US Army Corps
of Engineers ®
Wilmington District

HATTERAS TO HATTERAS INLET CHANNEL REALIGNMENT, ROLLINSON CHANNEL NAVIGATION PROJECT

ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

November 2022

Wilmington District – U.S. Army Corps of Engineers

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Finding of No Significant Impact (FONSI)

Hatteras to Hatteras Inlet Channel Realignment

Rollinson Channel Navigation Project

Hyde and Dare Counties

North Carolina

The US Army Corps of Engineers, Wilmington District (USACE), has conducted an environmental analysis in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended. The USACE assessed the effects of the proposed action to realign the Hatteras to Hatteras Inlet portion of the Rollinson Channel project in the interest of improved navigational safety and reliability in the Environmental Assessment (EA), Hatteras to Hatteras Channel Realignment, Rollinson Channel Project, dated November 2022 (title revised).

As District Commander, it is my duty in the role of responsible Federal official to review and consider, in light of public interest, the stated views of other interested agencies and concerned public, the environmental effects of this proposed action.

My evaluation and findings are as follows:

1. PROJECT DESCRIPTION

Development of the alternatives for the Hatteras to Hatteras Inlet Channel Realignment addresses the maintenance dredging and associated placement of dredged material for a new route between Hatteras and Ocracoke Island, referred to as the horseshoe route, using a contracted pipeline dredge and shallow draft Government Plant (dredges). Maintenance dredging of the new route is required to maintain safe and reliable navigability for NC Department of Transportation ferry services, the US Coast Guard and commercial and recreational fishermen. Alternatives considered include:

Alternative 1 - No Action. Attempt to re-establish and maintain the Channel in its previous alignment.

Alternative 2 - Maintenance of the horseshoe route between 1 October and 31 March with permission required for hot spot dredging outside of that timeframe.

Alternative 3 (Proposed Action) – Government Plant maintenance of the horseshoe route between 1 October and 31 March except for Sloop Channel North and Hatteras Connector Channel which can be maintained any time of year.

The USACE collected information and coordinated with Tribes and Federal, State, and local agencies. The data collection, agency coordination, and findings of the Project Delivery Team (PDT) resulted in the Proposed Action, which consists of dredging all channel reaches between 1 October and 31 March with the exception of Sloop Channel North and Hatteras Connector Channel (formerly known as the South Ferry Channel), which may be maintained any time of year. This plan will reduce concerns related to ferry delays during peak tourist season and will provide safe access to offshore fishing areas for those who rely on ocean access for their livelihood. The Hatteras to Hatteras Inlet Channel Realignment will increase dredging efficiency, improve navigability and safety, while also reducing costs to taxpayers for maintenance of these important shallow draft channels.

The Proposed Action considers the natural inlet ecosystem and habitat that supports the important resources located there. The USACE has considered resource agencies' concerns by reducing dredging and placement of dredged material within the majority of the project area to a time when some marine species are less active or not present. The USACE has committed to aerial monitoring of submerged aquatic vegetation (SAV) within the project area before and after each dredge event and also maintaining a buffer between SAV and the dredge to reduce potential negative effects. If and when unavoidable impacts are anticipated, USACE will coordinate with resource agencies prior to dredging.

2. COORDINATION

A scoping letter describing the Proposed Action and requesting agency participation was circulated by email February 23, 2021 and a scoping meeting was held virtually on March 16, 2021. The USACE coordinated the Proposed Action with Tribes and Federal, State, and local agencies and issued a Public Notice in October 2021, to solicit comments. Agency and public comments were received from: National Marine Fisheries Service, US Fish and Wildlife Service, NC Department of Environmental Quality including the Division of Coastal Management and the Division of Marine Fisheries, and NC Wildlife Resources Commission. A spreadsheet of all comments and comment responses are included in this EA/FONSI as Appendix E.

Since the release of the Draft EA, several coordination meetings have taken place between USACE and the state and federal resource agencies listed above. Due to shared interests by Dare County and NCDOT to keep the horseshoe route maintained, USACE has agreed to develop and coordinate a single Hatteras Inlet Management Plan that USACE, Dare County and NCDOT would follow in maintaining the horseshoe route. The plan would also be used to track dredging activities and report to the resource agencies annually on work completed.

Compliance with Section 7(a)(1) of the Endangered Species Act for the Proposed Action is based on NMFS's 2020 South Atlantic Regional Biological Opinion (SARBO). Federally protected species under purview of the US Fish and Wildlife Service have

been reviewed regarding potential effects of maintenance dredging, and the Proposed Action is approved under the 2017 Statewide Programmatic Biological Opinion. Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act, the National Marine Fisheries Service Habitat Conservation Division provided conservation recommendations for the protection of Essential Fish Habitat on February 28, 2022 and September 1, 2022. (Appendix G). Actions to develop and implement a Hatteras Inlet Management Plan are underway. The North Carolina Division of Coastal Management provided its final federal consistency decision on September 16, 2022 (Appendix F).

The EA is available on the Wilmington District Website at:

http://www.saw.usace.army.mil/Missions/Navigation/Dredging/

3. ENVIRONMENTAL EFFECTS AND IMPACTS

The Proposed Action will be in compliance with all environmental laws and executive orders, and environmental impacts to protected resources will be minimized to the maximum extent practicable.

4. DETERMINATION

Based on the EA prepared for this project, I have determined that this action does not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, the action does not require the preparation of a detailed statement under Section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.). My determination was made considering the following factors discussed in the EA to which this document is attached:

a. The Proposed Action may affect and is likely to adversely affect: leatherback, loggerhead, hawksbill, Kemp's Ridley and green sea turtles; piping plover, rufus red knot and seabeach amaranth; and loggerhead, piping plover and red knot Critical Habitats.

b. The Proposed Action may affect but is not likely to adversely affect: West Indian manatee; Blue, Sei, Sperm, Finback and North Atlantic right whales; Atlantic and shortnose sturgeon; and giant manta ray; Atlantic and shortnose sturgeon and North Atlantic right whale Critical Habitats.

c. No significant cumulative or secondary impacts will result from implementation of this action.

d. The Proposed Action will not significantly impact cultural resources.

e. The Proposed Action will result in no significant impacts to air or water quality.

f. The Proposed Action will result in no significant adverse impact to fish and wildlife resources.

g. The Proposed Action will not cause any environmental health risks or safety risks that may disproportionately affect children and complies with Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks."

h. The Proposed Action will not cause any disproportionately high and adverse human health or environmental effects on minority populations and low-income populations and complies with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."

5. FINDINGS AND CONCLUSIONS

The Proposed Action to implement the Hatteras to Hatteras Inlet Channel Realignment will result in no significant environmental impacts.

Date: 30 Nov 2022

Robert M. Burnham
LTC, U.S. Army
Acting District Commander

Table of Contents

1.0 INTRODUCTION. 1
1.1 Authority. 5
1.2 Background 5
1.3 Project Area (Dredging and Placement). 9
2.0 PURPOSE AND NEED. 13
3.0 INCORPORATION BY REFERENCE. 14
4.0 ALTERNATIVES. 14
4.1 Dredge Types and Placement Options. 15
4.1.1 Pipeline Dredge 15
4.1.2 Special Purpose Hopper Dredge 16
4.1.3 Sidecast Dredge 16
4.2 Alternative 1 – No Action 17
4.3 Alternative 2 18
4.4 Alternative 3 (Proposed Action) 19
4.4.1 Barney Slough 20
4.4.2 Pamlico Sound. 21
4.4.3 Sloop Channel 21
4.4.4 Hatteras Connector Channel. 22
5.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS. 23
5.1 Sediments. 24
5.2 Water Resources. 26
5.2.1 Hydrology. 26
5.2.2 Water Quality and Characteristics. 27
5.2.3 Wetlands and Floodplains. 29
5.3 Air Quality. 30
5.4 Noise. 31
5.5 Marine and Estuarine Resources 32
5.5.1 Nekton. 32
5.5.2 Benthos. 34
5.6 Essential Fish Habitat. 36
5.6.1 Coastal Migratory Pelagics 39

5.6.2 Snapper-Grouper. 39
5.6.3 Spiny Lobster. 39
5.6.4 Coastal Inlet HAPC 39
5.6.5 Submerged Aquatic Vegetation (SAV) and Shellfish Beds. 40
5.6.6 Crab Spawning Sanctuary 42
5.6.7 Primary Nursery Areas. 44
5.6.8 Anadromous Fish Spawning Areas. 44
5.7 Endangered and Threatened Species. 48
5.8 Cultural Resources. 56
5.9 Climate Change and Sea Level Change. 60
5.10 Socioeconomics. 61
5.10.1 Ferry Services. 61
5.10.2 Tourism. 61
5.10.3 Recreational and Commercial Fishing. 62
5.10.4 US Coast Guard. 62
5.11 Environmental Impact Comparison of Alternatives. 63
6.0 STATUS OF ENVIRONMENTAL COMPLIANCE. 66
6.1 National Environmental Policy Act (NEPA). 66
6.2 North Carolina Coastal Zone Management Program. 66
6.2.1 Areas of Environmental Concern (AECs). 67
6.2.2 Other State Policies. 68
6.3 Clean Water Act. 69
6.4 Endangered Species Act. 69
6.5 Magnuson-Stevens Fishery Conservation and Management Act. 70
6.6 Environmental Justice. 70
6.7 Public Laws and Executive Orders. 71
6.8 Park Service Special Use Permit National. 73
6.9 Coordination of This Document. 75
7.0 ENVIRONMENTAL COMMITMENTS. 75
8.0 CONCLUSION. 76
9.0 POINT OF CONTACT. 76
10.0 REFERENCES. 77

List of Figures

Figure 1. Hatteras Inlet area map showing historic route (pre-2013)..... 3
Figure 2. Proposed Corridor with 2022 Hydrographic Survey 4
Figure 3. Erosion on Ocracoke and Hatteras 2013-2016 7
Figure 4. Proposed Corridor Identifying High Shoaling Areas 8
Figure 5. Proposed Corridor Showing Placement Areas 11
Figure 5a. Ocracoke Island Active Cable Line……...12

Figure 6. Proposed corridor with half-mile buffer showing SAV locations 41
Figure 7. Hatteras Inlet Area Crab Spawning Sanctuary (CSS)…….43
Figure 8. NC-1A and NC-1B, Proposed Rufa Red Knot Critical Habitat..... 51
Figure 9. Cultural Resources Near Proposed Project Area according to HPOWEB..... 57
Figure 10. Area of Potential Cultural Effects (with three SHPO-identified restricted areas)..... 59
Figure 11. Placement areas on Ocracoke and Hatteras Islands (shown in yellow and black) as approved by the NPS..... 74

List of Tables

Table 1. Annual dredging events estimated to maintain each portion of the horseshoe route. 22
Table 2a. Essential Fish Habitat within the Study Area 38
Table 2b. Categories of Essential Fish Habitat……38

Table 3. Federally Listed Threatened & Endangered Species (aquatic and terrestrial) 48
Table 4. Comparison of Environmental Impacts..... 64
Table 5. The Relationship of the Proposed Action to Federal Laws and Policies..... 72

Appendices

Appendix A: USACE Sediment Analysis

Appendix B: NCDEQ-DWR GC Approval and Individual Water Quality Certification

Appendix C: Updated Lists of ESA Listed Species (IPAC)

Appendix D: List of EA Recipients

Appendix E: Comments and Responses on the Draft EA

Appendix F: Coastal Zone Management Act Correspondence

Appendix G: NMFS Essential Fish Habitat Correspondence

Appendix H: 404(b)(1) Guidelines Analysis

1.0 INTRODUCTION.

The National Environmental Policy Act of 1969 (NEPA), as amended, requires consideration of the environmental impacts for major federal actions. The purpose of this Environmental Assessment (EA) is to ensure the environmental consequences of the proposed action are considered and that environmental and project information is available to the public. The United States Army Corps of Engineers (USACE) has prepared this EA in accordance with the NEPA, the Council on Environmental Quality regulations (40 Code of Federal Regulations (CFR) parts 1500-1508,1515-1518) updated in 2020, and Engineer Regulation (ER) 200-2-2.

The subject of this EA is a portion of the Rollinson Channel Project known as Hatteras to Hatteras Inlet Channel, which is located within waters of Pamlico Sound on the backside of Hatteras Island, Dare and Hyde Counties, North Carolina. Historically, the channel connected Hatteras Village Harbor to the Hatteras Inlet gorge by a direct route that ran behind and parallel to the islands. This route provided mariners, fishermen, and the US Coast Guard (USCG) access to the Atlantic Ocean, as well as safe ferry transportation between Ocracoke Island and Hatteras Island (Figure 1).

