US Army Corps of Engineers®

Murrells Inlet, South Carolina Maintenance Dredging of the Federal Navigation Channel

Draft Supplemental Environmental Assessment

Prepared by:
U.S. Army Corps of Engineers
Charleston District
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ACRONYMS

APE	Area of Potential Effect
ArchSite	South Carolina's Archaeological Site File
BCE	Before Common Era
BMP	Best management practice
CAA	Clean Air Act
CE	Common Era
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CBRA	Coastal Barrier Resources Act
CZMA	Coastal Zone Management Act
CWA	Clean Water Act
DMMA	Dredged Material Management Area
EA	Environmental Assessment
EFH	Essential Fish Habitat
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
f. coliform	Fecal coliform
FMC	Fisheries Management Council
FMP	Fisheries Management Plan
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination Act
GCB	Garden City Beach
HAPC	Habitat Area of Particular Concern
HBSP	Huntington Beach State Park
HUC	Hydrologic Unit Code
HTRW	Hazardous, Toxic, and Radioactive Waste
IPaC	Information for Planning and Consultation
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Services
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
O&M	Operation and Maintenance
OSHA	Occupational Safety and Health Administration
PEFHA	Programmatic Essential Fish Habitat Assessment
SCDHEC	South Carolina Department of Health and Environmental Control
SCDNR	South Carolina Department of Natural Resources
SAFMC	South Atlantic Fishery Management Council
SARBO	South Atlantic Regional Biological Opinion
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service

CHAPTER 1 INTRODUCTION

1.1 Description of Document

This Environmental Assessment (EA) has been prepared by the U.S. Army Corps of Engineers, (USACE), Charleston District, in compliance with the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321- 4370f, and its implementing regulations, 40 C.F.R. §§ 1500-1508, and 33 C.F.R. Part 230, to evaluate the proposed maintenance dredging of material from the Murrells Inlet Federal navigation channel and the placement of that material on Garden City Beach (GCB) and Huntington Beach State Park (HBSP) and to update previous NEPA documentation for the project. Previous NEPA documents for the Project include a 1976 Final Environmental Impact Statement (EIS), a 2001 (supplemental) Environmental Assessment (EA) and Finding of No Significant Impact (FONSI), and a 2017 Supplemental EA/FONSI. Additional coordination with Federal and State resource agencies has occurred in conjunction with this EA. If the impacts are considered insignificant, and the proposed action does not represent either a substantial change to the Project relevant to environmental concerns or present significant new circumstances or information relevant to environmental concerns, a FONSI would be issued.

1.2 Project Authorization

The Murrells Inlet, South Carolina Project was authorized by Resolutions of the House Committee on Public Works on 10 November 1971 and the Senate Committee on Public Works on 18 November 1971, under the authority of Section 201 of the Flood Control Act of 1965 (P.L. 89-298). The Project includes a navigation channel, jetties, deposition basin, and a turning basin. Section 67 of the Water Resources Development Act of 1974 authorized emergency dredging operations necessary to maintain channel depths sufficient to permit free and safe movement of vessels until the authorized project was completed. Project construction was initiated in September 1977 and completed in August 1981.

Authority for the Project includes continued channel maintenance. The Final Report, Improvements for Murrell's Inlet, South Carolina (April 1978), Part VIII, recommended a program of periodic inspection to determine the necessity of maintenance dredging. As stated in the transcript for Hearings Before a Subcommittee of the Committee on Appropriations, 94th Congr., 2nd Sess., regarding Public Works for Water and Power Development and Energy Research Appropriations for Fiscal Year 1977, the "primary objective of the project is the establishment and maintenance of a navigation channel through the inlet." 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). Previous iterations of maintenance dredging have been conducted in 1988, 2001, and 2016.

The authority to place beach-quality sand that has been dredged in constructing and maintaining navigation channels on adjacent beaches was made a part of Regional Sediment Management in Section 2037 of WRDA 2007. In making a determination of the Federal

standard (see discussion below under 2.1), 33 USC 2326g requires that the economic benefits and efficiencies from the beneficial use of dredged material must be taken into account.

1.3 Project Description and Location

The Murrell's Inlet navigation channel is located on the Atlantic coast in Georgetown County, South Carolina (SC), approximately 80 miles north of Charleston, SC and 12 miles south of Myrtle Beach, SC. (Figure 1).

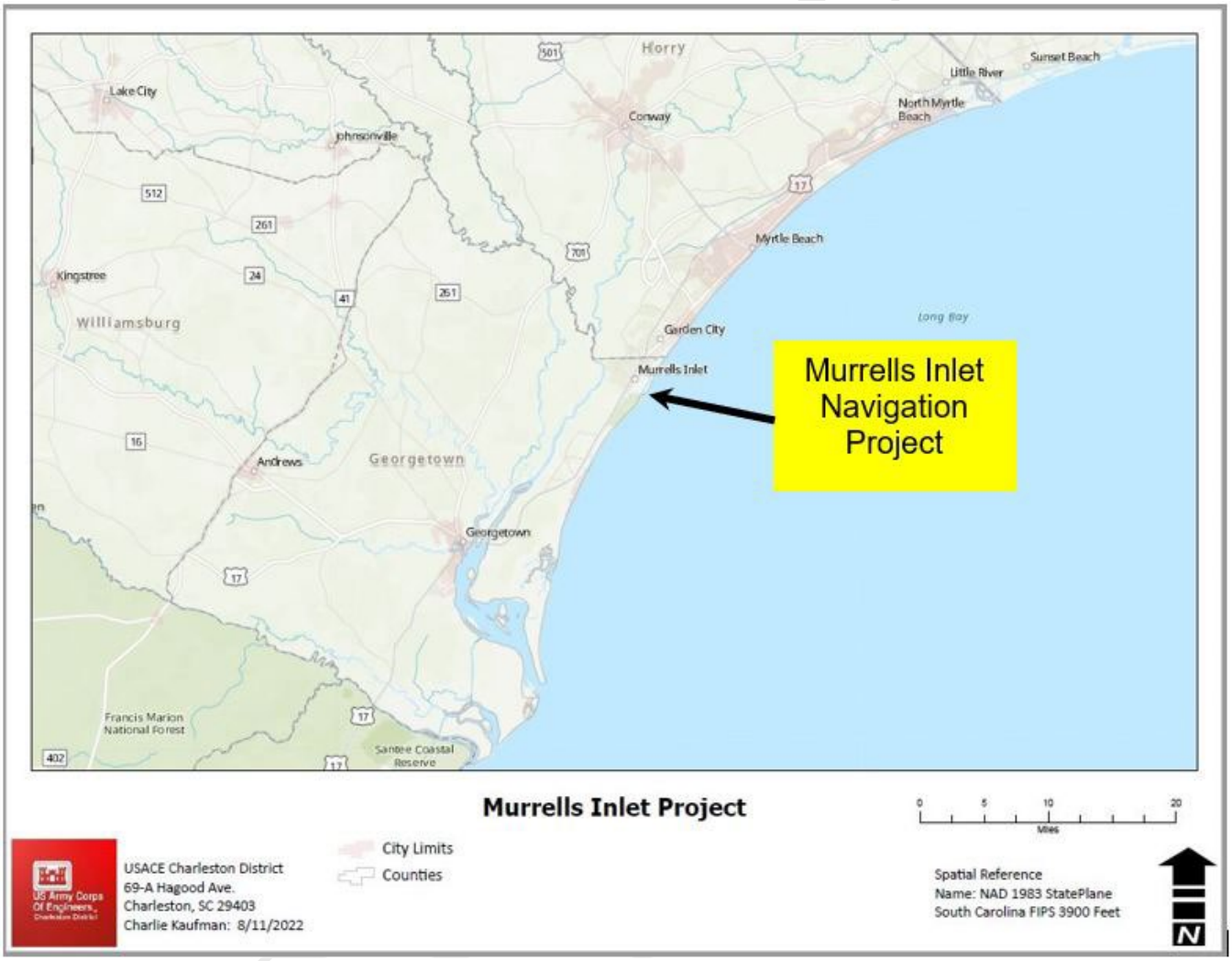

Figure 1. Murrells Inlet Location Map

The Project provides for an entrance channel twelve feet deep by 300 feet across the seaward bar, a length of 3,200 feet; a ten-foot deep by 90-foot inner channel to an old army crash boat dock where it terminates with a turning basin 300 feet long and 150 feet wide, an auxiliary Channel, which is 200 feet wide, 10 feet deep and approximately 1000 feet long, and a deposition basin, Figure 2. The Entrance Channel is stabilized by ocean jetties extending seaward 3,445 feet and 3,319 feet on the north and south sides of the Inlet, respectively. The north jetty was constructed with a weir section at the north end to allow for passage of littoral

drift traveling essentially between the shoreline and the –4-foot contour. Inside the north jetty is a deposition basin that has the capacity to hold up to 600,000 cubic yards of material. Initial construction of the Project resulted in approximately 1,103,300 cubic yards being excavated.

The last cycle of maintenance dredging was conducted in 2016, when approximately 585,000 cubic yards of material was dredged from the entrance channel, portions of the inner channel and deposition basin and placed on GCB and HBSP. Maintenance dredging had been previously performed in 1988 and 2001. This environmental assessment updates previous NEPA analysis for continued operation and maintenance (O&M) of the Murrells Inlet Federal navigation channel.

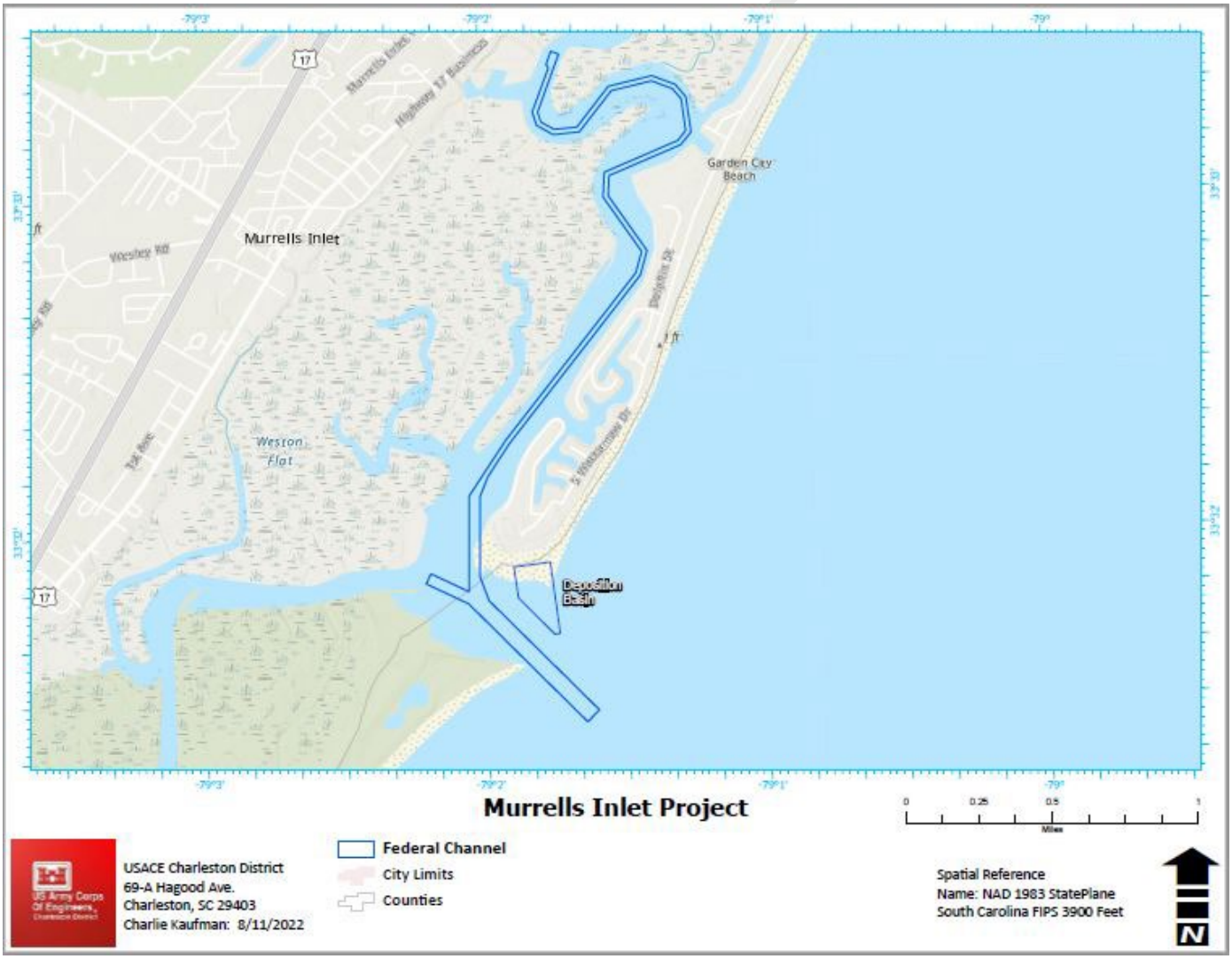

Figure 2. Murrells Inlet Federal Navigation Channel

1.4 Purpose and Need

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 to the village of Murrell's Inlet. 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 auxiliary channel and a portion of the entrance channel along with portions of the inner channel and the deposition basin to improve access to and from Murrell's Inlet (Figure 3). The material will be placed on either Garden City Beach (GCB) or Huntington Beach State Park (HBSP).

Dredged material is placed in a manner to enhance coastal storm risk reduction for infrastructure on GCB. At the terminal west end of the south jetty on HBSP, dredged material was used to restore shorebird habitat and to provide protection for the jetty foundation. At HBSP, dredged material is also used for coastal storm risk reduction, enhancement of sea turtle nesting habitat, and habitat for seabeach amaranth and the wintering piping plover.

1.5 Scope of the Environmental Assessment

USACE has prepared this EA in compliance with NEPA and associated implementing regulations to supplement and update previous NEPA documentation. USACE considered the possible environmental effects of the proposed action and determined that potential effects to the environmental resources listed below were relevant to the decision to be made; thus, the following environmental resources are addressed in detail in this EA.

- Water Quality
- Wetlands
- Terrestrial Biological Resources
- Aquatic Biological Resources
- Essential Fish Habitat
- Threatened and Endangered Species
- Coastal Barrier Resources System
- Visual Resources (Aesthetics)
- Historical and Cultural Resources
- Air and Noise
- Hazardous, Toxic, and Radioactive Waste
- Public Health and Safety
- Socioeconomics and Environmental Justice
- Natural Areas, Parks, and Recreation
- Climate Change

The following issues were eliminated from detailed analysis because they were not considered relevant to the proposed action and alternatives:

- Soils
- Transportation
- Geological Resources

1.6 Related Environmental Reviews

The following environmental reviews have been completed as part of the overall Murrells Inlet navigation project:

- *Final Environmental Impact Statement for Murrell's Inlet Navigation Project* (USACE 1976). This EIS evaluated impacts associated with initial construction, including dredging an entrance channel through the offshore bar, dredging an inner channel, dredging a deposition basin, constructing a north jetty with a low weir section for sand bypassing, constructing a south jetty as well as a fishing walkway on top of the south jetty, and constructing sand dikes on both sides of the inlet to the jetties to the existing dune line. The EIS also evaluated impacts associated with O&M of the project, including maintenance dredging on an approximate 3-year cycle. It was anticipated on such a cycle that the entrance channel would be self-maintained due to the effect of the jetties.

- *Final Environmental Assessment for Operation & Maintenance Dredging of the Murrell's Inlet Entrance and Auxiliary Channels and New Information Relating to Placement of Material on Garden City Beach and Huntington Beach State Park Georgetown County, South Carolina.* (USACE 2001). This EA evaluated impacts associated with excavating as much as 260,000 cubic yards of material from the Federal Channel (including from the Auxiliary Channel and the portion of the Entrance Channel to be dredged) and 420,000 cubic yards from the deposition basin and the placement of the material at either Huntington Beach State Park or Garden City Beach.

- *Supplemental Environmental Assessment for Maintenance Dredging of an Inner Shoal of the Murrells Inlet Federal Navigation Project.* (USACE 2017). This EA evaluated impacts associated with dredging approximately 25,000 cubic yards of material from a one and eight tenths acre reach of the Federal Channel near Marlin Quay Marina (Inner Shoal B) and the placement of the material at the previously used placement area within the intertidal zone of the Huntington Beach State Park.

CHAPTER 2 ALTERNATIVES

2.1 Alternative Analysis

Several conceptual alternatives were initially evaluated with regard to maintenance of the Federal navigation channel. Alternatives were evaluated based on compliance with environmental laws and regulations, compliance with executive orders, level of environmental impacts including impacts to climate, land use, water resources and aquatic habitat, terrestrial resources and wildlife, air quality and noise, cultural resources, endangered species, hazardous toxic and radioactive waste, and socioeconomics, cost effectiveness, engineering feasibility, and the ability of the alternative to meet the purpose and need of the project. Alternatives were also evaluated to determine whether they met *the Federal standard* (see 33 CFR Parts 335-338) – the Federal standard is the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process or ocean dumping criteria. Alternative plans to the proposed action included: upland storage and dewatering, use of a dredged material management area, and a "No-Action" alternative. Alternatives must be technically feasible (engineering), cost effective, compliant with applicable environmental laws, regulations, and executive orders, and be environmentally acceptable to be carried forward. Only one of these plans, the Proposed Action, was found to meet the criteria outlined above. Both the upland storage and dewatering and the dredged material management areas alternatives were eliminated on technical feasibility and cost-effective grounds, and a resulting failure to meet the Federal standard. A No Action Alternative, while it would not meet the purpose and need for the action, is also evaluated to provide a baseline for environmental impacts, as required by NEPA.

2.2 Proposed Action

The upcoming Murrells Inlet O&M dredging project will dredge sandy material from the entrance channel, the deposition basin, the auxiliary channel, and portions of the inner channel (shoals A, B and C). The southern tip of GCB has accreted into the federal channel. Dredging of the entrance channel will remove the accreted sediment and restore the authorized federal navigation channel. A total of 500,000 to 750,000 cubic yards is expected to be dredged. Maintenance dredging will be by means of a hydraulic cutterhead dredge that will transport the sand through a pipeline to be discharged as a slurry and placed directly on the front beach at GCB, at the terminal west end of the south jetty on HBSP, and on the front beach at HBSP (see Figure 3). During construction, temporary training dikes of sand will be used to contain the discharge and control the fill placement. Fill sections will be graded by land-based equipment, such as bulldozers, articulated front-end loaders, and other equipment as necessary to achieve the desired placement profile. Staging areas will be located upland and in previously disturbed areas, such as vacant lots. is anticipated that construction will begin in the summer of 2023 and will require approximately 4 months for completion. This schedule could change due to funding constraints, contractual issues, inclement weather, equipment failure, or other unforeseen difficulties.

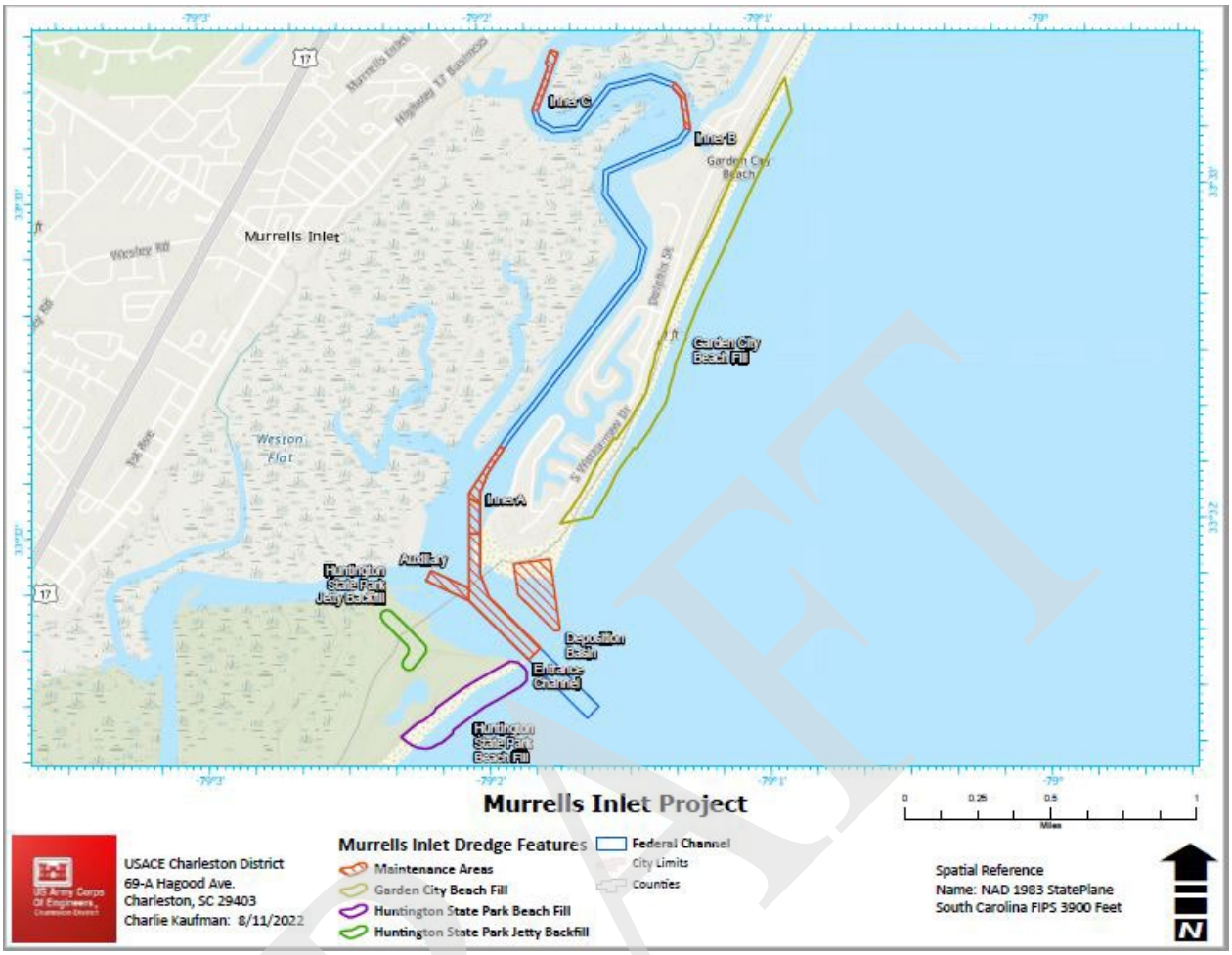

Figure 3. Murrells Inlet Maintenance and Placement Areas

2.3 No Action Alternative

A No Action Alternative is required under NEPA. The No Action Alternative is the most probable future condition if no action is taken. Under the No Action Alternative, the Corps would not conduct maintenance dredging and passage through the Murrell's Inlet Federal Navigation Channel will continue to be restricted as deposition will continue, further impeding vessel traffic. Vessels would need to continue to navigate to deeper waters, as feasible and eventually become impassable to larger vessels. Additionally, the structural integrity of the south jetty would continue to erode and potentially fail.

2.4 Alternatives Considered but Eliminated

Upland Storage and Dewatering

This alternative entails pumping the dredged material into geotubes, placing the geotubes adjacent to one of the Murrells Inlet receiving waters, and allowing the return water to reenter the Inlet. The geotubes would then be transported to a permanent confined facility, such as a landfill. This alternative is not technically feasible in that there was no available space to place the geotubes for dewatering and would result in unjustified additional cost. Therefore, USACE has eliminated this alternative from consideration.

Dredged Material Management Area (DMMA)

This alternative would require transport, via pipeline of all the excavated material to an enclosed upland facility for storage. There are no upland disposal facilities within close proximity to the project that may be used. Therefore, USACE has eliminated this alternative from consideration on technical infeasibility and cost-effective grounds.

The Proposed Action and the No Action Alternative are the only Alternatives that will be evaluated as part of this EA.

CHAPTER 3 EXISTING CONDITIONS

3.1 Water Quality

The proposed project lies within the Little River Watershed. The waters within Murrells Inlet are classified as Shellfish Harvesting (SFH) Waters by the South Carolina Department of Health and Environmental Control (SCDHEC 2005). The SFH rating applies to tidal saltwater protected for shellfish harvesting and is considered suitable for recreation, crabbing, and fishing. It is also considered 'suitable for the survival and propagation of a balanced indigenous aquatic community of marine fauna and flora.'

In 2005, SCDHEC developed a Total Maximum Daily Load (TMDL) with respect to fecal coliform bacteria loading in Murrells Inlet. This TMDL was developed in 2005 as a result of some of the water quality monitoring stations within Murrells Inlet failing to meet established water quality standards for the presence of fecal coliform (f.coliform), resulting much of Murrells Inlet being included on the state's 303(d) impaired waters list. The 2005 TMDL identified nonpoint source pollution loading from primarily urban runoff, domestic animal, and wildlife wastes as the primary sources of f.colifrom. Water quality in the Murrells Inlet are currently not meeting water quality standards for safe shellfish harvesting because of the elevated levels of f.coliform.

SCDHEC has placed segments of Murrells Inlet (Hydrologic Unit Code [HUC] 03040208308) on its 2018 303(d) list due to f. coliform impairments (SCDHEC 2020).

To determine the disposition of dredged material, sediment sampling was conducted in 1970, 1997, and 2000, and 2016. In 2015, seven sediment samples were collected from the project area, specifically within the shoals and entrance channel. Sediments were analyzed for the following parameters:

- Metals
- Total Organic Carbon (TOC)
- Percent Solids
- Grain size
- Specific Gravity
- Atterberg Limits
- Polybrominated diphenyl ethers(PBDEs)
- Pesticides
- Polychlorinated biphenyls (PCBs)
- PCB Congeners
- Butyltins, including Tributyltin
- Dioxins/Furans
- Polynuclear aromatic hydrocarbons (PAHs)

Results were similar to previous sampling no contamination concerns were identified. The deposition basin, entrance channel, and Inner Shoal A samples were essentially pure sand, whereas, the samples in the upper shoals (B and C) are around 78% sand. Subsequently, a Section 401 Water Quality Certification was issued for disposal of dredged material associated with the project by the South Carolina Department of Health and Environmental Control (SCDHEC) on April 18, 2017. Based on the previous results, consistently high sand content, and no change in land use, or other sources that may result in contamination additional sampling was determined unnecessary

3.2 Terrestrial Biological Resources

There are several kinds of habitats near the project area including tidal marsh, sand and/or mudflats, and open water. Due to the diversity of habitat in and adjacent to the project area, a variety of wildlife species are expected to occur. Species present may include raccoon, otter, marsh rice rat, opossum, and marsh rabbit, as well as a variety of reptiles/amphibians (e.g., frogs, toads, lizards, snakes, turtles, alligator).

Murrells Inlet is utilized by waterfowl and shorebirds particularly during the winter months. More than 300 species of birds have been recorded within Huntington Beach State Park (South Carolina State Parks 2022).

Review of the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) database (https://ecos.fws.gov/ipac/) resulted in identification of the following 37 migratory birds of conservation concern that have the potential to present within the project area: American kestrel, American oystercatcher, bachman's sparrow, bald eagle, blue guillemot, black scoter, black skimmer, black-legged kittiwake, brown pelican, brown-headed nuthatch, chimney swift, common eider, common loon, dovekie, gull-billed tern, lesser yellowlegs, long-tailed duck, marbled godwit, painted bunting, prairie warbler, prothonotary warbler, purple sandpiper, razorbill, red-breasted merganser, red-headed woodpecker, red-throated loon, ring-billed gull, royal tern, ruddy turnstone, rusty blackbird, short-billed dowitcher, surf scoter, swallow-tailed kite, white-winged, scoter, willet, Wilson's plover, and wood thrush (USFWS 2022). In addition, a known bald eagle nest occurs within the state park, approximately two miles from the project area.

3.3 Aquatic Biological Resources

The subtidal nearshore habitat and the intertidal and beach habitat of Murrells Inlet, Garden City Beach, and Huntington Beach State Park support diverse communities of benthos (bottom-dwelling organisms), invertebrates, planktons (drifting organisms in the water column), fish, birds, marine mammals, and aquatic plants as described below.

