Appendix F
CWA Section 404(b)(1) Evaluation

Clean Water Act, Section 404(b)(1) Evaluation

Maintenance Dredging of Town Creek Federal Navigation Channel

Charleston County, South Carolina

The U.S. Army Corps of Engineers, Charleston District (USACE) is proposing to maintain the Town Creek Federal Navigation Channel located in Charleston County, South Carolina. This document presents the Clean Water Act Section 404(b)(1) evaluation for the discharge of dredged or fill material into the waters of the U.S. associated with the proposed excavation and placement of material to maintain the channel.

I. PROJECT DESCRIPTION

A. Location

The Town Creek Federal Navigation Channel is located on the Atlantic Coast in Charleston County, South Carolina (SC) approximately 35 miles north of Charleston, SC and near McClellanville, SC and provides access to and from McClellanville to the Atlantic Ocean. Material dredged from the entrance channel will be beneficially used to supplement sand resources within the nearshore depth of closure zone of Lighthouse Island within Cape Romain National Wildlife Refuge. The entire project area is within the Cape Romain National Wildlife Refuge.

B. General Description

The Town Creek Navigation Channel is approximately 8.2 miles in length, providing a safe, reliable channel for existing and prospective vessel traffic to and from McClellanville, South Carolina to the Atlantic Ocean. The existing channel includes a navigation/entrance channel across the ocean bar to the mouth of Five Fathom Creek, a distance of 2.0 miles, that is 12 feet deep at mean low water (MLLW) and 100 feet wide; and also includes a channel 10 feet deep at MLW by 80 feet wide from the mouth of Five Fathom Creek, through Town Creek, to the Atlantic Intracoastal Waterway (AIWW), a distance of 6.2 miles.

The majority of the project area is within Cape Romain National Wildlife Refuge, which is managed by the U.S. Fish an estuarine marsh area characterized by many interconnecting channels, open-water bays, and multiple outlets to the ocean.

The proposed work consists of periodic maintenance dredging of shoal material from the Federal Navigation Channel. Dredged material would be beneficially used and placed nearshore of Lighthouse Island.

