As Amended Through October 11, 1996). That provision states: "Each Federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any essential fish habitat identified under this Act." It is also done in accordance with the Interim Final Rule (par. 600.920(g)) that requires an EFH Assessment contain the following: (1) Description of the Proposed Action, (2) An Analysis of the Effects, including cumulative effects, of the action on EFH, the managed species, and associated species by life history stage, (3) The Federal agency's views regarding the effects of the action on EFH, and (4) Proposed mitigation, if applicable.

## **2.0 COORDINATION**

Savannah District has initiated informal consultation of the proposed project with the National Oceanic and Atmospheric Administration (NOAA) Fisheries Habitat Conservation Division and is now requesting concurrence with the effects analysis.

## **3.0 DESCRIPTION OF PROPOSED ACTION**

This authorized 3.5 mile long project was initially constructed in 1974 with a 50-year project life and periodic renourishments to occur every 7 years. The beach was last renourished in 2008 and is scheduled to be renourished again in 2015. In 2015, there will be 9 years left in the project life, Savannah District, with the non-Federal sponsor’s concurrence, selected to perform the 2015 periodic renourishment for the remaining 9 years of the 50-year project life. The renourishment volume to be placed includes the volume needed to restore the project plus an additional 312,000 cubic yards to account for potential erosion through 2024. The beach template will be slightly modified to include placement of the additional material by extending the berm north to the terminal groin of the template. This area has been nourished during previous renourishment cycles, but not during the 2008 renourishment. In addition, the berm will be extended seaward up to 50 feet beyond the previously constructed template to account for erosion during the additional 2 years for a 9 year cycle. The same borrow area that was used for the 2008 renourishment, Borrow Area 4, will be used for this final renourishment. The borrow area is approximately 7,000 feet (1.3 miles) southeast of the southernmost Federal terminal groin. Figure 1 shows the proposed borrow area.

As proposed, the project will be constructed using a hydraulic cutterhead pipeline. A submerged pipeline will extend from the borrow site to the southerly tip of Tybee Island. Shore pipe will be progressively added to perform fill placement along the shorefront areas to be renourished. Temporary toe dikes will be constructed parallel with the shore to control the hydraulic effluent and reduce turbidity. The sand will be placed in varying design templates based upon alongshore volumetric fill requirements which reflect beach conditions at the time of construction. Figure 2 shows the proposed fill limits and locations.

The USACE 1994 Section 934 report evaluated 26 combinations of alternate berm widths (40 to 70 feet), berm heights (+11.0 to +17.0 feet), and beach slopes. This provided a variety of potentially feasible widths and heights. Five alternate berm widths and heights were selected for detailed evaluation, and costs and benefits were computed for each of the alternatives. The analysis concluded a 40-foot wide berm at elevation +11.0 feet with 1V:20H slope was the most desirable beach template.

In the 1998 Environmental Assessment for South Tip Beach/Tybee Creek, it was concluded that in order to maintain the integrity of the restored beach at Back River between periodic renourishment, advance nourishment would be provided by placing fill material one foot above the beach template, up to elevation +12 feet MLW, and providing additional material on the beach slope. A berm elevation of +12 feet MLW and 1V:15H slope was proposed for the Back River/Tybee Creek segment of the proposed renourishment project.

For the current project template design is based on project performance and erosion rates since the last renourishment project in 2008. Beach fill will primarily be placed in areas included in the previous renourishment in 2008. These areas include the North Beach (North End Groin to Oceanview Court), Second Street area (Oceanview Court to Center Street), Middle Beach (Center Street to 11th Street), South Beach (11th Street to South End Groin), and Back River/Tybee Creek (South Tip Groin Field to Inlet Avenue). Additional fill will be placed between these areas to provide a more stable beach profile and to avoid some of the excessive losses in the 2nd Street “hot spot” from project end losses and offshore losses that resulted from the wide beach constructed at this location during the last renourishment. Constructed beach widths on the Back River Beach vary from 30 feet to 110 feet at +11.22 feet MLLW. Constructed beach widths on the Front Beach will vary from a 25 foot width berm, to a berm approximately 350 feet wide at the elevation of +11.22 MLLW. Based on the natural angle of repose on the existing beach, and experience with previous placement, a beach slope of 1V:25H will be required on the front beach. The Back River will have an +11.22 foot elevation MLLW and a 1V:15H slope. Figures 3 and 4 show the proposed design template.