The Navigation mission of the USACE is to provide safe, reliable, efficient, effective, and environmentally sustainable waterborne transportation systems (i.e., channels, harbors, and waterways). As part of its navigation mission, USACE is responsible for maintenance of the federally authorized Rollinson Channel navigation project, which includes Rollinson Channel “proper” (the portion of the project that connects Hatteras village to the deep water of the Pamlico Sound) and the Hatteras to Hatteras Inlet Channel. This navigation project allows mariners to safely access the gorge at Hatteras Inlet and, in conjunction with State-maintained ferry channels, provides a navigation channel between Ocracoke Island and Hatteras Island.

Due to the dynamic nature of the Hatteras Inlet complex, the surface and subsurface environment is constantly shifting and changing. Extensive erosion has greatly increased the width of Hatteras Inlet while reducing the length of Hatteras Island, which protects part of the navigation channel. In 1993, Hatteras Inlet was about one-third of a mile wide; now that distance has increased to over two miles, making it impossible to maintain the historic route efficiently and safely. As increasing erosion and shoaling continues to occur every year, substantial challenges to local navigation escalate.

This EA explores a reasonable range of alternatives for re-establishing a safe and navigable channel between Hatteras and Ocracoke Islands with access to the Hatteras Inlet gorge. The No Action alternative focuses on directing efforts towards re-opening the historic route; the other two alternatives focus on an alternate route which follows natural deep water. Having a channel that follows natural deep water to the extent practicable, given the natural dynamic nature of sediment movement, will allow for a safer, more reliable channel, reduced dredging effort, and an associated reduction in maintenance dredging costs, as well as having the least impact to the environment. Therefore, the proposed action is to abandon the historic direct route to the Hatteras

Inlet gorge and to re-route the channel to follow natural deep water along what is commonly known as the “horseshoe route” (Figure 2). This is the only way for USACE to economically maintain access to the gorge at Hatteras Inlet and will allow transportation of passengers, goods, and services to continue from the mainland, as well as allowing safe access to open ocean waters.

The horseshoe route is officially marked by the USCG and has been utilized by mariners and the North Carolina Department of Transportation (NCDOT) Ferry Division vessels since 2013. This natural deep-water route has only been routinely dredged in one portion of the channel, located near the Hatteras/Ocracoke ferry terminal that connects to the Hatteras Inlet gorge, known as the Hatteras Connector Channel. Pursuant to Engineer Regulation (ER) 1165-2-119, paragraph 9, USACE has the authority to make adjustments to location of channels, including in this case the adoption of the horseshoe route as the new authorized federal channel and assumption of responsibility for future maintenance along the entire route. See Section 1.1 for more explanation.

Hatteras to Hatteras Inlet Channel’s authorized dimensions are 100 feet wide and 10 feet deep plus 2 feet of allowable overdepth. The proposed horseshoe channel realignment will have the same dimensions; however, the location will differ from the original channel by following the best, naturally deep water. A corridor has been identified (approximately 1,729 acres) in the vicinity of the horseshoe route to allow for deep water to shift naturally, enabling USACE to maintain the authorized 100-foot-wide channel (Figure 2) within the corridor. The USACE would not maintain the entire corridor, but rather only the area (approximately 110 acres) that provides a channel of the same width as the existing authorization (100 ft width). The exact location of the channel may shift over time within this wider corridor to take advantage of naturally occurring deep water. It is USACE’s goal to minimize dredging and achieve establishment of a navigation corridor that will provide flexibility and cost savings in maintaining the federal navigation channel. Maintenance dredging will only be performed in shoaled areas to sustain the authorized channel dimensions.

Three different dredge types may be used to compete the dredging including two different types of shallow draft dredges that are USACE owned and operated (USACE dredges are referred to as Government Plant) and by contracting a cutterhead pipeline dredge (referred to as a pipeline dredge). Dredging by pipeline will likely occur only every three to five years and will continue to include placement of material on bird island and beaches, as completed on prior routes. Placement in these areas will continue to place during times that limit impacts to nesting for shorebirds and sea turtles. Maintenance of the new route will also be completed more frequently using two shallow draft Government Plant dredges one of which (referred to as a Special Purpose Dredge) will continue to place material in nearshore environments near Ocracoke and Hatteras Islands. The other Government Plant uses sidecast (referred to as the sidecast dredge) to place material adjacent to the channel. Sidecast placement will be limited to 1

October to 31 March throughout the new project area except in two specific high shoaling areas (Sloop Channel North and Connecter Channel to Hatteras Inlet [previously referred to as South Ferry Channel]). Maintenance dredging in the two high shoaling areas will only occur as needed from 1 April to 30 September to assure safe navigation. Based on vibracore sampling, sediments in the identified corridor consist of beach quality material (≥90% sand).

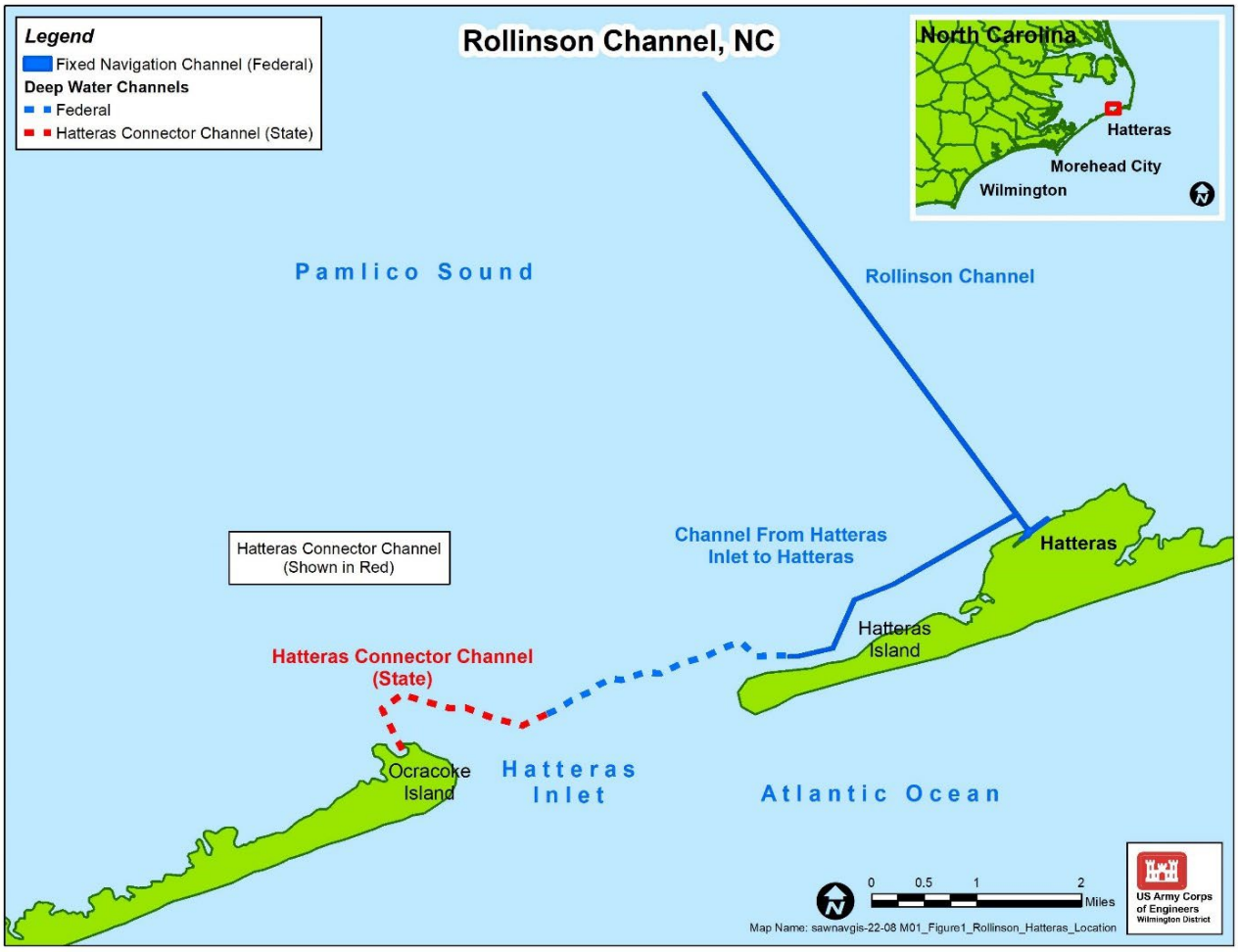


Figure 1. Hatteras Connector Channel area map showing historic route (pre-2013)

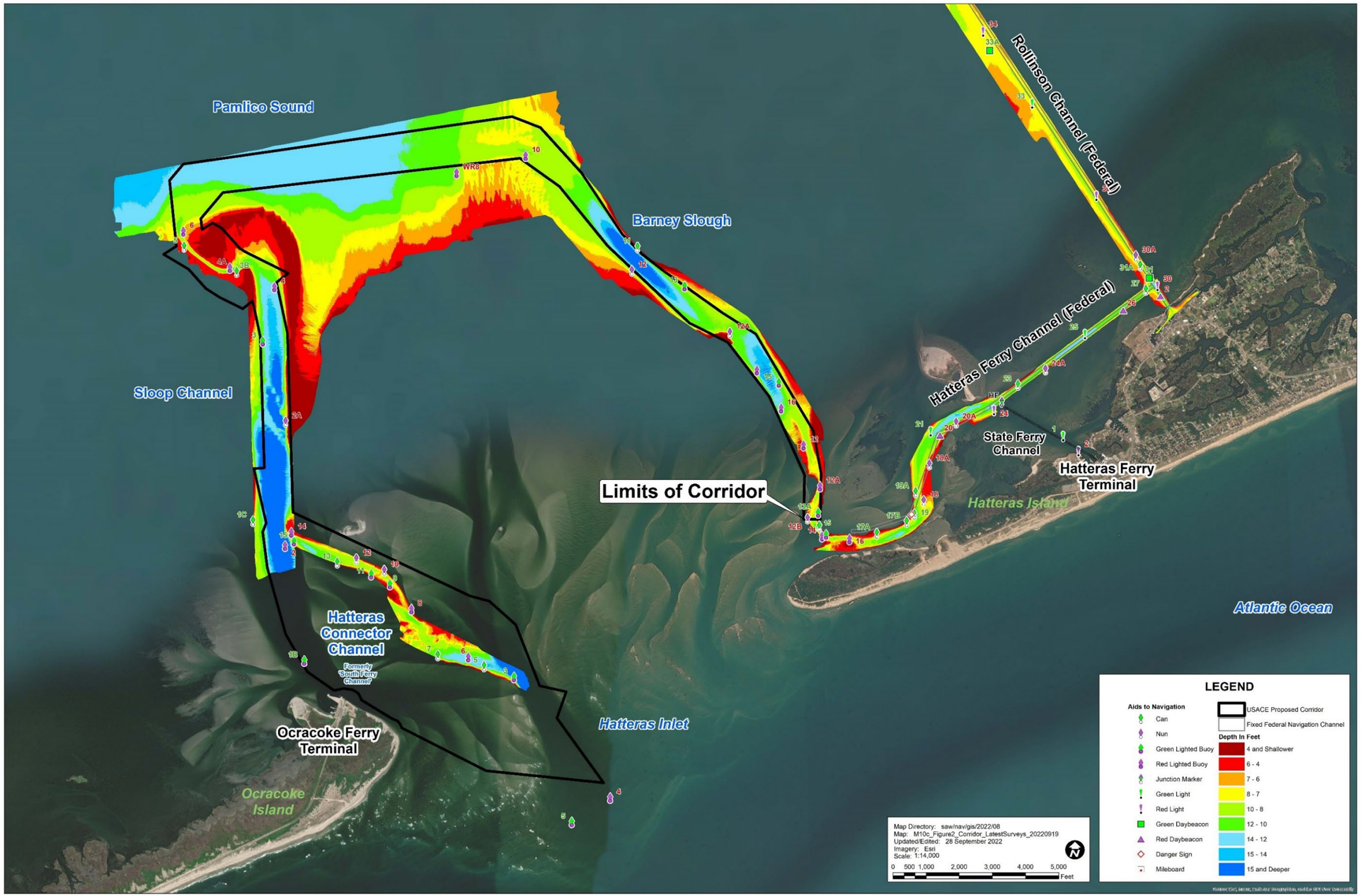


Figure 2. Proposed Corridor with 2022 Hydrographic Survey

1.1 Authority.

The Rollinson Channel Navigation Project, which includes Rollinson Channel and the Hatteras to Hatteras Inlet Channel, was authorized in its current location and dimensions on October 23, 1962, under authority of the River and Harbor Acts of 1935, 1945, 1954, and 1962, as amended. The navigation project includes two sections: (1) a 100-foot-wide fixed channel with an authorized depth of -12 feet mean lower low water (MLLW) + 2 feet allowable overdepth[1] extending through Rollinson Channel from Hatteras Harbor to Pamlico Sound; and (2) a 100-foot-wide channel with an authorized depth of -10 feet mean lower low water (MLLW) + 2 feet allowable overdepth that extends from Rollinson Channel to the Hatteras Inlet gorge, with part of the channel being fixed and part following best (deepest natural) water. The USACE proposes to realign the portion of the Hatteras to Hatteras Inlet Channel that follows deep water due to the changes in shoaling patterns caused by the dynamic nature of the Hatteras Inlet system. Pursuant to Engineer Regulation (ER) 1165-2-119, Modifications to Completed Projects, “where not otherwise precluded by project authorization, the location of a completed channel may be altered during the course of the periodic maintenance program if the maintenance can thereby be more economically accomplished and related aids to navigation are readily adjustable to suit the restored channel dimensions at the shifted location.” The project’s authorization does not specify the precise location of the Hatteras to Hatteras Inlet Channel, and therefore the location may be altered if found to be justified.