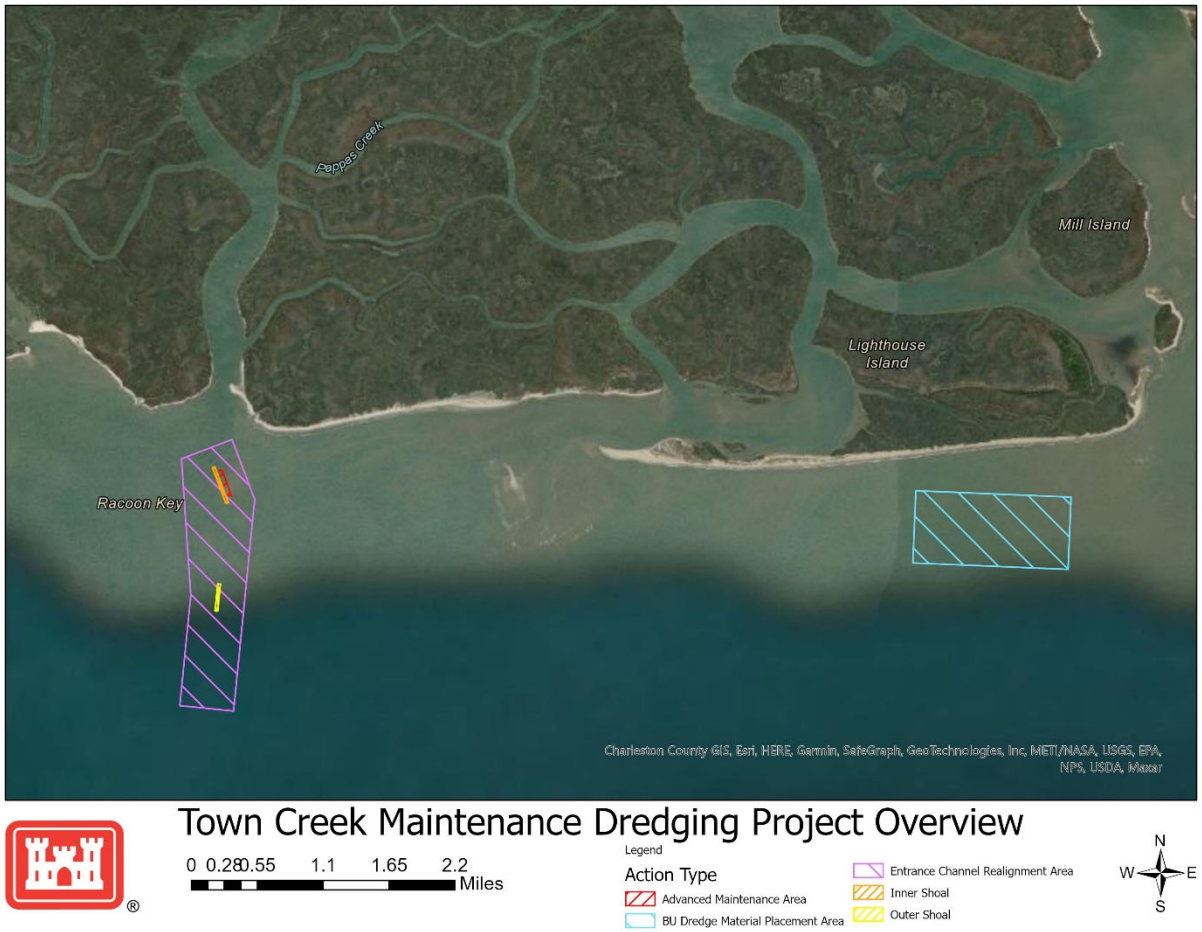

Figure 1. Town Creek Maintenance and Placement Area

C. Authority and Purpose

The Town Creek Project was authorized on 12 November 1974 under Section 107 of the River and Harbor Act of 1960, as amended, which provides for the development of small navigation projects not specifically authorized by the Congress. The project was completed in 1975.

Authority for the Project includes continued channel maintenance and assumed maintenance dredging would be required every three years. USACE policy, generally, is to maintain authorized navigation projects to full constructed channel dimensions when feasible and justified (ER 1130-2-520, 29 Nov 1996, 8-2.a.(5)). This iteration of maintenance dredging is funded by the Infrastructure Investment and Jobs Act, Division J, Title III of Public Law 117-58 (a/k/a Bipartisan Infrastructure Law) in conjunction with the Harbor Maintenance Trust Fund (Section 201 of WRDA 1986, 26 USC 9505).

In 1989, Hurricane Hugo breached Sandy Point and created a new inlet to the ocean. This inlet continued to increase in size and was being used by local traffic to get to the Atlantic Ocean. In 1997, USACE requested authority to maintain this new inlet in lieu of the original authorized channel. The request to abandon the original Town Creek channel alignment and establish the new channel was approved. The proposed channel relocation, due to natural occurrences, is within the scope of the project authorization.

The purpose of this iteration of maintenance dredging is to continue to provide safe navigation for existing and prospective vessel traffic by maintaining the congressionally authorized Federal navigation channel from the 12-foot contour in the open ocean through Five Fathom Creek the AIWW and McClellanville. Shoals tend to accumulate in areas within the channel, which impact navigation. When this shoaling occurs, vessels navigate outside the Federal channel to access deeper areas. Therefore, there is a need to conduct regular maintenance dredging of the entrance channel to improve access to and from McClellanville.

D. Alternatives Considered

For reference, Section 404(b)(1) guidelines of the Clean Water Act require that "except as provided under section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." The 404(b)(1) guidelines consider an alternative practicable "if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes."