3.3.1 Benthos

Aquatic organisms that live in close association with the bottom, or substrate, of a body of water, are collectively called benthos. The benthic environment includes a number of communities correlated largely with substratum type. The benthic fauna is divided into two

groups: epifauna, living on the substratum; and infauna, living within the substratum. Infaunal communities are dominated by a great diversity of burrowing and tube dwelling crustaceans (e.g., amphipods), polychaete worms, and by burrowing bivalve mollusks. Some infaunal invertebrates, especially among the crustaceans, are capable of a high degree of lateral mobility, but the majority is essentially sedentary. The infauna is, with rare exception, comprised of filter and detritus feeding invertebrates. The epifauna and flora of sandy bottoms such as those in the project area tend to be much lower in diversity, and most inhabitants are microscopic. These surfaces are unsuitable for attachment by sessile invertebrates. In addition, sand bottoms such as those found in the estuary are depositional and the continual rain of sediment quickly buries attached animals. Thus, these substrata support diatoms, other unicellular algae, protistans, and attached multicellular algae. Invertebrates primarily include motile deposit feeders, such as polychaete worms, sea cucumbers, and sand dollars. Some fish and crabs also graze on the bottom. Attached organisms are restricted largely to the occasional bit of shell or small rock lying at the surface. The development of oyster reefs on muddy intertidal bottoms, for example, is dependent on the presence of bits of shell or rock for initial larval attachment (Howie and Bishop 2021).

3.3.2 Plankton Community

Plankton are organisms that cannot swim or move on their own but rely on tides and currents. The plankton community within the project area is mainly composed of unicellular algae, larval stages of many fish and invertebrates and the adult stages of several microscopic invertebrates. Adult stages of several macro invertebrates such as jellyfish (*Chrysaora, Cyanea, Stomolophus, and Rhopilema*) and comb jellies (*Mnemiopsis*) that are carried by current and tides are also an important part of the plankton community.

3.3.3 Nekton

Nekton collectively refers to aquatic organisms capable of controlling their location through active moment and do not rely on the water current or tide for movement. Fish are the principal nektonic species although some crustaceans such as portunid crabs, penaeid shrimp and some mollusks, such as the squid spend at least a portion of their life as nekton. A number of fish species are considered to be estuarine dependent and utilize the coastal estuaries for at least a portion of their life cycle. Fish species commonly observed in the project area include spotted seatrout (*Cynoscion nebulosus*), weakfish (*Cynoscion regalis*), bluefish (*Pomatomus saltatrix*), red drum (*Sciaenops ocellata*), black drum (*Pogonias cromis*), spot (*Leiostomus xanthurus*), croaker (*Micropoganius undulatus*), sheepshead (*Archosargus probatocephalus*), menhaden (*Brevoortia tyrannus*), gizzard shad (*Dorosoma cepedianum*), mullet (*Mugil cephalus*), flounder (*Paralichthys sp.*), silversides (*Atherinidae*), and sea catfish (*Ariidae*).

3.3.4 Commercial Shellfish

Three commercial shellfish leases/culture areas and one state shellfish area (S358) are within the project area. These leases are issued and overseen by the South Carolina Department of Natural Resources (SCDNR). Two commercial shellfish leases/culture areas (C-370 and C-371) appear to extend into the project area, however, he federal channel itself is closed for shellfish harvesting. Additionally, the proposed placement areas are near shellfish culture areaC-365.

3.4 Essential Fish Habitat

The 1996 Congressional amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (16 U.S.C. 1802(10)) set forth requirements for the National Marine Fisheries Service (NMFS), regional fishery management councils (FMC), and other Federal agencies to identify and protect important marine and anadromous fish habitat. These amendments established procedures for the identification of Essential Fish Habitat (EFH) and a requirement for interagency coordination to further the conservation of federally managed fisheries.

EFH is defined in the act as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The definition for EFH may include habitat for an individual species or an assemblage of species, whichever is appropriate within each Fisheries Management Plan (FMP).

The project area encompasses approximately 104 acres, including several EFH habitat types; intertidal and sub tidal nearshore coastal marine bottoms, coastal inlets, estuarine emergent wetlands, estuarine unconsolidated bottoms, and estuarine and marine water column.

Table 1 lists the species for which the South Atlantic Fishery Management Council (SAFMC) manages or has developed fishery management plans and that may occur in the study area. Murrells Inlet is a coastal inlet and therefore meets the criteria for EFH-Habitat Areas of Particular Concern (HAPC) for both penaeid shrimp and the snapper-grouper management complex (NMFS 2022).

Table 1. FMPs and Managed Species for the South Atlantic that may occur in the Project Area

Fishery Management Plan (FMP)	COMMON NAME	SCIENTIFIC NAME	LIFESTAGE(S)
Penaeid Shrimp	White shrimp	*Litopenaeus setiferus*	Larvae, Juvenile
	Brown shrimp	*Farfantepenaeus aztecus*	Larvae, Juvenile
Snapper Grouper Complex	Jack crevalle	*Caranx hippos*	All
	Gag grouper	*Mycteroperca microlepis*	All
	Black sea bass	*Centropristis striata*	All
	Mutton snapper	*Lutjanus analis*	All
	Red snapper	*Lutjanus campechanus*	All
	Lane snapper	*Lutjanus synagris*	All
	Gray snapper	*Lutjanus griseus*	All
	Yellowtail snapper	*Ocyurus chrysurus*	All
	Spadefish	*Chaetodipterus faber*	All
	White grunt	*Haemulon plumieri*	All
	Sheepshead	*Archosargus probatocephalus*	All
	Hogfish	*Lachnolaimus maximus*	All
Coastal Migratory Pelagics	King mackerel	*Scomberomorus cavalla*	All
	Spanish Mackerel	*Scomberomorus maculatus*	All
Mid-Atlantic FMP species which occur in South Atlantic	Bluefish	*Pomatomus saltatrix*	Larvae, Eggs, Adult, Juvenile
	Summer flounder	*Paralichthys dentatus*	Larvae, Juvenile, Adult
Federally Implemented Fishery Plan	Sand tiger shark	*Carcharias taurus*	Neonate/Juvenile, Adult
	Spinner shark	*Carcharhinus brevipinna*	Juvenile/Adult
	Sandbar shark	*Centropristis striata*	Juvenile/Adult
	Scalloped hammerhead shark	*Lutjanus analis*	Juvenile/Adult
	Tiger shark	*Galeocerdo cuvier*	Juvenile/Adult, Neonate
	Blacktip shark (Atlantic Stock)	*Carcharhinus limbatus*	Juvenile/Adult

Blacknose shark (Atlantic Stock)	*Carcharhinus acronotus*	Juvenile/Adult
Smoothhound shark (Atlantic Stock)	*Ocyurus chrysurus*	All
Atlantic Sharpnose shark	*Rhisoprionodon terraenovae*	Adult
Bonnethead shark (Atlantic Stock	*Sphyrna tiburo*	Juvenile/Adult

3.5 Threatened and Endangered Species

The Endangered Species Act of 1973, as amended (ESA) (16 United States Code [USC] §§ 1531-1543) was passed to conserve the ecosystems upon which endangered and threatened species depend, and to conserve and recover those species. An endangered species is defined by the ESA as any species in danger of extinction throughout all or a significant portion of its range. A threatened species is likely to become endangered within the foreseeable future throughout all or a significant part of its range. Critical habitats, essential to the conservation of listed species, also can be designated under the ESA. The ESA establishes programs to conserve and recover endangered and threatened species and makes their conservation a priority for Federal agencies. Section 7 of the ESA requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) and NMFS Protected Resources Division (PRD) when their proposed actions may affect endangered or threatened species or their critical habitats.

Table 2 contains a list of species that have been listed by either the U.S. Fish and Wildlife Service or NMFS PRD as occurring or possibly occurring in Georgetown County.

Table 2. USFWS and NOAA Fisheries Listed Species in Georgetown County

CATEGORY	COMMON NAME	SCIENTIFIC NAME	STATUS	PRESENT?
Birds	American wood stork	*Mycteria americana*	T	Yes
	Eastern black rail	*Laterallus jamaicensis jamaicensis*	T	Yes
	Piping plover	*Charadrius melodus*	T, CH	Yes
	Red-cockaded woodpecker	*Picoides borealis*	E	No
	Red knot	*Calidris canutus rufa*	T, PCH	Yes
Fish	Atlantic sturgeon*	*Acipenser oxyrinchus**	E, CH	Yes
	Shortnose sturgeon*	*Acipenser brevirostrum**	E	Yes
Mammals	Northern-long-eared bat	*Myotis septentrionalis*	T	No
	Fin whale*	*Balaenoptera physalus**	E	No
	Humpback whale*	*Megaptera novaengliae**	E	No
	Right whale*	*Balaena glacialis**	E, CH	No
	Sei whale*	*Balaenoptera borealis**	E	No
	Sperm whale*	*Physeter macrocephalus**	E	No
	West Indian manatee	*Trichechus manatus*	T	Yes
Plants	Pondberry	*Lindera melissifolia*	E	No
	Seabeach amaranth	*Amaranthus pumilus*	T	Yes
Reptiles	Green sea turtle**	*Chelonia mydas***	T	Yes
	Kemp's ridley sea turtle**	*Lepidochelys kempii***	E	Yes
	Leatherback sea turtle**	*Dermochelys coriacea***	E	Yes
	Loggerhead sea turtle**	*Caretta caretta***	T, CH	Yes

NOTES:

* Species under the jurisdiction of NOAA Fisheries, all others are under USFWS only.

** The U.S. Fish and Wildlife Service (FWS) and NMFS PRD share jurisdiction of this species, with NMFS PRD having jurisdiction when in the marine environment and USFWS having jurisdiction when in the terrestrial environment.

E - Federally Endangered, T - Federally Threatened, CH - Critical Habitat, PCH - Proposed Critical Habitat

Designated critical habitat for piping plover is present within the project's footprint, and critical habitat for rufa red knot has been proposed within the project's footprint. No other critical habitat has been designated or proposed within the project area for any other species.

3.5.1 American Wood Stork

Wood storks are birds of freshwater and estuarine wetlands. They feed in freshwater marshes, narrow tidal creeks, or flooded tidal pools with water depths of around 4–12 inches. There is an active American wood stork colony on Huntington Beach State Park approximately 2 miles from the area of the project. The placement area at the terminal west end of the south jetty at HBSP may occasionally be used as a feeding area by wood storks; however, during there is other foraging habitat in the area, specifically HBSP.

3.5.2 Eastern Black Rail

Eastern black rail habitat can be tidally or non-tidally influenced, and range in salinity from salt to brackish to fresh. In the northeastern United States, the eastern black rail can typically be found in salt and brackish marshes with dense cover but can also be found in upland areas of these marshes. Further south along the Atlantic coast, eastern black rail habitat includes impounded and unimpounded salt and brackish marshes. Eastern black rails are known to nest in salt marshes and impoundments within Georgetown County; however, the likelihood of nesting in the project area is unknown. Eastern black rail nesting primarily occurs from May to August. Nests are laid above the high tide line in areas that are only inundated during extreme lunar or wind tides.

3.5.3 Piping Plover

Piping plovers are small, stocky shorebirds that resemble sandpipers. Piping plovers typically nest in sand depressions on un-vegetated portions of the beach above the high tide line on sand flats at the ends of sand spits and barrier islands, gently sloping foredunes, blowout areas behind primary dunes, sparsely vegetated dunes, and washover areas cut into or between dunes.

3.5.4 Rufa Red Knot

The red knot (Calidrus canutus rufa) is a migratory shorebird that has recently been listed under the ESA. The red knot is a regular visitor along the South Carolina coast during both the spring and fall migrations. Flocks of over 1000 birds have been observed in the spring with lesser numbers being observed in the fall. The red knot also uses the South Carolina coast as a wintering area. In the general project area, red knots are most abundant during the spring, northward migration

The USFWS has proposed 25 areas along the South Carolina (SC) coast as critical habitat for red knots. Two of these areas (Unit SC-1 and Unit SC-2) are on Garden City Beach and HBSP.

3.5.5 Sturgeon

Atlantic and shortnose sturgeon inhabits coastal, estuarine, and riverine environments on the Atlantic coast. Both species spawn in freshwater. SCDNR reports that in South Carolina, sturgeon inhabit The Waccamaw-Pee Dee River Basin. Shortnose sturgeon rarely in habit coastal ocean waters and tend to stay closer to the freshwater/saltwater divide, therefore it is unlikely that the shortnose sturgeon occurs in the project area. Atlantic sturgeon migrate to the

Atlantic ocean as sub-adults and return to the rivers to spawn. There are no known occurrences of either sturgeon in the project area.

3.5.6 West Indian Manatee

Manatees inhabit both salt and fresh water and can be found in shallow (usually <20 feet), slow-moving rivers, estuaries, saltwater bays, canals, and coastal areas (USFWS, 2001) throughout their range. In South Carolina, manatees occupy fresh, brackish and marine habitats and move freely between salinity extremes. Manatees will move up rivers until the water is too shallow for passage or is blocked by a dam. Manatees are thermally stressed at water temperatures below 18ºC (64.4ºF) (Garrott et al., 1995). For this reason, manatees are only seen in South Carolina in the summer months and there is no Critical Habitat in South Carolina for the West Indian manatee. Counties in South Carolina in which the manatee is known or believed to occur include: Beaufort, Berkeley, Charleston, Colleton, Dorchester, Georgetown, Horry, and Jasper.

3.5.7 Seabeach Amaranth

Seabeach amaranth is an annual plant found on the dunes of Atlantic Ocean beaches. Upon germination, the species forms a small unbranched sprig, but soon begins to branch profusely into a clump, which often reaches 30 cm in diameter and consists of five to 20 branches. Occasionally, a clump may get as large as a meter or more across, with 100 or more branches. The species is an effective sand binder, building dunes where it grows. (http://www.fws.gov/nces/plant/seabamaranth.html) . Seabeach amaranth occurs on barrier island beaches, where its primary habitat consists of overwash flats at accreting ends of islands and lower foredunes and upper strands of non-eroding beaches. The species appears to need extensive areas of barrier island beaches and inlets, functioning in a relatively natural and dynamic manner.

Huntington Beach State Park staff propagate seabeach amaranth on the front beach areas of the park. Seabeach amaranth has historically been present on the southern spit of Garden City Beach; however, a survey was conducted in September 2022 and no plants were found.

3.5.8 Sea Turtles

There are four species of sea turtles on the Atlantic Coast, Kemp's ridley sea turtle (*Lepidochelys kempii*), leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), and green sea turtle (*Chelonia mydas)*. These four species of sea turtles are protected by the Convention on International Trade in Endangered Species (CITES). They are also listed as endangered or vulnerable in the Red Data Book by the International Union for the Conservation of Nature (IUCN). The Kemp's ridley and leatherback were listed as endangered by the U. S. Endangered Species Act in 1973. The green turtle and the loggerhead were added to the list as threatened in 1978.

Green turtles are found in all temperate and tropical waters around the world and stay mainly near the coastline and around islands. Green turtles are found in shallow flats and seagrass meadows during the day and return to scattered rock ledges, oyster beds, and coral reefs during the evening (FFWCC 2010). In the U.S. Atlantic waters, green turtles are found from Texas to Massachusetts, the U.S. Virgin Islands, and Puerto Rico. Green turtles are generally found over shallow flats, seagrasses, and algae areas inside bays and inlets. Resting areas include rocky bottoms, oyster, worm, and coral reefs. Post-hatchling pelagic-stage turtles may be omnivorous. Adult turtles are herbivores and consume algae and seagrasses.

Loggerhead sea turtles are found in temperate and subtropical waters of the world. They feed in coastal bays, estuaries, and in shallow water along the continental shelves of the Atlantic, Pacific, and Indian Oceans. Loggerhead turtles occur throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian oceans and are widely distributed within their range. They can be found hundreds of miles offshore or inshore in bays, lagoons, salt marshes, creeks, ship channels, and the mouths of large rivers (Conant et al. 2009). Loggerheads primarily feed on mollusks, crustaceans, fish, and other marine animals. Feeding areas often include coral reefs, rocky areas, and shipwrecks. Adult loggerheads may migrate considerable distances between foraging areas and nesting beaches. Loggerheads reach sexual maturity at about 35 years of age. Loggerheads move into South Carolina inshore waters to nest on beaches from May through August. They are known to nest along the beaches within the project area.

Leatherbacks, the most widely distributed of the sea turtles, are found throughout the Atlantic, Pacific, and Indian oceans, including areas near Alaska and Labrador. Leatherback turtles are highly migratory and pelagic and can be found at depths more than 3,000 feet. Because of their ability to regulate their body temperature, they can be found in deeper water than other species of sea turtles and can be active in water below 40 F. Leatherbacks primarily feed on jellyfish, but also consume sea urchins, squid, crustaceans, tunicates, fish, blue-green algae, and floating seaweed. In the Gulf of Mexico, leatherbacks are frequently associated with cabbage head *Stomolophus* and *Aurelia* jellyfish. The distribution and food habits of post-hatchling and juvenile leatherbacks are unknown, although they may be pelagic and associate with Sargassum weed.

Kemp's ridley turtles inhabit shallow nearshore and inshore waters of the northern Gulf of Mexico, particularly in Texas and Louisiana. During winter, turtles in the northern Gulf may travel to deeper water (NMFS and USFWS 1992). Kemp's ridleys are often found in waterbodies associated with salt marshes. Kemp's ridley nesting is essentially limited to the beaches of the western Gulf of Mexico, primarily in Tamaulipas, Mexico. In the US, nesting occurs primarily in Texas (especially Padre Island National Seashore), and occasionally in Florida, Alabama, Georgia, South Carolina and North Carolina (NMSF and USFWS 2013a). Neonatal Kemp's ridleys feed on Sargassum and infauna or other epipelagic species. Post-pelagic diets include various items such as mollusks, sea horses, cownose rays, jellyfish, crabs, tunicates and fish. Live bottom (sessile invertebrates attached to hard substrate) has been identified as a preferred habitat of neritic juveniles in the coastal wates of western Florida (NMFS and USFWS 2013a). Hatchlings may become entrained in Gulf of Mexico eddies and dispersed by oceanic surface currents, then enter coastal shallow water habitats when they reach about 20 cm in length.

3.6 Coastal Zone Resources

The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. §1451 to §1466) was established as a national policy to preserve, protect, develop, and where possible, restore or enhance, the resources of the Nation's coastal zone for current and future generations. The South Carolina Coastal Management Program was established per the CZMA and was authorized in 1977 under SC's Coastal Tidelands and Wetlands Act. The proposed action is within South Carolina's designated Coastal Zone Management Area.

3.7 Coastal Barrier Resources System (CBRS)

The Coastal Barrier Resources Act (CBRA) of 1982 (19 U.S.C. §3501 *et. Seq.*), as amended by the Coastal Barrier Improvement Act (CBIA) of 1990 limits Federally-subsidized development within CBRA Units to minimize the loss of human life by discouraging development in high risk areas and to protect undeveloped coastal barriers along the Atlantic and Gulf Coasts, including islands, spits, tombolo's, and bay barriers that are subject to wind, waves, and tides such as estuaries and nearshore waters. There is one CBRA Unit, Huntington Beach Unit SC-03, within the study area and most of the dredging for this project is located within the unit along with the disposal locations at Huntington South Jetty and Huntington (front) Beach, Figure 4.

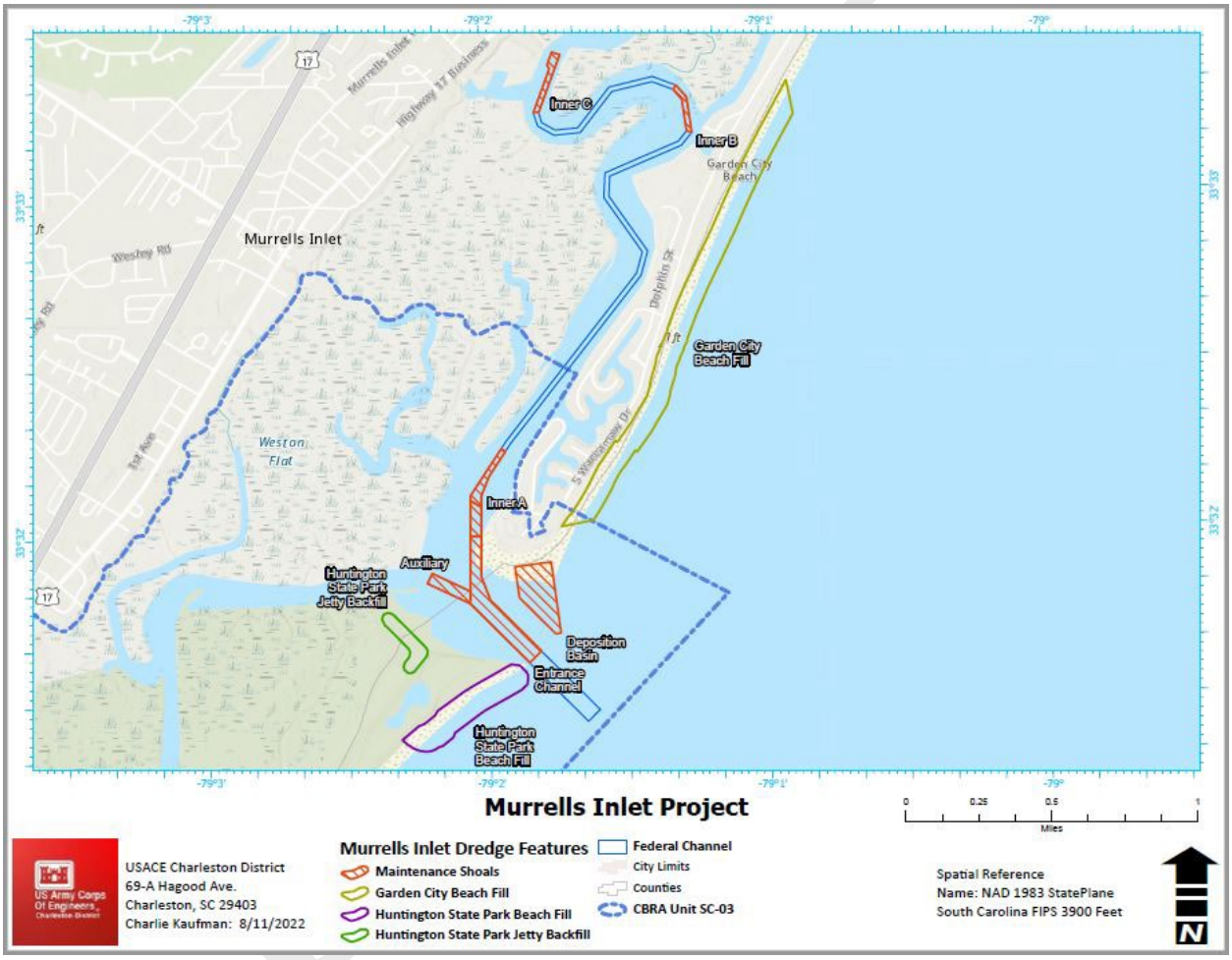

Figure 4. Coastal Barrier Resources Act Unit SC-03

3.8 Cultural Resources

The management of cultural resources is regulated under Federal laws such as the National Historic Preservation Act (NHPA) of 1966 (54 U.S.C. §300101 *et seq.*), the Archaeological and Historic Preservation Act of 1974 (54 U.S.C. §§312501- 312508), the American Indian Religious Freedom Act of 1978 (42 U.S.C. §§1996 and 1996a), the Archeological Resource Protection Act of 1979 (16 U.S.C. §§470aa-470mm), NEPA (42 U.S.C. §4321 *et seq.*), the Native American

Graves Protection and Repatriation Act of 1990 (25 U.S.C. §3001 *et seq.*), the Abandoned Shipwreck Act of 1987 (43 U.S.C. §§2101-2106), and the Sunken Military Craft Act of 2004 (10 U.S.C. § 113 *et seq.*).

Cultural resources considered in this study are those defined by the NHPA as properties listed, or eligible for listing, on the National Register of Historic Places (NRHP) and are referred to as historic properties. Historic properties include buildings, structures, sites, districts, objects, cultural items, Indian sacred sites, archaeological artifact collections, and archaeological resources (36 CFR 800.16(l)(1)). Cultural resources also include resources with unknown NRHP eligibility status.

Archaeological and Historical Setting

This undertaking is located in an area that is a natural channel through a sandy beachline featuring tidal flows between the Atlantic Ocean and lagoons. An influx of sand into the inlet creates an environment of shallow shifting-sand shoals. The archival research presented here is taken from a Chicora Foundation, Inc. investigation conducted in the area of this undertaking (Chicora 2006).

Prehistoric cultural resources in this coastal area range from the Paleoindian Period (12,000 – 8,000 BCE) through the Archaic Period (8,000 – 2,000 BCE), Woodland Period (2,000 BCE – 1,000 CE, and Mississippian Period 1,000 – 1,640 CE. The Paleoindian period is usually associated with the earliest securely documented period of human occupation in the New World and was characterized by low population density and band level societies of both nomadic hunters and foragers. The Paleoindian Period slowly transitioned into the Archaic Period in response to climate change. A diverse material culture resulted from the change to flora and fauna, while populations increased, and settlements intensified. The Woodland Period saw some continuation of the Archaic Period lifestyle, especially regarding hunting and fishing subsistence patterns, but the introduction of fired clay pottery marked a significant transition. Subsistence patterns begin to rely more heavily on shellfish, and occurrences of shell ring settlement systems become more common later in the Woodland Period. Shell middens are common during this period. Changes in the culture focused on craft specialization and elaborate mortuary behaviors.

The Mississippian period saw the development of a more elaborate level of culture, including complex social organization, agriculture, temple mound construction, and ceremonial centers. The introduction of European diseases marked the end of the Mississippian Period and beginning of the Historic Period around 1,640 CE. The coastal areas were highly sought after by European settlers due to the important of water for trade purposes. Tidal rice culture began in the 1730s and dominated the land and economy through large plantations that exploited slave labor. These highly profitable rice plantations continued through the 19th century, and Georgetown County is recorded as having the highest percentage of slaves in South Carolina, making up 88% of the county's population. The Civil War devastated the local economy, and subsequent crop failures in the mid- to late-1800s effectively ended the reign of a plantation-based economy.

Inventory of Resources in the Study Area

Cultural resource surveys (historic research, remote sensing, and dive investigations) have been conducted in South Carolina's inland and offshore waters, but only a few have been

conducted in the general vicinity of the current project area. One known investigation within the Area of Potential Effect (APE) included aspects of prospecting for and identifying submerged prehistoric sites within the current survey areas.

Gulf South Research Institute performed an exploratory magnetic survey of Murrell's Inlet (Gulf South 1978). The survey employed the use of a magnetometer. The report notes that two historically documented vessels were thought to be lost at or in the inlet, but their exact locations could not be determined through their investigation. One magnetic anomaly was identified within Murrell's Inlet, which could represent a potentially significant cultural resource such as a shipwreck. It was recommended that a 50-foot buffer be implemented to avoid impacts to the anomaly. If a buffer could not be implemented, then the site would need to be evaluated and delineated through additional investigations to include additional remote surveys and diver inspections.

A search of South Carolina's Archaeological Site File (ArchSite) was performed to identify and previously documented sites in this portion of Georgetown County, South Carolina, in or adjacent to the Project Area. This review showed no known terrestrial or submerged cultural resources in the form of prehistoric sites or shipwrecks recorded in the APE. ArchSite indicates the presence of the Murrell's Inlet Historic District in the APE. Figure 5 shows the historic district boundary, which is publicly available information. The Murrell's Inlet Historic District was listed in the National Register of Historic Places (NRHP) in November 1980 (SCDAH N.D.). The district contains a number of historic structures that contribute to its NRHP status, which demonstrate the transition of this area from 19th century rice plantations to a 20th century resort community. The historic district is also well documented from a survey sponsored by the Georgetown County Visitors Bureau and South Carolina's Department of Archives and History (New South 2006). The undertaking, as proposed, has no adverse effect on the historic district and any of its contributing structures.