1.2 Background.

The southwest end of Hatteras Island began receding dramatically around 1993, when the inlet was only 0.35 miles wide. Running parallel behind the island, the traditional “direct route” to the inlet gorge was maintained by USACE until the winter/spring of 2013 when it became impossible for the USACE to safely maintain. During that time a USACE-contracted pipeline dredge was overwhelmed while performing dredging operations. The shoaling occurred faster than the dredge could remove the material, resulting in treacherous conditions that did not allow safe dredging operations in an open water environment. The contractor was allowed to suspend dredging operations without completing maintenance of the channel because of the conditions. Once the contract dredging was suspended, Government-owned dredges (sidecast and special purpose hopper) worked from June 2013 to August 2013 to try to maintain safe navigation, which was later deemed unmaintainable. The NC Department of Transportation (NCDOT) ferry service and local mariners then began utilizing the horseshoe route to access Ocracoke Island in order to maintain operations.

[1] Allowable overdepth dredging (depth and/or width) is a construction design method for dredging that occurs outside the required authorized dimension and advance maintenance (as applicable) prism to compensate for physical conditions and inaccuracies in the dredging process and allow for efficient dredging practices. The term "allowable" must be understood in the contracting context of what dredging quantities are eligible for payment rather than in the regulatory context of what dredging quantities are reflected in environmental compliance documents or permits.

In 2014, USACE began assessing advanced maintenance options for the direct route, proposing the dredging of 50-foot wideners[2] on both sides of the channel to the gorge to slow the shoaling process; however, in 2017 these efforts ceased when it became apparent that the maintenance dredging needs would exceed available funding ($765,000 in FY17). Additionally, USACE did not have adequate funding to conduct the cultural resources surveys required for wideners. Hatteras Island continued to erode and by 2019 approximately 1.7 miles (~9,000 feet) of shoreline and approximately 315 acres of dry land had been lost. Likewise, approximately 2,000 feet of shoreline (roughly 130 acres) were lost from the eastern end of Ocracoke Island (Figure 3). Extensive erosion in both locations has transformed formerly upland beach into subtidal shoals, resulting in an inlet that is now over two miles wide.

Since 2013, commercial and recreational vessel traffic has continued to use the horseshoe route and the overall channel has remained relatively stable; however, there are areas that naturally shoal more often than others. In pinch-point areas, such as the north end of Sloop Channel (Figure 2), the channel width has narrowed to widths that are unsafe for two passenger ferries to pass one another. After the horseshoe route was first established, 72 passenger ferry runs would occur per day between Hatteras and Ocracoke Islands during the height of season; however, since 2018 this number was reduced to 60 to allow ferries to pass safely and remain on schedule.

In 2016, NCDOT and Dare County began coordinating with federal and state resource agencies to assess the effects of maintenance dredging needs. As a result, Dare County obtained permits to maintain the portion of channel from the mid-point at Sloop Channel, south beyond the Hatteras/Ocracoke Ferry landing to the Hatteras Inlet gorge (Hatteras Connector Channel, Figure 2). Submerged cultural resources have been identified, and restricted areas established to avoid impacts to those resources. NCDOT received permits for the northern portion of Sloop Channel where it meets Pamlico Sound. At the time the Draft EA was released, no dredging had occurred within Sloop Channel; however, the northern portion of the channel at greenlight Buoy 3A (a.k.a. “dog-leg”, Figure 4) was dredged using the Government-owned sidecast dredge in April 2022 due a potential shutdown of ferry operations.

[2] Wideners refers to dredging to a specified depth and/or width beyond the authorized channel dimensions in critical and fast-shoaling areas to avoid frequent redredging and ensure the reliability and least overall cost of operating and maintaining the project authorized dimensions.

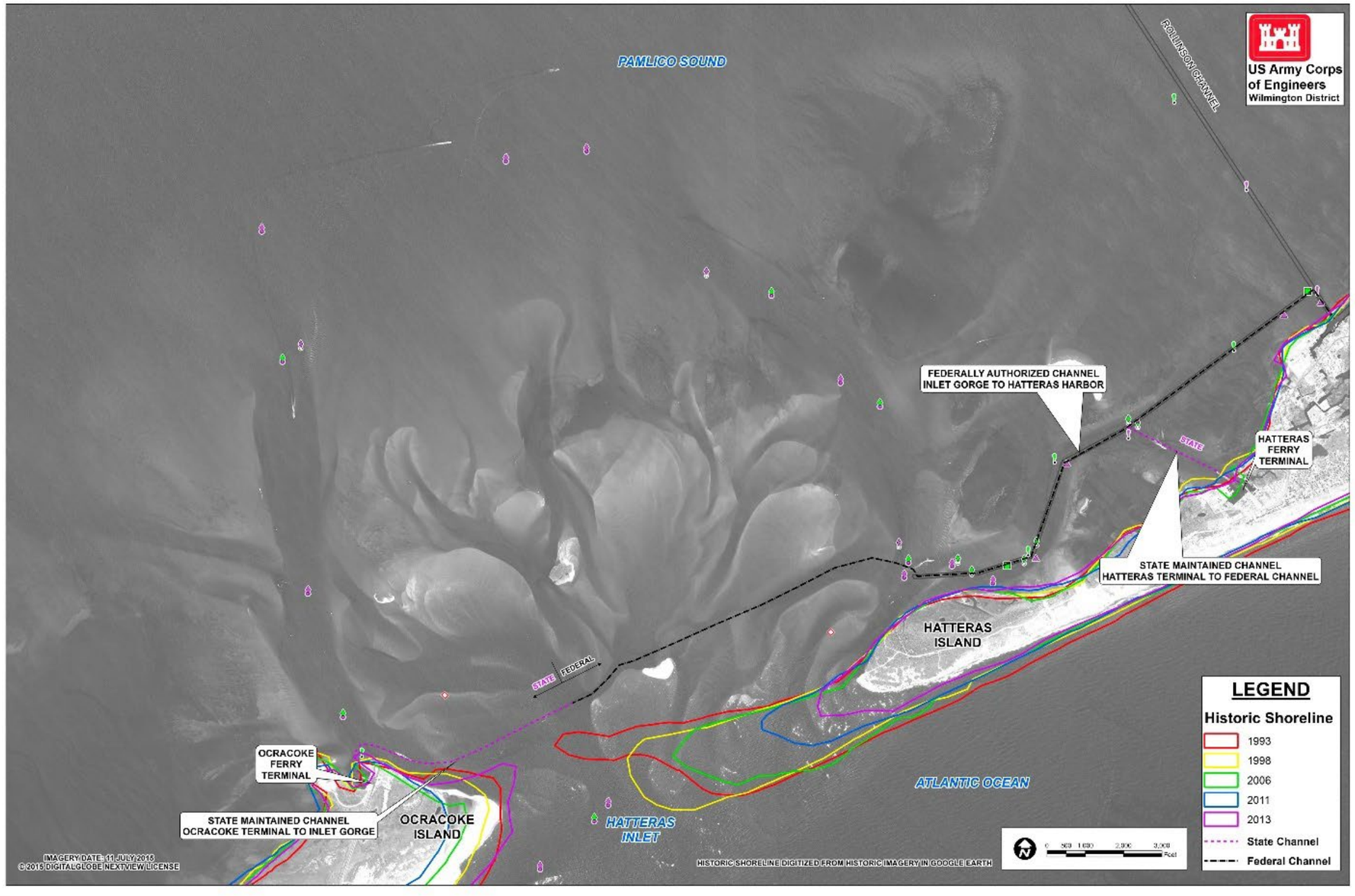


Figure 3. Erosion on Ocracoke and Hatteras Islands 2013-2016

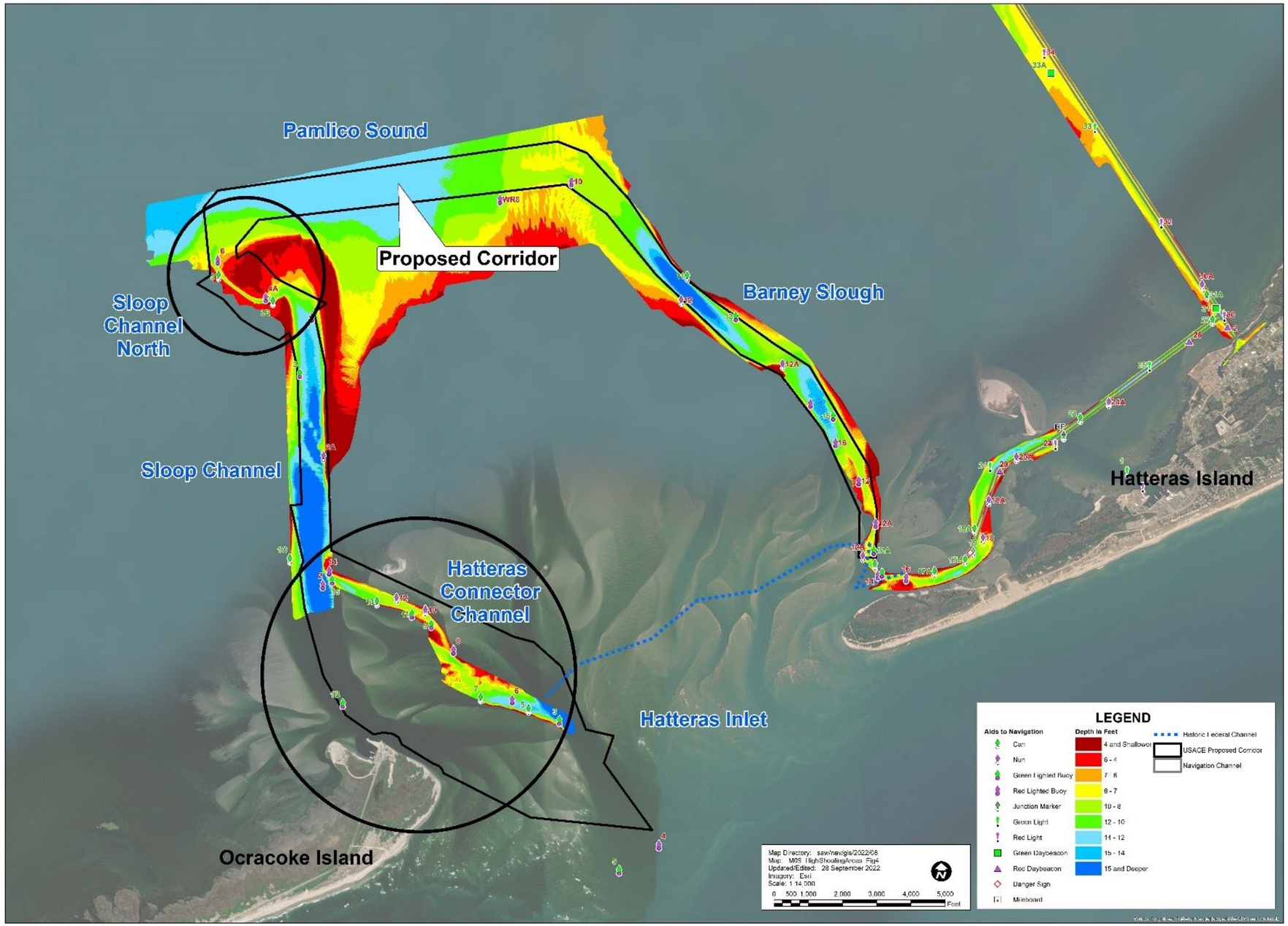


Figure 4. Proposed Corridor Identifying High Shoaling Areas (shown in circles) to be Dredged Any Time of Year

1.3 Project Area (Dredging and Placement).
The proposed project areas (shown in Figure 5) consist of the horseshoe corridor and relevant dredged material placement areas to include beachfront and nearshore areas of Ocracoke Island and Hatteras Island, nearby Cora June and DOT bird nesting islands, adjacent open water, and a scour hole located next to the Ocracoke Ferry Terminal (referred to as Sheetpile Protection Placement Area, Figure 5). Nearshore, bird island, open water (sidecasting) and beachfront placement areas have been previously approved for use; however, placement into the identified scour hole has not. The type of dredge plant used will depend on the location of the shoaling, quantity and depth of shoaled material, plant availability, and project funding.