In accordance with the National Environmental Policy Act (NEPA) and USACE guidance, the following alternatives were reviewed: Side-Cast Dredging Alternative, the Proposed Action Alternative, and the No Action Alternative.

The proposed alternative includes excavating up to 190,000 cubic yards of material from the Federal Navigation Channel. Maintenance dredging will be by means of either a modified hopper dredge that will transport the sand to a nearshore placement location in the tidal zone of Lighthouse Island or by means of a side-cast dredge.

E. General Description and Quantities of the Dredged or Fill Material

1) *General Characteristics of Material*

Based on a physical particle analysis conducted in August of 2022, the fill material is predominantly silica sand, with 90% or greater sand content.

2) *Quantity of Material*

Approximately 190,000 cubic yards of material may be dredged every 5-7 years; however, dredging volumes and frequency may vary due to storm induced shoaling.

3) *Source of Material*

The dredge material will come from the Town Creek Federal Navigation Channel.

F. Description of the Proposed Discharge Site

1) *Location and Size*

The proposed placement location is the littoral zone along Lighthouse Island within the depth of closure approximately 13 feet MLW. The area proposed for beneficial use placement is approximately 545 acres. A split-hull small hopper dredge would be used to excavate the sandy material from the entrance channel, transit to the nearshore placement location and deposit the material (350 cubic yards/load).

II. FACTUAL DETERMINATIONS

A. Physical Substrate Determinations

1) Substrate Elevation and Slope

The sand will be placed in the water in depths of about 8-13 feet MLW and the created berm will be limited to a height of 4 feet. Currents will naturally disperse the material within the littoral zone.

2) Sediment Type
The sediment is 90% or greater of fine, medium, and coarse sands.

3) Dredged/Fill Material Movement
The material will be naturally dispersed within the nearshore wash zone by currents.

4) Physical Effects on Benthos
The proposed marine placement of dredged sand in 350 cubic yard loads may result in initial burial of some nearshore benthic organisms. Substrate is composed of material that is similar to existing substrate, which is expected to become recolonized by the same type of benthos through recruitment from adjacent areas. Most invertebrate species are adapted to the high energy environment within the nearshore placement zone where waves break and are capable of migrating through the surficial layers of sand. Species will rapidly recolonize the area following dredging and placement.

B. Water Circulation, Fluctuation and Salinity Determinations.

1) Water Column

(a) Salinity. There are no anticipated impacts expected to salinity.

(b) Water Chemistry. There are no anticipated impacts expected to water chemistry.

(c) Clarity and Color. There may be a local and temporary increase in turbidity during excavation and deposition activities.

(d) Odor. The excavation and placement are not expected to have any effects on odor in the project area.

(e) Taste. Not applicable. Water in the project area is not used as a drinking water resource.

(f) Dissolved Gas Levels. Dissolved oxygen levels will not be altered significantly by the proposed project due to high-energy wave action and associated adequate re-aeration rates. No anoxic layers of sediment would be exposed by dredging due to the low level of organic material in the dredged material.

(g) Nutrients. There are no anticipated impacts expected to nutrients.

(i) Eutrophication. High nutrient loading causes eutrophication: however since nutrient loading is not high in the study area, eutrophication is not expected.

2) Current Patterns and Circulation.

(a) Current Patterns and Flow. Currents in the project area are both tidal and longshore. Placement of the nearshore will have no effect on the currents.

(b) Velocity. Effects on water velocity would be minimal.

(c) Stratification. No change in stratification is anticipated.

(d) Hydrologic Regime. The hydrologic regime would not be affected.

3) *Normal Water Level Fluctuations and Salinity Gradients*
Tides in the project area are semi-diurnal. The mean ranges of tides in the project area is approximately 3.0 feet. The project will have no adverse impact to these characteristics and would not affect salinity gradients in the area.

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 dredging and placement activities. Turbidity will be temporary and localized, and no significant adverse effects are expected.