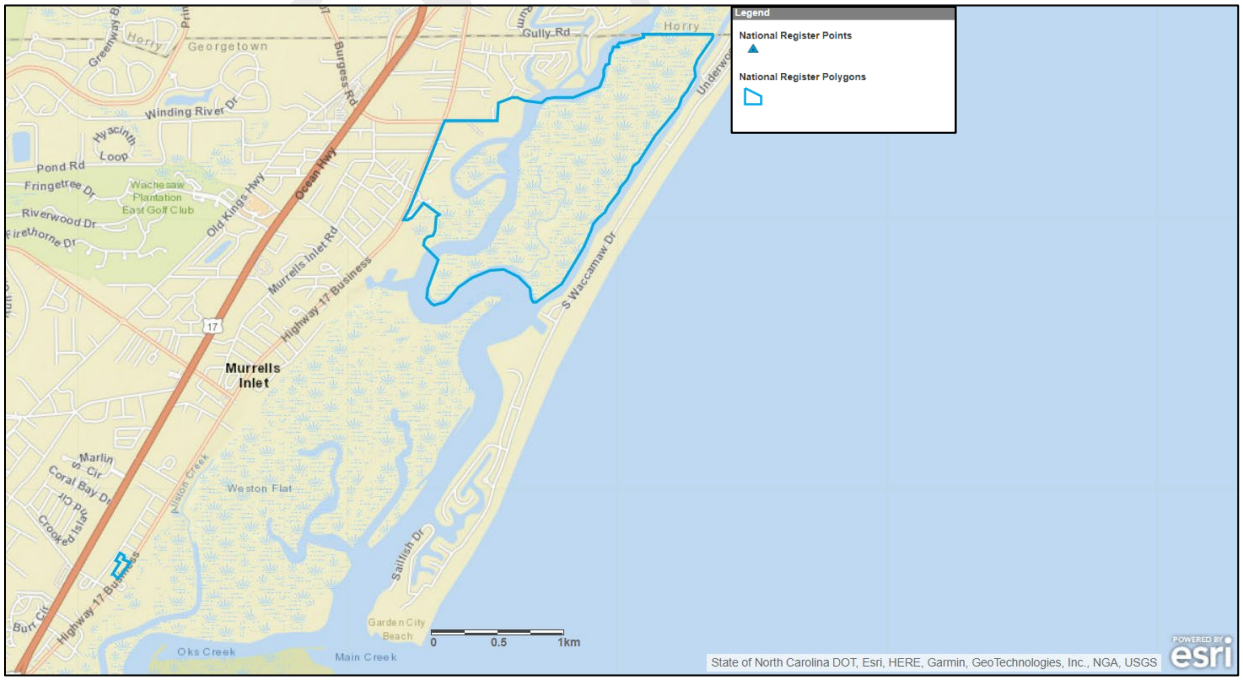

Figure 5. Arch Site results for the undertaking's APE indicating the publicly available boundary for the Murrell's Inlet Historic District.

A search of the National Oceanic and Atmospheric Administration's (NOAA) Wrecks and Obstructions Database did not reveal the presence of any documented wrecks or obstructions in the APE. One documented wreck is shown nearly one mile from the entrance channel (Figure 6). Little information is available for this wreck, as there is no history on when it was sunk and its possible association with a vessel name. It is listed as always being submerged and is considered dangerous. The undertaking, as proposed, will have no effect on this wreck.

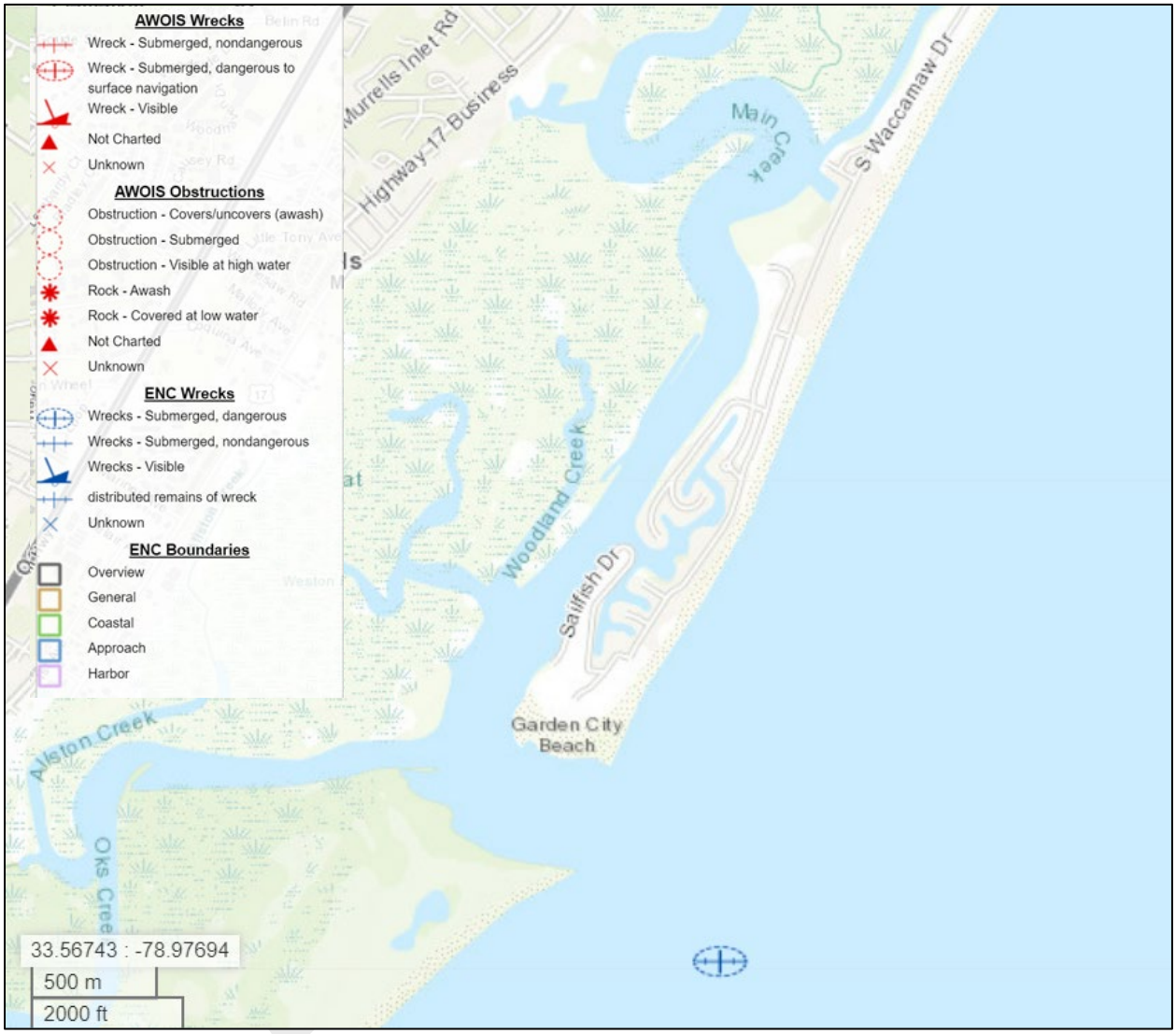

Figure 6. NOAA's Wrecks and Obstructions Database results for Murrell's Inlet with one obstruction noted near the entrance channel.

3.9 Visual Resources (Aesthetics)

Visual resources compose the visible character of a place and include both natural and humanmade attributes. Visual resources influence how an observer experiences a particular location and distinguishes it from other locations.

The project area is located within the viewshed of Garden City Beach and Huntington Beach State Park. The project area contains many pleasing attributes including the open water, beaches, and undeveloped marsh. The majority of the beach within GCB is developed with single, residential homes. HBSB remains undeveloped, which provides a natural setting and visually appealing backdrop.

3.10 Air and Noise

The Clean Air Act (CAA), as amended, requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The CAA established two types of national ambient air quality standards, primary and secondary. Primary standards are levels established by the EPA to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards are levels established to protect the public welfare, including protection from decreased visibility and damage to animals, crops, vegetation, and buildings.

The EPA Office of Air Quality Planning and Standards has set NAAQS for six principal pollutants which are called “criteria” pollutants. Those pollutants are Carbon Monoxide, Lead, Nitrogen Oxides, Particulate Matter (PM_{10} and $PM_{2.5}$), Ozone and Sulfur Dioxide. All air pollutants are listed as in attainment for Georgetown County (EPA 2015).

Environmental noise is a conglomeration of distant and nearby noise sources. Types of nearby noise sources observed within the project area include naturally occurring noises (wind on the beach, wave action in the surf zone, buzzing of insects, bird calls) and those from man-made sources (marine vessel engines, etc.).

3.11 Hazardous, Toxic, and Radioactive Waste (HTRW)

Hazardous waste is defined by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as any substance which may present a significant danger to public health and/or environment if released.

There are currently no known HTRW producers adjacent to the project site or any entity that discharges toxic effluent nearby. Since the area has been dredged multiple times, there is minimal risk of encountering HTRW.

3.12 Socioeconomics and Environmental Justice

The 2020 U.S. Census Data reports that the population of Murrell’s Inlet is approximately 9,740. The ratio of male to female was approximately 49% male to 51% female with 86% of the population reported as white, 9.5% black, 3.3% Hispanic or Latino, and 1.5% Asian (USCB 2022). There were 4,280 households with a median household income of $60,487. Of the occupied housing units, 81.7% were owner occupied. Approximately 7.9% of the people in Murrell’s Inlet are below the poverty level. Low income and minority populations are located inland of the project area, specifically within Georgetown County, South Carolina.

Using the newly developed Climate and Economic Justice Screening Tool, only one of the two census tracts that encompass the project area are identified as disadvantaged. Census Tract 45043920502 is identified as disadvantaged in the health burden category. Census tract 45043920501 is not identified as disadvantaged (CEQ 2022).

Communities are identified as disadvantaged in the health burden category if at or above the 90th percentile for asthma, diabetes, or heart disease, or at or above the 90th percentile for low life expectancy, above the 65th percentile for low income, and 80% or more of adults 15 or older are not enrolled in higher education.
In accordance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, federal agencies must assess whether disproportionately high and adverse effects would be imposed on minority or low-income areas by federal actions. In addition, Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, requires Federal agencies to assess the environmental health and safety risk of their actions on children. Section 112(b)(1) of WRDA 2020 (P.L. 166-260) requires the formulation of water resource projects to comply with "any existing Executive Order regarding environmental justice." Moreover, Executive Order 14008, Tackling the Climate Crisis at Home and Abroad, Section 219 directs federal agencies to "[develop] programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities".

3.13 Climate Change

The climate in this region of South Carolina consists of long hot summers and cool winters. Summers are warm and humid (average July high and low temperatures are 92°F and 71°F, respectively), and winters are relatively mild (average January high and low temperatures are 58°F and 35°F, respectively). In general, the state has warmed by one-half to one degree (F) over the last century and the sea is rising about one to one-and-a-half inches every decade (USEPA 2016). Precipitation occurs chiefly as rainfall and averages about 49.5 inches per year with approximately one-third of that total occurring during the months of June, July, and August. It is expected that in the coming decades changing climate in South Carolina will lead to an increase in the number of unpleasantly hot days, an increase in heat related illness, an increase in inland flooding, a decrease in crop yields, and harm to livestock (USEPA 2016). Sea level rise is the biggest climate change concern in Murrells Inlet. Due to sea level rise, there is an increased risk of coastal storm surge and potential damages to resources located within Murrells Inlet. Huntington Beach State Park was identified as a Priority Environmental Area in the South Atlantic Coastal Study (USACE 2022). HBSP is at medium to high risk from storm surge and sea level rise and potential loss of natural habitats for numerous species, including sea turtles.

3.14 Natural Areas, Parks, and Recreation

Several parks, including Huntington Beach State Park occurs within or near the project area. Huntington Beach State Park was recently ranked by Southern Living Magazine as the 3rd best state park in the south (Rogers 2022). Huntington Beach State Park includes 2,300 acres of land, including three miles of beach and is known as one of the best birding spots along the east coast. There is also a public beach access area that provides direct access to Garden City Beach.

Murrells Public Boat Landing, located less than ½ mile from the federal channel, is a three-lane public boat launch that provides direct boat access to Murrells Inlet and the use of the federal navigation channel.

Murrells Inlet is an intensively used estuary as it offers opportunities for recreational shellfish harvesting, recreational fishing, recreational boating, and wildlife viewing. Historical data from South Carolina Department of Natural Resources estimates that 98% of all spots (red fish), 30% of all flounder, and 23% of all red snapper taken in South Carolina waters are caught within the vicinity of Murrells Inlet (Salvino and Wachsman 2013). Additionally, the Murrells Inlet area has three designated State Shellfish Grounds covering 26.8 acres and two designed Recreational Shellfish Grounds covering 11.4 acres.

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

4.1Water Quality

No Action Alternative

Under the No Action Alternative, the proposed maintenance dredging would not occur; therefore, no direct or indirect project related impacts to water quality would result.

Proposed Action Alternative

There will be a minor, temporary increase in turbidity levels in the project area during dredging and placement activities. Due to the sandy nature of the sediments proposed for dredging, turbidity plumes will be minimal and restricted primarily to the dredging and disposal areas. No adverse effects are expected. A Section 401 Water Quality Certification was issued for disposal of dredged material associated with the project by the South Carolina Department of Health and Environmental Control (SCDHEC) on April 18, 2017. The dredging and disposal methods have not changed, and no new disposal locations have been added since 2017. In an email dated August 26, 2022, SCDHEC concurred with the Corps' conclusion that the 2017 401 Water Quality Certification is still valid (Appendix F). Standard best management practices will be implemented to minimize migration of sediments on and off the placement areas during and after construction.

4.2 Terrestrial Biological Resources

No Action Alternative

Under the No Action Alternative, the proposed dredging would not occur; therefore, no direct or indirect project related impacts on terrestrial resources would result.

Proposed Action Alternative

The dredging and placement of sand at GCB and HBSP may have a temporary, minor effects on waterfowl, shorebirds or other animals that nest or inhabit the project area. There could be temporary displacement of shorebirds during disposal of dredged material at the beach placement areas. Migratory songbirds may also be impacted during the construction of containment berms/dikes and placement of dredged material in the upland placement areas. The USACE will include its standard migratory bird protection measures in the project plans and specifications and will require the Contractor to abide by those requirements. Sand placement activities at the beach will be monitored daily during the nesting season to protect nesting migratory birds. If nesting activities occur within the construction area, appropriate buffers will be placed around nests to ensure their protection No long-term significant impacts are expected to occur. In the long-term, the project will enhance and protect shorebird nesting habitat through the placement of sand along the beaches and the additional protection. Additionally, there is ample habitat adjacent to and in close proximity to the project area to provide refuge during project implementation.

The tidal marsh areas that lie behind Huntington (front) Beach and south of the Huntington Beach South Jetty will be protected by the temporary construction of a small protective berm during construction. After construction is completed, the temporary berm will be removed.

Some of the beach quality sand placed at the beaches will be allowed to naturally enhance the dry berm, intertidal, and subtidal zones. Organisms inhabiting this beach fill zone may be covered as material is pumped onto the beach and into the intertidal zone. Because animals from high-energy beaches are motile and adapted to shifting sediments, rapid recovery of the fauna on these beach areas following the deposition of dredged materials is likely. There is adequate habitat nearby that would not be impacted that will provide habitat for any displaced animals. Previous studies have shown that the recovery time for benthos ranged from approximately two to six months when there is a good match between the fill material and the natural beach sediment. In thee case of the proposed project, the fill material would not be substantially different than native material, therefore, it is expected that recover time would be similar to the two to six month estimate

The sand/mud flat just north of the Huntington Beach South Jetty will be covered as that area is rebuilt. However, as the newly built area reaches its natural state, similar sand/mud flats will reappear and will be re-colonized. Further, this will provide protection for the tidal marsh located south of the south jetty.

4.3 Aquatic Biological Resources

No Action Alternative

Under the No Action Alternative, the proposed dredging would not occur; therefore, no direct or indirect project related impacts on aquatic resources would result.

Proposed Action Alternative

Dredging activities would involve disturbance of the bottom substrate and the subsequent removal of benthic communities; however, studies have shown a relatively short recovery time for infaunal communities following dredging (Wilber and Clark 2007). Once dredging activities cease, pelagic larval recruits would initially inhabit the impact areas and the adjacent unimpacted areas would provide a gradual recruitment of less opportunistic species. It is expected that benthic communities would be re-established within approximately one to two years after dredging activities cease (Vivan et. al. 2009).

Some of the planktonic organisms entrained by the dredging operations will suffer injury or mortality. Turbidity resulting from the dredging activity may reduce primary productivity by phytoplankton as light penetration into the water column is reduced. Both potential effects on plankton are expected to be minor and temporary as they would coincide in significance with the short duration of dredging and the extremely small percentage of fine-grained material in the dredged sediments. Additionally, there is ample habitat outside of the project area that will remain available during project implementation.

Dredging will take approximately four months to complete for each dredging cycle. Disturbances would be minor within a very localized area around the dredging area, of which nekton can avoid given their mobility. Therefore, dredging is not anticipated to adversely impact fish in the area.

To minimize impacts to the commercial shellfish harvesting area along Huntington Beach State Park, a temporary berm will be constructed to contain the slurry during construction. The federal channel itself is closed for shellfish harvesting, therefore, the dredging operation would have no

impacts to the commercial shellfish leases/culture areas, C-370 and C-371, that are adjacent to the dredging areas.

4.4 Essential Fish Habitat

No Action Alternative

Under the No Action Alternative, the proposed dredging would not occur; therefore, no direct or indirect project related impacts on EFH would result.

Proposed Action Alternative

Dredging of the Federal channel and deposition basin, and beach placement activities could have negative effects on non-vegetated benthic communities through removal, direct burial, increased turbidity, or changes in the sand grain size or beach profiles. Dredging and placement activities would result in elevated turbidity levels and suspended solids in the project area when compared to the existing conditions; however, significant increases in turbidity are not expected to occur outside the immediate construction areas and turbidity levels and suspended sediments would be expected to return to background levels once construction ceases.

Dredging activities would involve disturbance of the bottom substrate and the subsequent removal of benthic communities; however, studies have shown a relatively short recovery time for infaunal communities following dredging (Wilber and Clark 2007). Once dredging activities cease, pelagic larval recruits would initially inhabit the impact areas and the adjacent unimpacted areas would provide a gradual recruitment of less opportunistic species. It is expected that benthic communities would be re-established within approximately one to two years after dredging activities cease (Vivan et. al. 2009).

Beach placement activities may have negative effects on intertidal macrofauna through direct burial, or changes in the sand grain size or beach profile. During maintenance dredging activities, benthic communities would be covered by dredged material; however, effects to benthic infauna would be considered relatively minor both spatially and temporally. Infaunal organisms in particular have very high reproductive potential and adjacent unimpacted areas would provide a source for recruitment. Avoiding beach placement activities during periods of peak larval recruitment, and matching grain size distributions between fill and native beach sediments could also minimize adverse effects to benthic communities (Wilbur et al., 2009). Prior to each maintenance dredging event, grain size testing of the shoals and project area will be conducted to determine suitability of the material for beneficial use placement efforts.

Dredging of the Federal channel and dredged material placement will not adversely affect any of the area's valuable tidal marshes. The tidal marsh areas located behind Huntington (front) Beach and south of the Huntington Beach south jetty will be protected by the temporary construction of a training berm during project activities. After construction is complete, the temporary berm will be removed. USACE is currently in consultation with NMFS to develop a Programmatic EFH Assessment (PEFHA) that will apply to maintenance dredging of the Murrells Inlet project. USACE intends to follow the conservation measures set forth in the PEFHA in order to avoid significant individual or cumulative adverse effects on EFH or living marine resources under the jurisdiction of NMFS. See appendix D for additional information.

4.5 Threatened and Endangered Species

Suitable habitat is present within the project area for the following federally listed species: American wood stork, Eastern black rail, piping plover, seabeach amaranth, West Indian manatee, and all four sea turtles (green sea turtle, leatherback sea turtle, Kemp's ridley sea turtle, and loggerhead sea turtle).

No Action Alternative

Under the No Action Alternative, the proposed dredging would not occur; therefore, no direct or indirect project related impacts to listed species would result.

Proposed Action Alternative

The proposed action may impact the below species under either USFWS or NMFS jurisdiction. The action is covered activity under the 2020 South Atlantic Regional Biological Opinion (SARBO), and will adhere to all applicable Project design criteria, therefore no further consultation with NMFS under ESA is required.

American wood stork

There is an active American wood stork colony on Huntington Beach State Park approximately 2 miles from the area of the project. Most of the work occurs in the deeper waters of Murrells Inlet and on the front beaches of Garden City and Huntington Beach State Park where there are no feeding areas. The placement area at the terminal west end of the south jetty at HBSP may occasionally be used as a feeding area by wood storks; however, during the project other foraging habitat in the area can be used. Feeding in the area of the south jetty will be able to resume upon completion of the project. Based on the above, it has been determined that maintenance dredging of the Murrells Inlet federal navigation channel may affect but is not likely to adversely affect the American wood stork.

Eastern black rail

It is unknown if eastern black rails occur in the immediate project area, however, should it occur, its habitat would be the salt marsh in the areas around Murrells Inlet away from the deeper waters where dredging will occur and away from the placement areas on the front beach and at the terminal west end of the south jetty. Based on the above, it has been determined that maintenance dredging of the Murrells Inlet federal navigation project may affect but is not likely to adversely affect the eastern black rail.

Piping Plover

Direct loss of nests from the placement of the dredged material should not occur, as the species is not known to nest in the project area. Piping plover foraging distribution on the beach may be altered as beach food resources may be affected by placement of material along the project area. Such disruptions will be temporary and of minor significance since the birds can easily fly to other loafing and foraging locations. Since part of the southern tip of GCB will be converted from dry land to open water, there will be a loss of approximately 3.5 acres of piping plover critical habitat in this area. However, placement of material at the terminal west end of the south jetty at HBSP will result in creation of additional habitat in this area that will offset the loss at GCB. The placement of dredged material into the intertidal zone along the front beach of HBSP will provide additional foraging habitat for the wintering piping plover in this area.

Additionally, since the grain size is suitable for placement on these areas, it is unlikely that the benthic community structure will significantly differ between pre and post construction activities. Previous studies of beach nourishment projects have shown a short-term impact to the beach and surf zone infaunal community with a recovery within six months (SCDNR, 2009). Based on the above, it has been determined that maintenance dredging of the Murrells Inlet federal navigation project may affect but is not likely to adversely affect the piping plover and may affect but is not likely to adversely modify piping plover critical habitat.

Rufa red knot

Direct loss of nests from the placement of the dredged material will not occur since the species does not nest in the project area. Red knot foraging distribution on the beach may be altered as beach food resources may be affected by placement of material along the project area. Such disruptions will be temporary and of minor significance since the birds can easily fly to other loafing and foraging locations. Additionally, since the grain size is suitable for placement on these areas, it is unlikely that the benthic community structure will significantly differ between pre and post construction activities. Previous studies of beach nourishment projects have shown a short-term impact to the beach and surf zone infaunal community with a recovery within six months (SCDNR, 2009). As previously mentioned, approximately 3.5 acres of dry land will be converted to open water, therefore, there will be a loss of rufa red knot proposed critical habitat in this area. However, placement of material at the terminal west end of the south jetty at HBSP will result in creation of additional habitat in this area that will offset the loss at Garden City Beach. The placement of dredged material into the intertidal zone along the front beach of GCB and HBSP will provide additional foraging habitat for the red knots in this area. Based on the above, it has been determined that maintenance dredging of the Murrells Inlet federal navigation project may affect, but is not likely to adversely affect the rufa red knot plover and may affect, but is not likely to adversely modify proposed rufa red knot critical habitat.

Seabeach amaranth

While the extent of the in-situ seed bank that remains is unknown, a portion, if not all, of the seed bank that supplies the sand spit on Garden City Beach will be removed and disposed of on either Garden City Beach or HBSP. Since the disposal of the dredged material on beaches seems to maintain desirable habitat for the species, the seeds transported to Garden City Beach or HBSP may germinate and thrive in the newly deposited material. If this is the case, the proposed project will be beneficial to the long-term survival potential of the species in Murrells Inlet area.

Even though a portion of the sand spit on GCB will be removed, it will most likely continue its accretion/migration into Murrells Inlet for the foreseeable future. As the sand spit accretes, habitat for sea beach amaranth will again be created up until such time as maintenance dredging becomes necessary. This accreted area will likely be repopulated by seabeach amaranth seeds that either remain in the sand spit after the dredging is completed, wash in from material being placed on GCB north of the jetty or from the seed bank material scraped up and stockpiled prior to dredging. While the extent of the seed bank that remains is unknown, there is no reason to believe that it is not sufficient to repopulate the area between maintenance dredging events. Based on the above, it has been determined that maintenance dredging of the Murrells Inlet federal navigation project may affect, is likely to adversely affect seabeach amaranth.

West Indian manatee

Most of the proposed work is currently scheduled to occur during the time of year when manatees are visiting the area. 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. In addition, since the proposed work is to be performed with a hydraulic cutterhead pipeline dredge and since manatees are uncommon in the vicinity of Murrells Inlet, no impacts to the manatee are anticipated. Based on the above, it has been determined that maintenance dredging of the Murrells Inlet federal navigation project may affect, but is not likely to adversely affect the West Indian manatee.

Sea turtles

Sea turtle nesting is known to occur on both GCB and HBSP. The Murrells Inlet maintenance dredging project may occur during sea turtle nesting season.If the project occurs during sea turtle nesting season, the placement of sand on the beach could adversely affect any existing sea turtle nests and sea turtles attempting to nest. If the project is delayed and work occurs during sea turtle nesting season, the following the Corps is proposing the following measures to minimize effects to nesting seaturtles, however, this list could be updated or modified dependent on the outcome of the ongoing ESA consultation with USFWS:

- Daily nesting surveys will be conducted starting either May 1 or 65 days prior to the start of construction, whichever is later. These surveys will be performed between sunrise and 9:00 A.M. and will continue until the end of the project, or September 30, whichever is earlier. Any nests found in the area that will be impacted by construction activities will be moved to a safe location. The nesting surveys and nest relocations will only be performed by people with a valid South Carolina DNR permit.

- The dredging contractor will provide nighttime monitoring along the beach where construction is taking place to ensure the safety of female turtles attempting to nest. Cease construction activities if a sea turtle is sighted on an area of beach scheduled for fill until the turtle returns to the ocean. A buffer zone around the female will be imposed in the event of an attempt to nest.

- Construction activities occurring during the period May 1 through October 31, use of heavy equipment will be limited to the area undergoing placement of material.

- Staging areas for equipment and supplies will be located off of the beach to the maximum extent possible.

- All on-beach lighting associated with the project will be limited to the minimum amount necessary around active construction areas to satisfy Occupational Safety and Health Administration (OSHA) requirements.

- The dredging contractor will use predator proof trash receptacles to minimize presence of species that prey upon hatchlings.

Immediately after completion of the project, the Corps of Engineers will perform tilling on the project's front beach area of GCB to a depth of at least 24 inches in order to reduce compaction associated with the newly placed sand. Visual surveys for escarpments along the project area will be made immediately after completion of the project and prior to May 1 for 3 subsequent years, if needed.

Adherence to the above precautions should minimize the effects to nesting loggerhead sea turtles and emerging loggerhead sea turtle hatchlings. The monitoring and relocation program will minimize potential adverse effects to nesting sea turtles. Completion of the project will recreate lost habitat and protect existing turtle nesting habitat as well as the structures on the island. However, because of the possibility of missing a sea turtle nest during the nest monitoring program or inadvertently breaking eggs during relocation, there is a potential for temporary, minor localized adverse effects to turtles. Therefore, USACE has determined that maintenance dredging of the Murrells Inlet federal navigation project may affect, is likely to adversely affect the green sea turtle, leatherback sea turtle, Kemp's ridley sea turtle, and loggerhead sea turtle.

Per Section 7 of the ESA, USACE has drafted a Biological Assessment concerning the above potential impacts to listed species. USACE is currently in formal consultation with USFWS.

4.6 Coastal Zone Resources

No Action Alternative

Under the No Action Alternative, the proposed dredging would not occur; therefore, no direct or indirect project related impacts on coastal zone resources would result. The placement areas will not receive additional material, nor will the jetty receive additional protection from erosion.

Proposed Action Alternative

The SCDHEC, Office of Ocean and Coastal Resource Management provided conditional certification that the project was consistent with the Coastal Zone Management Program by letter of November 15, 2016. A revised Coastal Zone Consistency was received on November 21, 2016, that included project specific conditions. The dredging and disposal methods have not changed and all conditions will be adhered to; therefore, the Corps of Engineers considers the previous consistency determination to still be valid. Concurrence from SCDHEC was received by email on July 13, 2022 (Appendix E).