The 8.5-mile-long proposed corridor is in the Hatteras Inlet complex between Ocracoke Island (Hyde County) and Hatteras Island (Dare County). The Hatteras Island side begins at greenlight Buoy 15 (approximately) and includes Barney Slough, a small portion of Pamlico Sound, Sloop Channel and Hatteras Connector Channel (Figures 2, 4). The proposed corridor varies in width, allowing the channel to shift while following naturally deep water. The authorized channel within the corridor will be 100 feet wide by 10 feet deep plus 2 feet of allowable overdepth, with 3:1 side slopes. The total maintained channel area would equate to approximately only 7% of the total area of the corridor.

Placement of material will be dependent on dredged material composition. Sediment sampling and analysis in Sloop Channel and the Hatteras Connector Channel has been performed by Dare County and NCDOT, and USACE has recently completed a subsurface investigation in Barney Slough and the shallower areas of Pamlico Sound. All sampled material within the corridor to a depth of 12 feet (project depth of 10 feet plus 2 feet of allowable over depth) consists of ≥90% beach quality sand, making it suitable for beach placement, bird island placement, nearshore placement, and sidecasting. Since 2017, most dredge events have been by sidecast dredge, occurring in the Hatteras Connector Channel. All dredging of the Hatteras Connector Channel to date has been completed using government-owned special purpose hopper and sidecast dredges. Sloop Channel has been dredged mechanically by NCDOT, and once by USACE, under an emergency approval, using a sidecast dredge.

In 2000, Tideland Electric Membership Corporation installed a submarine power cable between Hatteras Island and Ocracoke Island. The cable transects the navigation corridor in Hatteras Connector Channel, and it is the only source for power and communications on Ocracoke Island (Figure 5a). The active cable, 4.5 inches in diameter, is located within the corridor at shallower depths ranging between -7 and -12 feet. There are also two inactive (disconnected) cables within the corridor located to east of the active line.

From an operational standpoint, USACE Government Plant will maintain a minimum dredging distance of 100 feet from either side of the active submarine power cable,

since it is located within the authorized navigation channel limits and associated overdepth. The dredging safety buffer will be removed once the line is relocated to a minimum depth of -15 feet mean low water within the corridor.

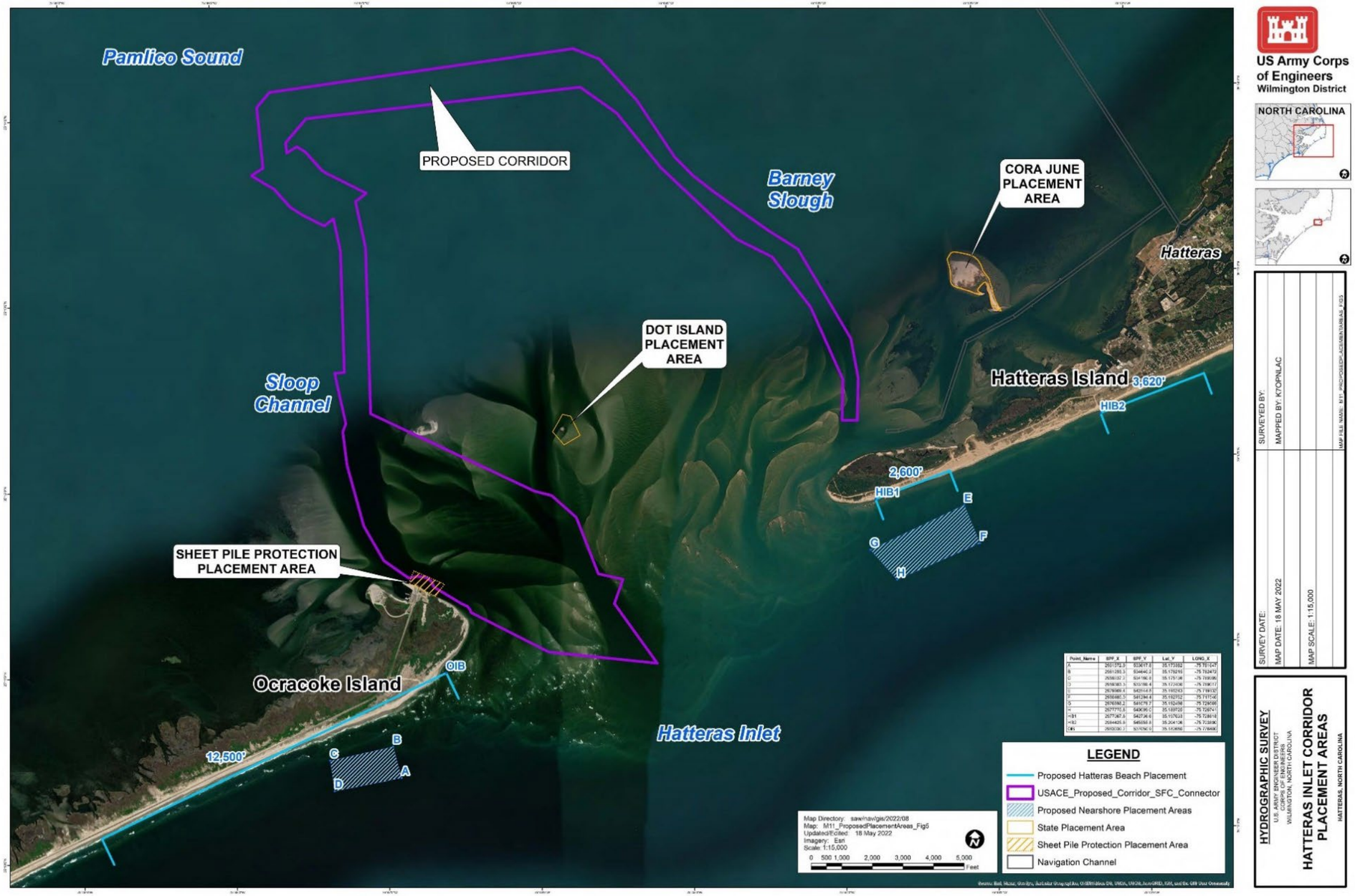


Figure 5. Proposed Corridor Showing Placement Areas

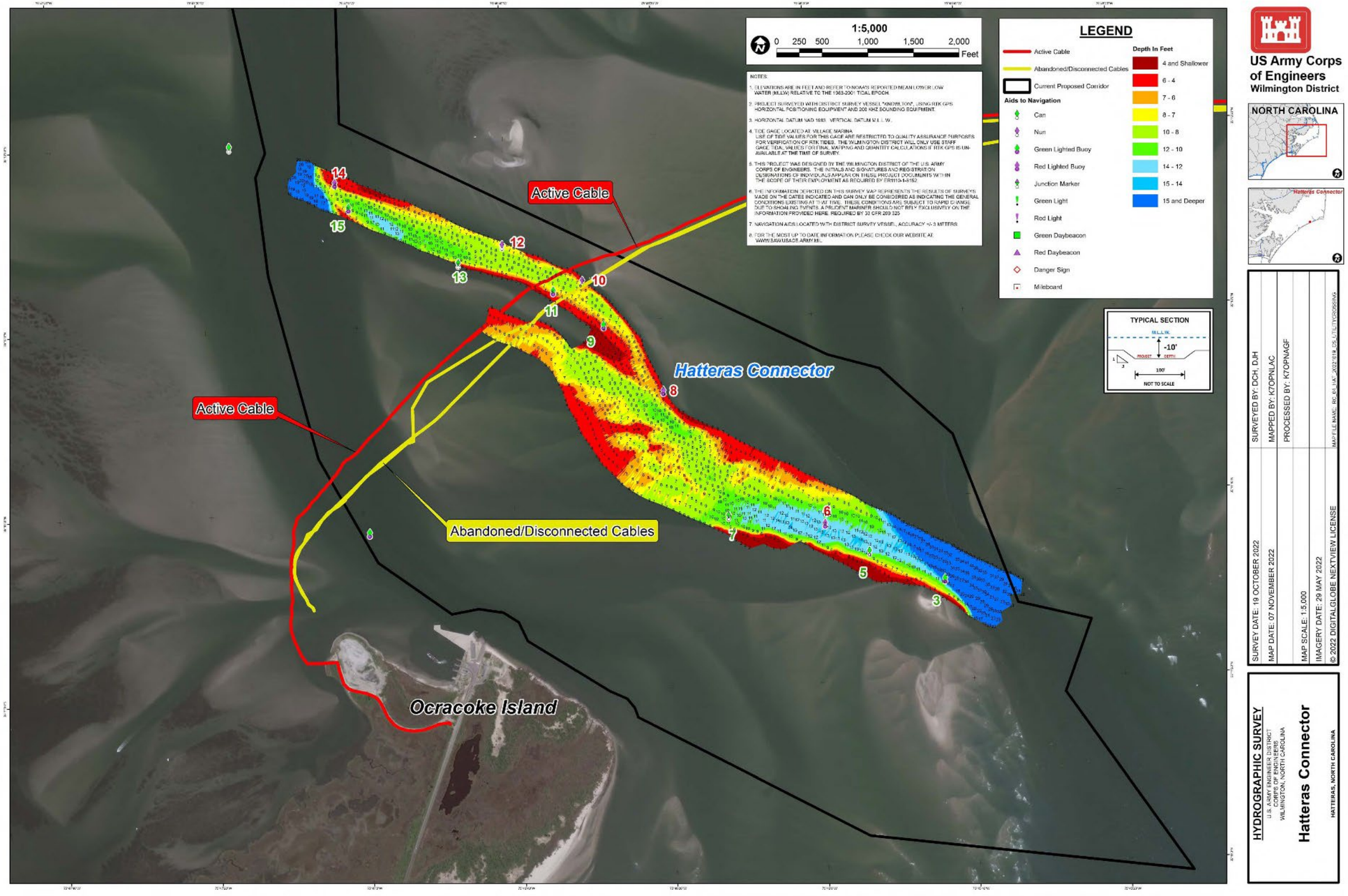


Figure 5a. Ocracoke Island Active Cable Line (in red)

2.0 PURPOSE AND NEED.

The purpose of considering realignment of the Hatteras Ferry Channel is (1) to provide a safe, reliable navigation channel for residents, visitors, supplies, and services to and from Ocracoke and Hatteras Islands and (2) for the US Coast Guard (USCG) and commercial and recreational fishermen to access Hatteras Inlet gorge enroute to the ocean.

The NCDOT ferry service is a lifeline to this area, connecting the mainland from Cedar Island and Swan Quarter to the Ocracoke ferry terminal on the south end of Ocracoke Island. Another ferry on the north end of Ocracoke takes passengers and supplies over to Hatteras Island by way of the Hatteras Ferry Channel. The only other access to Hatteras Island is a single route, NC Highway 12, which takes approximately two hours by vehicle to reach the next barrier island to the north. There is no vehicle access to Ocracoke Island that does not involve a ferry, so elimination of the ferry route between Hatteras Island and Ocracoke would result in no traffic of people, supplies, or services from Hatteras and Dare County.