Beach fill final placement will be based on physical conditions and funds available at the time of construction. Alternative bid schedules will be used to optimize the quantity of beach fill placed for the funds available. The proposed project is expected to commence by November 2015, and be completed by April 30, 2016. Federal participation in the Federal project expires in 2024, 9 years after the time of the proposed construction.

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Figure 1: Proposed Borrow Area

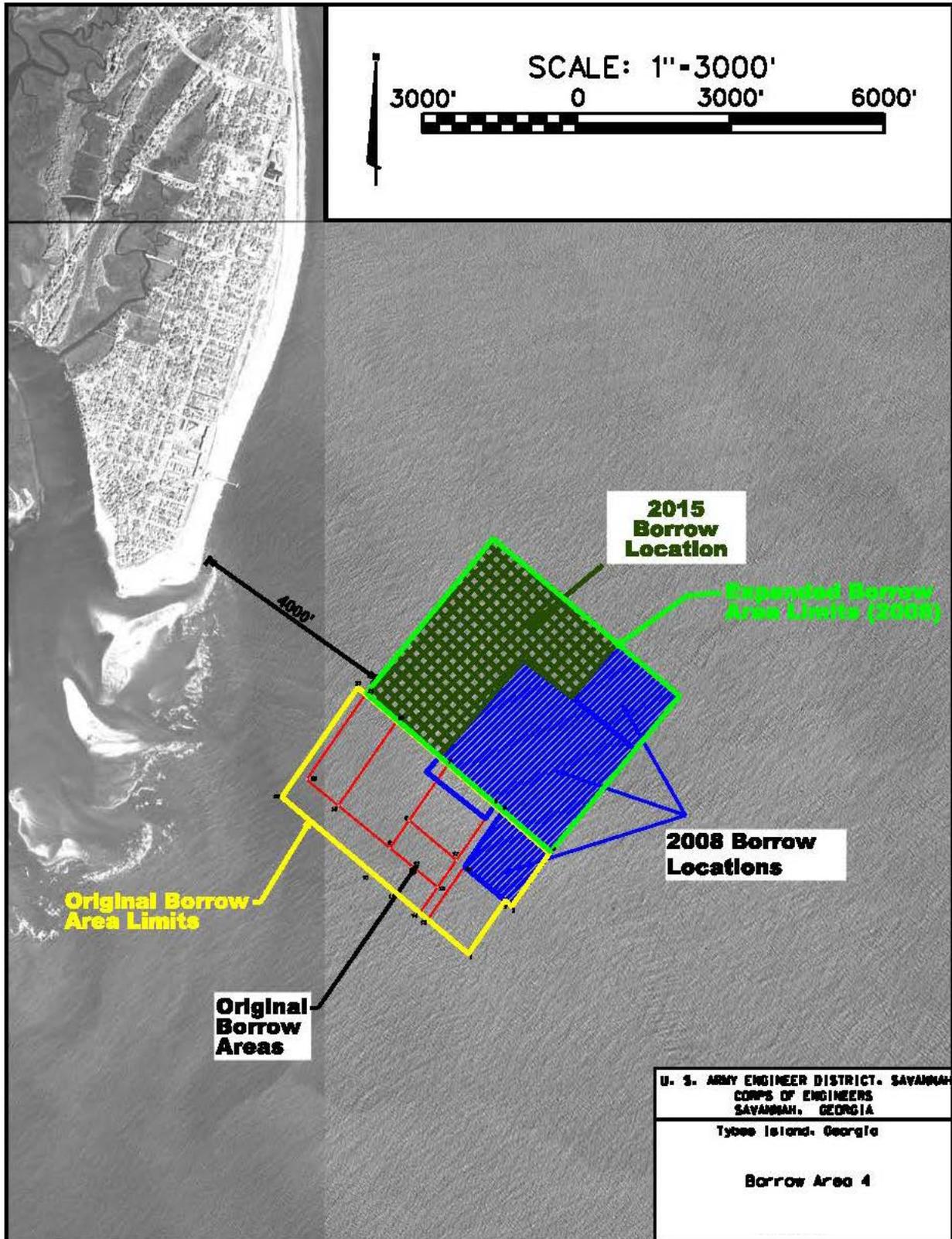


Figure 2: Proposed Fill Limits For 2015 Tybee Beach Renourishment

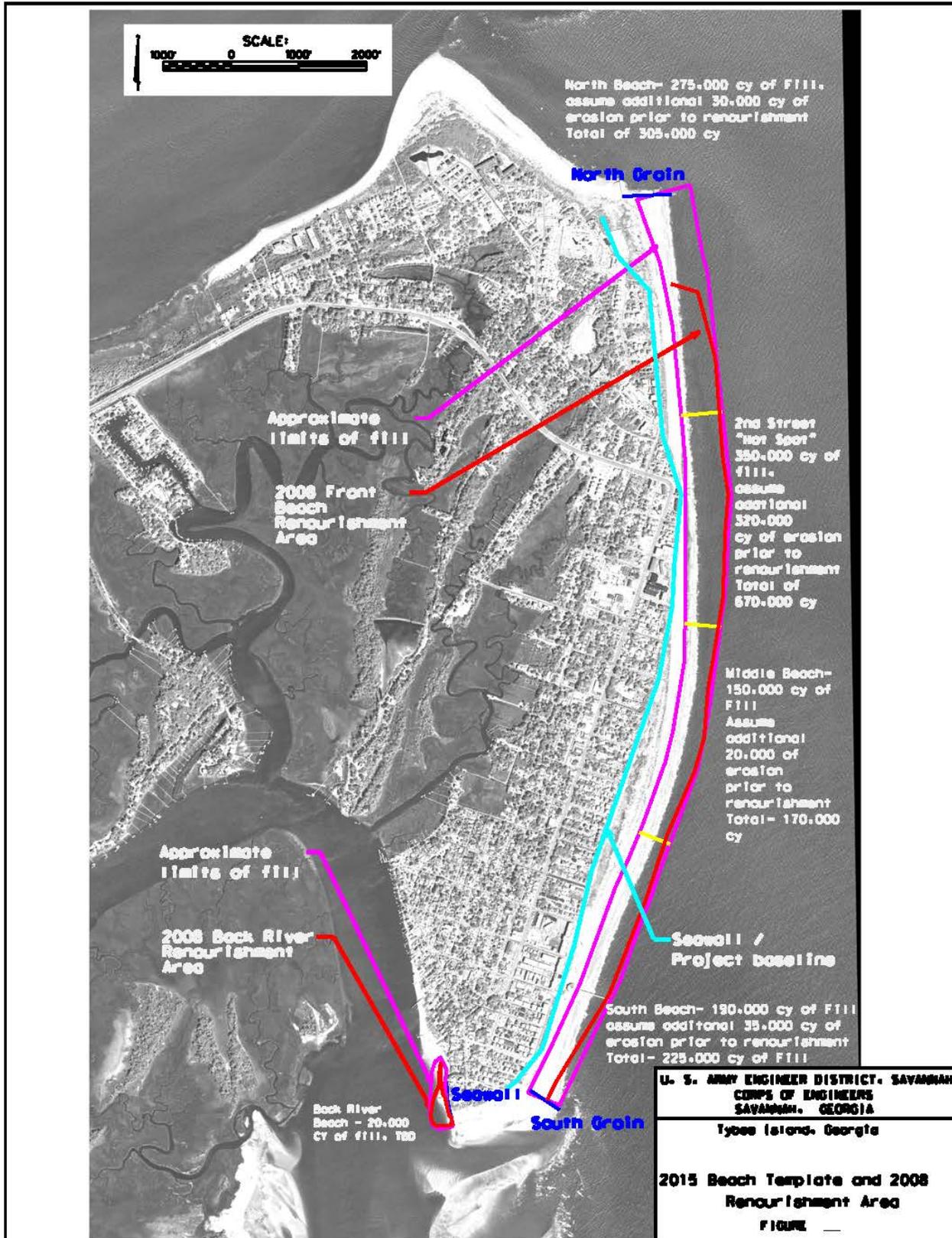


Figure 3: Template Design For Recommended Alternative

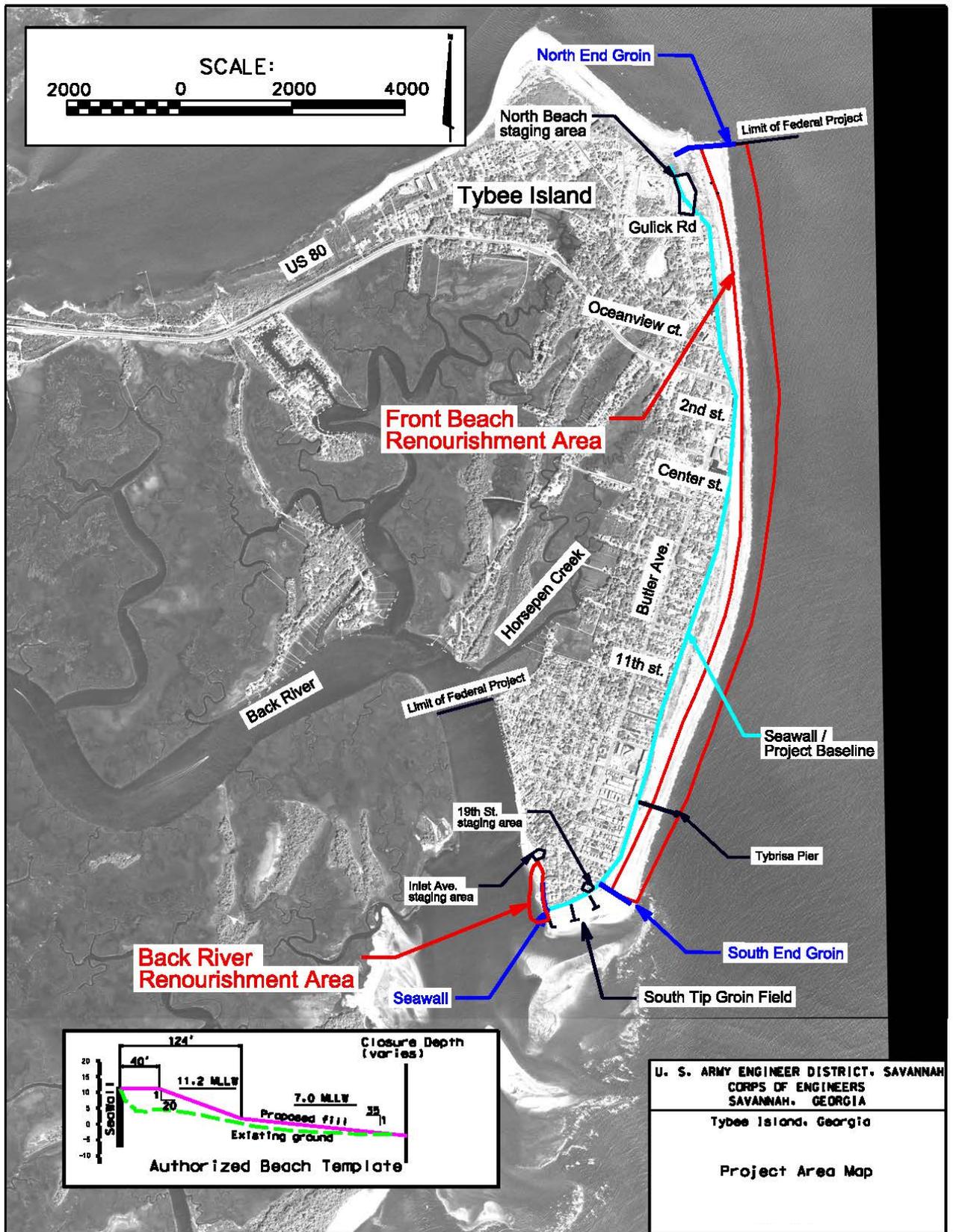
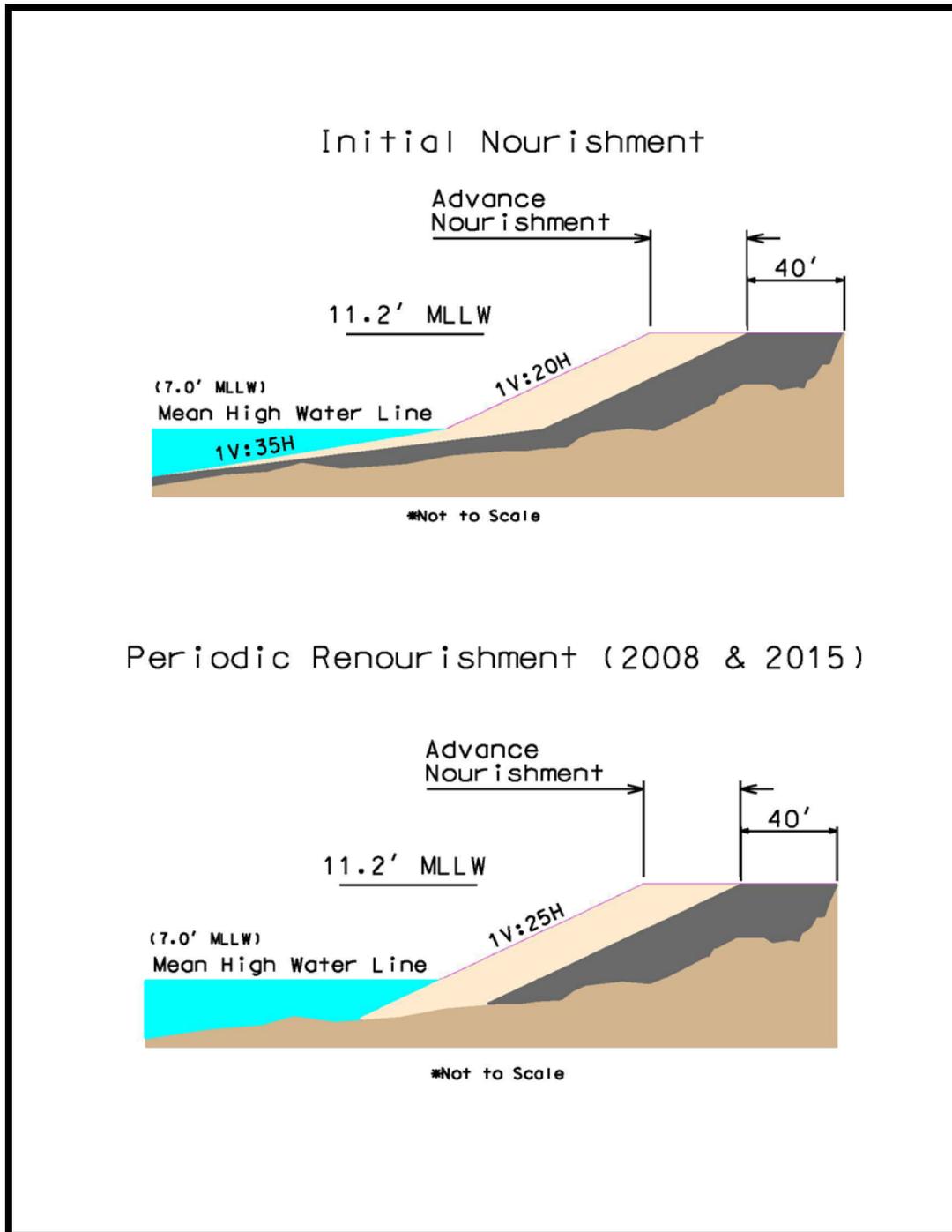