4.7 Coastal Barrier Resources System

No Action Alternative

Under the No Action Alternative, the proposed dredging would not occur; therefore, no direct or indirect project related impacts on the coastal barrier unit would result. The placement areas will not receive additional material, nor will the jetty receive additional protection from erosion.

Proposed Action Alternative

Between 250,000 yd^3 and 500,000 yd^3 of sediment would be removed from within Unit SC-03 and placed on the front beach at Garden City Beach, which is outside of the units boundaries. Exception 16 U.S.C. 3505(a)(2) for the maintenance or construction of improvements of existing federal channels applies to this project. On September 25, 2022, USFWS concurred that the project meets this exception (Appendix B).

4.8 Cultural and Historic Resources

Federal agencies are required by Section 106 of the NHPA and by NEPA to consider the possible effects of their undertakings on historic properties. For cultural resources, the threshold for significant impacts includes any disturbance that cannot be mitigated and affects the integrity

of a historic property (i.e., a cultural resource that is eligible for the National Register of Historic Places (NRHP]). The threshold also applies to any cultural resource that has not yet been evaluated for its eligibility to the NRHP or disturbs a resource that has importance to a traditional group under American Indian Religious Freedom Act, EO 13007, and NAGPRA.

No Action Alternative

Under the No Action Alternative, the proposed dredging and subsequent sediment placement would not occur; therefore, no direct or indirect project related impacts on cultural resources would occur.

Proposed Action Alternative

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment by introducing visual or audible elements that are out of character for the period the resource represents, or neglecting the resource to the extent that it deteriorates or is destroyed. Indirect impacts are those that may occur as a result of the completed project, such as increased vessel traffic in the vicinity of the resource and the associated hydrologic changes associated with this increase.

The APE has been defined as the entrance channel, federal navigation channel, and surrounding shoreline. Actions anticipated within the APE would consist of dredging in the channel and placement of dredged material for beneficial use along shorelines. Impacts to cultural resources could result from activities which include soil disturbance, soil compaction, and rut formation. Soil disturbing activities have the potential to destroy stratigraphy and site integrity which could adversely affect a site's National Register of Historic Places eligibility. Soil compaction caused by placement of dredge pipes and dredged material have the potential to destroy site integrity resulting in adversely affecting the site's potential to yield specific data that addresses important research questions. Placing dredge pipe on top of archaeological sites could cause ruts to form, which can potentially cause artifacts to become exposed, erode soil, and cause overall damaging effects to the site's depositional integrity affecting its potential to yield significant data to build upon the region's history or prehistory.

Dredging of the federal navigation channel and placement of dredged material in previously approved sites will not negatively impact cultural resources. In accordance with the regulations pertaining to Section 106 of the NHPA, USACE made a determination of no adverse effect for the undertaking due to the buffer implemented for the magnetic anomaly within the inner channel and the distance from which the undertaking is from the only NRHP-listed resource in the area (Murrells Inlet Historic District). SHPO concurred with this determination in a letter dated September 8, 2022. Potential impacts will need to be considered and consultation resumed if inadvertent discoveries are found.

4.9 Visual Resources (Aesthetics)

No Action Alternative

Under the No Action Alternative, the proposed dredging would not occur; therefore, no direct or indirect project related impacts on visual resources would result.

Proposed Action Alternative

The presence of assorted dredging and construction equipment will create a minor, temporary impact to the natural beauty of the project area. This temporary change would be observed by anyone navigating the project area by commercial or recreational vessels during project operations. However, these impacts are temporary and will not affect the preservation of this coastal setting. Existing conditions will return to the area following completion of the project.

4.10 Air and Noise

No Action Alternative

Under the No Action Alternative, the proposed dredging would not occur; therefore, no direct or indirect project related impacts on air quality or noise would occur.

Proposed Action Alternative

There will be a minor change in air quality as a result of exhaust from the dredge and any associated equipment, vessels, and vehicles. The change will be minor and temporary in nature. Air quality will return to normal following completion of the project.

Ambient noise levels will increase as a result of the operations of the dredge and any associated equipment, vessels, and vehicles during project construction. The increase will be minor and temporary in nature. Noise levels will return to normal following completion of the project.

4.11 Hazardous, Toxic and Radioactive Waste

No Action Alternative

Under the No Action Alternative, the proposed dredging would not occur; therefore, no direct or indirect project related impacts on HTRW would result.

Proposed Action Alternative

The last maintenance dredging of the navigation channel occurred in 2017. Because of the type of material (sand) and the historical knowledge of this site, it is not expected that any hazardous, toxic or radiological waste will be encountered. Material that is predominately sand generally does not require any contaminant testing since contaminants adhere to organic particles, which are present in very low concentrations in this material. Additionally, pursuant to ER 1165-2-132, dredge materials and sediments beneath navigable waters proposed for dredging qualify as hazardous or toxic wastes only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal action or remedial action) under CERCLA.

4.12 Socioeconomics and Environmental Justice

No Action Alternative

Under the No Action Alternative, the proposed dredging would not occur; therefore, the channel would continue to shoal in, and boat traffic would continue to find it difficult to traverse the inlet. This may result in negative impacts to the industrial and commercial base of the area and impact the local economy.

Proposed Action Alternative

Maintenance of the navigation channel would have a favorable economic impact on the area. Recreational and commercial vessels serving the area will help and possibly even expand the industrial and commercial base that currently exists in Murrell's Inlet. This will directly and indirectly have a beneficial effect on the local, state, and national economy. Indirect benefits may accrue in the area through increases in business activity, employment, property values, and tax revenues. Other benefits for the commercial fishing and tourism industry would also be expected to occur. Accordingly, it is not anticipated that there will be any disproportionately high human health or environmental impact on low income or minority populations.

4.13 Climate Change

No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no effect to climate change or sea level rise.

Proposed Action Alternative

Maintenance dredging of Murrells Inlet would have no impacts on sea level rise. The project will provide a benefit by improving resiliency to sea level rise by protecting the south jetty which helps reduce impacts from sea level rise. The proposed project may result in a negligible release of greenhouse gases into the atmosphere when compared to global greenhouse gas emissions. Greenhouse gas emissions have been shown to contribute to climate change. Greenhouse gas emissions associated with the Corps federal action may occur from the combustion of fossil fuels associated with the operation of dredging equipment. Greenhouse gas emissions from the Corps action have been weighed against national goals of energy independence, national security, and economic development and determined not contrary to the public interest.

4.13 Natural Areas, Parks, and Recreation

No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no effect to natural areas, parks, and recreation.

Proposed Action Alternative

While the proposed maintenance dredging and placement at GCB and HBSP may be an inconvenience to recreators and commercial fishers during construction, it is not expected to have any long-term adverse effect on fishing activities in the area. The placement of material at both locations will have a long-term positive effect by protecting the area and continuing to provide recreational opportunities.

Maintaining the navigation channel will provide fishing vessels better access to and from Murrell's Inlet, which may improve commercial fishing. Recreational boaters will also benefit from maintaining the channel. The presence of the dredge and associated equipment could create temporary inconveniences for boats (recreational and commercial) navigating in the vicinity. However, since the dredge is either stationary or slow moving, it does not provide a swiftly moving target that must be avoided. The effects will be minor and temporary. The project area will benefit in the long-term through beach nourishment.

CHAPTER 5 CUMULATIVE IMPACTS

Cumulative impacts are defined in the regulations implementing NEPA as follows:

> Cumulative effects, which are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. § 1508.1(g)(3). The following paragraphs summarize the cumulative impacts expected from the proposed project.

5.1 Past, Present, and Reasonably Foreseeable Future Actions

Dredging of the Murrells Inlet navigation channel has occurred periodically since the project was completed in 1981 and it is expected that in the future, routing operation and maintenance dredging of the entrance channel, deposition, basin, and inner channel will occur.

In 2017, Georgetown County conducted maintenance dredging near the navigation channel and placed the material in an upland location. Georgetown County has proposed dredging the same area near the Marshwalk and boat ramp, but is proposing to place the material offshore.

5.2 Resource Areas Evaluated for Cumulative Effects

Implementation of the proposed action would have no or negligible effects on Water Quality, Aquatic Resources, Terrestrial Resources, Cultural Resources, Visual Resources, Air Quality, Noise, Hazardous Waste, Socioeconomics, Environmental Justice, Climate Change, and Natural Areas, Parks, and Recreation. As such, these resources were not carried forward into the cumulative effects analysis. Implementation of the proposed action will have minor impacts to the resources further discussed below.

Essential Fish Habitat

The proposed action, when considered with past, present, and reasonably foreseeable future projects, would not result in significant impacts to EFH. USACE is currently in consultation with NMFS to develop a Programmatic EFH Assessment (PEFHA) that will apply to the Murrells Inlet project. USACE intends to follow the conservation measures set forth in the PEFHA in order to avoid significant individual or cumulative adverse effects on EFH or living marine resources under the jurisdiction of NMFS. See appendix D for additional information.

Threatened and Endangered Species

The proposed action, when considered with past, present, and reasonably foreseeable future projects, would not result in significant impacts to listed species. While the proposed project may affect some listed species, the work will be performed in compliance with all applicable laws and will follow all minimization measures and conditions that are a result of ESA consultation. Additionally, the project may help provide and protect habitat for the listed species.

Individuals may be temporarily affected by the dredging and placement activities; however, the cumulative adverse impacts will be minor.

Given the size of the project, the overall minor and temporary nature of any adverse effects, and the beneficial use of the dredged material, there should be little adverse cumulative impact resulting from the proposed project.

CHAPTER 6 PUBLIC INVOLVEMENT AND COORDINATION

The Draft EA and Finding of No Significant Impact (FONSI) will be published on USACE public media outlets announcing the availability of the EA for review and comment for 30 days. Additionally, notification letters will be sent to the following:

- **Tribes**
  - Absentee-Shawnee Tribe of Indians of Oklahoma
  - Alabama-Quassarte Tribal Town
  - Catawba Indian Nation
  - Cherokee Nation
  - Chickasaw Nation
  - Delaware Tribe of Indians
  - Eastern Band of the Cherokee Indians
  - Eastern Shawnee Tribe of Oklahoma
  - Kialegee Tribal Town
  - The Muscogee (Creek) Nation
  - Poarch Band of Creek Indians
  - Shawnee Tribe
  - Thlopthlocco Tribal Town
  - Tuscarora Nation
  - United Keetoowah Band of Cherokee Indians in Oklahoma
- **Federal Agencies**
  - Environmental Protection Agency
  - National Marine Fisheries Services
  - U.S. Fish and Wildlife Service
- **State Agencies**
  - SCDHEC Bureau of Air Quality
  - SCDHEC Bureau of Water
  - SCDHEC Ocean and Coastal Resources Management
  - South Carolina Department of Natural Resources (SCDNR)
  - South Carolina Department of Archives and History
  - South Carolina Department of Parks, Recreation, and Tourism

CHAPTER 7 COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS

Clean Air Act of 1972

The Clean Air Act (CAA) sets goals and standards for the qualify and purity of air. It requires the EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. Georgetown County is designated as in attainment for all principal pollutants. The short-term effects from construction equipment associated with the project would not result in permanent adverse effects to air quality in the study area. Air quality permits would not be required for this project.

Clean Water Act of 1972 – Section 401 and Section 404

The Clean Water Act (CWA) sets and maintains goals and standards for water quality and purity. A Section 401 Water Quality Certification was issued for disposal of dredged material associated with the project by the South Carolina Department of Health and Environmental Control (SCDHEC) on April 18, 2017. Since the dredging and disposal methods have not changed and no new disposal locations have been added, the Corps of Engineers considers the previous water quality certification to still be valid.

A 404(b)(1) Analysis of the project has been completed in 2016 and is currently being coordinated with SCDHEC.

Coastal Barrier Resources Act of 1982

The Coastal Barrier Resources Act (CBRA) provides for a Coastal Barrier Resources System of undeveloped coastal barriers along the Atlantic and Gulf Coasts, including islands, spits, tombolo's, and bay barriers that are subject to wind, waves, and tides such as estuaries and nearshore waters. Resources in the System are to be protected by restricting Federal expenditures that have the effect of encouraging development of coastal barriers. Most of the dredging for this project is located within Huntington Beach Unit SC-03, along with the disposal locations at Huntington South Jetty and Huntington (front) Beach, Figure 4.

The Coastal Barrier Resources Act (CBRA) exempts the maintenance or construction of improvements of existing Federal navigation channels and related structures (such as jetties), including the disposal of dredge materials related to maintenance or construction. O&M dredging of the existing Murrells Inlet project and disposal of beach quality sand on adjacent beaches falls squarely within this exemption. On September 25, 2022, USFWS concurred that the project meets this exception (Appendix B).

Coastal Management Zone Act of 1972

The Coastal Zone Management Act (CZMA) requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs." Per the Coastal Tidelands and Wetlands Act (S.C. Code Ann. The SCDHEC, Office of Ocean and Coastal Resource Management provided conditional certification that the project was consistent with the Coastal Zone Management Program by letter of

November 15, 2016. A revised Coastal Zone Consistency was received on November 21, 2016. Since the dredging and disposal methods have not changed and no new disposal locations have been added, the Corps of Engineers considers the previous consistency determination to still be valid. Concurrence from SCDHEC was received by email on July 13, 2022 (Appendix E).

Endangered Species Act of 1973

The ESA is designed to protect and recover threatened and endangered species of fish, wildlife, and plants. Suitable habitat is present within the project area for the following federally listed species: American wood stork, Eastern black rail, piping plover, seabeach amaranth, West Indian manatee, and all four sea turtles (green sea turtle, leatherback sea turtle, Kemp's ridley sea turtle, and loggerhead sea turtle).

USACE has determined that the project may affect, but is not likely to adversely affect the American wood stork, Eastern black rail, piping plover, and West Indian manatee. It has been determined that maintenance dredging of the Murrells Inlet federal navigation project may affect, is likely to adversely affect seabeach amaranth, the green sea turtle, leatherback sea turtle, Kemp's ridley sea turtle, and loggerhead sea turtle.

Section 7 of the ESA, USACE has drafted a Biological Assessment concerning the above potential impacts to listed species. USACE is currently in consultation with USFWS.

The project would be implemented in compliance with the 2020 SARBO issued by NMFS.

Environmental Justice (EO 12898)

According to EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, each federal agency must conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such programs, policies, and activities, because of their race, color, national origin, or income level. Total minority populations (i.e., all non-white and Hispanic or Latino racial groups) combined comprise approximately 14 percent of the population in the project area. The project would have no impacts on minority populations.

Fish and Wildlife Coordination Act of 1934

The Fish and Wildlife Coordination Act (FWCA) provides authority for the USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features and requires that federal agencies consult with USFWS, NMFS, and state resource agencies on the proposed project. This coordination is being conducted concurrent with the public review of the draft EA.

Floodplain Management (EO 11988)

To comply with Executive Order 11988, the policy of the USACE is to formulate projects that, to the extent possible, avoid or minimize adverse effects associated with the use of the

floodplain and avoid inducing development in the floodplain unless there is no practicable alternative. Projects that involve beneficial use of dredged material and beach nourishment are inherently located in within the floodplain. USACE intends to prioritize beneficial use of dredged material wherever and whenever possible. For the proposed project, beach placement of dredged material helps alleviate problems associated with beach erosion, including the enhancement of habitat within the floodplain. For the reasons stated above, the project is in compliance with EO 11988, Floodplain Management.

Protection of Wetlands (EO 11990)

This Executive Order requires, among other things, that Federal agencies avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. No wetlands would be affected by the proposed project. This project is in compliance with the goals of this Executive Order.

Migratory Bird Treaty Act and EO 13186

The Migratory Bird Treaty Act (MBTA) of 1918 is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico, and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possessing, transporting, and importing of migratory birds, their eggs, parts, and nests. EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) directs federal agencies to take certain actions to further implement the MBTA, including evaluating the effects of actions on migratory birds. Measures will be taken to minimize and avoid impacts to migratory birds, such as timing of activities. Migratory birds may benefit from the beneficial placement of material behind the south jetty, which will enhance and protect shore bird habitat. As such, the proposed as proposed would not negatively impact migratory birds.

National Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. A review of the Wild and Scenic River inventory list reveals that the proposed project would not affect a stream or portion of a stream that is included in the National Wild and Scenic Rivers system.

National Historic Preservation Act of 1966

Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The proposed project has been reviewed for historic properties (cultural resources listed on or eligible for listing on, the National Register of Historic Places) pursuant to regulations implementing Section 106 of the National Historic Preservation Act (NHPA). In accordance with 36 C.F.R. §800.4(d)(1), it was determined that there would be no effect to historic properties and documentation of this determination has been coordinated with the South Carolina State Historic Preservation Office. Therefore, in accordance with 36 C.F.R. §800.4(d)(1)(i), USACE's responsibilities under Section 106 of the NHPA have been fulfilled.

The Corps pursued NHPA Section 106 and National Environmental Policy Act (NEPA) consultation and coordination for this undertaking with the South Carolina Department of Archives and History, State Historic Preservation Office (SHPO) in 2001 (SHPO Project No. 16-ED0118) and again in 2016 (SHPO Project No. 16-ED0078). SC SHPO concurred in a letter dated May 11, 2001 that no properties listed on the National Register of Historic Places (NRHP) or determined eligible for inclusion on the NRHP would be affected by the proposed undertaking. The 2016 coordination under NEPA focused on the review and comment on the draft EA and FONSI for the Murrells Inlet Federal Navigation Project dredging of the inner shoal area. SC SHPO recommended consultation under Section 106 and to ensure that the State Underwater Archaeologist was involved in the review.

Consultation under Section 106 resumed in September 2022 with SC SHPO and 11 consulting Tribes, including Absentee-Shawnee Tribe of Oklahoma, Alabama-Quassarte Tribal Town, Catawba Indian Nation, Chickasaw Nation, Delaware Tribe of Indians, Eastern Band of Cherokee Indians, Eastern Shawnee Tribe of Oklahoma, Kialegee Tribal Town, Poarch Band of Creek Indians, Shawnee Tribe, and Thlopthlocco Tribal Town. SC SHPO responded in a letter dated September 8, 2022, to provide concurrence that no properties listed in or eligible for listing in the NRHP will be adversely affected by this project. Two tribal responses were received. The Catawba Indian Nation responded in a letter dated October 12, 2022, to state that they had no concerns for this undertaking (THPO#2022-46-7). The Eastern Shawnee Tribe of Oklahoma responded in a letter dated October 13, 2022, to provide concurrence of the determination of no adverse effect (EST Reference Number: 4492). Section 106 consultation is complete for this undertaking. Any inadvertent discoveries will be coordinated with the SC SHPO and Tribes if encountered.

CHAPTER 8 ENVIRONMENTAL COMMITMENTS

USACE employs standard practices when conducting dredging activities. Some of the more specific measures which would be applied to reduce the potential for adverse environmental effects during implementation of the project are as follows:

- To lessen impacts on fish, wildlife and their habitats, dredged material from Inner Shoal B may only be placed along the eroding shoreline at the north end of Huntington State Beach Park (as proposed) and not on the marsh side of the island, where significant shellfish resources could be adversely affected by the resuspension of fine sediments.

- Prior to construction or maintenance, the USACE must specify quality control measures including:
    - A description of the means and limits by which the material quality will be assessed during and after construction.
    - A definition of material quality that would require removal or screening of material from the beach; and,
    - A reasonable timetable for removal of the material and restoration.

- The beach compatibility and quality of the material placed upon the beach must be monitored during construction operations by persons who are qualified to assess the material. Monitors will report immediately to those persons with the authority to suspend or modify the work if a determination is made that unsuitable material is being placed on the beach.

- An assessment of fill material is recommended to be conducted within 30 days of project completion with at least 10 random samples taken and analyzed for sand grain size distribution, percent of shell composition and color. Any report detailing results of the analysis shall be submitted to the natural resource agencies within 60 days of construction.

- A post-construction survey (as-built) is required to be submitted to SCDHEC OCRM within 60 days of project completion.

- The standard manatee conditions will be implemented from 15 April to 31 October. The Contractor will be instructed to take necessary precautions to avoid any contact with manatees. If manatees are sighted within 100 yards of the dredging area, all appropriate precautions will be implemented to insure protection of the manatee. The Contractor will stop, alter course, or maneuver as necessary to avoid operating moving equipment (including watercraft) any closer than 100 yards of the manatee. Operation of equipment closer than 50 feet to a manatee will necessitate immediate shutdown of that equipment.

- Daily nesting surveys will be conducted starting either May 1 or 65 days prior to the start of construction, whichever is later. These surveys will be performed between sunrise and 9:00 A.M. and will continue until the end of the project, or September 30, whichever is earlier. Any nests found in the area that will be impacted by construction activities will

be moved to a safe location. The nesting surveys and nest relocations will only be performed by people with a valid South Carolina DNR permit.

- The dredging contractor will provide nighttime monitoring along the beach where construction is taking place to ensure the safety of female turtles attempting to nest. if a sea turtle is sighted on an area of beach scheduled for fill, construction activities will cease until the turtle returns to the ocean. A buffer zone around the female will be imposed in the event of an attempt to nest.

- If construction activities occur during the period May 1 through October 31, use of heavy equipment will be limited to the area undergoing placement of material.

- Staging areas for equipment and supplies will be located off of the beach to the maximum extent possible.

- During construction of this project, staging areas for construction equipment will be located off the beach to the maximum extent practicable. Nighttime storage of construction equipment not in use shall be off the beach to minimize disturbance to sea turtle nesting and hatching activities. In addition, all dredge pipes that are placed on the beach will be located as far landward as possible without compromising the integrity of the existing or reconstructed dune system. Temporary storage of pipes will be off the beach to the maximum extent possible. Temporary storage of pipes on the beach will be in such a manner so as to impact the least amount of nesting habitat and will likewise not compromise the integrity of the dune systems (placement of pipes perpendicular to the shoreline will be recommended as the method of storage).

- During construction of this project, all on-beach lighting associated with the project will be limited to the immediate area of active construction only. Such lighting will be shielded, low-pressure sodium vapor lights to minimize illumination of the nesting beach and nearshore waters. Red filters will be placed over vehicle headlights (i.e., bulldozers, front end loaders). Lighting on offshore equipment will be similarly minimized through reduction, shielding, lowering, and appropriate placement of lights to avoid excessive illumination of the water, while meeting all U.S. Coast Guard and OSHA requirements. Shielded, low pressure sodium vapor lights will be highly recommended for lights on any offshore equipment that cannot be eliminated.

- The dredging contractor will use predator proof trash receptacles to minimize the presence of species that prey upon hatchlings.

- Immediately after completion of the project, USACE will perform tilling on the project's front beach area of Garden City Beach to a depth of at least 24 inches in order to reduce compaction associated with the newly placed sand.

- Visual surveys for escarpments along the project area will be made immediately after completing of the project and prior to May 1st for three subsequent years, if needed.

- USACE will abide by the NMFS 2020 SARBO and relevant Project Design Criteria (PDC).

- Sand placement activities at the beach will be monitored daily during the nesting season to protect nesting migratory birds. If nesting activities occur within the construction area, appropriate buffers will be placed around nests to ensure their protection.

- The survey revealed the presence of a magnetic anomaly and potential shipwreck in proximity to Inner Shoal B, and additional testing was recommended if avoidance was not possible. The current undertaking, as proposed, will avoid this anomaly, and a 50-foot buffer will be implemented as an avoidance area.

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Appendix A
Comments and Response
(Placeholder)

Appendix B
Coastal Barrier Resources Act Consultation

Coastal Barrier Resources Act Consultation Request

August 22, 2022

FROM:
U.S. Army Corps of Engineers,
Charleston District
69A Hagood Ave.
Charleston, SC 29403-5107

TO:
U.S. Fish & Wildlife Service
South Carolina Ecological Services Field Office
176 Croghan Spur Road, Suite 200
Charleston, SC 29407-7558

Consultation Request: The U.S Army Corps of Engineers, Charleston District requests a consultation with the U.S. Fish and Wildlife Service (Service) under the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.) for maintenance dredging of the Murrells Inlet federal navigation project. This project is funded by the Bipartisan Infrastructure Law.

Project Location: The dredging project is located in Georgetown County, SC, and is mostly within Unit SC-03 of the Coastal Barrier Resources System (CBRS).

Description of the Proposed Action or Project: The project involves maintenance dredging of several shoals in the Murrells Inlet federal navigation project, and placement of the dredged material at three locations. The shoals consist of the entrance channel shoal, the deposition basin, the auxiliary channel, inner shoal A, inner shoal B, and inner shoal C. The placement areas include the front beach at Garden City Beach, the back bay area near the terminal west end of the south jetty on Huntington Beach State Park, and the front beach at Huntington Beach State Park. Most of the shoals to be dredged and two of the placement areas are within CBRS Unit SC-03. Inner shoal B, inner shoal C, and the placement area on the front beach of Garden City Beach are outside of Unit SC-03. Between 250,000 yd^3 and 500,000 yd^3 of sediment will be removed from within Unit SC-03 and placed on the front beach at Garden City Beach. See Figure 1 for the boundaries of Unit SC-03 in relation to the locations of the various shoals and the placement areas.

Applicable Exception(s) under 16 U.S.C. 3505(a)

General Exceptions

☐ 16 U.S.C. 3505(a)(1): Any use or facility necessary for the **exploration, extraction, or transportation of energy resources** which can be carried out only on, in, or adjacent to a coastal water area because the use or facility requires access to the coastal water body.

☒ 16 U.S.C. 3505(a)(2): The **maintenance or construction of improvements of existing federal navigation channels** (including the Intracoastal Waterway) and related structures (such as jetties), including the disposal of dredge materials related to such maintenance or construction. *A federal navigation channel or a related structure is an existing channel or structure, respectively, if it was authorized before the date on which the relevant System Unit or portion of the System Unit was included within the CBRS (16 U.S.C. 3505(b)).*

☐ 16 U.S.C. 3505(a)(3): The maintenance, replacement, reconstruction, or repair, but not the expansion, of **publicly owned or publicly operated roads, structures, or facilities that are essential links** in a larger network or system. *While this exception generally prohibits expansions, there is a special provision in CBRA that allows for the expansion of highways in Michigan under this exception (see 16 U.S.C. 3505(c)).*

☐ 16 U.S.C. 3505(a)(4): **Military activities** essential to national security.

☐ 16 U.S.C. 3505(a)(5): The construction, operation, maintenance, and rehabilitation of **Coast Guard facilities** and access thereto.

Specific Exceptions

The exceptions below may apply only if the project or action is also consistent with the purposes of CBRA, which are:

- *to minimize the loss of human life;*
- *minimize wasteful expenditure of federal revenues; and*
- *minimize damage to fish, wildlife, and other natural resources associated with coastal barriers*

by restricting future federal expenditures and financial assistance which have the effect of encouraging development; and by considering the means and measures by which the long-term conservation of these fish, wildlife, and other natural resources may be achieved.

Therefore, **if selecting any of the exceptions below, it is necessary to describe how the proposed action or project is consistent with these purposes**.

☐ 16 U.S.C. 3505(a)(6)(A): **Projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats**, including acquisition of fish and wildlife habitats, and related lands, stabilization projects for fish and wildlife habitats, and recreational projects.

☐ 16 U.S.C. 3505(a)(6)(B): Establishment, operation, and maintenance of **air and water navigation aids** and devices, and for access thereto.

☐ 16 U.S.C. 3505(a)(6)(C): Projects under chapter 2003 of title 54 and the **Coastal Zone Management Act** of 1972 (16 U.S.C. 1451 et seq.). *Chapter 2003 of title 54 refers to expenditures under the **Land and Water Conservation Fund**. For additional information on the use of this exception for projects under the CZMA, please see this fact sheet.*

☐ 16 U.S.C. 3505(a)(6)(D): **Scientific research**, including aeronautical, atmospheric, space, geologic, marine, fish and wildlife, and other research, development, and applications.