Since maintenance of the direct parallel route to the inlet gorge is virtually impossible (that is, maintenance would require almost continuous dredging - 12 hours per day, 300 days per year), this EA considers methods to follow natural deep water in order to economically maintain access to Hatteras Inlet. Hatteras Inlet is the only access to the Atlantic Ocean for many miles; Ocracoke Inlet is approximately 18 miles to the south, and Oregon Inlet is approximately 55 miles to the north. The USCG search and rescue operations from the Oregon Inlet boat ramp would take hours to respond to a distressed mariner off the coast of Hatteras or Ocracoke Islands. It is critical for the USCG Station Hatteras Inlet to access the open ocean year-round to support life-safety missions and effectively protect these U.S. coastal waters and the mariners who use them.

Local commercial and recreational fishing, as well as tourism, are the lifeblood of the Outer Banks economy. Nearshore and offshore fishing have provided generations of income to residents and tourism dollars to the entire state. Access to offshore fishing areas has been strained for the last 20+ years due to the eroding adjacent shorelines and increased shoaling in Hatteras Inlet. The USCG is constantly monitoring and adjusting safe navigation routes for fishermen so they do not become stranded or run aground. A stable and maintainable channel is needed to reduce the risks to fishermen navigating from Hatteras Inlet to safer harbors. The likely outcome will be increased use by the local fishing fleet due to the improved safety and thus economic stimulation.

Beneficial use of dredged material will help to keep valuable sediments within the system and potentially decrease rates of erosion and habitat loss. By placing the beach quality material in the nearshore, on beaches and bird islands, USACE can protect and buffer existing shorelines and infrastructure and rebuild upland habitat areas to reduce risks to inshore areas from the effects of storm surge and high tides.

Ferry services operate year-round, but the number of operational ferries and their frequency peaks May – August. Based on a shoaling analysis of all the channels within the proposed corridor, there are two identified high shoaling areas that will require maintenance throughout the year, Sloop Channel North and Hatteras Connector Channel (Figure 4). Absent unpredictable seasonal storms that could result in unanticipated shoaling, all other channel areas could be maintained during the winter months with no expected adverse effects to ferry operations.

Given the dynamic nature of sediment movement within the Hatteras Inlet complex, following natural deep water to the extent practicable, and employing best management practices would result in a safer, more reliable channel, a reduced dredging effort and an associated reduction in maintenance costs.

3.0 INCORPORATION BY REFERENCE.

The proposed work will be conducted by dredging and placement methods previously used for maintenance dredging of federally authorized channels in the project area. The environmental acceptability of these methods has been addressed in previous National Environmental Policy Act (NEPA) documents that were circulated for public and environmental agency review between 1977 and 2014. They include the following:

a. Manteo (Shallowbag) Bay North Carolina, Final Environmental Statement. 1977, U.S. Army Corps of Engineers.

b. Maintenance of Rollinson Channel, Hatteras to Hatteras Inlet Channel Section, Dare and Hyde Counties, North Carolina. Environmental Assessment and Finding of No Significant Impact. 2000, U.S. Army Corps of Engineers.

c. Use of Government Plant to Dredge in Federally Authorized Navigation Projects in North Carolina. Environmental Assessment. March 2004, U.S. Army Corps of Engineers.

d. Use of Government Plant to Dredge in Federally Authorized Navigation Projects in North Carolina. Finding of No Significant Impact. September 2004, U.S. Army Corps of Engineers.

e. Sidecast Maintenance Dredging of a Portion of Hatteras-to-Hatteras Inlet Channel Pamlico Sound, North Carolina. Environmental Assessment. November 2013, U.S. Army Corps of Engineers.

f. Sidecast Maintenance Dredging of a Portion of Hatteras-to-Hatteras Inlet Channel Pamlico Sound, North Carolina. Finding of No Significant Impact. February 2014, U.S. Army Corps of Engineers.

4.0 ALTERNATIVES.

In addition to the alternatives discussed in detail below in Section 4.2, the implementation of 50-foot advanced maintenance wideners for the direct route to the

Hatteras Inlet gorge were explored in 2017. The objective was to dredge an additional 50 feet on both sides of the channel to maintain the 100-foot channel width for longer periods; however, conducting cultural resource surveys in areas that had not been previously dredged proved to be cost prohibitive and this effort was abandoned. This alternative is not carried forward in the detailed analysis in Section 5.

4.1 Dredge Types and Placement Options.
Various dredge types may be used to maintain the Hatteras to Hatteras Inlet Channel, depending on dredge availability and channel conditions like shoaling locations and controlling water depths. Dredge type and placement options are described immediately below and would be applicable to any of the three alternatives described next in Section 4.2.

4.1.1 Pipeline Dredge.
To maintain the horseshoe route, a contracted hydraulic cutter-suction (pipeline) dredge will be used approximately every 3-5 years, depending upon shoaling rates and available funding. These cutter suction dredges, typically use pipelines of 18-24 inches in diameter, operate 24 hours per day and have the capability to remove larger volumes of material (≥150,000 CYs) per contract, as compared to other dredge types. Cutterhead suction horsepower of small non-ocean certified dredges usually ranges between 1,300 – 2,000 HP whereas larger pipeline dredges range from 3,000 – 4,500 HP. Beneficial use of dredged material may occur with placement of beach quality sand on Hatteras and Ocracoke Island beaches and/or onto Cora June and DOT Island bird islands for the purpose of restoring habitat for nesting sea turtles and shorebirds, respectively.

Historically, pipeline dredging in the vicinity of the project area has occurred outside of bird nesting season (1 September – 31 March) with dredged material pumped onto nearby Cora June Island, a well-known bird nesting habitat site in the area. Presently, the island has reached maximum size (25 acres) and will not accommodate additional material until it naturally erodes to a smaller footprint. A second island, DOT Island, is located centrally inside the corridor and has almost completely eroded away. Authorizations have been obtained by the North Carolina Wildlife Resources Commission (NCWRC) to pump dredged material there by control-of-effluent and expand its footprint to a maximum size of 25 acres.

Pipeline dredging may also place dredged material directly onto adjacent Ocracoke and Hatteras Island beaches for purposes of habitat restoration and to combat shoreline erosion. Placement of dredged material from 16 November – 31 March is intended to be protective of bird nesting habitat. Beach placement on the Cape Hatteras National Seashore between 16 November and 31 March would require a Special Use Permit (SUP) to be issued by the National Park Service, and would need to be accomplished

as described in applicable NPS NEPA documents. The USACE would obtain an SUP prior to any placement of sand.

4.1.2 Special Purpose Hopper Dredge.
The Wilmington District has two Government-owned shallow-draft special purpose hopper dredges, the “Murden” and the “Currituck”. These vessels typically operate during daylight hours approximately 300 out of 365 days per year, 12 hours per day. As previously discussed, these special purpose hopper dredges are smaller than commercial hopper dredged and both are capable of dredging at a minimum depth of 5.5 feet of water partially loaded and 8 feet fully loaded. Both have two dragarms with dragheads that pump material at 100-110 HP into a hopper that can overflow to obtain an economic load. Once the hopper is full (~300 to 500 CYs) the dredged material would be taken to nearshore ocean waters where the split-hull hopper would be opened, and the material placed (typically at 10 feet or more below mean low water (MLW)). These dredges are used to remove small and/or isolated, regularly occurring shoals when contract dredging is not scheduled.

Nearshore placement areas previously established under the 2004 EA, Use of Government Plant to Dredge in Federally Authorized Navigation Projects in North Carolina, have been utilized in the past by special purpose hopper dredges. The nearshore location on the Ocracoke side of the inlet is currently in use by Dare County to place material from Hatteras Connector Channel. However, the previously established nearshore area on the Hatteras side is now located in the inlet (due to erosion); therefore, the proposed nearshore location on the Hatteras side is a new site (Figure 5). It is believed that placement in both locations will help to protect the adjacent beaches by acting as a wave energy dissipator and/or to distribute the beach quality dredged material onto the beaches, offering erosion protection.

In addition to the nearshore placement locations, special purpose dredges can place material into scour hole sites such as the area directly adjacent to the Hatteras/Ocracoke Ferry Terminal sheet pile wall. The purpose of this effort would be to provide sediment protection for the sheet pile wall which was installed to decrease the erosion occurring at the Hatteras/Ocracoke Ferry Terminal facility. Smaller amounts of material (typically ≤5,000 cubic yards) would be placed in this location when specifically requested by NCDOT.

4.1.3 Sidecast Dredge.
The Wilmington District presently has one Government-owned sidecast dredge, the “Merritt.” The Merritt is capable of dredging in a minimum depth of 5 feet of water, has two adjustable dragarms with dragheads, has a 12-inch diameter discharge pipe that is 80 feet long, and has an available 10-foot pipe extension. The suction pump horsepower is 110 HP. The Merritt is only used in areas with 90% or greater sand that settles out quickly and casts material approximately 80 feet from the port or starboard

side of the vessel into adjacent open waters where the predominant currents carry the sediments away from the channel. As with the special purpose hopper, the sidecaster operates only during daylight hours (12 hours/day).

Due to its shallow draft capability, the sidecast dredge is often the only method of dredging available for shoal removal. The Merritt is often used for digging pilot channels for the special purpose dredges or contract dredge to deepen to project depth. Sidecast dredging takes less time than special purpose dredging since transit time for dredged material placement is not required. When maintenance dredging is required and other dredge types are not available, USACE proposes to sidecast dredge. Sidecast activity in the vicinity of the corridor has been previously authorized to occur as needed (2014 Sidecast Dredge EA) to maintain the historical route to the inlet gorge.

4.2 Alternative 1 – No Action:

The No Action alternative refers to the USACE's on-going pursuit of maintaining the historical route (parallel to the islands) to the Hatteras Inlet gorge. This route had been maintained by USACE since the 1960s, with dredged material sidecast away from the channel, placed in nearshore areas using special purpose hopper dredges, or pumped by pipeline dredge to adjacent beaches and/or Cora June and DOT bird islands. This maintenance dredging did not have timing limitations and was limited to only the areas of shoaling. Furthermore, government plant dredges have much less of an impact on resources due to their smaller size and lower suction power as compared to the commercial fleet. To avoid dredging restrictions, USACE committed to coordinating with agencies prior to dredging to avoid potential impacts to aquatic habitat, an effort it will continue to practice. Therefore, the only risk minimization measures deemed appropriate from prior dredging using these equipment types was to limit placement of material when necessary to protect nesting shorebirds and sea turtles.

The historical route is not currently navigable and re-establishing it would require a dual effort of sidecast dredging and commercial pipeline dredging almost continuously due to high shoaling within the mouth of the inlet. The Government sidecast dredge is operable 300 days per year, however it is only certified to operate during daylight hours. Constant dredging over a ten-year period is expected to cost over $60 million with the sidecast dredge alone. For USACE to continue pursuing methods to maintain the historical channel would be extremely expensive, cost prohibitive and operationally dangerous. Without the protection of the barrier islands, sediments continue to shift and change the path of deep water, making it nearly impossible to maintain. Having a Government dredge onsite continuously may keep the channel open part of the time, but due to weather patterns storms would likely adversely affect channel dredging on a regular basis, making this option economically unfeasible.

The USCG, NCDOT ferries and local mariners have been using the horseshoe route for the past 8 years, which nearly doubles the transit distance and time from Hatteras

Village (location of the USCG station) to the Hatteras/Ocracoke ferry landing, as compared to the historic route. Shoaling within certain high shoaling areas has driven Dare County and NCDOT to obtain their own maintenance dredging permits. Dare County has acquired authorization to maintenance dredge from the ferry landing to the inlet gorge (Hatteras Connector Channel) between October 1 – March 31, and NCDOT permits have been issued for Sloop Channel also with the 1 October – 31 March timeframe. The dredging of Barney Slough is not currently covered by any permits and is experiencing substantial shoaling.

If the USACE does not obtain clearances to maintain the horseshoe channel route, operational and financial strain would be placed on the State and local municipalities to independently maintain the channel. It is USACE's responsibility to maintain access to the Hatteras Inlet gorge as part of the Rollinson Channel federal navigation project. Although, the No Action alternative is not a viable option, it is carried forward for comparison purposes in the detailed analysis of Affected Environments and Potential Impacts in Section 5.