Figure 4: Proposed Template\*



\*Back River Beach will have a slope of 1V:15H

#### **4.0 ANALYSIS OF THE EFFECTS OF THE PROPOSED WORK ON EFH**

##### **4.1 IDENTIFY APPLICABLE EFH**

EFH habitat applicable to this proposal includes intertidal flats and marine and estuarine water column.

##### **4.1.1 Generalized Areas Designated by the South Atlantic Fisheries Management Council**

Table 1 shows EFH as identified in Fishery Management Plan Amendments for the South Atlantic and Mid-Atlantic Fishery Management Councils, geographically defined areas of particular concern and whether or not these areas/habitats occur within the project vicinity or if areas will be impacted by project activities. Areas listed in this table were derived from Essential Fish Habitat: A Marine Fish Habitat Conservation Mandate for Federal Agencies. February 1999 (Revised 10/2001) (Appendices 4 and 5).

**Table 1.**  
**Essential Fish Habitat Areas**

Essential Fish Habitat	Potential Presence		Potential Impacts	
	In/Near Project Vicinity	Project Impact Area	Dredge Plant Operation	Beach Disposal Activities
<b>Estuarine Areas</b>				
Estuarine Emergent Wetlands	Yes	No	No	No
Estuarine Scrub/ Shrub Mangroves	No	No	No	No
Submerged Aquatic Vegetation (SAV)	No	No	No	No
Oyster Reefs & Shell Banks	Yes	No	No	No
Intertidal Flats	Yes	Yes	No	No
Palustrine Emergent & Forested Wetlands	No	No	No	No
Aquatic Beds	No	No	No	No
Estuarine Water Column	Yes	Yes	Yes	Yes
<b>Marine Areas</b>				
Live/Hard Bottoms	No	No	No	No
Coral & Coral Reefs	No	No	No	No
Artificial/ Manmade Reefs	No	No	No	No
<i>Sargassum</i>	Offshore	No	No	No
Water Column	Yes	Yes	Yes	Yes
<b>Geographically Defined Habitat Areas of Particular Concern</b>				
Area-Wide				
Council designated Artificial Reef Special Management Areas	No	No	No	No
Hermatypic (reef-forming) Coral Habitats & Reefs	No	No	No	No
Hoyt Hills	No	No	No	No
<i>Sargassum</i> Habitat	Offshore	No	No	No
State Designated Areas of Importance of Managed Species (PNAs)	No	No	No	No
Submerged Aquatic Vegetation (SAV)	No	No	No	No