☐ 16 U.S.C. 3505(a)(6)(E): Assistance for **emergency actions essential to the saving of lives and the protection of property and the public health and safety**, if such actions are performed pursuant to sections 5170a, 5170b, and 5192 of title 42 **and are limited to actions that are necessary to alleviate the emergency.**

☐ 16 U.S.C. 3505(a)(6)(F): Maintenance, replacement, reconstruction, or repair, but not the expansion (except with respect to United States route 1 in the Florida Keys), of **publicly owned or publicly operated roads, structures, and facilities.** *Please note that for this exception, FEMA regulations (44 CFR Part 206.347(c)(5)) indicate that "no such facility may be repaired, reconstructed, or replaced unless it is an 'existing facility'" (i.e., one that was constructed prior to its inclusion in the CBRS and has not been substantially improved or expanded since).*

☐ 16 U.S.C. 3505(a)(6)(G): **Nonstructural projects for shoreline stabilization** that are designed to mimic, enhance, or restore a natural stabilization system. *For additional information on the use of this exception, please see this Frequently Asked Questions document.*

Justification for Exception(s): The Murrells Inlet project is a U.S. Army Corps of Engineers federal navigation project that was authorized by Congress in 1965 (H.D. 137, 92nd Congress, Section 201, P.L. 89-298 River and Harbor and Flood Control Act of 1965). Therefore, the planned dredging of Murrells Inlet fully meets exception 16 U.S.C. 3505(a)(2).

Contact Information: Alan Shirey, U.S. Army Corps of Engineers, Charleston District, 69A Hagood Avenue, Charleston, SC; 843-329-8166; alan.d.shirey@usace.army.mil.

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Nancy A. Parrish
Chief, Planning and Environmental Branch

22 August 2022
Date

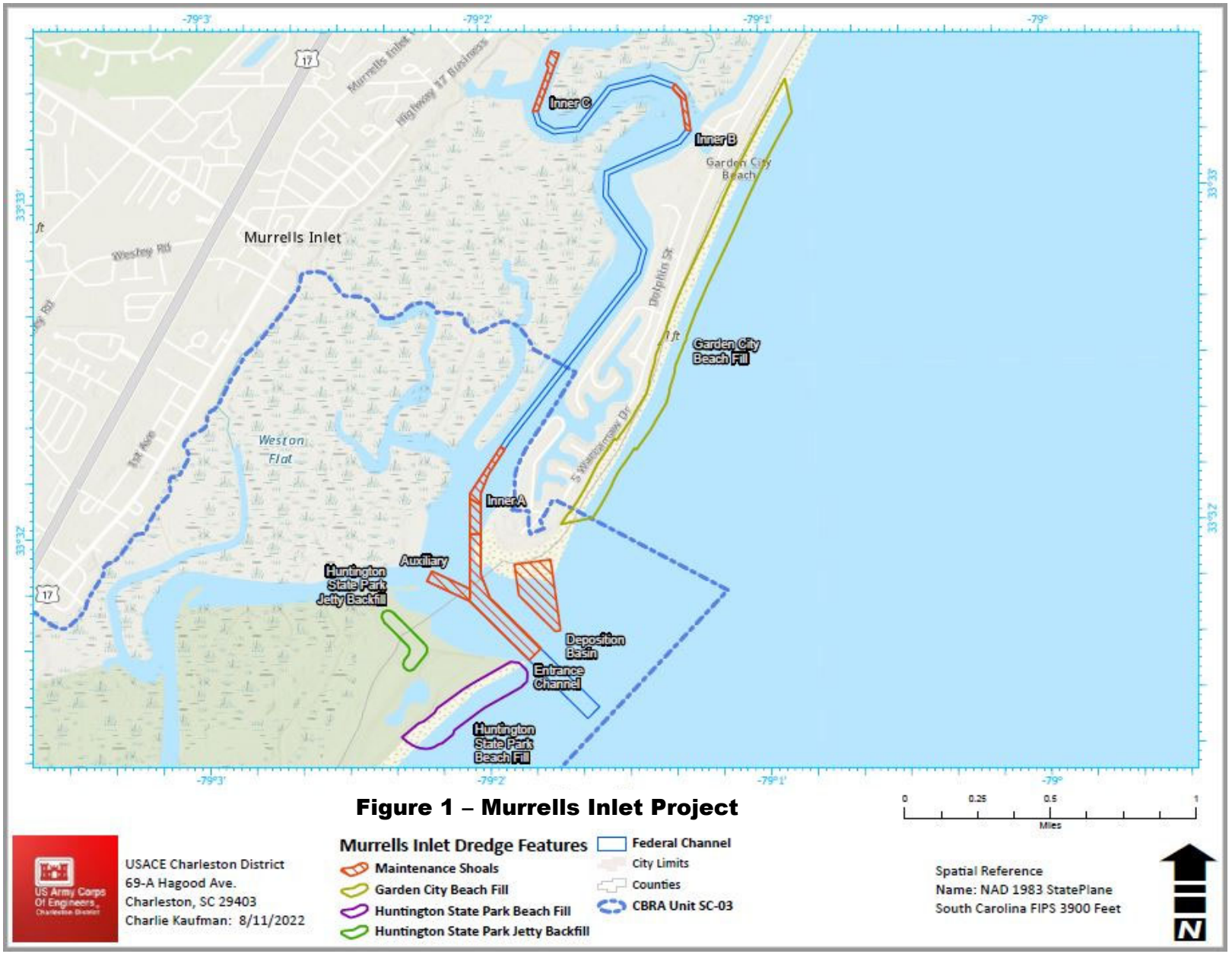

Figure 1 – Murrells Inlet Project

U.S. Fish and Wildlife Service Response

Below is the Service's response to the U.S. Army Corps of Engineers, Charleston District's (USACE Charleston) request for a consultation under CBRA for maintenance dredging of the Murrells Inlet federal navigation project. This response represents the Service's opinion. **The final decision regarding the expenditure of funds for this action or project rests with the federal action agency.** USACE Charleston has fulfilled its obligation to consult with the Service under CBRA for this particular action or project within the CBRS. Please note that any new commitment of federal funds associated with this action or project, or change in the project design and/or scope, is subject to CBRA's consultation requirement.

The Service has reviewed the information provided by USACE Charleston, and believes the referenced action/project is:

- ☐ Not located within a System Unit of the CBRS and CBRA does not apply (except with respect to the restrictions on federal flood insurance)
- ☒ Located within a System Unit of the CBRS and meets the exception(s) to CBRA selected above
- ☐ Located within a System Unit of the CBRS and meets different exception(s) than the one(s) selected above (see additional information/comments below)
- ☐ Located within a System Unit of the CBRS and does not meet an exception to CBRA (see additional information/comments below)

Additional Information/Comments

This response does not constitute consultation for any project pursuant to section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) or comments afforded by the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 et seq.); nor does it preclude comment on any forthcoming environmental documents pursuant to the National Environmental Policy Act (83 Stat. 852; 42 U.S.C. 4321 et seq.).

Thomas D. McCoy

Thomas McCoy
Field Supervisor

September 26, 2022

Date

Appendix C
USFWS Biological Assessment

US Army Corps
Of Engineers®
Charleston District

BIOLOGICAL ASSESSMENT
OF THREATENED AND ENDANGERED SPECIES

for the

MURRELLS INLET, SOUTH CAROLINA
MAINTENANCE DREDGING OF THE FEDERAL NAVIGATION CHANNEL
AND BEACH PLACEMENT
GEORGETOWN COUNTY, SOUTH CAROLINA

OCTOBER 2022

Contents

1.0 INTRODUCTION

This Biological Assessment (BA) has been prepared by the U.S. Army Corps of Engineers, Charleston District (USACE) in order to meet the federal agency consultation requirements of Section 7 of the ESA. This document evaluates the effects of the maintenance dredging within Murrell's Inlet and placement of dredged material on Garden City Beach and at the terminal west end of the south jetty within Huntington Beach State Park (Figure 1 and Figure 2), on federally listed and proposed threatened and endangered species under the jurisdiction of the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). Consultation with NMFS is not required because in-water impacts of the project are covered by the NMFS South Atlantic Regional Biological Opinion (NMFS 2020).

Murrell's Inlet is located on the Atlantic coast in Georgetown County, South Carolina (SC), approximately 80 miles north of Charleston, SC and 12 miles south of Myrtle Beach, SC. The inlet is located between the south end of Garden City and the north end of Huntington Beach State Park (HBSP). Congress authorized the Murrells Inlet Navigation Project ("Project") on 18 November 1971 under Section 201 of Public Law 298, 89th Congress (House Document 92-137, 92nd Congress 1st Session). The Project consisted of the construction of two jetties and sand dikes to stabilize the inlet. It also authorized the dredging of a deposition basin with a capacity of 600,000 cubic yards (cy), an entrance channel 300 feet wide and 10 feet deep plus two feet of overdepth, an inner channel 90 feet wide and 8 feet deep with two feet of overdepth, and a turning basin 300 feet long and 150 feet wide. In addition, regular operation and maintenance (O&M) dredging, with placement of dredged material on Garden City Beach and HSBP was authorized.

Construction was initiated by USACE in 1977 and was completed in 1981. Since that time, USACE has completed three rounds of O&M dredging of the authorized project. In 1988, USACE completed O&M dredging of the entrance channel, inner shoal A, and the deposition basin. In 2001, USACE completed O&M dredging of the entrance channel, inner shoal A, the auxiliary channel, and the deposition basin. In 2017, USACE completed O&M dredging of part of the entrance channel, the deposition basin, inner shoal A, and inner shoal B. For initial construction and all subsequent O&M dredging events, material was placed on the front beach of Garden City Beach and at HBSP (either at the terminal west end of the south jetty or on the front beach or both).

In 2001, O&M dredged material was placed in a manner that had several benefits for the surrounding communities and wildlife. These benefits included:

- At Garden City Beach, dredged material was used to enhance storm protection to adjacent property owners and public infrastructure.
- At the terminal west end of the south jetty on HBSP material was used to restore shorebird habitat and to provide protection for the jetty foundation.
- At HBSP, dredged material was used for shore protection, enhancement of sea turtle nesting habitat, as well as habitat for seabeach amaranth and the wintering piping plover.

In 2017, dredged material was placed in the same locations at Garden City Beach and at the terminal west end of the south jetty on HBSP, which resulted in the same benefits as in the 2001 project.

Figure 1. Location of Murrells Inlet Navigation Project

2.0 PROJECT DESCRIPTION

The upcoming Murrells Inlet O&M dredging project will dredge sandy material from the entrance channel, the deposition basin, and inner shoal A. The southern tip of Garden City Beach has accreted into the federal channel; therefore, dredging of the entrance channel will transform approximately 2 acres of land above mean lower-low water (MLLW) back into open water. A total of 500,000 to 750,000 cubic yards[1] of material is expected to be dredged. The dredged material will be placed on the front beach at Garden City Beach, at the terminal west end of the south jetty on HBSP, and on the front beach at HBSP (see Figure 2). It is anticipated that dredging will begin in May 2023 and will require approximately 4-6 months for completion.

[1] The final volume of material that is dredged will depend on the amount of allowed overdepth the dredging contractor dredges. The current estimated volume with no overdepth is 355,000 yd^3. The current estimated volume if all the allowed overdepth is dredged is 1,090,000 yd^3. The actual volume will be between those two quantities.

This schedule could change due to funding constraints, contractual issues, inclement weather, equipment failure, or other unforeseen difficulties.

During construction, temporary training dikes of sand will be used to contain the discharge and control the fill placement. Fill sections will be graded by land-based equipment, such as bulldozers, articulated front-end loaders, and other equipment as necessary to achieve the desired placement profile.

Figure 2. Murrells Inlet Project Features

3.0 PRIOR CONSULTATIONS

To our knowledge, no previous Section 7 formal or informal consultations occurred for the original project or the 1988 O&M dredging event. A Biological Assessment was provided to the USFWS and subsequently a Biological Opinion was issued by USFWS for maintenance dredging in 2001. A second Biological Assessment and subsequent Biological Opinion were prepared for maintenance dredging in 2016.

4.0 LIST OF SPECIES

Table 1 contains a list of species that have been listed by either the U.S. Fish and Wildlife Service or NOAA Fisheries as occurring or possibly occurring in Georgetown County.

TABLE 1: U.S. FISH &WILDLIFE SERVICE AND NOAA FISHERIES THREATENED AND ENDANGERED SPECIES IN GEORGETOWN COUNTY

CATEGORY	COMMON NAME	SCIENTIFIC NAME	STATUS
Birds	American wood stork	*Mycteria americana*	T
	Eastern black rail	*Laterallus jamaicensis jamaicensis*	T
	Piping plover	*Charadrius melodus*	T, CH
	Red-cockaded woodpecker	*Picoides borealis*	E
	Red knot	*Calidris canutus rufa*	T, PCH
Fish	Atlantic sturgeon*	*Acipenser oxyrinchus**	E, CH
	Shortnose sturgeon*	*Acipenser brevirostrum**	E
Mammals	Northern-long-eared bat	*Myotis septentrionalis*	T
	Fin whale*	*Balaenoptera physalus**	E
	Humpback whale*	*Megaptera novaengliae**	E
	Right whale*	*Balaena glacialis**	E, CH
	Sei whale*	*Balaenoptera borealis**	E
	Sperm whale*	*Physeter macrocephalus**	E
	West Indian manatee	Trichechus manatus	T
	West Indian manatee	*Trichechus manatus*	T
Plants	Pondberry	*Lindera melissifolia*	E
	Seabeach amaranth	*Amaranthus pumilus*	T
Reptiles	Green sea turtle**	*Chelonia mydas***	T
	Kemp's ridley sea turtle**	*Lepidochelys kempii***	E
	Leatherback sea turtle**	*Dermochelys coriacea***	E
	Loggerhead sea turtle**	*Caretta caretta***	T, CH

NOTES:

* Species under the jurisdiction of NOAA Fisheries
** The U.S. Fish and Wildlife Service (FWS) and NOAA Fisheries share jurisdiction of this species

E - Federally Endangered T - Federally Threatened
CH - Critical Habitat PCH - Proposed Critical Habitat

5.0 GENERAL EFFECTS ON LISTED SPECIES/CRITICAL HABITAT

Since all aspects of the proposed work will occur either in the open water of Murrells Inlet or on an ocean beach, the project will not affect any listed species occurring in forested or freshwater habitats. Thus, species such as the red-cockaded woodpecker, northern long-eared bat, and pondberry will not be affected by the proposed action.

In addition, dredging impacts to listed fish and whale species under the jurisdiction of NOAA Fisheries are covered under the 2020 South Atlantic Regional Biological Opinion issued by NMFS (NMFS 2020). Therefore, impacts to fin, humpback, right, sei, and sperm whales and impacts to Atlantic and shortnose sturgeon are not discussed in this assessment.

Species that could be present in the project area during the proposed action are the Kemp's ridley, leatherback, loggerhead, and green sea turtles; the West Indian manatee; the American wood stork; the eastern black rail; the piping plover; the red knot; and seabeach amaranth. Critical habitat has been designated for piping plover within the project's footprint, and critical habitat for red knots has been proposed within the project's footprint. No other critical habitat has been designated or proposed within the project area for any other species. Therefore, the focus of this assessment is limited to the above species and critical habitats.

Loggerhead sea turtles are the primary sea turtle nesters in South Carolina; however, the other species of sea turtles occasionally nest in South Carolina. The west Indian manatee rarely visits the area, but passes through when moving up the coast and has been seen in various locations throughout the area. There is an American wood stork colony at Huntington Beach State Park near the project location. The eastern black rail could be found in the marshes near the project area. The piping plover is an occasional visitor and is known to winter in the area. The red knot is generally a migrant visitor with a few birds wintering in the area. Seabeach amaranth is known to grow in the area and is propagated by staff at Huntington Beach State Park on state park property.

6.0 SPECIES ASSESSMENTS

6.1 West Indian Manatee

West Indian manatees (*Trichechus manatus*) have large, seal-shaped bodies with paired flippers and a round, paddle-shaped tail. They are typically grey in color (color can range from black to light brown) and occasionally spotted with barnacles or colored by patches of green or red algae. The muzzle is heavily whiskered and coarse, single hairs are sparsely distributed throughout the body. Adult manatees, on average, are about nine feet long and weigh about 1,000 pounds. At birth, calves are between three and four feet long and weigh between 40 and 60 pounds (USFWS 2022a).

The West Indian manatee was listed as endangered on March 11, 1967, under a law that preceded the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.). The West Indian manatee was reclassified as threatened under the Endangered Species Act on April 5, 2017. Additional Federal protection is provided for this species under the Marine Mammal

Protection Act of 1972, as amended (16 USC 1461 et seq.). Manatees live in freshwater, brackish and marine habitats. Submerged, emergent, and floating vegetation are their preferred food. The manatee population in the United States is confined during the winter months to the coastal waters of peninsular Florida; however, during the summer months, they may migrate as far north as coastal Rhode Island on the East Coast and as far west as Texas on the Gulf of Mexico (USFWS, 2001). The manatee is an infrequent visitor to the South Carolina coast with some visual reports in various locations along the coast including the Murrells Inlet area.

Effects Determination

Most of the proposed work is expected to occur during the summer when manatees might be in the project area. During the warmer, spring through fall 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. In addition, since the proposed work is to be performed with a hydraulic cutterhead pipeline dredge (i.e., dredge plants that are slow moving) and since manatees are uncommon in the vicinity of Murrells Inlet, no impacts to the manatee are anticipated. Based on the above, it has been determined that maintenance dredging of the Murrells Inlet federal navigation project **may affect, but is not likely to adversely affect the West Indian manatee**.

6.2 Sea Turtles

There are four species of sea turtles on the South Carolina coast: Kemp's ridley sea turtle (*Lepidochelys kempii*), Leatherback sea turtle (*Dermochelys coriacea*), Loggerhead sea turtle (*Caretta caretta*), and the Green sea turtle (*Chelonia mydas)*. These four species of sea turtles are protected by the Convention on International Trade in Endangered Species (CITES). They are also listed as endangered or vulnerable in the Red Data Book by the International Union for the Conservation of Nature (IUCN). Kemp's ridley and leatherback were listed as endangered by the U. S. Endangered Species Act in 1973. The green turtle and the loggerhead were added to the list as threatened in 1978. A final rule to establish 9 Distinct Population Segments for the loggerhead sea turtle was established in 2001 (76 FR 58868). The Northwest Atlantic Ocean DPS is within the range of the proposed project. While, the Federal Government has designated critical habitat for nesting loggerheads in South Carolina (Federal Register/ Vol. 79, No. 132. July 10, 2014), there is no critical habitat designation for any sea turtle species within the area of the project.

Since the reproductive cycles of all sea turtles are similar, a generalized version encompasses all. Mating takes place offshore, and the turtles must only mate once to fertilize all eggs laid during the nesting season. When nesting, the female crawls onto the beach, usually at night, and digs a hole in the sand with her hind flippers. After laying about 100 (number of eggs vary among species) white, leathery eggs, she covers them and returns to the sea. A single female may nest several times a season, usually at 2-week intervals. The eggs incubate about 60 days, depending on the weather. Hatchlings dig out of the sand at night and make their way to the sea using light cues for guidance. Destruction of nests and hatchling mortality at sea are usually high. It appears sea turtles' high number of eggs per clutch and several nestings per season offset this high mortality rate. Nesting habits of the Kemp's ridley deviate from those of

other sea turtles. The Kemp's ridley is the only species that nests during the day. Most sea turtles do not nest every year. They return on either a 2 or 3-year cycle to the same general area or beach.

Of the four listed species of sea turtles, only the loggerhead is a regular nester in South Carolina. However, since 2015, 23 green sea turtles have nested on either Garden City Beach or Huntington State Park (www.seaturtle.org, SCDNR, 2022). No leatherback sea turtle nests have been recorded in the project area since 2010.

Table 2. Sea Turtle nesting records within the Project Area

	2015	2016	2017	2018	2019	2020	2021	2022
Loggerhead turtle	18	31	38	11	71	33	27	40
Green turtle	1	0	7	0	6	0	4	6
Total	19	31	45	11	78	33	31	46

Loggerhead Sea Turtle. The loggerhead is the third largest sea turtle with an average shell length of 5 feet and is by far the most common sea turtle species in the project area. Loggerheads have rich reddish-brown shells and yellow on their undersides. They have a worldwide distribution and are typically found in temperate and subtropical waters. Loggerheads usually leave the cold, coastal waters in the winter and are often seen foraging along the edge of the Gulf Stream. Loggerheads are omnivores and feed on crustaceans, mollusks, squid, jellyfish, fish, and plant materials. Their large skull provides for the attachment of strong jaw muscles for crushing conchs and crabs USFWS 2022b).

Loggerhead sea turtles regularly nest along the entire coast of South Carolina, usually from mid-May to August; however, nesting activity is greatest during June and July. Over the last 15 years the number of loggerhead sea turtle nests have been trending upward in South Carolina as a whole. Nesting is preferred on remote beaches and juveniles prefer to reside in bays and estuaries. Loggerheads are known to nest from one to seven times within a nesting season with an internesting interval averaging about 14 days and a mean clutch size of about 100 to 125 along the southeastern United States coast. Loggerheads are nocturnal nesters, but exceptions to this rule occur infrequently. Loggerhead hatchlings engage in a "swimming frenzy" for about 20 hours after they enter the sea, and that frenzy takes them about 22 to 28 kilometers offshore. Adult loggerheads become migratory for the purpose of breeding. Reported tag recoveries suggest a "migratory path" from Georgia to Cape Hatteras, North Carolina. No critical habitat is present within the study area.

Green sea turtle. The green sea turtle, the second largest sea turtle, and their name is derived from the color of their subdermal fat, not their shells, which are grayish in older animals. Green turtles are found in shallow flats and seagrass meadows during the day and return to scattered rock ledges, oysters beds, and coral reefs during the evening (USFWS 2022c). Green sea turtles are herbivorous and remain near pastures of turtle-preferred grasses that are not near their nesting beaches, therefore these turtles may migrate hundreds of miles to nest. Open

beaches with a sloping platform and minimal disturbance are required for nesting. Green turtles apparently have a strong nesting site fidelity and often make long distance migrations between feeding grounds and nesting beaches. Within the U.S., green turtles nest in small numbers in the U.S. Virgin Islands, Puerto Rico, Georgia, South Carolina, and North Carolina, and in larger numbers in Florida Hatchlings have been observed to seek refuge and food in Sargassum rafts. The nesting season varies with the locality. In the Southeastern U.S., it is roughly June through September. Nesting occurs nocturnally at 2, 3, or 4-year intervals. Only occasionally do females produce clutches in successive years.

Leatherback sea turtle. The leatherback is very different from the other sea turtle species. Instead of plates (scutes) on the shell, the leatherback's carapace has seven hard longitudinal ridges along the length of the back. Its rubber like covering is black with white spots and a pinkish white underside. Leatherbacks feed entirely on jellyfish, and they often travel long distances to keep up with large concentrations of this food source drifting in the ocean currents. No critical habitat is present within the study area (USFWS 2022d).

Kemp's ridley sea turtle. The smallest sea turtle that may be present in the project area is the Kemp's ridley turtle. The adult Kemp's ridley has an oval carapace that is almost as wide as it is long and is usually gray to olive-gray in color and the plastron is creamy tan in color. emp's ridley turtles inhabit shallow nearshore and inshore waters of the northern Gulf of Mexico, particularly in Texas and Louisiana. During winter, turtles in the northern Gulf may travel to deeper water (NMFS 1997; USFWS 2022e).

Kemp's ridleys are often found in waterbodies associated with salt marshes but nesting is essentially limited to the beaches of the western Gulf of Mexico, primarily in Tamaulipas, Mexico. In the US, nesting occurs primarily in Texas (especially Padre Island National Seashore), and occasionally in Florida, Alabama, Georgia, South Carolina and North Carolina (NMSF and USFWS 2013a). Neonatal Kemp's ridleys feed on Sargassum and infauna or other epipelagic species. Post-pelagic diets include various items such as mollusks, sea horses, cownose rays, jellyfish, crabs, tunicates and fish. Live bottom (sessile invertebrates attached to hard substrate) has been identified as a preferred habitat of neritic juveniles in the coastal waters of western Florida (NMFS and USFWS 2013a). Hatchlings may become entrained in Gulf of Mexico eddies and dispersed by oceanic surface currents, then enter coastal shallow water habitats when they reach about 20 cm in length. No critical habitat has been designated (USFWS 2006).

Factors impacting sea turtle nesting success. In general, no other factor contributes to egg mortality more than nest predation. A variety of natural and introduced predators such as raccoons, foxes, ghost crabs and ants prey on incubating eggs and hatchling sea turtles. Normally, it is expected that the raccoon (*Procyon lotor*) would be the principal predator, as it is throughout the coast, followed by fox and ghost crabs. Raccoons are known to patrol primary dune lines at night and dig up nests after they have been buried in the dune. Raccoons may take up to 96 percent of all nests deposited on a beach if there is no intervention. Any remaining eggs can be cleaned and then relocated; however, these small nests normally exhibit very low hatching success. In addition to the destruction of eggs, other predators may take considerable numbers of hatchlings just prior to or upon emergence from the sand (NMFS, USFWS, 2008).

Effects Determination

Sea turtle nesting is known to occur on both Garden City Beach and HBSP. The Murrells Inlet maintenance dredging project is currently planned to occur during sea turtle nesting season; however, this schedule could change due to funding constraints, contractual issues, inclement weather, equipment failure, or other unforeseen difficulties. Placement of sand on the beach could adversely affect any existing sea turtle nests and sea turtles attempting to nest. In order to avoid/minimize impacts to nesting sea turtles, the following precautions will be taken:

- Daily nesting surveys will be conducted starting either May 1 or 65 days prior to the start of construction, whichever is later. These surveys will be performed between sunrise and 9:00 A.M. and will continue until the end of the project, or September 30, whichever is earlier. Any nests found in the area that will be impacted by construction activities will be moved to a safe location. The nesting surveys and nest relocations will only be performed by people with a valid South Carolina DNR permit.
- The dredging contractor will provide nighttime monitoring along the beach where construction is taking place to ensure the safety of female turtles attempting to nest. If a sea turtle is sighted on an area of beach scheduled for fill, construction activities will cease until the turtle returns to the ocean. A buffer zone around the female will be imposed in the event of an attempt to nest.
- If construction activities occur during the period May 1 through October 31, use of heavy equipment will be limited to the area undergoing placement of material.
- Staging areas for equipment and supplies will be located off of the beach to the maximum extent possible.
- All on-beach lighting associated with the project will be limited to the minimum amount necessary around active construction areas to satisfy Occupational Safety and Health Administration (OSHA) requirements.
- The dredging contractor will use predator proof trash receptacles to minimize the presence of species that prey upon hatchlings.

Immediately after completion of the project, USACE will perform tilling on the project's front beach area of Garden City Beach to a depth of at least 24 inches in order to reduce compaction associated with the newly placed sand. Visual surveys for escarpments along the project area will be made immediately after completion of the project and prior to May 1 for 3 subsequent years, if needed.

Adherence to the above precautions should minimize effects to nesting sea turtles and emerging sea turtle hatchlings. The monitoring and relocation program will minimize potential adverse effects to nesting sea turtles. Completion of the project will recreate lost habitat and protect existing turtle nesting habitat as well as the structures on the island. However, because of the possibility of missing a sea turtle nest during the nest monitoring program or inadvertently breaking eggs during relocation, it has been determined that maintenance dredging of the Murrells Inlet federal navigation project **may affect, is likely to adversely affect the green sea turtle, leatherback sea turtle, Kemp's ridley sea turtle, and loggerhead sea turtle**.

6.3 American wood stork

American wood storks (*Mycteria americana*) are large, long-legged wading birds, about 50 inches tall, with a wingspan of 60 to 65 inches. The plumage is white except for black primaries and secondaries and a short black tail. The head and neck are largely unfeathered and dark gray in color. The bill is black, thick at the base, and slightly decurved. Immature birds have dingy gray feathers on their head and a yellowish bill (USFWS 2022f).

The wood stork is a highly colonial species usually nesting in large rookeries and feeding in flocks. Age at first breeding is 3 years but typically do so at 4. Nesting periods vary geographically. In north and central Florida, Georgia, and South Carolina, storks lay eggs from March to late May, with fledging occurring in July and August. Wood Storks nest in trees above standing water. They build nests in cypress swamps, in oaks in flooded impoundments, in mangroves, and in flooded areas with black gum and Australian pine. Almost any tree or shrub will do as long as standing water is present. Several nests are usually located in each tree. Wood storks have also nested in man-made structures. Storks lay two to five eggs, and average two young fledged per successful nest under good conditions (USFWS 2022f).