4.3 Alternative 2 – Maintenance of the horseshoe route between 1 October and 31 March with permission required for hot spot dredging outside of that timeframe:

Based on input from resource agencies during project scoping, a dredging work period of 1 October – 31 March was recommended to protect sensitive stages of marine life that use the estuarine habitat for spawning and development. This timeframe is also consistent with those included in the Dare County and NCDOT dredging permits with use of Government Plant dredges.

When a contract pipeline dredge is employed, USACE would abide by the placement timeframes established to protect nesting shorebirds and sea turtles on the bird islands and adjacent beaches. Pipeline placement of dredged material onto Cora June and DOT bird islands would be restricted to 1 October – 31 March, and 16 November – 30 April for Hatteras and Ocracoke Island beachfronts; unless bird nesting is occurring (or has historically occurred), then beach placement activities shall cease no later than 31 March.

Under this alternative, USACE would be required to conduct regular maintenance with Government Plant dredges between 1 October and 31 March but would have the option to request dredging in other timeframes when severe shoaling occurs. **Coordination with the resource agencies would be required prior to every dredging event outside of the 1 October – 31 March timeframe, no matter how minimal the dredging.** Since placement of dredged material from pipeline dredging would be restricted to 16 November – 30 April for placement onto beaches and bird islands, respectively, only sidecast and special purpose hopper dredging events would require

be coordination with agencies prior to dredging during the months of April through September.

Limiting Government plant dredging to only the 1 October – 31 March timeframe is not practicable given the dynamic nature of the inlet and high shoaling rates. Weather in the Outer Banks in the wintertime is tumultuous and the most dangerous time to dredge because heavy winds and high seas common during December – February result in increased sediment transport. Inclement weather is the number one reason for dredge delays, making wintertime dredging very expensive and inefficient.

Implementing dredging timeframe restrictions will not decrease the overall amount of dredging needed to maintain the channel, and it will not lessen the amount of dredging that would be needed outside of those timeframes. In the first half of 2021, Hatteras Connector Channel required four timeframe moratorium relief requests resulting in the need for immediate dredging action that required many federal and state agencies to reprioritize established project workloads and provide input on these USACE requests. When severe shoaling occurs and the ferry service is affected, as occurred in May 2021, hundreds of travelers may become stranded, and delivery of important supplies may be delayed.

The need for numerous moratorium relief requests needed over the past 3 years substantiates the ineffectiveness of trying to maintain such dynamic channels during a limited, 6-month period of the year. This approach is inefficient, inflexible, and not sustainable and does not provide a safe, reliable navigation channel; however, it is carried forward for comparison purposes in the detailed analysis in Section 5.

4.4 Alternative 3 (**Proposed Action**) – Government Plant maintenance of the horseshoe route between 1 October and 31 March except for Sloop Channel North and Hatteras Connector Channel which can be maintained any time of year:

The proposed action is to limit dredging with Government Plant to the 1 October and 31 March timeframe as much as possible throughout the project area as requested by resource agencies with the intent of protecting important fisheries and fishery habitat within the corridor. However, two locations, Sloop Channel North and Hatteras Connector Channel, experience high shoaling amounts year-round and therefore require maintenance at all times of year. By relinquishing the dredging moratorium, USACE may proactively manage maintenance dredging events as needed, and expedite dredging when needed, saving valuable time while preventing groundings within the channel and ferry service delays or closures.

As seen with recent dredging events in Hatteras Connector Channel, numerous requests for relief from the seasonal dredging restrictions have been necessary to

maintain year-round navigability. Since 2017, 50% of shoaling that resulted in the need for dredging occurred during the prior timeframe. Maintaining navigability in the summer months is most important since tourism triples the population on Ocracoke and Hatteras islands between the months of May and September. Based on past experience, performing maintenance of the channel immediately prior to the tourist season does not guarantee the channel will remain open throughout this period.

Contract pipeline dredging can be resourced and funded in advance to occur approximately every 3-5 years. The goal of using a pipeline dredge would be to remove as much material within the authorized dimensions as possible to make effective use of equipment mobilization costs, while at the same time beneficially using the material. Timing of pipeline dredging would be driven by placement options, with most of the material being placed on oceanfront beaches and bird islands. Therefore, all pipeline dredging would occur within the restricted placement timeframes of 16 November – 30 April on beaches (if no nesting birds are present; otherwise 31 March), and 1 October – 31 March on bird islands.

As documented in the 2004 Government Plant EA/FONSI, some portions of Rollinson Channel project are restricted from sidecast dredging to protect submerged aquatic vegetation (SAV) that occurred in the vicinity of the channel. However, as the islands have retreated over the past 20 years, SAV beds have become negatively impacted by the natural currents and dynamics of the inlet, causing the constant shifting of sands to cover the beds and prevent them from growing back. Historically, to avoid impacts to SAV, the USACE has assessed SAV locations prior to conducting dredging events outside of moratorium timeframes. These efforts would continue preceding each dredging event in proximity to SAV habitat areas.

In between the contract dredging events, USACE would utilize a Government Plant as needed to maintain high shoaling areas. The use of the special purpose hopper and sidecast dredges allows for prompt and economical responses to quickly address developing shoaling situations. Currently, shoaling is most prevalent in 4 areas: the lower portion of Barney Slough, where Barney Slough meets the Pamlico Sound Channel, the upper portion of Sloop Channel and Hatteras Connector Channel. The last hydrographic survey of the entire corridor was completed in September 2022 (Figures 2, 4) identifying high shoaling areas (shown in red). Approximate volumes were based on this survey to estimate future dredging volumes and shoaling rates. It is suggested that Sloop Channel North and Hatteras Connector Channel be dredged at least 4-6 times per year in between contract dredging events. Table 1 shows the annual dredging events estimated to maintain each reach within the horseshoe corridor.

4.4.1 Barney Slough.

Barney Slough is the local name for the natural deep-water channel that developed on the backside of Hatteras Island running north-south connecting the Hatteras to Hatteras

Inlet Channel with deep water of Pamlico Sound. The channel begins at greenlight Buoy 13A (approximately), and ends where it intersects with Pamlico Sound Channel at Buoy 10.

Dredging within Barney Slough is not currently covered by any permits and shoaling is most prevalent in the lower portion near Buoy 12A (aka Barney Slough South). Between pipeline contracts, the ideal dredge type to maintain this portion of the horseshoe route would be the sidecast dredge, as transit distance would be too far for the special purpose hopper to travel to reach the Ocracoke nearshore for placement. It is estimated that 30 days of dredging over 2-3 dredging events per year (approximately 40,000 CYs annually) would be needed to maintain the channel. All dredging would be completed during the recommended 1 October – 31 March timeframe.

Barney Slough North refers to the remainder of the channel which is currently natural deep water. The need to dredge is not foreseen at this time, however conditions may change, resulting in shoaling. If this occurs, dredging will be limited to the 1 October – 31 March timeframe. If dredging is needed between April and September, agency coordination will occur in advance.

4.4.2 Pamlico Sound.
The Pamlico Sound portion of the horseshoe corridor is the deepest and would require the least maintenance. Shallow areas on the eastern side, where Pamlico Sound connects with Barney Slough, may require annual maintenance with Government Plant. Removal of approximately 7,500 CYs is estimated to take a total of 6 days over the course of 1-2 dredge events, using the sidecast dredge. Annual maintenance dredging within the Pamlico Sound channel will be completed during the recommended 1 October – 31 March timeframe.

4.4.3 Sloop Channel.
Sloop Channel runs north south from Pamlico Sound to the Ocracoke ferry landing. Significant shoaling has occurred in Sloop Channel North (aka “dog leg”) allowing only enough water for one ferry to travel at a time. Continuous vessel traffic is the only reason this portion of channel stays navigable, however today there are fewer ferry departures than 3 years ago (60 out of 72 during peak season) as a result.

Dredging of Sloop Channel North using the sidecaster Merritt first occurred in April 2022 under NCDOT permits. USACE shoaling analysis indicates that annual maintenance dredging would be needed 4-6 times a year using either the sidecast or special purpose hopper dredges to remove an average of about 80,000 CYs over approximately 60 days per year. Maintaining this portion of the channel will require dredging at all times of year; approximately 30 days of dredging between 1 April and 30 September annually is expected.

Sloop Channel South is currently situated in deep water and does not require dredging. Shoaling may occur naturally in the future due to a storm or other related event, and future maintenance will occur within the recommended timeframe. If dredging is needed between April and September, agency coordination will occur in advance.

4.4.4 Hatteras Connector Channel.
Hatteras Connector Channel, formerly known as South Ferry Channel, connects Sloop Channel to the Hatteras Inlet gorge and is frequently traveled by commercial and recreational fishermen accessing the Atlantic Ocean and routinely by USCG for search and rescue operations. Hatteras Connector Channel experiences the highest amount of shoaling; the entire area is considered a hot spot since natural deep water is continuously shifting.

Dare County obtained permits to maintain Hatteras Connector Channel and from 2017 – 2021 there have been a total of 16 dredging events. To date, Dare County has funded USACE to complete these dredging events. Thus far, 14 events used the Merritt and 2 events used the Murden. Initial dredging occurred between 11 May – 1 June and again 12-23 September, removing a total of 80,600 CYs. Since then, six maintenance dredging events during the NCDMF/NMFS-imposed moratorium of 1 April – 30 September have been needed, with four of these occurring in 2021. All these events required resource agency coordination prior to the start of dredging.

Under the proposed action, 4-6 maintenance events in Hatteras Connector Channel per year are expected with removal of approximately 100,000 CYs annually. A total of 80 days of dredging per year would be needed to maintain the channel, barring any major storms. Maintaining this portion of the channel will require dredging at all times of year; approximately 40 days of dredging between 1 April and 30 September is expected.

Table 1. Annual dredging events estimated to maintain each portion of the horseshoe route

Channel	Dredge Type	Avg Amt/year (CYs)	Avg Dredging Days/year	# Events per year	Avg Days Dredging April - Sept
Barney Slough South	Sidecast only	40,000	32	2-3	0
Barney Slough North	Sidecast Only	7,500	6	1-2	0
Pamlico Sound	Sidecast Only	0	0	0	0

Sloop Channel North	Sidecast & Hopper	80,000	60	4-6	30 (2-3 events/year)
Sloop Channel South	Sidecast & Hopper	0	0	0	0
Hatteras Connector Channel	Sidecast & Hopper	100,000	80	4-6	40 (2-3 events/year)
	Totals	**227,500**	**178**	**11-17**	**70**

Yellow = Dredging during window only
Green = No dredging anticipated
Blue = Dredging all times of year

5.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS.

The area of dredging effects to both benthic species and those that are found in the water column are limited by the dredge types covered. Government Plant dredges that have small dragheads (2 foot by 3 foot) resulting in a small linear dredge footprint with each dredging pass that limits the area effected. Those species that may be in the area surrounding the dredge draghead are at low risk of entrainment due to the low dredge intake velocity, small dredge footprint. Dredging by pipeline would also be limited to the small area where the cutterhead was actively dredging. The cutterhead is in a fixed location and swings slowly in an arch pattern limiting entrainment to a few feet from the suction created at the cutterhead. Both dredge types will not engage pumps until the suction portion of the dredge is at the sea floor limiting the area of disturbance and potential entrainment to only likely less than 10 feet total. Since the suction is occurring at the sea floor, potential disturbance or entrainment within the water column is not likely. Time of year does not change the area that will be affected by these equipment types.

Effects from placement of material from these dredge types will also be minimal to both benthic species and those found within the water column. All material proposed for dredging consists of beach quality sand (≥90% sand) and placement on beaches or bird islands will be done in accordance with the dredging timeframes for protecting nesting birds and sea turtles. Existing clearances and conditions that allow placement by control-of-effluent onto Cora June and DOT islands will be implemented. Placement onto National Park Service (NPS) National Seashore beaches of Hatteras and Ocracoke Islands will be limited to the areas identified in Figures 5 and 11 and will occur only after a Special Use Permit (SUP) is obtained. Additionally, placement will abide by the 2021 Cape Hatteras National Seashore Sediment Management Framework Final Environmental Impact Statement and the terms and conditions and conservation recommendations described in the 2017 U.S. Fish and Wildlife Service (USFWS) Statewide Programmatic Biological Opinion.

Hydraulic pipeline dredging within the proposed corridor will be assessed for environmental effects since this is considered a new area of dredging; however, pipeline dredging will be limited to the16 November – 31 March timeframe based on placement restrictions protecting sea turtle and bird nesting areas. The environmental effects from the placement of dredged material from a cutterhead suction/hydraulic pipeline dredge will not be analyzed in this EA as these impacts have been addressed in past NEPA documents.