*Draft Appendix B EFH  
Tybee Island Shore Protection Project, Georgia  
2015 Renourishment*

<b>Georgia</b>				
Gray's Reef	Distant offshore	No	No	No
<b>South Carolina</b>				
Charleston Bump	No	No	No	No
Hurl Rock	No	No	No	No
Broad River	No	No	No	No

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#### 4.1.1.2 Intertidal Flats

Intertidal areas and mudflats are important dwelling habitat and feeding areas for benthic macroinvertebrates, juvenile fish species, arthropods, mollusks, and predatory organisms that feed on these species. The proposed project will place fill in areas of Tybee's intertidal flats burying some organisms while others more motile will likely avoid and survive the dispersal event. Impacts to intertidal areas are expected to be temporary and minor in nature. A monitoring plan may be developed to determine the success of recolonization of these areas by organisms. Although intertidal areas will experience some negative effects the habitat will increase in size due to the fill placement resulting in an overall benefit.

#### 4.1.1.3 Marine Water Column

Total suspended particulate matter produced by this activity is expected to be similar to that produced by other authorized forms of dredging. These effects are expected to be temporary and minor. Temporary toe dikes will be constructed parallel with the shore to control the hydraulic effluent and reduce turbidity. In addition the quality of dredged material used during this renourishment is primarily fine grained poorly graded SP sands. This material is appropriate for beach placement and should produce very little turbidity.

#### 4.1.1.4 Estuarine Water Column

Although no work is occurring directly in the estuarine water column it is possible turbidity effects resulting from work within the marine water column may impact estuarine waters upstream in the Savannah River. These impacts would be considered temporary and minor in nature.

#### 4.1.1.5 Areas Identified Under Specific Plans for Managed Species

Federally managed species that inhabit the marine water column area offshore of Tybee Island include blue fish (*Pomatomus saltatrix*), brown shrimp (*Penaeus aztecus*), pink shrimp (*P. duorarum*), white shrimp (*P. setiferus*), cobia (*Rachycentron canadum*), dolphin (*Coryphaena hippurus*), Atlantic sturgeon (*Acipenser oxyrinchus*) (managed by ASMFC and NOAA), red snapper (*Lutjanus campechanus*), gag grouper (*Mycteroperca microlepis*), king mackerel (*Scomberomorus cavalla*), Spanish mackerel (*Scomberomorus maculatus*), spot (*Leiostomus xanthurus*), Summer Flounder (*Paralichthys dentatus*) and red drum (*Sciaenops ocellatus*) (SAFMC 1998; ASMFC, [www.asmfc.org](http://www.asmfc.org); accessed on January 4, 2013). A summary of managed species and their potential occurrence within the Tybee Island area is provided in Table 2.

**Table 2.**  
**Summary of managed species potential occurrence in the Tybee Island area**

Species	Scientific name	Habitat/Occurrence in Project Area
King mackerel	<i>Scomberomorus cavalla</i>	Migratory pelagic, nearshore and offshore marine
Spanish mackerel	<i>S. maculatus</i>	Migratory pelagic, nearshore and offshore marine
Bluefish	<i>Pomatomus saltatrix</i>	Migratory pelagic, nearshore and offshore marine
Gag grouper	<i>Mycteroperca microlepis</i>	Migratory demersal; nearshore and offshore marine; hardbottom
Red drum	<i>Sciaenops ocellatus</i>	Resident demersal; nearshore marine, Tybee Inlet; estuarine
Shrimp (brown, white and pink)	<i>Penaeus aztecus</i> , <i>P. setiferous</i> , <i>P. duoarum</i>	Migratory decapods crustacean; nearshore and offshore marine; Tybee Inlet; estuarine
Cobia	<i>Rachycentron canadum</i>	Migratory pelagic; nearshore and offshore marine; Adults-summer water column
Atlantic sturgeon	<i>Acipenser oxyrinchus</i>	Migratory; nearshore marine; estuarine; Tybee Inlet; riverine
Dolphin	<i>Coryphaena hippurus</i>	Oceanic species, offshore marine; larval habitat is coastal pelagic
Summer Flounder	<i>Paralichthys dentatus</i>	Migratory pelagic; nearshore and offshore marine; Adults nearshore during summer months
Spot	<i>Leiostomus xanthurus</i>	Migratory; estuarine and marine; spawning offshore in winter; Adults nearshore in fall
Red snapper	<i>Lutjanus campechanus</i>	Resident demersal species; nearshore and offshore marine. Juveniles-year round softbottom. Adults-hardbottom of moderate to high relief; sloping soft-bottom area