Wood storks are birds of freshwater and estuarine wetlands. They feed in freshwater marshes, narrow tidal creeks, or flooded tidal pools with water depths of around 4–12 inches. They tend to use open wetlands more frequently for foraging than closed canopy wetlands. Particularly attractive feeding sites are depressions in marshes or swamps where fish become concentrated during periods of falling water levels. Their primary diet consists of small fish from 1 to 6 inches long, especially topminnows and sunfish, and aquatic invertebrates. They also feed on seeds, amphibians, nestlings, and reptiles. Wood storks capture their prey by a specialized technique known as grope-feeding or tacto-location. Feeding often occurs in water 6 to 10 inches deep, where a stork probes with the bill partly open. When a fish touches the bill, it quickly snaps shut, swallowing the prey whole. To find prey they also push their feet up and down in the water or flick their wings to startle prey. Storks also visually search for prey, but more frequently use their bill to feel for it, especially in muddy waters. Wood storks use thermals to soar as far as 80 miles from nesting to feeding areas. Since thermals do not form in early morning, wood storks may arrive at feeding areas later than other wading bird species such as herons (USFWS 2022f).

Effects Determination

There is an active American wood stork colony on Huntington Beach State Park approximately 2 miles from the area of the project. Most of the work occurs in the deeper waters of Murrells Inlet and on the front beaches of Garden City and Huntington Beach State Park where there are no feeding areas. The placement area at the terminal west end of the south jetty at HBSP may occasionally be used as a feeding area by wood storks; however, during the project other foraging habitat in the area can be used. Feeding in the area of the south jetty will be able to resume upon completion of the project. Based on the above, it has been determined that maintenance dredging of the Murrells Inlet federal navigation project **may affect, but is not likely to adversely affect the American wood stork**.

6.4 Eastern black rail

The eastern black rail is a small, secretive marsh bird. Adult eastern black rails range from 10-15 centimeters in total length and have a wingspan of 22-28 cm. Eastern black rails weigh 35 grams (g) on average. Males and females are similar in size and adults are generally pale to blackish-gray, with a small blackish bill and bright red eyes. Overall, males are darker and have pale to medium gray throats, while females are lighter and have pale gray to white throats (USFWS 2018a; Watts 2016).

Eastern black rail habitat can be tidally or non-tidally influenced, and range in salinity from salt to brackish to fresh. In the northeastern United States, the eastern black rail can typically be found in salt and brackish marshes with dense cover but can also be found in upland areas of these marshes. Further south along the Atlantic coast, eastern black rail habitat includes impounded and unimpounded salt and brackish marshes. Eastern black rails are known to nest in salt marshes and impoundments within Georgetown County; however, the likelihood of nesting in the project area is unknown. Eastern black rail nesting primarily occurs from May to August. Nests are laid above the high tide line in areas that are only inundated during extreme lunar or wind tides. Eggs are laid in a bowl constructed of live and dead fine-stemmed emergent grasses, rushes, or other herbaceous plant species. The average clutch size is seven eggs. (USFWS 2018a; Watts 2016).

Effects Determination

It is unknown if eastern black rails occur in the immediate project area, however, should they occur, they would be found in the salt marsh areas around Murrells Inlet away from the deeper waters where dredging will occur, and away from the placement areas on the front beach and at the terminal west end of the south jetty. Based on the above, it has been determined that maintenance dredging of the Murrells Inlet federal navigation project **may affect, but is not likely to adversely affect the eastern black rail**.

6.5 Piping plover and piping plover critical habitat

Piping plovers (*Charadrius melodus*) are small shorebirds approximately six inches long with sand-colored plumage on their backs and crown, and white under parts. Breeding birds

have a single black breast band, a black bar across the forehead, bright orange legs and bill, and a black tip on the bill. During the winter, the birds lose the black bands, the legs fade to pale yellow, and the bill becomes mostly black.

The piping plover breeds on the northern Great Plains, in the Great Lakes, and along the Atlantic coast (Newfoundland to North Carolina); and winters on the Atlantic and Gulf of Mexico coasts from North Carolina to Mexico, and in the Bahamas West Indies. They are an occasional visitor along the South Carolina coast during the fall and winter months; however, there are no large wintering concentrations in the state. Piping plovers are considered threatened species under the Endangered Species Act of 1973, as amended, when on their wintering grounds. The species is not known to nest in the project area; however, it is known to winter in the project area.

The USFWS has designated 15 areas along the South Carolina (SC) coast as critical habitat for the wintering populations of the piping plover. One of these areas (Unit SC-3) is at Huntington Beach State Park and the southern tip of Garden City Beach. The description for critical habitat unit SC-3 is given below:

> "*Unit SC–3: Murrells Inlet/Huntington Beach. 135 ha (334 ac) in Georgetown County. The majority of the unit is within Huntington Beach State Park. This unit extends from the southern tip of Garden City Beach, just south of the groins (a rigid structure or structures built out from a shore to protect the shore from erosion or to trap sand) north of Murrells Inlet from MLLW to where densely vegetated habitat or developed structures, not used by the piping plover, begins and where the constituent elements no longer occur stopping perpendicular with the southern end of Inlet Point Drive. It includes from MLLW south of Murrells Inlet to the northern edge of North Litchfield Beach approximately 4.5 km (3.0 mi). The unit includes the MLLW from the Atlantic Ocean up to where densely vegetated habitat, not used by the piping plover, begins and where the constituent elements no longer occur. The lagoon at the north end of Huntington Beach State Park is also included."*

Effects Determination

Direct loss of nests from the placement of the dredged material should not occur, as the species is not known to nest in the project area. Piping plover foraging distribution on the beach may be altered as beach food resources may be affected by placement of material along the project area. Such disruptions will be temporary and of minor significance since the birds can easily fly to other loafing and foraging locations. Since dredging of the entrance channel will transform approximately 2 acres of land above mean lower-low water (MLLW) at the southern tip of Garden City Beach into open water, there will be a loss of piping plover critical habitat in this area. However, placement of material at the terminal west end of the south jetty at HBSP will result in creation of approximately 10 acres of additional habitat in this area that will offset the loss at Garden City Beach. The placement of dredged material into the intertidal zone along the front beach of HBSP will provide additional foraging habitat for the wintering piping plover in this area. Additionally, since the grain size is suitable for placement on these areas, it is

unlikely that the benthic community structure will significantly differ between pre and post construction activities. Previous studies of beach nourishment projects have shown a short term impact to the beach and surf zone infaunal community with a recovery within six months (SCDNR, 2009). Based on the above, it has been determined that maintenance dredging of the Murrells Inlet federal navigation project **may affect, but is not likely to adversely affect the piping plover and may affect, but is not likely to adversely modify piping plover critical habitat**.

6.6 Rufa Red knot and proposed rufa red knot critical habitat

Red knots (*Calidris canutus rufa*) are medium-sized shorebirds approximately 9 to 11 inches long. Red knots have a proportionately small head, small eyes, and short neck, and a black bill that tapers from a stout base to a relatively fine tip. The bill length is not much longer than head length. Legs are short and typically dark gray to black, but sometimes greenish in juveniles or older birds in nonbreeding plumage. Nonbreeding plumage is dusky gray above and whitish below. Juveniles resemble nonbreeding adults, but the feathers of the scapulars (shoulders) and wing coverts (small feathers covering base of larger feathers) are edged with white and have narrow, dark bands, giving the upperparts a scalloped appearance. Breeding plumage of red knots is a distinctive rufous (red). The face, prominent stripe above the eye, breast, and upper belly are a rich rufous-red to a brick or salmon red, sometimes with a few scattered light feathers mixed in. The feathers of the lower belly and under the tail are whitish with dark flecks. Upperparts are dark brown with white and rufous feather edges; outer primary feathers are dark brown to black. Females are similar in color to males, though the rufous colors are typically less intense, with more buff or light gray on the dorsal (back) parts (USFWS, 2013a).

Red knots generally nest in dry, slightly elevated tundra locations, often on windswept slopes with little vegetation. Breeding areas are located inland, but near arctic coasts. Nests may be scraped into patches of mountain avens (*Dryas octopetala*) plants, or in low spreading vegetation on hummocky ground containing lichens, leaves, and moss. Female red knots lay only one clutch (group of eggs) per season, and as far as is known, do not lay a replacement clutch if the first is lost. The usual clutch size is four eggs, though three-egg clutches have been recorded. The incubation period lasts approximately 22 days from the last egg laid to the last egg hatched, and both sexes participate equally in egg incubation. After the eggs hatch, red knot chicks and adults quickly move away from high nesting terrain to lower, wetland habitats. Young are precocial, leaving the nest within 24 hours of hatching and foraging for themselves. Females are thought to leave the breeding grounds and start moving south soon after the chicks hatch in mid-July. Thereafter, parental care is provided solely by the males, but about 25 days later (around August 10) they also abandon the newly fledged juveniles and move south. Not long after, they are followed by the juveniles (USFWS, 2013a).

Red knots are a specialized molluscivore, eating hard-shelled mollusks, sometimes supplemented with easily accessed softer invertebrate prey, such as shrimp and crab-like organisms, marine worms, and horseshoe crab eggs. Red knots do not necessarily prefer hard-shelled mollusks (in fact they do not, when given the choice), but they are specialized in finding and processing such prey. Due to this specialization, red knots have less ability to find the

actively crawling soft-bodied worms and small crustaceans on which other sandpiper species specialize. Foraging activity is largely dictated by tidal conditions, as red knots rarely wade in water more than 0.8 to 1.2 in deep. Due to bill morphology, red knots are limited to foraging on only shallow-buried prey, within the top 0.8 to 1.2 in of sediment. Red knots and other shorebirds that are long-distance migrants must take advantage of seasonally abundant food resources at migration stopovers to build up fat reserves for the next non-stop on a long-distance flight. During the migration period, although foraging red knots can be found widely distributed in small numbers within suitable habitats, birds tend to concentrate in those areas where abundant food resources are consistently available from year to year. On the breeding grounds, the red knot's diet consists mostly of terrestrial invertebrates, though early in the season, before insects and other macroinvertebrates are active and accessible, red knots will eat grass shoots, seeds, and other vegetable matter (USFWS, 2013a).

Red knots are restricted to ocean coasts during winter, and occur primarily along the coasts during migration. Habitats used by red knots in migration and wintering areas are similar in character, generally coastal marine and estuarine (partially enclosed tidal area where fresh and saltwater mixes) habitats with large areas of exposed intertidal sediments. In North America, red knots are commonly found along sandy, gravel, or cobble beaches, tidal mudflats, salt marshes, shallow coastal impoundments and lagoons, and peat banks. In the southeastern U.S., red knots forage along sandy beaches during spring and fall migration from Maryland through Florida. In addition to the sandy beaches, red knots also forage along peat banks and tidal mudflats during migration. Along the Atlantic coast, dynamic and ephemeral features are important red knot habitats, including sand spits, islets, shoals, and sandbars, often associated with inlets. From South Carolina to Florida, red knots are found in significantly higher numbers at inlets than at other coastal sites. In the general project area, red knots are most abundant during the spring, northward migration (USFWS, 2013a).

Each year red knots make one of the longest distance migrations known in the animal kingdom, traveling up to 19,000 miles annually. The red knot is a regular visitor along the South Carolina coast during both the spring and fall migrations. Flocks of over 1000 birds have been observed in the spring with lesser numbers being observed in the fall. The red knot also uses the South Carolina coast as a wintering area. In the mid-Atlantic, southbound red knots start arriving in July. Numbers of adults peak in mid-August and most depart by late September, although data shows that some birds stay through November. Migrant juveniles begin to appear along the U.S. Atlantic coast in mid-August, occurring in much lower numbers and scattered over a much wider area than adults. Several studies suggest that adult red knots fly directly to South America from the eastern seaboard of the United States, arriving in northern South America in August (USFWS, 2013a). Some red knots from the Southeast-Caribbean wintering area, and from South American wintering areas, utilize spring stopovers along the Southeast United States, from Florida to North Carolina. The length of stopover at these locations is generally believed to be brief; although data exist showing that some stopovers last for several weeks. Red knots typically use mid-Atlantic stopovers from late April through late May or early June.

The primary threats to the red knot are loss of both breeding and non-breeding habitat; reduced prey availability throughout the non-breeding range; potential for disruption of natural

predator cycles on the breeding grounds; and increasing frequency and severity of asynchronies (i.e., mismatches) in the timing of their annual migratory cycle relative to favorable food and weather conditions (USFWS, 2013b).

The USFWS has proposed 25 areas along the South Carolina (SC) coast as critical habitat for red knots. Two of these areas (Unit SC-1 and Unit SC-2) are on Garden City Beach and HBSP. The descriptions for proposed critical habitat units SC-1 and SC-2 are given below:

> "*Unit SC–1 consists of approximately 616 ac (249 ha) of occupied coastal shoreline habitat in Georgetown and Horry Counties. The northern boundary of the unit begins at the Garden City pier in Horry County and extends southwest to the northern side of Murrells Inlet in Georgetown County. The unit includes all emergent land from MLLW (which includes the highly dynamic shoreline and sandy intertidal zone that is covered at high tide and uncovered at low tide) to the toe of the dunes or where densely vegetated habitat, not used by the red knot, begins. This unit also includes the ephemeral, emergent shoals (sand bars) within the flood-tidal and ebb-tidal deltas associated with the northeastern side of Murrells Inlet's navigable channel."*
>
> *Unit SC–2 consists of approximately 1,634 ac (661 ha) of occupied coastal shoreline habitat in Georgetown County. The unit boundary begins on the southern side of Murrells Inlet southwest and extends southwest to the northern side of Midway Inlet. The unit includes all emergent land from MLLW (which includes the highly dynamic shoreline and sandy intertidal zone that is covered at high tide and uncovered at low tide) to the toe of the dunes or where densely vegetated habitat, not used by the red knot, begins. This unit also includes the ephemeral, emergent shoals (sand bars) within the flood-tidal and ebb-tidal deltas associated with the southwestern side of Murrells Inlet's navigable channel and the northeastern side of Midway Inlet's navigable channel.*

Effects Determination

Direct loss of nests from the placement of dredged material will not occur since the species does not nest in the project area. Red knot foraging distribution on the beach may be altered as beach food resources may be affected by placement of material along the project area. Such disruptions will be temporary and of minor significance since the birds can easily fly to other loafing and foraging locations. Additionally, since the grain size is suitable for placement on these areas, it is unlikely that the benthic community structure will significantly differ between pre and post construction activities. Previous studies of beach nourishment projects have shown a short term impact to the beach and surf zone infaunal community with a recovery within six months (SCDNR, 2009). Since dredging of the entrance channel will transform approximately 2 acres of land above mean lower-low water (MLLW) at the southern tip of Garden City Beach into open water, there will be a loss of red knot critical habitat in this area. However, placement of material at the terminal west end of the south jetty at HBSP will result in creation of approximately 10 acres of additional habitat in this area that will offset the loss at Garden City Beach. The placement of dredged material into the intertidal zone along the front

beach of Garden City Beach and HBSP will provide additional foraging habitat for the red knots in this area. Based on the above, it has been determined that maintenance dredging of the Murrells Inlet federal navigation project **may affect, but is not likely to adversely affect the rufa red knot and may affect, but is not likely to adversely modify proposed rufa red knot critical habitat**.

6.7 Seabeach Amaranth

Seabeach amaranth (*Amaranthus pumilus*) is an annual plant historically native to the barrier island beaches of the Atlantic coast from Massachusetts to South Carolina. No other vascular plant occurs closer to the ocean. The species was Federally listed as threatened by the U.S. Fish and Wildlife Service in 1993. Seabeach amaranth is listed as threatened and of national concern in South Carolina.

Germination takes place over a relatively long period of time, generally beginning in April and continuing at least through July (USACE, 2001). Upon germinating, this plant initially forms a small-unbranched sprig but soon begins to branch profusely into a clump, often reaching a foot in diameter and consisting of 5 to 20 branches. Occasionally a clump may get as large as 3 feet or more across, with hundreds of branches. The stems are fleshy and pink-red or reddish, with small, rounded leaves that are 1.3 to 2.5 centimeters in diameter. The leaves are clustered toward the tip of the stem, are normally a somewhat shiny, spinach-green color, and have a small notch at the rounded tip. Flowers and fruits are relatively inconspicuous and are borne in clusters along the stems. Flowering begins as soon as plants have reached sufficient size, sometimes as early as June in the Carolinas but more typically commencing in July and continuing until their death in late fall or early winter. Seed production begins in July or August and reaches a peak in most years in September; it likewise continues until the plant dies.

Seabeach amaranth occurs on barrier island beaches, where its primary habitat consists of overwash flats at accreting ends of islands and lower foredunes and upper strands of non-eroding beaches. It occasionally establishes small temporary populations in other habitats, including sound side beaches, blowouts in foredunes, and in dredged material placed for beach re-nourishment or disposal. Seabeach amaranth appears to be intolerant of competition and does not occur on well-vegetated sites. The species appears to need extensive areas of barrier island beaches and inlets, functioning in a relatively natural and dynamic manner. These characteristics allow it to move around in the landscape as a fugitive species, occupying suitable habitat as it becomes available (USACE, 2001).

Historically, seabeach amaranth occurred in 31 counties in 9 states from Massachusetts to South Carolina. It has been eliminated from six of the States in its historic range. The only remaining large populations are in New York and North Carolina. Surveys in South Carolina found that the number of plants along the coast dropped by 90% (from 1,800 to 188) as a result of Hurricane Hugo, subsequent winter storms and beach rebuilding projects that occurred in its wake. South Carolina populations are still low with an annual average from 2007 to 2016 of 36.8 plants. The remaining populations in areas with suitable habitat are in constant danger of extirpation from habitat destruction, disease, predation, and other natural and anthropogenic factors (USFWS 2018b). At the present time, Huntington Beach State Park staff propagate

seabeach amaranth on the front beach areas of the park. Seabeach amaranth has historically been present on the southern spit of Garden City Beach; however, a seabeach amaranth survey conducted by USACE and HBSP personnel on September 8, 2022, did not find any plants.

Effects Determination

While the extent of the in-situ seed bank that remains is unknown, a portion, if not all, of the seed bank that supplies the sand spit on Garden City Beach will be removed and disposed of on either Garden City Beach or HBSP. Since the disposal of the dredged material on beaches seems to maintain desirable habitat for the species, the seeds transported to Garden City Beach or HBSP may germinate and thrive in the newly deposited material. If this is the case, the proposed project will be beneficial to the long-term survival potential of the species in Murrells Inlet area.

Even though a portion of the sand spit on Garden City Beach will be removed, it will most likely continue its accretion/migration into Murrells Inlet for the foreseeable future. As the sand spit accretes, habitat for sea-beach amaranth will again be created up until such time as maintenance dredging becomes necessary. This accreted area may be repopulated by seabeach amaranth seeds that either remain in the sand spit after the dredging is completed, wash in from material being placed on Garden City Beach north of the jetty, or are exposed by dredging of the sand spit. Based on the above, it has been determined that maintenance dredging of the Murrells Inlet federal navigation project **may affect, is likely to adversely affect seabeach amaranth**.

7.0 SUMMARY OF CONSERVATION MEASURES

West Indian Manatee: When work occurs during the manatee migration period, personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing manatees. The Contractor may be held responsible for any manatee harmed, harassed, or killed as a result of vessel collisions or construction activities. Failure of the Contractor to follow these specifications is a violation of the Endangered Species Act and could result in prosecution of the Contractor under the Endangered Species Act or the Marine Mammals Protection Act. The standard manatee conditions will be implemented from 15 April to 31 October. The Contractor will be instructed to take necessary precautions to avoid any contact with manatees. If manatees are sighted within 100 yards of the dredging area, all appropriate precautions will be implemented to insure protection of the manatee. The Contractor will stop, alter course, or maneuver as necessary to avoid operating moving equipment (including watercraft) any closer than 100 yards of the manatee. Operation of equipment closer than 50 feet to a manatee will necessitate immediate shutdown of that equipment.

Sea Turtles: If work occurs during sea turtle nesting the following conservation measures will be implemented:

- A beach monitoring and nest relocation program for sea turtles will be implemented. This program will include daily patrols of sand placement areas at sunrise, relocation of any nests laid in areas to be impacted by sand placement, and monitoring of hatching success of the relocated nests. Sea turtle nests will be relocated to an area suitable to both

the USFWS and the SCDNR. USACE will perform any necessary maintenance of beach profile (shaping or knocking down escarpments) during construction.

- During construction of this project, staging areas for construction equipment will be located off the beach to the maximum extent practicable. Nighttime storage of construction equipment not in use shall be off the beach to minimize disturbance to sea turtle nesting and hatching activities. In addition, all dredge pipes that are placed on the beach will be located as far landward as possible without compromising the integrity of the existing or reconstructed dune system. Temporary storage of pipes will be off the beach to the maximum extent possible. Temporary storage of pipes on the beach will be in such a manner so as to impact the least amount of nesting habitat and will likewise not compromise the integrity of the dune systems (placement of pipes perpendicular to the shoreline will be recommended as the method of storage).

- During construction of this project, all on-beach lighting associated with the project will be limited to the immediate area of active construction only. Such lighting will be shielded, low-pressure sodium vapor lights to minimize illumination of the nesting beach and nearshore waters. Red filters will be placed over vehicle headlights (i.e., bulldozers, front end loaders). Lighting on offshore equipment will be similarly minimized through reduction, shielding, lowering, and appropriate placement of lights to avoid excessive illumination of the water, while meeting all U.S. Coast Guard and OSHA requirements. Shielded, low pressure sodium vapor lights will be highly recommended for lights on any offshore equipment that cannot be eliminated.

8.0 SUMMARY OF EFFECT DETERMINATIONS

This assessment has examined the potential impacts of the proposed project on the habitat and listed species of plants and animals that are, or have been, present in the project area. Both primary and secondary impacts to habitat have been considered. Based on this analysis, the following determinations have been made.

- It has been determined that maintenance dredging of the Murrells Inlet federal navigation project may affect but is not likely to adversely affect the West Indian manatee.
- It has been determined that maintenance dredging of the Murrells Inlet federal navigation project may affect, is likely to adversely affect the green sea turtle, leatherback sea turtle, Kemp's ridley sea turtle, and loggerhead sea turtle.
- It has been determined that the maintenance dredging of the Murrells Inlet federal navigation project may affect but is not likely to adversely affect the American wood stork.
- It has been determined that maintenance dredging of the Murrells Inlet federal navigation project may affect but is not likely to adversely affect the Eastern black rail.
- It has been determined that maintenance dredging of the Murrells Inlet federal navigation project may affect, but is not likely to adversely affect the piping plover and may affect, but is not likely to adversely modify piping plover critical habitat.

- It has been determined that maintenance dredging of the Murrells Inlet federal navigation project may affect, but is not likely to adversely affect the rufa red knot plover and may affect, but is not likely to adversely modify proposed rufa red knot critical habitat.
- It has been determined that maintenance dredging of the Murrells Inlet federal navigation project may affect, is likely to adversely affect seabeach amaranth.

9.0 REFERENCES

National Marine Fisheries Service and U.S. Fish and Wildlife Service. 2008. Recovery Plan for the Northwest Atlantic Population of the Loggerhead Sea Turtle (Caretta caretta), Second Revision. National Marine Fisheries Service, Silver Spring, MD

National Marine Fisheries Service, Office of Protected Species. 1997. Regional Biological Opinion for Hopper Dredging Along South Atlantic Coast. Silver Spring, Maryland.

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U.S. Army Corps of Engineers. 2001. Biological Assessment for the Operations and Maintenance Dredging and Disposal for the Murrells Inlet Project, Georgetown County, South Carolina, April 2001.

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U.S. Fish and Wildlife Service. 2018b. Seabeach amaranth (*Amaranthus pumilus*) 5-Year Review: Summary and Evaluation. June 2018. Raleigh, North Carolina.

U.S. Fish and Wildlife Service. 2022a. West Indian manatee (*Trichechus manatus*), Species profile page (*https://ecos.fws.gov/ecp/species/4469*). Accessed on August 4, 2022.

U.S. Fish and Wildlife Service. 2022b. Loggerhead sea turtle (*Carreta carreta*), Species profile page (*https://ecos.fws.gov/ecp/species/1110*). Accessed on September 22, 2022.

U.S. Fish and Wildlife Service. 2022c. Green sea turtle (*Chelonia mydas*), Species profile page (*https://ecos.fws.gov/ecp/species/6199*). Accessed on September 22, 2022.

U.S. Fish and Wildlife Service. 2022d. Leatherback sea turtle (*Dermochelys coriacea*), Species profile page (*https://ecos.fws.gov/ecp/species/1493*). Accessed on September 22, 2022.

U.S. Fish and Wildlife Service. 2022e. Kemp's ridley sea turtle (*Lepidochelys kempii*), Species profile page (*https://ecos.fws.gov/ecp/species/5523*). Accessed on September 22, 2022.

U.S. Fish and Wildlife Service. 2022f. Wood stork (*Mycteria americana*), Species profile page (https://ecos.fws.gov/ecp/species/B06O). Accessed on September 22, 2022.

Watts, B. D. 2016. Status and distribution of the eastern black rail along the Atlantic and Gulf Coasts of North America. The Center for Conservation Biology Technical Report Series, CCBTR-16-09. College of William and Mary/Virginia Commonwealth University, Williamsburg, VA. 148 pp

Appendix D
Programmatic EFH Assessment
(Placeholder)

Appendix E
Coastal Zone Consistency Determination

From: Stout, Christopher
To: Hughes, Andrea W CIV USARMY CESAC (USA)
Cc: Fritz, Erica CIV USARMY CESAC (USA)
Subject: [Non-DoD Source] RE: Murrells Inlet Dredging
Date: Wednesday, July 13, 2022 9:34:19 PM
Attachments: image001.png

Andrea

If the federal project is not changing and there are no new coastal resources identified in the project area then the CZC concurrence from 2016 would still be valid. For the coastal resources, that would include any new threatened or endangered species or designated critical habitats for those species. To the best of my knowledge, I believe that is not the case for this project, but if something comes up with your coordination with USFWS, NOAA NMFS, and/or SCDNR please let me know and we can work to update the CZC review for that new resource.

If you have any other questions, please feel free to contact me.

Regards
Chris

Christopher M. Stout
Manager, Coastal Zone Consistency Section
S.C. Dept. of Health & Environmental Control
Office: (843) 953-0691
Mobile: (843) 340-3112
Connect: www.scdhec.gov Facebook Twitter

From: Hughes, Andrea W CIV USARMY CESAC (USA) <Andrea.W.Hughes@usace.army.mil>
Sent: Friday, July 8, 2022 12:37 PM
To: Stout, Christopher <stoutcm@dhec.sc.gov>
Cc: Fritz, Erica CIV USARMY CESAC (USA) <Erica.Fritz@usace.army.mil>
Subject: Murrells Inlet Dredging

Hi Chris,

We are updating NEPA for maintenance dredging of Murrells Inlet and I have been asked to confirm that the existing CZC (original and revised attached) is still valid. We are not planning to dredge outside the original boundaries and placement will be the same (Huntington Beach State Park and Garden City Beach). I'm copying Erica Fritz as she is the biologist responsible for drafting the NEPA documents.

Hope you are doing well.

Thanks,

Andrea

Andrea W. Hughes
Biologist, Planning and Environmental Branch
U.S. Army Corps of Engineers, Charleston District
69-A Hagood Avenue
Charleston, South Carolina 29403
843.329.8145

November 21, 2016

Lt. Colonel Matthew W. Luzzatto
District Engineer
United States Army Corps of Engineers
69A Hagood Avenue
Charleston, S. C. 29403

Attn: Jesse Helton

Re: Modified Conditional Concurrence to Include Emergency Measures, Federal Consistency Review for USACE Murrell's Inlet Federal Navigation Channel Dredging and Sand Placement (CZC-16-0961)

Dear Colonel Luzzatto:

The South Carolina Department of Health and Environmental Control, Ocean and Coastal Resources Management (SCDHEC OCRM) again extends it appreciation for continued close coordination between Federal and State staff on the Murrells Inlet Federal Navigation Channel Dredging project (CZC-16-0961) pursuant to 15 C.F.R. § 930 Subpart C, Federal Consistency regulations associated with the Coastal Zone Management Act of 1972 (CZMA) as amended. Under the CZMA, federal activities which may have reasonably likely effects on any land or water use or natural resource of the coastal zone, regardless of the location, must be consistent to the maximum extent practicable with the enforceable policies of the State's federally-approved Coastal Zone Management Program.