Special purpose hopper dredging transits material to an approved nearshore area for placement. Sidecast dredging sprays the dredged material adjacent to the channel redistributing it into the environment, atop existing sandy sediments. Material is cast 80 feet from the port or starboard side of the vessel into waters flowing away from the channel being dredged. Since dredging may occur up to the edge of the corridor, sidecasting up to 80 feet outside of the proposed corridor may result. All areas that will be maintained consist of ≥90% sand (grain-size between 0.075 mm and 4.75mm); which settles out quickly, limiting effects outside of the placement area from water quality effects such as increased turbidity or sedimentation effects, such as the burial of nearby resources. The dredged material spray results in a thin layer of material placement that is not expected to permanently affect these areas adjacent to the channel, as benthic species will either survive the placement or repopulate the areas quickly.

The impacts of these activities will be addressed for the three alternatives, described above as 1) No Action; 2) Government Plant maintenance of the horseshoe route between 1 October and 31 March; and 3) Government Plant maintenance of the horseshoe route between 1 October and 31 March except for Sloop Channel North and Hatteras Connector Channel which can be maintained any time of year (Proposed Action). It should be noted that the impact assessments, below, assume that dredging will occur between 1 October and 31 March to the maximum extent practicable. For the proposed alternative, all areas, except for Sloop Channel North and Hatteras Connector Channel, will require agency coordination if dredging is needed in the spring and summer months.

5.1 Sediments.

The Wilmington District conducted geotechnical investigations of the project area in 2021 to properly characterize material in the proposed corridor to determine the most suitable placement options. Seventeen (17) vibracores borings were drilled into material lying above the maximum dredging elevation of -12 feet Mean Lower Low Water (MLLW). This includes a project elevation of -10 feet MLLW plus -2 feet of overdepth for periodic maintenance dredging. All 17 vibracores were advanced to a minimum depth of 12 feet below the channel bottom to ensure that all strata that may be encountered during dredging operations were properly characterized.

Results of all vibracore borings collected to date in the project area, including drilling logs and gradation testing, are included as Appendix A. Once all the vibracores were collected, they were split open. The sampled soils were logged and designated for

testing, and the vertical shoal strata between the channel bottom and -12 feet MLLW was characterized using the drilling logs and cross-sections presented in Appendix A[3].

Most of the sampled material consists of poorly graded sand (SP), which has a fines content that ranges from 0 to 5%. The maximum allowable fines content for USACE beach placement projects is 10% fines, composited vertically through the strata-datapoint. Throughout the project area, the material is ≥90% sand (grain-size between 0.075 mm and 4.75mm); none of the individual test samples within the corridor, to project depth, appear to exceed this 10% fines criteria.

Material exceeding the 10% fines criteria has been identified in areas within the Sloop Channel corridor at depths below -12 feet MLLW elevation. Dredging will not exceed -12 MLLW within the proposed navigation corridor as it may encounter poorer quality material that would impact available placement options. Observations of dredging events will be conducted to reverify the type of sediments present; additional grain-size analyses will be accomplished, if warranted.

No dangerous debris, including unexploded ordnance, is anticipated to be encountered during any portion of the corridor. However, should such debris be found, procedures would be followed to dispose of the debris appropriately to avoid injury to the dredge crew and the public, as well as damage to property or the environment.

Environmental Impacts.

Alternative 1 - No Action: Under the No Action alternative, USACE would attempt to maintain the historic route, which would require almost continuous dredging, 12 hours per day, 300 days per year, with the Government Plant and/or 24 hours per day with contracted pipeline dredge to keep the channel navigable. Doing so would result in constant manipulation of sediments within a very dynamic area; however, impacts would be minor since this is such a dynamic area.

Alternative 2 - Maintenance of the horseshoe route between 1 October and 31 March with permission required for hot spot dredging outside of that timeframe: Dredging of the realignment (horseshoe route) will remove shoaled dredged material to the authorized project width and depth. Initial dredging along the horseshoe route is anticipated to remove approximately 200,000 CYs of beach quality sand that would be beneficially used by redistributing it within the littoral system. The dredged material would be sidecast into adjacent waters, placed in the nearshore areas by hopper dredge or placed on adjacent beaches and bird islands when a pipeline dredge is used. Pipeline dredging with placement on beachfronts would be limited to 16 November – 31 March and placement onto bird islands from 1 October – 31 March. Most of the material to be dredged is continually being redistributed by normal tidal processes and storm events. Extensive erosion of the Ocracoke and Hatteras Island shorelines has occurred since

[3] In addition to the vibracores collected in 2021, an additional 3 cores were collected within Hatteras Connector Channel in October 2022 to verify shoaled material composition. The drilling logs and lab test results are maintained within the SAW geotechnical section's project files.

1993 and continues to result in shifting sediments, carried by strong currents. Redistribution of sediments is, therefore, a natural and continuous phenomenon.

Once the new navigation alignment has been established, periodic maintenance dredging would remove future shoaled sediments, which is not expected to adversely impact the project area's geology or sediments. Since the channel would follow naturally deep water, less dredging events and volumes are expected, in comparison to the initial channel establishment.

Alternative 3 (Proposed Action) – Government Plant maintenance of the horseshoe route between 1 October and 31 March except for Sloop Channel North and Hatteras Connector Channel which can be maintained any time of year: Proposed dredging without time-of-year restrictions will have the same effect on sediments as dredging with time of year restrictions, with the exception that redistribution of sediments within the littoral system could occur any time of year. The same amount of material would be moved (dredging and placement) regardless of when dredging occurs. As with Alternative 2, initial channel dredging would have the largest impact on sediment movement and smaller maintenance events will result in less impacts since sediment quantities removed would be expected to be less.

5.2 Water Resources.

5.2.1 Hydrology.
Tides in the project area are semidiurnal and the mean tidal range (difference between mean high water and mean low water) is approximately 3.5 feet. Wind is a noticeable factor in tide level. The estuarine waters of Hatteras Inlet and the surrounding area display considerable daily variation in current and salinity conditions due to freshwater inflow, tides, and wind. Regular reversals of flow occur with each tidal cycle. The salinity of the area is 35 parts per thousand (ppt) due to the proximity to the inlet and the ocean.

Environmental Impacts.

Alternative 1 - No Action:
Under the No Action alternative, the USACE would continuously dredge the historic route by government dredge any time of year since the need exists and there are no dredging timeframes. Dredging-related impacts on hydrology (changes to salinity, tides, etc.) within the inlet would be minor and localized to the historic route. Due to the dynamic nature of the inlet, these changes are not expected to be detectable.

Alternative 2 - Maintenance of the horseshoe route between 1 October and 31 March with permission required for hot spot dredging outside of the timeframe:

Dredging within the proposed corridor will be minimized by allowing natural deep water to dictate where the channel is, and most of the dredging will occur during the 6-month timeframe. Between 1 April and 30 September, any required dredging would be

coordinated with resource agencies before proceeding. Where shoaling is apparent, dredging will result in increases to water depths within the channel, possibly having minor effects on salinity and flow; however, in comparison to the size of the inlet complex, impacts within the minimal area of impact would be minor, temporary, and not affect the overall hydrology of the area.

Alternative 3 (Proposed Action) – Government plant maintenance of the horseshoe route between 1 October and 31 March except for Sloop Channel North and Hatteras Connector Channel which can be maintained any time of year:

The proposed action would have the same effects as dredging the horseshoe route with seasonal restrictions, since dredge quantity is not expected to change. Therefore, the proposed action is not expected to result in changes to hydrology or salinity, regardless of the time of year dredging occurs.

5.2.2 Water Quality and Characteristics.
The project area is in North Carolina Division of Water Resources (NCDWR) Pasquotank River basin and U.S. Geologic Survey (USGS) Hydrologic Unit 03020105.

The Clean Water Act (CWA) of 1972 requires that the surface waters of each state be classified according to designated uses. North Carolina's tidal salt waters are classified with the following categories:

- Class SC: Secondary Recreation (i.e., fishing, boating) and Aquatic Life Propagation
- Class SB: Primary Recreation (swimming) plus SC uses
- Class SA: Commercial Shellfish Harvesting plus SC/SB uses
- HQW: High Quality Waters (all SA waters; excellent quality)
- OWR: Outstanding Resource Waters (all HQWs; outstanding fish habitat/fisheries)

NCDWR classifies Pamlico Sound (index # 30-22) and Hatteras Inlet (index # 30-22-33) at the project site as SA and HQW. SA waters are protected for commercial shell fishing along with all designated SB and SC uses. Class SA commercial shell fishing waters are assigned a Shellfish Growing Area Status of Approved, Conditional, or Prohibited based on North Carolina Division of Marine Fisheries (NCDMF) Shellfish Sanitation fecal coliform criteria. Ocean waters beyond the Hatteras inlet mouth are classified as SB waters (15 NC Administrative Code 2B .0311).

If a waterbody does not meet the state designated use standards, it is considered impaired and is placed on the 303(d) list. There are no designated 303(d) waters within the project area.

The potential water quality impacts of dredging include minor and short-term suspended sediment plumes and the release of soluble trace constituents from the sediment. Suspended sediments also affect turbidity, an optical property of water (measured in nephelometric turbidity units, or NTUs) that affects light penetration into the water

column. During dredging, turbidity increases outside the dredging area should be less than 25 NTUs to be considered insignificant. In the case of overflowing government-owned hopper dredges to obtain economic loading, sediment that is ≥90% sand is not likely to produce significant turbidity or other water quality impacts since material is expected to dissipate from the water column relatively rapidly (USACE 1997).

North Carolina Division of Water Resources (NCDWR) Section 401 Water Quality Certification (WQC) under the Clean Water Act of 1977 (PL 95-217) are issued for projects that result in a regulated discharge of material. Dredged material placed in the authorized beachfront and nearshore placement areas is covered under WQC #4500, and placement in the nearshore areas and by control-of-effluent on the bird islands is covered under WQC #4152 by means of authorization letter dated September 30, 2019. The USACE has been issued NCDWR Individual WQC #5186 dated September 19, 2022 for all dredging and sidecasting and scour hole placement options. A copy of all WQCs can be found in Appendix B.

Pursuant to 33 C.F.R. § 335.7, and meeting the environmental standards established by the Clean Water Act Section 404(b)(1) evaluation process, a 404(b)(1) guidelines analysis has been included as Appendix H.

Environmental Impacts.

Alternative 1 - No Action:
With the No Action plan, dredging within the historic route with Government Plant would occur 12 hours per day, approximately 300 days per year. Turbidity within the localized area of the dredge would be constant during daylight hours, however it is still expected to stay within the 25 NTU criteria since the material is ≥90% sand and sediments would settle out completely every night. Therefore, effects on water quality would be minor and localized.

Alternative 2 - Maintenance of the horseshoe route between 1 October and 31 March with permission required for hot spot dredging outside of that timeframe:

Initial dredging and maintenance dredging of the horseshoe route will create minor and short-term impacts on water quality. Sediments within the corridor have been sampled and tested and all material to be dredged has less than 10% fines and therefore is not likely to produce significant turbidity.

The implementation of the channel realignment requires a 401 WQC for the regulated discharge of dredged material, pursuant to the Clean Water Act for contracted pipeline and Government Plant special purpose hopper and sidecast dredging. Placement onto Cora June Island and DOT Island are covered under WQC #4152 and placement within the preauthorized beachfront and nearshore areas is covered under WQC #4500.

Alternative 3 (Proposed Action) – Government Plant maintenance of the horseshoe route between 1 October and 31 March except for Sloop Channel North and Hatteras Connector Channel which can be maintained any time of year:

The proposed action of dredging within Sloop Channel North and Hatteras Connector Channel any time of year would have the same effects on water quality as dredging with timeframes; dredged material agitated during dredging and placement would settle out quickly and be localized to the dredged area. However, these minor and short-term impacts could occur any time of year, including outside the 1 October – 31 March timeframe.

The same Water Quality Certifications for regulated discharge of dredged material apply to the proposed action, as noted above, for dredging of the horseshoe route with a seasonal restriction. The USACE has obtained approval from NCDWR to utilize Individual WQC #5186 by decision letter dated September 19, 2022 (Appendix B).