2) *Effects (degree and duration) on Chemical and Physical Properties of the Water Column*

(a) Light Penetration. Light penetration will decrease during discharge in the immediate area where dredged material is being deposited. This effect will be temporary and will have no 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. No anoxic layers of sediment would be exposed by dredging due to the low level of organic material in the dredged material.

(c) Toxic Metals, Organics, and Pathogens. No toxic metals, organics, or pathogens will be released by the project due to the clean nature of the dredged material.

(e) Aesthetics. Aesthetic quality will be temporarily reduced during the period when work is occurring.

(3) Effects on Biota

(a) Primary Production & Photosynthesis. Primary production is not a recognized, significant phenomenon in the surf zone, where a temporary increased level of suspended particulates will occur. Elevated turbidity levels may have minor, adverse impacts on drifting autotrophic organisms in the immediate project area. Because of nearshore water exchange from tidal and wind generated currents, it is probable that photosynthetic organisms are continuously carried in and out of the project area. Therefore, no long-term adverse effects are expected.

(b) Suspension/Filter Feeders. Dredged material resuspended into the water column may contribute to the clogging of siphons or filter-feeders. This is

expected to be a temporary condition. Conditions for existing filter feeders should return to normal once construction is complete.

(c) Sight Feeders. Elevated turbidity levels will have a short-term adverse impact on these organisms; however, these organisms are highly mobile and are able to migrate into more favorable areas to fulfill their nutritional requirements during the short-term.

D. Contaminant Determinations

Deposited dredged material is similar to the existing material in the surrounding areas and would not introduce, relocate, or increase contaminants in the nearshore waters.

E. Aquatic Ecosystem and Organism Determinations

1) Effects on Plankton

Decreased light transmission caused by suspended dredged material may have a temporary adverse effect on plankton; however, this effect is expected to be minor and temporary.

2) Effects on Benthos

Existing benthic organisms will be permanently lost in the immediate locations where fill is placed. Recoloniztion of benthic communities should occur within a year once operations have ceased because of their high fecundity and turnover rate. Species composition should be similar to that which existed prior to construction. The effects will be minor and temporary.

3) Effects on Nekton

Direct impacts to motile organisms would be minor because of their ability to avoid adverse conditions. Some larval fishes may be destroyed by the mechanical action of the cutterhead. Impacts would be temporary and minor and would not significantly affect the local fish stock.

4) Effects on Aquatic Food Web

Reductions in primary productivity from turbidity would be temporary and localized around the immediate area of excavation and placement sites. Non-motile organisms are quickly able to recolonize affected intertidal zones; no long-term adverse impacts to higher trophic level organisms are expected. No long term adverse effect on the food web is anticipated.

5) Effects on Special Aquatic Sites.

(a) Sanctuaries and Refuges. The dredging will have no impact on the Cape Romain National Wildlife Refuge. The nearshore placement will have positive effects by protecting and renourishing Lighthouse Island.

(b) Wetlands. Not applicable, no wetlands will be impacted.

(c) Mud Flats. Not applicable, no mud flats will be impacted.

(d) Vegetated Shallows. Not applicable; there are no species of submerged aquatic vegetation in the study area.

(e) Coral Reefs. Not applicable; not found in the study area.

(f) Riffle and Pool Complexes. Not applicable; not found in the study area.

5) Threatened and Endangered Species

Suitable habitat is present within the project area for the following federally listed species: piping plover, rufa red knot, Atlantic sturgeon, shortnose sturgeon, seabeach amaranth, West Indian manatee, North Atlantic right whale, green sea turtle, leatherback sea turtle, Kemp's ridley sea turtle, and loggerhead sea turtle. The US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) share jurisdiction of sea turtles, with NMFS having jurisdiction when in the marine environment and USFWS having jurisdiction when in the terrestrial environment.