The SCDHEC OCRM conditionally concurred with the consistency determination for the above referenced project on November 15, 2016. We are in receipt of the request for the modified concurrence with proposed drawings to take emergency measures needed to protect the structural integrity of the south jetty at Murrell's inlet dated and received electronically on November 18, 2016.

South Carolina's Coastal Management Policy for Dredged Material Disposal (1)(c) does not allow for blocking natural channels with dredge material. However, pursuant to 15 C.F.R. § 930.32 (3)(b), a federal agency may deviate from full consistency with an approved management program when such deviation is justified because of an emergency or other unforeseen circumstance which presents the federal agency with a substantial obstacle that prevents complete adherence to the approved program. The regulations encourage the federal agency to consult with the State prior to undertaking the activity. This consultation has been accomplished. The State of South Carolina's Coastal Management Program accepts the United States Army Corps of Engineers' technical assessment that the newly breached inlet behind the jetty as a result of Hurricane Matthew will put the structure at significant risk, thus in turn risking safe navigation and a significant public investment. The impacts from Hurricane Matthew in the project area have presented a substantial obstacle and under these circumstances, we accept the revised conceptual project drawing, and modify the conditional concurrence to remove the first condition which did not allow for filling of the newly breached inlet. The revised conditional concurrence follows:

SCDHEC OCRM Decision, SCCZMP Enforceable Policies and Conditions:

Pursuant to 15 C.F.R. § 930.4, SCDHEC ***conditionally concurs*** with the determination that the project is consistent to the maximum extent practicable with the following conditions below.

Applicable Enforceable Policies of the SCCZMP: (1) Wildlife and Fisheries Management; (2) Dredging; (3) Erosion Control; (4) Geographic Areas of Particular Concern; (5) S.C. Code Ann. § 48-39-20; (6) S.C. Code Ann. § 48-39-30; (7) S.C. Code Ann. § 48-39-80; (8) S.C. Code Ann § 48-39-150, (9) S.C. Ann. Regs 30-12(G); (10) S.C. Ann. Regs 30-13(L)); and (11) S.C. Ann. Regs 30-13(N)(2)

(A) Wildlife and Fisheries Resources:

1. To lessen impacts on fish, wildlife and their habitats, dredged material from Inner Shoal B may only be placed along the eroding shoreline at the north end of Huntington State Beach Park (as proposed) and not on the marsh side of the island, where significant shellfish resources could be adversely affected by the resuspension of fine sediments.

2. All precautionary measures and conditions as specifically referenced in the comment letter of SCDNR dated August 26, 2016, will be taken to protect listed aquatic and terrestrial migratory and spawning species and habitats of concern. Any monitoring reports shall also be provided to the SCDHEC OCRM CZC Section.

3. Appropriate measures will be taken to protect the integrity of migratory and beach-nesting birds of State concern, with particular emphasis, but not limited to Piping Plovers and Red Knots during the course of the project and while conducting post-construction practices on the beach and dune system regarding compaction testing and tilling, escarpment remediation, and any sand fencing/establishment of vegetation in relation to sea turtle conservation measures.

(B) Dredged Material:

4. Prior to construction or maintenance, the USACE must specify quality control measures including:
   (a) A description of the means and limits by which the material quality will be assessed during and after construction;
   (b) A definition of material quality that would require removal or screening of material from the beach; and,
   (c) A reasonable timetable for removal of the material and restoration.

5. The beach compatibility and quality of the material placed upon the beach must be monitored during construction operations by persons who are qualified to assess the material. Monitors will report immediately to those persons with the authority to suspend or modify the work if a determination is made that unsuitable material is being placed on the beach.

6. An assessment of fill material is recommended to be conducted within 30 days of project completion with at least 10 random samples taken and analyzed for sand grain size distribution, percent of shell composition and color. Any report detailing results of the analysis shall be submitted to the natural resource agencies within 60 days of construction.

7. A post-construction survey (as-built) is required to be submitted to SCDHEC OCRM within 60 days of project completion.

Pursuant to 15 C.F.R. § 930.4, if the USACE does not agree to the above conditions, then all parties shall treat this conditional concurrence letter as an objection.

The SCDHEC concurrence relies on the following policies contained within SCCZMP: Wildlife and Fisheries Management; Dredging (*Dredging and Spoil Disposal*); Erosion Control (*General Erosion Control, Artificial Beach Nourishment*), the policies associated with Activities in Areas of Special Resource Significance (Barrier Islands, Dune Areas), Geographic Areas of Particular Concern (GAPC) and the priority of uses associated with GAPC's in addition to S.C. Annotated Code § 48-39-10 et seq and S.C. Regulations R 30-1 *et seq*.

Please contact me if you have any questions about this modified concurrence or the conditions within it. It is our intention to work with the Charleston District to address any concerns that the USACE may have as to how this project can be consistent with the enforceable policies of the SCCZMP.

Sincerely,

Jeannie Lewis

Jeannie Lewis
Project Manager, Coastal Zone Consistency Section
Regulatory Division – SCDHEC OCRM
1362 McMillan Avenue, Suite 400
Charleston, S. C. 29405
843-953-0243
lewisaj@dhec.sc.gov

Cc: SCDHEC- Curtis Joyner, Chris Stout, Heather Preston, Chuck Hightower
SCDNR- Priscilla Wendt
USFWS- Mark Caldwell, Melissa Bimbi
NOAA- Pace Wilbur (NMFS)

Healthy People. Healthy Communities.

November 15, 2016

Mr. Jesse Helton
Charleston District Army Corps of Engineers
Planning and Environmental Branch
69A Hagood Avenue
Charleston, S. C. 29403

Re: Federal Consistency Review for USACE Murrell's Inlet Federal Navigation Channel Dredging and Sand Placement (CZC-16-0961)

Dear Mr. Helton:

Thank you for coordinating with South Carolina's Department of Health and Environmental Control, Ocean and Coastal Resources Management (SCDHEC OCRM) on the Murrells Inlet Federal Navigation Channel Dredging project (CZC-16-0961) pursuant to 15 C.F.R. § 930 Subpart C, Federal Consistency regulations associated with the Coastal Zone Management Act of 1972 (CZMA) as amended. Under the CZMA, federal activities which may have reasonably likely effects on any land or water use or natural resource of the coastal zone, regardless of the location, must be consistent to the maximum extent practicable with the enforceable policies of the State's federally-approved Coastal Zone Management Program.

The SCDHEC OCRM is in receipt of the consistency determination from the US Army Corps of Engineers (USACE) dated and received electronically on July 27, 2016, and amended on September 27, 2016 for the dredging of and placement of material from the Federal Navigation Channel at Murrell's Inlet, Georgetown County, South Carolina. Accompanying the determination and amended project were electronic links to the supporting materials contained in the Draft Environmental Assessment (Draft EA), dated July 2016 and the Final EA dated May 2001. The USACE and SCDHEC offices of Ocean and Coastal Resource Management and 401 Water Quality Certification and Wetlands published public notice inviting comment on the project for a 30 day period on July 29, 2016 and again for a 10 day period beginning on September 30, 2016. Due to the need for a second public notice to encompass all dredging activities and sand placement and also due to impacts from Hurricane Matthew, SCDHEC notified the USACE that a project decision would be rendered on or before November 15, 2016 in an effort to meet dredge mobilization timeframes.

You may consider this response a ***conditional concurrence*** that the project is consistent to the maximum extent practicable with the enforceable policies of the South Carolina Coastal Zone Management Program pursuant to 15 C.F.R. § 930.4. This certification is issued for this project at this time and should not be considered an ongoing certification.

Please note that supplemental coordination pursuant to 15 C.F.R. § 930.46 will be required for the project if it is found before the project has begun that the project will affect any coastal use or resource substantially different than originally described. Substantially different effects are

reasonably foreseeable if the Corps makes substantial changes to the project or if there are new circumstances or information relevant to the SCCZMP's enforceable policies. As examples, but not fully exhaustive, the State of South Carolina would regard changes in the time of year, borrow site, placement area, sediment characteristics, or a significant change in the amount of material dredged as substantial changes to the project. Given that information for this project is in draft form and the conditions may have changed significantly as a result of Hurricane Matthew which struck the South Carolina Coast on October 8, 2016, SCDHEC OCRM should be informed of project meetings, scoping sessions, pre-construction meetings, site visits/consultations, etc. ***If there are future modifications to the project which affect any coastal use or resource substantially different from those reviewed by the SCCZMP, a consistency determination shall be submitted to the SCCZMP pursuant to 15 C.F.R. § 930.31(e).***

Project Description: Authorization and Summary (from the July 2016 Draft EA and May 2001 Final EA):

The Murrells Inlet Federal Navigation Channel was authorized by the House Committee on Public Works on 10 November 1971 and the Senate Committee on Public Works on 18 November 1971, under authority of Section 201, P.L. 89-298, and 1965 Flood Control Act. Project construction initiated in September 1977 and completed in August 1981. The project authorized the construction of two jetties and the construction of a deposition basin, an entrance channel, two inner channels (Inner Channel A and Inner Channel B, respectively) and a turning basin. The initial project provided for an Entrance Channel 300 feet wide, 10 feet deep and extends 3,900 feet from –12-foot ocean contour. Inner Channel A is 200 feet wide, 10 feet deep and extends from the entrance channel to the mouth of Main Creek, approximately 2000 feet. Inner Channel B is 90 feet wide, 8 feet deep and extends to an old Army crash boat dock where it terminates with a turning basin 300 feet long and 150 feet wide. The Auxiliary Channel is 200 feet wide, 10 feet deep and is approximately 1000 feet long. The Entrance Channel is stabilized by ocean jetties extending seaward 3,445 feet and 3,319 feet on the north and south sides of the Inlet, respectively. The north jetty was constructed with a weir section at the north end to allow for passage of littoral drift traveling essentially between the shoreline and the –4-foot contour. Inside the north jetty is a deposition basin that has the capacity to hold up to 600,000 cubic yards of material. The project resulted in approximately 1,103,300 cubic yards being initially excavated. The project also authorized regular operation and maintenance (O&M) dredging, with disposal of material on Garden City Beach and Huntington Beach State Park. The last dredging was conducted in 2002, when approximately 680,000 cubic yards of material was dredged from both the entrance channel and deposition basin and place on Garden City Beach and Huntington Beach State Park. Maintenance dredging has been previously performed in 1988 and 2001.

The proposed action includes excavation and disposal of 25,000 cubic yards of material dredged from a one and one eighth acre of the Murrells Inlet Federal Navigation Channel near Marlin Quay Marina. The material will be excavated by using hydraulic pipeline cutterhead dredge and deposited near the terminal end of the south jetty at Huntington Beach State Park. This material will be used to protect the jetty and restore lost shorebird habitat. The project also involves the use of a hydraulic pipeline cutterhead to dredge beach compatible sand from the federal navigation channel and the deposition basin located near the north jetty. Approximately 478,000 cy of material will be placed along approximately 8,976 feet of shoreline along Garden City Beach and approximately 80,000 cy of material will be placed along approximately 1,056 feet of shoreline at the terminal west end of the south jetty within Huntington Beach State Park.

SCCZMP Networked Agency Comment Summary in response to Draft EA:

South Carolina Department of Natural Resources (SCDNR), August 26, 2016 to USACE:

Comments from SCDNR were limited to the impacts from the dredging and deposition of sediments from Inner Shoal B:

(1) Dredge Material

The proposed dredge material, consists of 78% fine sand and contains no contaminants at concentrations that would pose an unacceptable risk to human health or the environment and will be used to protect the south jetty and restore lost shorebird habitat.

(2) Concurrence

(a) SCDNR concurs with the Finding of No Significant Impact on the quality of the natural environment. Negative impacts on fish, wildlife and their habitats are likely to be minor and temporary provided that the dredged material in placed only along the eroding shoreline at the north end of Huntington State Beach Park (as proposed) and not on the marsh side of the island, where significant shellfish resources could be adversely affected by the resuspension of fine sediments. The relatively high silt/clay content of the proposed dredged material (22%) also makes it unsuitable for placement on the front beach.

(b) In accordance with the Endangered Species Act, the US Fish and Wildlife Service has prepared a biological opinion that addresses potential impacts of the proposed project on species under its jurisdiction, including loggerhead sea turtles and piping plovers. As discussed in the Biological Opinion dated August 10, 2016, the deposition of dredged material might improve shorebird habitat, including non-breeding habitat for piping plovers during their annual spring and fall migration. The Biological opinion includes specific terms and conditions and conservation measures that address the protection of these species and their critical habitat before, during and after construction. SCDNR recommends the Corps adhere strictly to all terms and conditions outlined in the Biological Opinion, including all monitoring and reporting requirements. Provided these terms and conditions are met, the SCDNR offers no objection to the proposed project.

Public Comment Summary:

Comment was received on October 20 and October 21, 2016 from an adjacent oyster lease holder. Comments were forwarded to the USACE for review and accepted into the public record by SCDHEC OCRM.

The concerns which included maps are summarized as follows:

(1) The information in the draft EA was incorrect in that it did not identify commercial shellfish leases/culture areas in the area of the dredging to include areas C-370 and C-371; portions of these areas are not available for harvest due to the proximity of marina facilities and mandatory closure zones. Additionally, the draft EA did not identify shellfish culture area C-356 adjacent to the disposal area.

(2) The sediment survey as reported in the Draft EA did detect levels of arsenic, copper, nickel, PCB's and PBDES. The areas of the federal channel are closed for harvest, but the material is proposed to be placed near adjacent the adjacent shellfish culture area C-365.

(3) The disposal area is not suitable due to the contaminants and the area contains spartina habitat exposed from the October 2015 storms. There is a feasible alternative site (closer than

2 miles) for more compatible beach material in the deposition basin that is not in a closure area.

(4) Close the weir on the north jetty to prevent further shoaling and sedimentation and direct deposition of material into the channel.

(5) Allow additional water flow into the area to help the oyster culture areas, which have been covered by sand by past placements.

SCDHEC OCRM Decision, SCCZMP Enforceable Policies and Conditions:

Pursuant to 15 C.F.R. § 930.4, SCDHEC ***conditionally concurs*** with the determination that the project is consistent to the maximum extent practicable with the following conditions below.

Applicable Enforceable Policies of the SCCZMP: (1) Wildlife and Fisheries Management; (2) Dredging; (3) Erosion Control; (4) Geographic Areas of Particular Concern; (5) S.C. Code Ann. § 48-39-20; (6) S.C. Code Ann. § 48-39-30; (7) S.C. Code Ann. § 48-39-80; (8) S.C. Code Ann § 48-39-150, (9) S.C. Ann. Regs 30-12(G); (10) S.C. Ann. Regs 30-13(L)); and (11) S.C. Ann. Regs 30-13(N)(2)

(A) Wildlife and Fisheries Resources:

1. To promote water flow and flushing, the newly created inlet area resulting from Hurricane Matthew which is located behind the southern jetty may not be filled or otherwise altered.

2. To lessen impacts on fish, wildlife and their habitats, dredged material from Inner Shoal B may only be placed along the eroding shoreline at the north end of Huntington State Beach Park (as proposed) and not on the marsh side of the island, where significant shellfish resources could be adversely affected by the resuspension of fine sediments.

3. All precautionary measures and conditions as specifically referenced in the comment letter of SCDNR dated August 26, 2016, will be taken to protect listed aquatic and terrestrial migratory and spawning species and habitats of concern. Any monitoring reports shall also be provided to the SCDHEC OCRM CZC Section.

4. Appropriate measures will be taken to protect the integrity of migratory and beach-nesting birds of State concern, with particular emphasis, but not limited to Piping Plovers and Red Knots during the course of the project and while conducting post-construction practices on the beach and dune system regarding compaction testing and tilling, escarpment remediation, and any sand fencing/establishment of vegetation in relation to sea turtle conservation measures.

(B) Dredged Material:

5. Prior to construction or maintenance, the USACE must specify quality control measures including:
    (a) A description of the means and limits by which the material quality will be assessed during and after construction;
    (b) A definition of material quality that would require removal or screening of material from the beach; and,
    (c) A reasonable timetable for removal of the material and restoration.

6. The beach compatibility and quality of the material placed upon the beach must be monitored during construction operations by persons who are qualified to assess the material. Monitors will report immediately to those persons with the authority to suspend or modify the work if a determination is made that unsuitable material is being placed on the beach.

7. An assessment of fill material is recommended to be conducted within 30 days of project completion with at least 10 random samples taken and analyzed for sand grain size distribution, percent of shell composition and color. Any report detailing results of the analysis shall be submitted to the natural resource agencies within 60 days of construction.

8. A post-construction survey (as-built) is required to be submitted to SCDHEC OCRM within 60 days of project completion.

Pursuant to 15 C.F.R. § 930.4, if the USACE does not agree to the above conditions, then all parties shall treat this conditional concurrence letter as an objection.

The SCDHEC concurrence relies on the following policies contained within SCCZMP: Wildlife and Fisheries Management; Dredging (*Dredging and Spoil Disposal*); Erosion Control (*General Erosion Control, Artificial Beach Nourishment*), the policies associated with Activities in Areas of Special Resource Significance (Barrier Islands, Dune Areas), Geographic Areas of Particular Concern (GAPC) and the priority of uses associated with GAPC's in addition to S.C. Annotated Code § 48-39-10 et seq and S.C. Regulations R 30-1 *et seq*.

Please contact me if you have any questions about this concurrence or the conditions within it. It is our intention to work with the Charleston District to address any concerns that the USACE may have as to how this project can be consistent with the enforceable policies of the SCCZMP.

Sincerely,

Jeannie Lewis

Jeannie Lewis
Project Manager, Coastal Zone Consistency Section
Regulatory Division – SCDHEC OCRM
1362 McMillan Avenue, Suite 400
Charleston, S. C. 29405
843-953-0243
lewisaj@dhec.sc.gov

Cc: SCDHEC- Curtis Joyner, Chris Stout, Heather Preston, Chuck Hightower
SCDNR- Priscilla Wendt
USFWS- Mark Caldwell, Melissa Bimbi
NOAA- Pace Wilbur (NMFS)

Appendix F
Water Quality Certification

From:	Hughes, Andrea W CIV USARMY CESAC (USA)
To:	Fritz, Erica CIV USARMY CESAC (USA)
Subject:	FW: Murrells Inlet 401 certification
Date:	Friday, August 26, 2022 10:11:06 AM
Attachments:	Murrells Inlet- 401 WQC - 2017.pdf 2016 MurrellsInletPublicNotice.pdf

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From: Culbreath, S. Michele <CULBRESM@dhec.sc.gov>
Sent: Friday, August 26, 2022 9:58 AM
To: Hughes, Andrea W CIV USARMY CESAC (USA) <Andrea.W.Hughes@usace.army.mil>; Hightower, Charles <HIGHTOCW@dhec.sc.gov>
Subject: [URL Verdict: Neutral][Non-DoD Source] Re: Murrells Inlet 401 certification

Andrea,
After our phone conversation on August 8th, this office has determined that the 401 Water Quality Certification(WQC) dated April 18, 2017 is still valid for the current maintenance dredging of Murrells Inlet under the public notice for 2016-Murrells Inlet dated September 30, 2016. Furthermore, we found that condition #5 "All excavated materials must be hauled off site or placed on high land and properly contained and permanently stabilized to prevent erosion" was inadvertently added to the 401 WQC. The public notice for this dredge stated, "The material will also be excavated by hydraulic pipeline cutterhead dredge and deposited near the terminal end of the south jetty at Huntington Beach State Park. This material will be used to protect the jetty and restore lost shorebird habitat." The 401 WQC condition #5 is incompatible with this disposal method and should be considered stricken from the 401 WQC. Please attach a copy of this email to the 401 WQC.

S. Michele Culbreath
Water Certification and Wetlands Section
S.C. Dept. of Health & Environmental Control
Office: (803) 898-4224
fax: (803) 898-7344
Connect: www.scdhec.gov Facebook Twitter

From: Hughes, Andrea W CIV USARMY CESAC (USA) <Andrea.W.Hughes@usace.army.mil>
Sent: Friday, August 26, 2022 9:37 AM
To: Hightower, Charles <HIGHTOCW@dhec.sc.gov>; Culbreath, S. Michele <CULBRESM@dhec.sc.gov>
Subject: Murrells Inlet 401 certification

Hi Chuck and Michelle,

I just wanted to follow up concerning our August 8th discussion on the Murrells Inlet 401 certification. As I mentioned previously, we are not making any changes to the authorized project. Can you please confirm by responding to this e-mail that the attached 401 certification is sufficient and that condition #5 in the letter is not applicable?

Thanks so much for your assistance,

Andrea

Andrea W. Hughes
Biologist, Planning and Environmental Branch
U.S. Army Corps of Engineers, Charleston District
69-A Hagood Avenue
Charleston, South Carolina 29403
843.566.3857

dhec
Healthy People. Healthy Communities

April 18, 2017

US Army Corps of Engineers
69A Hagood Ave
Charleston SC 29403

Re: Certification in Accordance with Section 401 of the Clean Water Act, as amended.

US Army Corps of Engineers
New and maintenance dredging
Murrells Inlet
Georgetown County
P/N 2016-MURRELLS INLET

Dear Sir or Madam:

South Carolina Department of Health and Environmental Control (DHEC) staff have reviewed plans for this project and determined there is a reasonable assurance that the proposed project will be conducted in a manner consistent with the Certification requirements of Section 401 of the Federal Clean Water Act, as amended. In accordance with the provisions of Section 401, we certify that this project, subject to the indicated conditions, is consistent with applicable provisions of Section 303 of the Federal Clean Water Act, as amended. We also hereby certify that there are no applicable effluent limitations under Sections 301(b) and 302, and that there are no applicable standards under Sections 306 and 307.

This certification is subject to the following conditions:

1. The applicant must implement best management practices that will minimize erosion and migration of sediments on and off the project site during and after construction. These practices should include the use of appropriate grading and sloping techniques, mulches, silt fences, or other devices capable of preventing erosion, migration of sediments, and bank failure. All disturbed land surfaces and sloped areas affected by the project must be stabilized and sloped.

2. All necessary measures must be taken to prevent oil, tar, trash, debris and other pollutants from entering the adjacent waters or wetlands.

3. Once the project is initiated, it must be carried to completion in an expeditious manner in order to minimize the period of disturbance to the environment.

4. Construction activities must avoid to the greatest extent practicable, encroachment into any wetland/river bank areas not designated as impact areas.

5. All excavated materials must be hauled off site or placed on high land and properly contains and permanently stabilized to prevent erosion.

6. The excavated area must be sloped such that the rear is no deeper than the front and the front no deeper than the adjacent waterbody to maintain water circulation.

7. All conservation measures outlined in the U.S. Fish and Wildlife Service's Biological Opinion dated August 10, 2016, must be adhered to.

DHEC reserves the right to impose additional conditions on the Certification to respond to unforeseen, specific problems that might arise and to take any enforcement action to ensure compliance with State water quality standards.

Sincerely,

Heather Preston, Director
Division of Water Quality
Bureau of Water

cc: US Army Corps of Engineers
Charleston District Office
Environmental Affairs District Office Georgetown County
OCRM

Department of the Army
And
South Carolina Department of Health and Environmental Control

September 30, 2016

JOINT PUBLIC NOTICE
Amended

US Army Corps of Engineers, Charleston District
69A Hagood Ave.
Charleston, SC 29412
and the
South Carolina Department of Health and Environmental Control
Ocean and Coastal Resources Management, Charleston
Water Quality and Wetlands Section, Columbia

To Whom It May Concern:

Subject: Project amendment to include maintenance dredging of the entrance channel and of the deposition basin of the Federal Navigation Channel at Murrell's Inlet, with dredged material placement along the south end of Garden City Beach to the north jetty and at the terminal end of the south jetty. The amended notice follows the July advertisement of the Availability of Draft Environmental Assessment (Draft EA) describing the excavation and disposal of material dredged from the Murrells Inlet Federal Navigation Channel near Marlin Quay Marina. This is pursuant to the National Environmental Policy Act, Federal Consistency Determination pursuant to the Coastal Zone Management Act, and Water Quality Certification pursuant to Section 401of the Clean Water Act, for the Proposed Excavation of the Murrells Inlet Federal Navigation Channel, Georgetown County, South Carolina.

Pursuant to above mentioned federal statutes, the U.S. Army Corps of Engineers (USACE) Charleston District has prepared a July 2016 Draft EA and a May 2001 Final EA on the proposed dredging and material placement of the Murrells Inlet Federal Navigation Channel. The South Carolina Department of Health and Environmental Control (SCDHEC), Offices of Ocean and Coastal Resources Management and Water Quality Certification and Wetlands in conjunction with the USACE are inviting comment on this amended notification that serves as a public notice on their behalf. These documents are available to agencies and the public for an additional 10 day comment period. **Comments will be accepted until October 10, 2016.** The documents are available online at:

http://www.sac.usace.army.mil/Missions/CivilWorks/NEPADocuments.aspx.

Federal Project Authorization and Project Description:

The Murrells Inlet Federal Navigation Channel was authorized by the House Committee on Public Works on 10 November 1971 and the Senate Committee on Public Works on 18 November 1971, under authority of Section 201, P.L. 89-298, and 1965 Flood Control Act. Project construction initiated in September 1977 and completed in August 1981. The project authorized the construction of two jetties and the construction of a deposition basin, an entrance channel, two inner channels (Inner Channel A and Inner Channel B, respectively) and a turning basin. The initial project provided for an Entrance Channel 300 feet wide, 10 feet deep and extends 3,900 feet from –12-foot ocean contour. Inner Channel A is 200 feet wide, 10 feet deep and extends from the entrance channel to the mouth of Main Creek, approximately 2000 feet. Inner Channel B is 90 feet wide, 8 feet deep and extends to an old Army crash boat dock where it terminates with a turning basin 300 feet long and 150 feet wide. The Auxiliary Channel is 200 feet wide, 10 feet deep and is approximately 1000 feet long. The Entrance Channel is stabilized by ocean jetties extending seaward 3,445 feet and 3,319 feet on the north and south sides of the Inlet, respectively. The north jetty was constructed with a weir section at the north end to allow for passage of littoral drift traveling essentially between the shoreline and the –4-foot contour. Inside the north jetty is a deposition basin that has the capacity to hold up to 600,000 cubic yards of material. The project resulted in approximately 1,103,300 cubic yards being initially excavated. The project also authorized regular operation and maintenance (O&M) dredging, with disposal of material on Garden City Beach and Huntington Beach State Park. The last dredging was conducted in 2002, when approximately 680,000 cubic yards of material was dredged from both the entrance channel and deposition basin and place on Garden City Beach and Huntington Beach State Park. Maintenance dredging has been previously performed in 1988 and 2001.

This amended notice, covered in the May 2001 Final EA, includes maintenance dredging of sections of the Murrell's Inlet navigation channel and deposition basin. In 2001, the project was found to be in compliance with all applicable State and Federal laws and regulations and was certified as consistent with the South Carolina Coastal Zone Management Program. The project involves the use of a hydraulic pipeline cutterhead to dredge beach compatible sand from the federal navigation channel and the deposition basin located near the north jetty. Approximately 478,000 cy of material will be placed along approximately 8,976 feet of shoreline along Garden City Beach and approximately 80,000 cy of material will be placed along approximately 1,056 feet of shoreline at the terminal west end of the south jetty within Huntington Beach State Park. The originally noticed project described in the July 2016 Draft EA includes the excavation of 25,000 yd3 of material dredged from a one and one eighth acre of the Murrells Inlet Federal Navigation Channel near Marlin Quay Marina. The material will also be excavated by hydraulic pipeline cutterhead dredge and deposited near the terminal end of the south jetty at Huntington Beach State Park. This material will be used to protect the jetty and restore lost shorebird habitat.