The South Atlantic Fishery Management Council is responsible for the conservation and management of many species found in Federal waters in the South Atlantic Region. The Council currently has fishery management plans for nine fisheries. These fisheries include: Calico Scallop, Coastal Migratory Pelagics (including king and Spanish mackerel), coral and live bottom habitat, Dolphin and Wahoo, Golden Crab, Shrimp (including rock shrimp), Snapper/Grouper (60 species), Spiny Lobster, and Sargassum. Of these fisheries Snapper/Grouper contain species that are overfished. Both the recreational and commercial snapper grouper fisheries are highly regulated and progress continues to be made as more species are removed from the overfished list each year. The other fisheries are expected to continue into the future at productive sustainable levels ([www.safmc.net](http://www.safmc.net)).

EFH for red drum includes unconsolidated bottom and ocean high salinity surf zones. Red drum migrate inshore to spawn in the spring and offshore to wintering grounds during the fall. Spawning occurs primarily in the nearshore area during late

September/October. Eggs and pelagic larvae utilize high salinity waters inside estuaries. Juveniles utilize a variety of inshore habitats including oyster reefs and unconsolidated bottom. Sub-adults are found throughout southeastern estuaries. During fall migrations, adults use hard/live bottom areas and artificial reefs off South Carolina and Georgia ([www.asmfc.org](http://www.asmfc.org)).

EFH for bluefish and summer flounder includes coastal waters over the Continental Shelf and inshore waters. Summer flounder adults are likely to be present in the area during the summer months and move offshore to depths of 500 feet or more during winter months. Bluefish migrate south when water temperatures drop. Spawning occurs in open ocean waters when temperatures are between 18 – 22 degrees Celsius. Juveniles migrate from the continental shelf to nearshore waters as they develop. Juveniles are more common in the Mid Atlantic Bight than the South Atlantic Bight as they prefer sandy substrates over silts and clays. Adults use both offshore and inshore areas for foraging but favor warmer temperatures. The proposed renourishment is scheduled to occur during November 2015 to April 2016 which would prevent impacts to spawning populations.

Brown and white shrimp (juvenile and adult) and juvenile spanish mackerel utilize the nearshore areas of Georgia's coastal waters for feeding but are not expected to be adversely affected due to the availability of other suitable habitat nearby.

Historically Atlantic sturgeon supported commercial fisheries of varying magnitude. In the late 1800s, they were second only to lobster among important fisheries, with landings estimated at seven million pounds per year just prior to the turn of the century. Overharvesting of sturgeon for flesh and eggs (known as caviar) continued through the 1990s until the Commission and federal government implemented a coastwide moratorium in late 1997 and early 1998. The Commission's Fishery Management Plan for Atlantic Sturgeon called for a coastwide moratorium through at least 2038, in order to build up 20 yearclasses. In October 2009 the Natural Resources Defense Council (NRDC) petitioned NOAA to list Atlantic sturgeon under the Endangered Species Act (ESA) and designate critical habitat. In January 2010 NOAA Fisheries published a positive 90-day finding in the *Federal Register*. The Atlantic sturgeon was listed as endangered on April 6, 2012. This listing included five distinct population segments (DPS) one of which is the South Atlantic and Carolina population. Spawning occurs in tidal freshwater regions of large estuaries of waters where the temperatures range from 13.2 – 23 degrees Celsius. EFH for Atlantic sturgeon includes nearshore subtidal bottoms (for juveniles) ([www.asmfc.org](http://www.asmfc.org)). The NMFS 1995 BO on hopper dredging and beach renourishment activities in the southeastern US from North Carolina through Florida East Coast concluded that pipeline dredges were not likely to adversely affect listed species. No Critical habitat has been listed for the Atlantic sturgeon and much remains unknown about populations in the project area. However no impacts to spawning populations would occur as the spawning occurs in freshwater rivers. It would not be expected that Atlantic sturgeon would commonly utilize habitats where this project's activities would be performed, open nearshore areas of the ocean and beaches.