With regard to species under the jurisdiction of USFWS, USACE has determined that the project may affect but is not likely to adversely affect the piping plover, rufa red knot, West Indian manatee, green sea turtle (beach), leatherback sea turtle (beach), Kemp's ridley sea turtle (beach), and loggerhead sea turtle (beach). Furthermore, USACE has determined that the project may affect, but is not likely to adversely affect critical habitat or proposed critical habitat for piping plover, red knot and loggerhead sea turtle. Per Section 7 of the ESA, USACE consulted with USFWS concerning determinations and the following potential impacts to listed species. On December 15, 2022, the USFWS concurred with USACE's.

The project would be implemented in compliance with the 2020 SARBO issued by NMFS. If the project occurs during the warmer months, standard manatee conditions for in-water construction work will be followed to ensure that any manatees in the vicinity are not harmed or harassed.

6) Other Wildlife

Placement of dredged material is not expected to have long-term adverse impacts on wading birds of terrestrial foraging animals. The nearshore placement will help protect Lighthouse Island, which is a common area for nesting and migratory birds.

F. Proposed Disposal Site Determinations

1) Mixing Zone Determination

Given the lack of presence of known contaminants, dredged material will not cause unacceptable changes in the mixing zone specified in the Water Quality Certificate 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 project will comply with applicable state water quality standards.

3) Potential Effects on Human Use Characteristics

The project is not expected to result in long term adverse effects to human use characteristics. Dredging and placement is expected to occur prior to the summer months to avoid maximum seasonal recreation activities in the area. The project

is not expected to adversely affect viewscapes in relation to water quality and there are no known water supply intakes in the near vicinity of the project.

(a) **Municipal and Private Water Supply.** Not applicable; municipal drinking water is not supplied from within the study area, and USACE is not aware of any private water supplies.

(b) **Recreational and Commercial Fisheries.** Recreational and commercial fisheries may be temporarily impacted during the dredging and placement of material, but these effects should be minor and short-term. Maintenance dredging of the navigation channel will provide fishing vessels better access to and from McClellanville, which may improve commercial fishing in the long-term.

(c) **Water Related Recreation.** Water related recreation will be temporarily impacted during construction; however, it will be preserved and enhanced through the maintenance of safe depths for navigation.

(d) **Aesthetics.** A temporary decrease in aesthetics will occur with the presence of dredge equipment.

(e) **Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves.** The project area is within Cape Romain National Wildlife Refuge and Cape Romain Wilderness Area. The area will be temporarily impacted during construction and placement of material, however, will benefit in the long-term through renourishment and added material to improve habitat.

G. **Determination of Secondary and Cumulative Effects on the Aquatic Ecosystem.** The proposed discharge of material would have no adverse impacts that would result in degradation of the natural, cultural, or recreational resources of the project area. The project would have no incremental impacts that, when considered with past, present, and reasonably foreseeable future project, would result in major cumulative impairment of water resources or interfere with the productivity and water quality of the existing aquatic ecosystem.

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

A. No significant adaptation of the Section 404(b)(1) guidelines were made relative to this evaluation.

B. There are no practicable alternatives to the proposed beneficial use placement sites that would have less adverse impact on the aquatic ecosystem.

C. The proposed plan described in this evaluation would not cause or contribute to violations of any known applicable state water quality standards.

D. The disposal of dredged material in the nearshore of Lighthouse Point 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 specific by the Endangered Species Act of 1973.

E. The proposed project will not result in significant adverse effects on human health and welfare, recreational and commercial fishing, plankton, fish, shellfish, wildlife, special aquatic sites, or overall ecosystem diversity, productivity and stability.

F. The composition of the dredged material would not contribute organics or pollutants to the aquatic environment. All responsible precautions will be taken to prevent hazardous materials discharge from all activities and equipment.

G. Appropriate steps to minimize potential adverse impacts from the proposed action will be implemented.

h. On the Basis of the Guidelines, the Proposed Disposal Site(s) for the Discharge of Fill Material is specified as complying with the requirements of the Clean Water Act Section 404(b)(1) guidelines, with the inclusion of appropriate and practical conditions to minimize adverse effects on the aquatic ecosystem.

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