The South Carolina Department of Health and Environmental Control, Ocean and Coastal Resources Management is soliciting public comment through October 10, 2016 on the project's consistency with the enforceable policies and programs of the State's Coastal Zone Management Program, pursuant to 15 C.F.R. § 930.42, regulations associated with the Federal Coastal Zone Management Act of 1972. The Federal Navigation Channel was initially constructed between 1977 and 1981. Maintenance dredging of the Federal Channel has taken place several times since initial construction, the most recent dredging occurring in 2001. The proposed activity will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the South Carolina Coastal Zone Management Program (SCCZMP). Applicable enforceable resource policies of the SCCZMP include: (1) Wildlife and Fisheries Management, (2) Dredging, (3) Erosion Control, (4) Activities in Areas of Special Resource Significance, and (5) Beach and Shoreline Access. The SCCZMP enforceable polices may be reviewed in detail:

http://www.scdhec.gov/Environment/docs/OCRM_Policies_Procedures.pdf

This notice serves as a request to the South Carolina Department of Health and Environmental Control for

Section 401 Water Quality Certification and serves as a public notice on their behalf. Section 404 of the Clean Water Act requires this public notice as part of the water quality certification process to authorize the excavation and placement of dredged material, and discharge of effluents to waters of the United States. The South Carolina Department of Health and Environmental Control will review this project in accordance with the provisions of Section 401 of the Clean Water Act, which is required to conduct an activity in, or adjacent to, waters of the State of South Carolina. Any person or agency who desires to comment, object, or request a public hearing relative to State Water Quality Certification must do so within 10 days of the date of this notice (**October 10, 2016**), in writing, and state the reasons/basis of objections, or request for a public hearing to the South Carolina Department of Health and Environmental Control, Division of Water Quality, Bureau of Water, 2600 Bull Street, Columbia. An overview of the South Carolina Water Quality Certification Program may be viewed at:

http://www.scdhec.gov/environment/WaterQuality/401Certification/Overview/

Comments on the project should be addressed to:

Mr. Jesse Helton
Biologist
US Army Corps of Engineers
Charleston District
69A Hagood Ave
Charleston, SC 29412
Jesse.S.Helton@usace.army.mil

Comments on the consistency of the project with the South Carolina Coastal Zone Management Program's enforceable policies are invited and will be accepted through October 10, addressed or emailed to:

Jeannie Lewis
Coastal Zone Consistency Project Manager, Regulatory Division
SC Department of Health and Environmental Control
Ocean and Coastal Resources Management
1362 McMillan Ave; Suite 400
Charleston, SC 29405
lewisaj@dhec.sc.gov

Further information on Federal Consistency:
http://www.scdhec.gov/environment/WaterQuality/CoastalPermits/CoastalZoneConsistency/

https://coast.noaa.gov/czm/consistency/

Comments pertaining to the *water quality certification* pursuant to Section 401 of the Clean Water Act are invited and will be accepted through October 10, addressed or emailed to:

Chuck Hightower
Manager, Water Quality Certification and Wetlands Section
Bureau of Water
SC Department of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201
hightocw@dhec.sc.gov

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

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

Maintenance Dredging of the Murrells Inlet Federal Navigation Project

Georgetown County, South Carolina

The U.S. Army Corps of Engineers, Charleston District (USACE) is proposing to maintain the Murrells Inlet Federal Navigation Channel located in Georgetown 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 Murrells Inlet Federal Navigation Channel is located on the Atlantic Coast in Georgetown County, South Carolina (SC) approximately 90 miles north of Charleston, SC and 12 miles south of Myrtle Beach, SC.

B. General Description

The Inlet is a small, tidally driven estuary. The Inlet's dimensions are approximately five- and one-half nautical miles in length and one mile in width. The watershed draining into the Inlet is approximately 10,250 acres with approximately 3,108 acres considered suitable for shellfish production. Tidal range varies from 4.2 feet to 5.3 feet within the Inlet. The Inlet contains intertidal mudflats, marshes, oyster beds, tidal creeks and created canals.

The proposed work consists of periodic maintenance dredging of shoal material from the Federal Navigation Channel. Dredged material would be beneficially used at Huntington Beach State Park to protect the existing jetty and at beach placement areas along either Huntington Beach State Park and/or Garden City Beach.

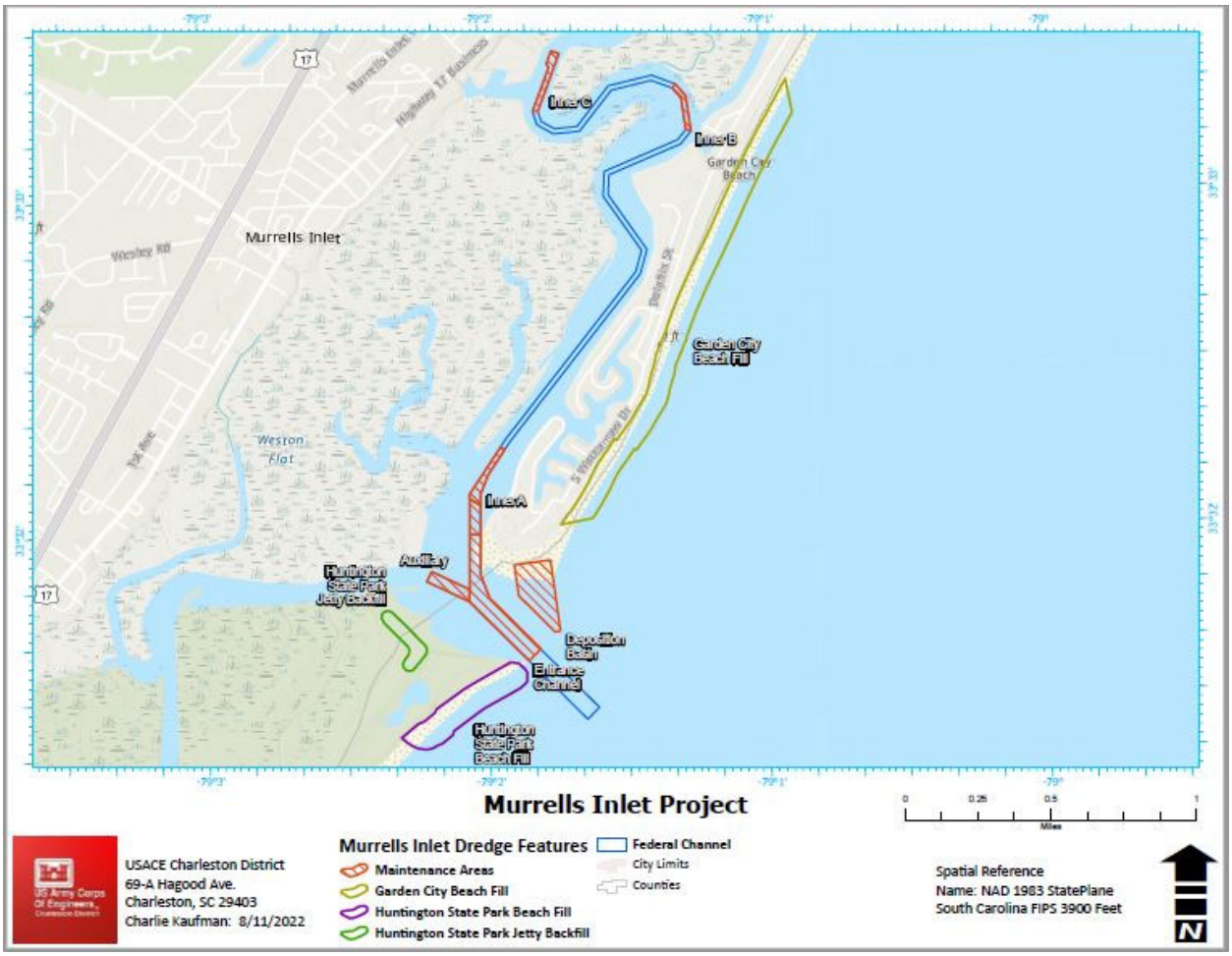

Figure 1. Murrells Inlet Maintenance and Placement Areas

C. Authority and Purpose

The Murrells Inlet Federal Navigation Channel Project was authorized by the House Committee on Public Works on 10 November 1971 and the Senate Committee on Public Works on 18 November 1971, under authority of Section 201, P.L. 89-298, and 1965 Flood Control Act. Section 67 of the Water Resources Act of 1974 authorized interim maintenance to permit free and safe movement of vessels until the authorized project was completed.

The purpose of this project 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 to the village of Murrell's Inlet. 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.

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: No Action Alternative and the Action Alternative.

The proposed alternative includes excavating up to 750,000 cubic yards of material from the Federal Navigation Channel. Maintenance dredging will be by means of a hydraulic cutterhead dredge that will transport the sand through a pipeline to be discharged as a slurry and placed directly on the front beach at Garden City Beach and/ Huntington Beach State Park. Material will also be placed at the terminal west end of the south jetty on Huntington Beach State. This material would be used to provide protection to the terminal end of the jetty and to restore shorebird habitat. During construction, temporary training dikes of sand will be used to contain the discharge and control the fill placement to preent runoff into areas outside of the construction zone. The dikes will be set at at elevation of +2 Mean High Water.

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

1) *General Characteristics of Material*

The fill material is predominantly silica sand. Only dredged material that is suitable for beach placement (90% or greater sand content) will be placed along the front beach. Sediment not suitable for beach placement would be placed at the terminal end of the south jetty located on Huntington Beach State Park.

2) *Quantity of Material*

Approximately 500,000 to 750,000 cubic yards of material may be dredged every 7-10 years; however, dredging volumes and frequency may vary due to storm induced shoaling.

3) *Source of Material*

The fill material will come from the Murrells Inlet Federal Navigation Channel.

F. Description of the Proposed Discharge Site

1) *Location and Size*

The fill material is predominantly silica sand. Only dredged material that is suitable for beach placement (90% or greater sand content) will be placed along the front beach. Sediment not suitable for beach placement would be placed at the terminal end of the south jetty located on Huntington Beach State Park.

II. FACTUAL DETERMINATIONS

A. Physical Substrate Determinations

1) Substrate Elevation and Slope

Top elevation of the construction beach fill will be consistent with past nourishment projects. Construction equipment is used to push up a berm, approximately 6.5 feet NAVD88, and then the slurry is discharged behind the berm and allowed to naturally settle to the designed elevation. The resulting elevation and profile will slightly vary depending on waves, tides, current distribution and grain size.

2) Sediment Type

The sediment is predominantly silica sand with some sand-size shell fragments. Some sediment consists of silt, clay and silty sand, which would be placed behind the jetty and not along the front beach.

3) Dredged/Fill Material Movement
The fill material will be subject to erosion by waves with the net movement of fill material to the south.

4) Physical Effects on Benthos
Existing benthic organisms will be permanently lost in the immediate areas of construction and deposition placement; however, benthic organisms are expected to quickly rebound from the short-term impacts of material 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 construction activities. Water clarity is expected to improve from preconstruction conditions shortly after operations are completed.

(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 fill along beach front and behind the jetty 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 4.0 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 on the beach. 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. There will be a long-term increase in aesthetic quality at beach sites once the work is completed.

(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 e3xchange from tidal and wind generated currents, it is probably that photosynthetic organisms are continuously carried I not 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. To minimize impacts to the commercial shellfish harvesting area along Huntington Beach State Park, a temporary berm will be constructed to contain the slurry during placement activities.

(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. Repopulation 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 stocks.

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 repopulate affected intertidal zones; no long-term adverse impacts to higher trophic level organisms are expected. No overall adverse effect on the food web is anticipated.

5) Effects on Special Aquatic Sites.

(a) Sanctuaries and Refuges. Not applicable; there are no special aquatic sites in the study area.

(b) Wetlands. Estuarine wetlands exist near the project area, but period maintenance dredging activities will not directly impact these areas.

(c) Mud Flats. There are tidal mudflats within the project area on the backside of Huntington Beach State Park. Fill will be placed behind the jetty and impact approximately 9.8 acres of mudflats. This area is an existing placement area that has been utilized in past dredging cycles. The area will naturally restore and continue to provide habitat for shore birds.

(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

USACE has entered formal consultation with the U.S. Fish and Wildlife Service (USFWS) in accordance with Section 7 of the Endangered Species Act, and the project will be implemented in compliance with the USFWS issued Biological Opinion once issued. In addition, the project would be implemented in complianc with the South Atlantic Regional Biological Opinion (SARBO) issued by the National Marian Fisheries Service (NMFS). Suitable habitat is present within the project area for the following federally listed species: American wood stork, Eastern black rail, piping plover, seabeach amaranth, West Indian manatee, and all four sea turtles (green sea turtle, leatherback sea turtle, Kemp's ridley sea turtle, and loggerhead sea turtle).

It has been determined that the proposed project may affect, but is not likely to adversely affect, the American wood stork, the Eastern black rail, piping plover, Rufa red knot, and the West Indian Manatee. 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.

Sea turtle nesting may occur in the project area during the time dredging and beach placement occurs. If placement occurs during nesting season, a sea turtle nest monitoring and relocation program will be implemented to discover, mark and relocate these nests. Any sea turtle nests discovered within the beach placement area will be removed and relocated using the procedures outlined in the SARBO. Other measures outlined in the SARBO will be followed to protect nesting turtles and to ensure that the sand placement project will not adversely affect the quality of the beach for use for turtle nesting after completion of the project. USACE has determined that the proposed project may affect, is likely to adversely affect, the, green sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, Kemp's ridley sea turtle, and loggerhead sea turtle. All of these listed species can be found in surrounding waterbodies and on beaches of the project area.

While there is designated Critical Habitat for piping plover within the project area. A portion of the southern tip of Garden City Beach will be converted from dry land to open water, which will result in a loss of piping plover critical habitat in this area. The fill activity within the mudflat will provide and protect piping plover habitat. However, placement of material at the terminal west end of the south jetty at Huntington Beach State Park will result in creation of additional habitat in this area that will offset the loss at Garden City Beach.

6) Other Wildlife

Placement of dredged material is not expected to have long-term adverse impacts on wading birds of terrestrial foraging animals. Measures to protect nesting shorebirds will be implemented if beach placement occurs during nesting season.

F. Proposed Disposal Site Determinations

1) Mixing Zone Determination
Dredged material will not cause unacceptable changes in the mixing zone specific 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

(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 by the dredging of material and the placement of the material on the beach, but these effects should be minor. Deepening of the navigation channel will provide fishing vessels better access to and from Murrells Inlet, 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 and by the beneficial use of compatible sediment along the beach.

(d) Aesthetics. A temporary decrease in aesthetics will occur with the presence of dredge and earthmoving equipment. Stabilizing eroding beach will improve the aesthetics of the beach in the long-term.

(e) Parks, National and Historic Monuments, National Seashores Wilderness Areas, Research Sites, and Similar Preserves. Huntington Beach State Park is within the project area. The park will be temporarily impacted during construction and placement of material, however, will benefit in the long-term through beach 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) 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 on the beach and behind the jetty 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. The earthmoving equipment is not expected to operate in the water (below mean low water) to minimize the potential adverse impact of hydrocarbon release into the water. All responsible precautions will be taken to prevent hazardous materials discharge from all activity or equipment.

G. Appropriate steps to minimize potential adverse impacts from the proposed action will be implemented, such as berms to protect nearby shellfish grounds and construction best management practices to reduce temporary turbidity and suspended solids impacts.

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.

Andrew C. Johannes, PhD PE PMP
Lieutenant Colonel, U.S. Army
Commander and District Engineer

Appendix H
SHPO Consultation

EST. 1905
SOUTH CAROLINA DEPARTMENT OF
ARCHIVES & HISTORY

September 08, 2022

Andrea Farmer
Archaeologist
Planning Branch
U.S. Army Corps of Engineers
Savannah District
Andrea.A.Farmer@usace.army.mil

Re: Murrells Inlet Federal Navigation Project, Environmental Assessment for Maintenance Dredging
Murrells Inlet, Georgetown County, South Carolina
SHPO Project Nos. 16-ED0118 and 16-ED0078

Dear Andrea Farmer:

Thank you for your letter of September 01st, 2022, and project review submittal which we received on September 02nd, 2022 regarding the maintenance dredging in the Murrells Inlet Federal Navigation Project and placement of beneficial use material on Garden City Beach and Huntington Beach State Park. We also received maps, and Sidescan, Magnetometer, and, Multibeam Survey Results Murrells Inlet, Georgetown County, South Carolina as supporting documentation for this undertaking. The State Historic Preservation Office (SHPO) is providing comments to the U.S. Army Corps of Engineers (COE), Charleston District pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800. Consultation with the SHPO is not a substitution for consultation with Tribal Historic Preservation Offices, other Native American tribes including those with state recognition, local governments, or the public.

The undertaking consists of the dredging of the entrance channel last occurred in 2002, with beneficial use material placed at Garden City Beach and Huntington Beach State Park. Previous maintenance dredging occurred in 1988 and 2001. The dredging, as proposed, will not be outside the footprint of previous dredging and placement activities. The *Exploratory Magnetic Survey of Murrell's Inlet, South Carolina, and Portions of the Main Creek Inner Channel* conducted by the Corps in 1978 revealed the presence of a magnetic anomaly and a probable shipwreck in the vicinity of Inner Shoal B. Further testing was recommended and the magnetic anomaly was investigated in August 2022 through sidescan sonar, magnetometer and multibeam echo sounder. The survey results indicated that the undertaking, as currently planned, will avoid this anomaly,

and a 50-foot buffer will be implemented as an avoidance area. The SHPO concurs with the proposed avoidance area.

In a letter dated May 11, 2001, our office concurred that no properties listed on the National Register of Historic Places (NRHP) or determined eligible for inclusion on the NRHP would be affected by the proposed undertaking. The Area of Potential Effect (APE) was surveyed by New South Associates in 2006 to document any above-ground historic properties (*Historic Resources Survey of Georgetown County, South Carolina*). The NRHP-listed Murrells Inlet Historic District is located within the APE and adjacent to the study area.

Based on the Corps' description of the Area of Potential Effect (APE) and the identification of the Murrells Inlet Historic District within the APE, our office concurs with the Corps assessment that no properties listed in or eligible for listing in the National Register of Historic Places will be adversely affected by this project.

If archaeological materials are encountered during construction, the procedures codified at 36 CFR 800.13(b) will apply. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include, but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal and glass objects, and human skeletal materials. The federal agency or the applicant receiving federal assistance should contact our office immediately.

Please refer to SHPO Project Numbers 16-ED0118 and 16-ED0078 in any future correspondence regarding this project. If you have any questions, please contact me at (803) 896-6168 or RLarsen@scdah.sc.gov.

Sincerely,

Robert P. Larsen III

Robert P. Larsen III, MSc., RPA
Archaeologist
State Historic Preservation Office

DEPARTMENT OF THE ARMY
CHARLESTON DISTRICT, CORPS OF ENGINEERS
69-A HAGOOD AVENUE
CHARLESTON, S.C. 29403-5107

September 01, 2022

SUBJECT: Murrells Inlet Federal Navigation Project, Environmental Assessment for Maintenance Dredging, Georgetown County, South Carolina
SHPO Project No. 16-ED0118 and 16-ED0078

W. Eric Emerson, Ph.D.
Director, South Carolina Department of Archives and History
8301 Parklane Road
Columbia, SC 29223

Dear Dr. Emerson:

This letter is in reference to the U.S. Army Corps of Engineers, Charleston District's (Corps) maintenance dredging in the Murrells Inlet Federal Navigation Project and placement of beneficial use material on Garden City Beach and Huntington Beach State Park (Figure 1). An Environmental Assessment (EA) is in development for this undertaking to address the channel dredging and placement of dredged material.

Dredging of the entrance channel last occurred in 2002, with beneficial use material placed at Garden City Beach and Huntington Beach State Park. Previous maintenance dredging occurred in 1988 and 2001. The dredging, as proposed, will not be outside the footprint of previous dredging and placement activities. In accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, the Corps performed a remote cultural resources survey in 1978 (*Exploratory Magnetic Survey of Murrell's Inlet, South Carolina, and Portions of the Main Creek Inner Channel*) for the project area. The survey revealed the presence of a magnetic anomaly and potential shipwreck in proximity to Inner Shoal B, and additional testing was recommended if avoidance was not possible. The magnetic anomaly was further investigated in 2022 through surveys consisting of sidescan sonar, magnetometer, and multibeam (Enclosure 1). The results of the survey revealed that the current undertaking, as proposed, will avoid this anomaly, and a 50-foot buffer will be implemented as an avoidance area (Figure 2).

In a letter dated May 11, 2001, your office concurred that no properties listed on the National Register of Historic Places (NRHP) or determined eligible for inclusion on the NRHP would be affected by the proposed undertaking. The Area of Potential Effect (APE) was surveyed by New South Associates in 2006 to document any above-ground historic properties (*Historic Resources Survey of Georgetown County, South Carolina*). The NRHP-listed Murrells Inlet Historic District is located within the APE and adjacent to the study area. The Corps recommends that the undertaking, as proposed, will have no

adverse effect on this resource or any other NRHP-listed or eligible resources in the APE.

Pursuant to Section 106 of NHPA, the Charleston District requests your office provide concurrence with the determination of no adverse effect. Please provide any comments regarding this proposed work within 30 calendar days of receipt of this letter to Ms. Andrea Farmer, Archaeologist, Planning Branch, Savannah District, at Andrea.A.Farmer@usace.army.mil or by phone at (912) 412-3363.

Sincerely,

Nancy Parrish

Nancy A. Parrish
Chief, Planning Branch

Encl

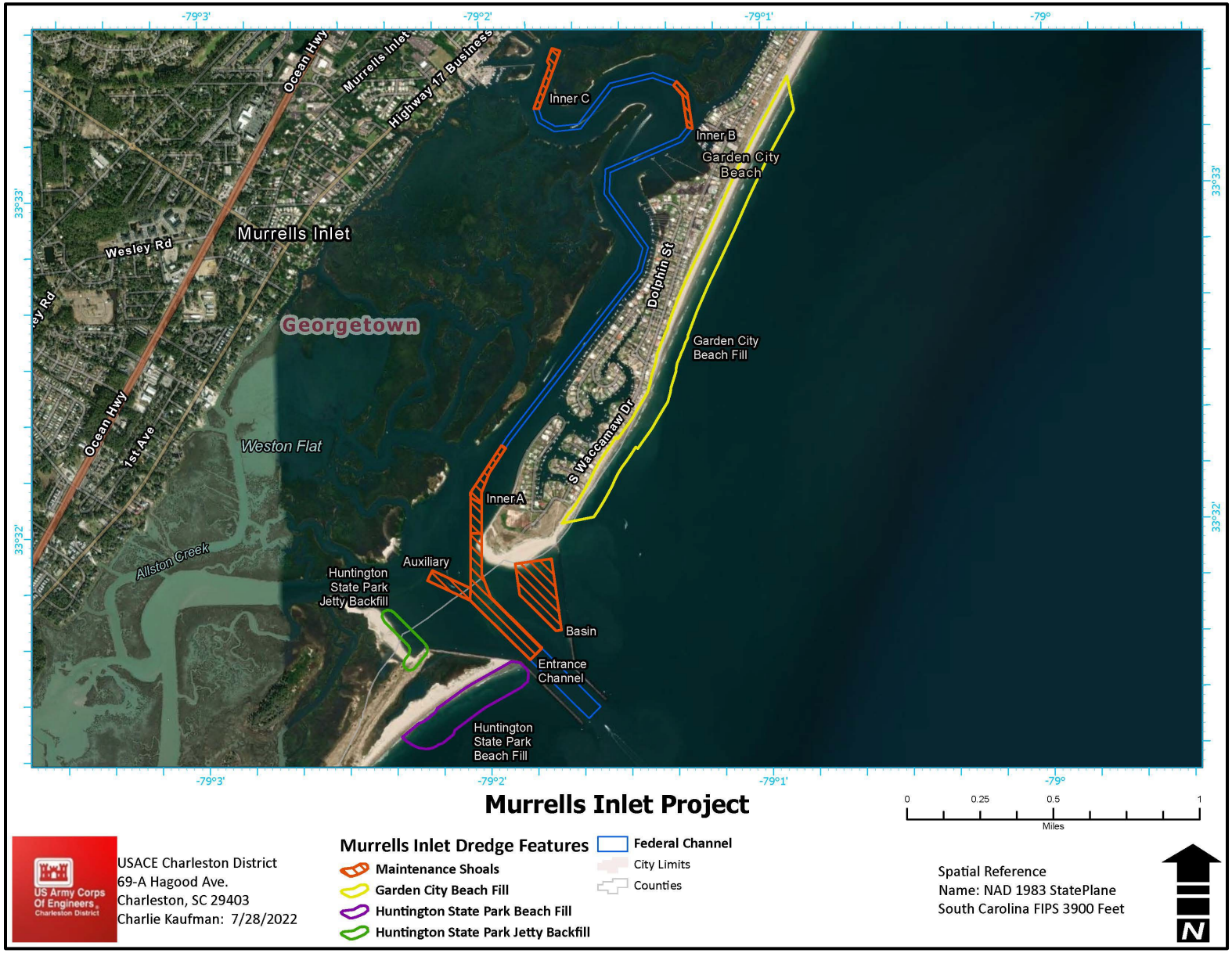

Figure 1. Project Area

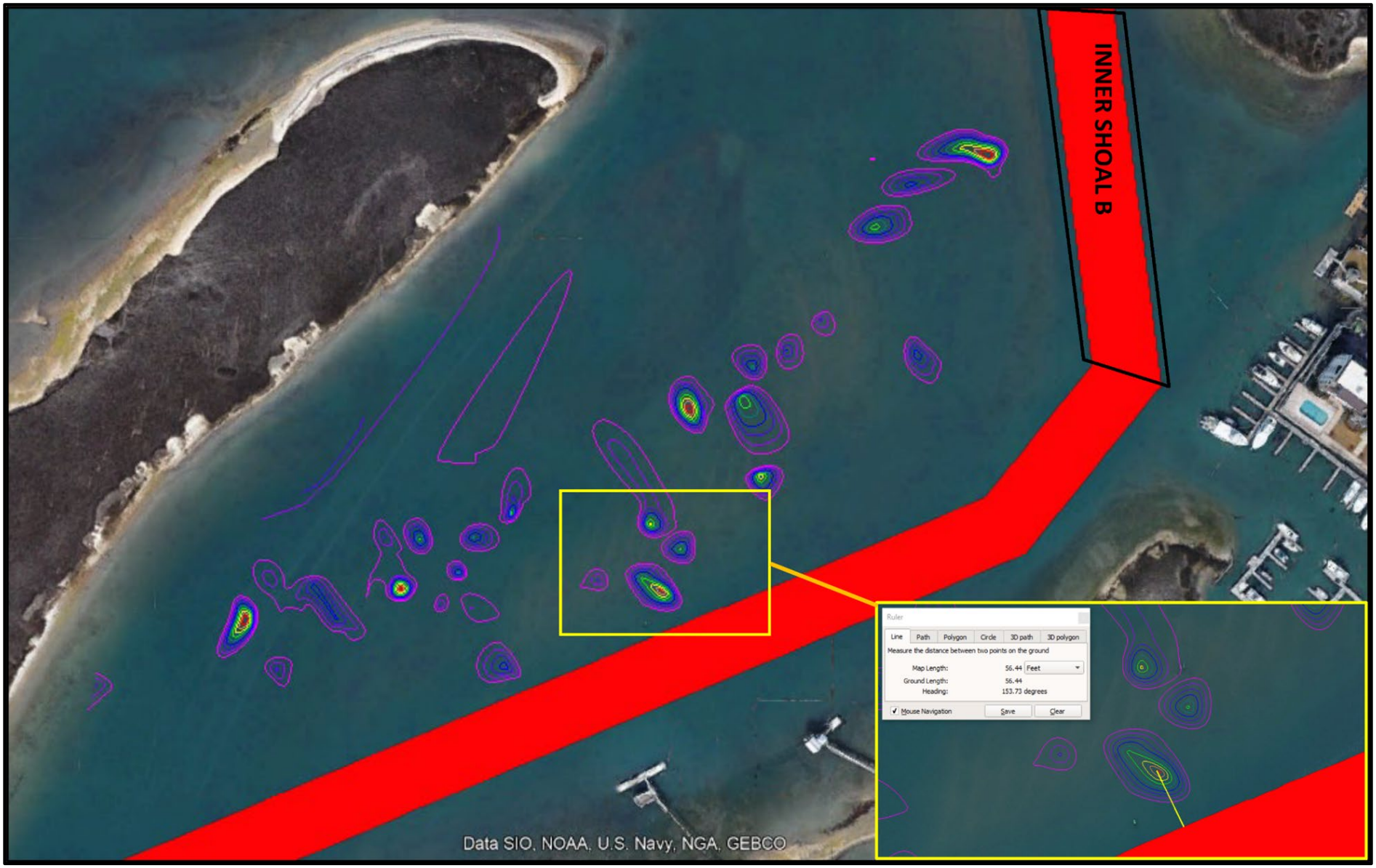

Figure 2. Anomaly Footprint and Buffer Zone