No significant impacts to other fish species would be expected. Some minor impacts associated with turbidity increases at the borrow area and on the beach would be expected during dredging and placement. Fish species abundance may be temporarily impacted by decreases in prey abundance. These impacts are expected to be temporary and minor in nature.

#### **4.1.1.6 Geographically Defined Habitat Areas of Particular Concern**

These include special management zones, hard bottoms, and State-designated areas of importance to managed species, and submerged aquatic vegetation. None of these areas would be impacted by the proposed work.

### **5.0 THE DISTRICT'S VIEWS ON THE EFFECT OF THE PROPOSED WORK ON EFH**

As discussed above under each type of identified EFH, when taking into account the overall effect of the proposed work, Savannah District expects the proposed renourishment to have no more than minimal negative impacts to EFH or the aquatic ecosystem and is not likely to adversely affect listed species.

### **6.0 PREVIOUS MONITORING**

As part of the 2008 renourishment NMFS recommended monitoring both the fill and borrow area to document changes relative to a control area and assess long-term recovery. Savannah District coordinated this monitoring with South Carolina Department of Natural Resources and a Before After Control Impact (BACI) monitoring program was conducted to address concerns relayed by NMFS on the lack of bathymetric and benthic data in Georgia where beach renourishment occurs. Results of the monitoring are summarized below and discussed in the EA under section 4.18.

Borrow area monitoring:

- The content of fine silts and clays as well as finer silts increased in the borrow area relative to an undredged reference site and remained elevated one year after.
- Infaunal communities changed significantly following dredging but appeared to be a product of seasonal changes more so than dredging.
- Biological communities changed the greatest during the six and twelve months post-dredging period, rather than immediately after dredging in the borrow area.
- The borrow area amphipod community, which normally responds quickly in a negative manner to dredging, exhibited very little change immediately after dredging and decreased in the six and twelve month survey.

- Polychaete worm populations increased in the borrow area (an opportunistic species).

Beach monitoring:

- Beach sediment characteristics changed very little after renourishment, supporting the findings that the borrow area sediments used were of a good match to existing beach sediments.
- Little evidence was found that ghost crab populations decreased significantly in the nourished segments compared to un-nourished reference sites.
- Data suggested that adult ghost crabs avoided the areas of active renourishment and successfully recolonized the affected beach system afterward.
- A decline in juvenile ghost crabs was evident across the entire beach system though adult populations remained relatively stable.
- The small size of Tybee Island made it difficult to distinguish significant changes in ghost crab populations.
- Bean clam densities declined during renourishment.
- There was low recruitment of juvenile clams to the renourished areas during the post-nourishment monitoring period.
- During 2010 a mass mortality of bean clams and other infaunal bivalves occurred at beaches along South Carolina and Georgia. However, the study could not definitively attribute the decline to the beach renourishment.
- Declines in the bean clams may also have affected ghost crab recruitment as the clam is one of the major prey sources.

## **7.0 PROPOSED MITIGATION**

Results of the last renourishment monitoring did not show significant adverse impacts to benthic organisms in the borrow area or on the beach. Based on the time of year construction is scheduled, the short duration, and the protective measures in place (type of equipment, endangered species watch plans, etc.) the Savannah District has identified no need for mitigation.

## **8.0 REFERENCES**

EFH Guidance (Essential Fish Habitat: New Marine Fish Habitat Conservation mandate for Federal Agencies, National Marine Fisheries Service, Habitat Conservation Division, Southeast Regional Office, St. Petersburg, FL, February 1999).

Final Habitat Plan. (Final Habitat Plan for the South Atlantic Region: Essential Fish Habitat Requirements for Fishery Management Plans of the South Atlantic Fishery Management Council, Prepared by the: South Atlantic Fishery Management Council, October 1998).

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U.S. Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS). 2012. 77 FR 5880, Rules and Regulations, (DOC), 50 CFR Parts 223 and 224, RIN 0648-XJ00 [Docket No. 100903414-1762-02], Endangered and Threatened Wildlife and Plants; Threatened and Endangered Status for Distinct Population Segments of Atlantic Sturgeon in the Northeast Region, Part II, ACTION: Final rule.