5.2.3 Wetlands and Floodplains.
Coastal wetlands of the vicinity include tidal salt marshes that occur along the shorelines and the island fringes in the area. These marshes are comprised mainly of smooth cordgrass (*Spartina alterniflora*) and are generally more extensive where they are protected from wind and wave action. Intertidal wetlands of the area are very important ecologically due to their high primary productivity, their role as nursery areas for larvae and juveniles of many marine species, and their refuge/forage value to wildlife. In addition, they provide esthetically valuable natural areas.

Executive Order 11988 (Floodplain Management) states that federal agencies shall avoid, to the extent possible, the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative, federal agencies shall take action to reduce the risk of flood loss, and minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.

Under Executive Order 11990 (Protection of Wetlands), Federal policy recognizes that wetlands have unique and significant public values and calls for the protections of wetlands. Policy directives set forth in Executive Order 11990 are (a) avoid long and short-term adverse impacts associated with the destruction or modification of wetlands; (b) avoid direct or indirect support of new construction in wetlands; (c) minimize the destruction, loss, or degradation of wetlands; (d) preserve and enhance the natural and beneficial values served by wetlands; and (e) involve the public throughout the wetlands protection decision-making process.

Wetlands and floodplains are not found within the proposed areas to be dredged. Placement areas where wetlands may be present in the vicinity would be coordinated with resource agencies appropriately prior to dredged material placement. There may be fringing wetlands within the pipeline alignment from the dredge to the placement

area, and any wetlands would be identified and avoided to the maximum extent practicable. Placement of beach quality sand within these areas would reduce risks to shorelines from erosion and sea level rise. Uplands created by sand placement would not be subject to development.

Environmental Impacts.

Due to the lack of wetlands or floodplains in the proposed dredging and placement areas, no alternatives considered would adversely affect wetlands or floodplains or alter their function; and work would be in full compliance with Executive Orders 11990 and 11988 following completion of the NEPA process. Likewise, no alternatives considered would result in placement of fill in wetlands or result in hydrologic or salinity changes affecting wetlands.

5.3 Air Quality.
Section 176(c)(1) of the Clean Air Act (CAA) (42 U.S.C. 7506(c)(1)) requires Federal agencies to assure that their actions conform to applicable implementation plans for achieving and maintaining the National Ambient Air Quality Standards for criteria pollutants.

The NC Division of Air Quality (NCDAQ) website (http://daq.state.nc.us) indicates that Dare and Hyde Counties are in attainment for fine particles, ozone, and sulfur dioxide pursuant to the National Ambient Air Quality Standards. The Washington Regional Office of the NCDAQ has air quality jurisdiction for the project area. According to 2018 data presented on the Division's website, both Dare, and Hyde Counties reported 1 pollutant facility and a total of less than 0.1 tons of emissions per year.

Alternative 1 - No Action:
The No Action alternative would result in almost constant dredging and may have an adverse effect on the air quality. Although dredging equipment would follow Section 176 (c) of the CAA, as amended, emissions may increase slightly above de minimis levels if dredging occurred 300 out of 365 days a year indefinitely.

Alternative 2 - Maintenance of the horseshoe route between 1 October and 31 March with permission required for hot spot dredging outside of that timeframe:

Dredging between October and March is not expected to result in adverse effects on the air quality within the project area. Annual dredging volumes are estimated to be 227,000 CYs and take approximately 178 days a year to complete (on average). These short-term impacts would be like those impacts occurring during routine maintenance dredging in other nearby locations. Accordingly, the long-term air quality conditions would be like existing conditions.

Alternative 3 (Proposed Action) – Government plant maintenance of the horseshoe route between 1 October and 31 March except for Sloop Channel North and Hatteras Connector Channel which can be maintained any time of year:

Dredging without a timeframe would have the same effect on air quality as dredging with a timeframe since the number of days the dredge would be in operation would be the same. Dredging any time of year is not expected to create any adverse effect on the air quality within the project area

5.4 Noise.
Noise levels below the water surface within the project area vary throughout the year and often include state, commercial and recreational boat traffic, in particular daily passenger ferry and vehicle barge transport between the months of May - August. Therefore, marine species within the project area are already accustomed to varying levels of motorized noise year-round.

Noise levels associated with dredging and placement activities are expected to comply with Section 6-28 and Section 22-33, NC code of ordinances. Dredging operations generally produce low levels of low-frequency sound energy that, although audible over considerable distances from the source, are of short duration (Michel 2013). Sound from a dredge is generated from the drag arm sliding along the bottom, the pumps moving the material, and operation of the ship engine/propeller. The significance of the noise generated by the equipment dissipates with increasing distance from the noise source. The effects of noise from dredging have been determined to have no lethal or injurious effects; behavioral effects on marine species may occur which may disturb feeding, mating and spawning especially during warmer months.

The impacts of underwater sound on fish populations from dredging are expected to be minor and temporary because duration of exposure to dredging noise is short-term and species can easily flee from the area. Migrating and spawning fish species are expected to pass the dredge unharmed, as had occurred in the James River, Virginia during a pipeline dredge event while Atlantic sturgeon were migrating. (Balazik, 2020). Sound from dredging within the Hatteras Inlet area is not expected to impact marine mammals in the area, notably whales and porpoises. The critically endangered North Atlantic right whale migrates offshore during the winter months, far enough from the source of dredging to avoid any behavioral effects.

Environmental Impacts.

<u>Alternative 1 - No Action:</u>
If maintenance dredging of the historic route to the inlet gorge were to be pursued by USACE then almost constant dredging with Government Plant would be necessary to keep the channel navigable. Noise levels from sidecast and special purpose hopper dredges would only occur during daylight hours but would be long-term, which may disturb feeding, mating, spawning, and other behaviors within sea turtles, porpoises, and blue crabs; but noise would not be significant since these species are expected to avoid the disturbance. Effects would only occur within a very localized area around the dredge. The same would be true for pipeline dredging, which would occur less

frequently (once every 3-5 years) than Government Plant dredging, but would operate 24 hours per day for several weeks at a time.

Alternative 2 - Maintenance of the horseshoe route between 1 October and 31 March with permission required for hot spot dredging outside of that timeframe:

While dredging would elevate noise levels somewhat, under Alternative 2 each dredging event is expected to be of short duration (24-42 days, Table 1) and any elevated noise levels would be a disturbance only within a very localized area around the dredge. Affects would be similar to the No Action alternative but noise disturbance would be less as dredging would be limited to 3-4 events per year.

Alternative 3 (Proposed Action) – Government Plant maintenance of the horseshoe route between 1 October and 31 March except for Sloop Channel North and Hatteras Connector Channel which can be maintained any time of year:

The amounts and levels of dredging-related noise are expected to be the same as Alternative 2 (maintenance of the horseshoe route with a timeframe). Under the proposed action, dredging would occur during warmer months in Sloop Channel North and Hatteras Connector Channel when species are more abundant, however, dredging during 1 April – 30 September would still occur under Alternative 2. During summer months, additional noise resulting from dredging would be negligible as compared to the continuous noise derived from vessel traffic. At the height of tourist season, as many as 7 ferries are in constant motion within the corridor, which is in addition to commercial and recreational fishing boats, private pleasure cruises, and other recreational boats. Added noise related to dredging between 1 April and 30 September, which may equate to two 14-day dredging events in each location (during daylight hours only), is not expected to adversely affect marine species physically or behaviorally.

5.5 Marine and Estuarine Resources.

5.5.1 Nekton.

Nekton collectively refers to aquatic organisms capable of controlling their location through active movement rather than depending upon water currents or gravity for passive movement. Nekton of the nearshore Atlantic Ocean along the northeastern North Carolina coast can be grouped into three categories: estuarine dependent species; permanent resident species; and seasonal migrant species. The most abundant nekton of these waters are the estuarine dependent species that inhabit the estuary as larvae and the ocean as juveniles or adults. This group includes species which spawn offshore, such as the Atlantic croaker (*Micropogon undulatus*), spot (*Leiostomus xanthurus*), Atlantic menhaden (*Brevoortia tyrannus*), flounders (*Paralichthys* spp.), mullets (*Mugil* spp.), anchovies (*Anchoa* spp.), blue crab (*Callinectes sapidus*), and penaeid shrimp (*Penaeus* spp.), as well as species that spawn in the estuary, such as red drum (*Sciaenops ocellatus*) and weakfish (*Cynoscion regalis*). Species that are permanent residents of the nearshore marine waters include the black sea bass (*Centropristis striata*), longspine porgy (*Stenotomus caprinus*),

Atlantic bumper (*Chloroscombrus chrysurus*), inshore lizardfish (*Synodus foetens*), and searobins (*Prionotus* spp.). Common warm water migrant species include the bluefish (*Pomatomus saltatrix*), Spanish mackerel (*Scomberomorus maculatus*), king mackerel (*Scomberomorus cavalla*), cobia (*Rachycentron canadum*), and spiny dogfish (*Squalus acanthias*).

Hatteras Inlet is a passageway for the larvae of many species of commercially and ecologically important fish. Spawning grounds for many marine fishes are believed to occur on the continental shelf with immigration to estuaries, including Pamlico Sound, during the juvenile stage. The shelter provided by the marshes and shallow water habitats within the project area's estuarine waters serves as nursery habitat where young fish undergo rapid growth before returning to the offshore environment.

Marine mammals also occur in North Carolina's coastal waters. The federally listed North Atlantic right whale (*Eubaleana glacialis*) is a winter migrant off the coast. Several other whale and dolphin species normally inhabit deeper waters offshore, while the bottlenose dolphin (*Tursiops truncatus*) and the harbor porpoise (*Phocoena phocoena*) utilize nearshore waters. The bottlenose dolphin is common in the project area. The federally endangered manatee (*Trichechus manatus*) is a rare but are occasional visitors to the northeastern North Carolina coast.

Five species of federally listed sea turtles are known to nest on the beaches of Cape Hatteras National Seashore and/or occasionally enter Hatteras Inlet. These are the green (*Chelonia mydas*) and loggerhead (*Caretta caretta*), hawksbill (*Eretmochelys imbricata)*, Kemp's ridley (*Lepidochelys kempii*), and leatherback (*Dermochelys coriacea*) sea turtles.

Environmental Impacts.

Alternative 1 - No Action:
The almost constant dredging required to maintain the historic route may result in negative effects on marine species by disturbing feeding, mating, spawning, and other behaviors, however this would only occur within the localized area of the dredge. The surrounding habitat of the Hatteras Inlet area would remain unaffected by the dredge and is expected to provide sufficient shelter, feeding areas, and spawning grounds for species to thrive.

Alternative 2 - Maintenance of the horseshoe route between 1 October and 31 March with permission required for hot spot dredging outside of that timeframe:

Each dredging event during the months of October and March is expected to be short term: for pipeline dredges, contracts would occur once every 3-5 years and last for approximately 30-45 days; for government-owned dredges, events would last from 3 days to 3 weeks and would occur multiple times of year, even in the summer months with agency coordination. Disturbances would be minor within a very localized area around the dredging and placement areas, of which nekton can avoid. Areas expected to require regular dredging would consist of only about 2% of the overall corridor.

Therefore, these disturbance events are not expected to adversely impact fish, marine mammals, or marine reptiles in the area.

Alternative 3 (Proposed Action) – Government Plant maintenance of the horseshoe route between 1 October and 31 March except for Sloop Channel North and Hatteras Connector Channel which can be maintained any time of year:

As explained above, limiting dredging to specific timeframes does not change the amount of dredging necessary in high shoaling areas that need to be dredged throughout the year. All pipeline dredging would occur in the winter months and only government-owned dredges would operate in the spring and summertime with plans to dredge minimum volumes needed to maintain the route through the summer season. Sensitive life stages of economically and ecologically important fisheries will be more abundant within the project area during warmer months, however the minor effects on water quality, noise, and species' behaviors are not anticipated to adversely affect populations. As was explained in detail in the 2004 Use of Government Plant to Dredge in Federally Authorized Navigation Projects in North Carolina, due to the small size of dragheads, low suction power and low speed, these dredges are not capable of entraining adult-sized species. Smaller life stages could become entrained if they are on the seafloor within the channel and the limited path of the dragheads, however it is possible they may survive entrainment and relocation with the placed material (this has not been studied). Dredging with Government Plant any time of year has been occurring in Hatteras Connector Channel for years with no observable impacts to species, therefore maintaining Sloop Channel North and Hatteras Connector Channel any time of year may have minor impacts on nekton like the aforementioned, but is not anticipated to result in significant effects on any species.

5.5.2 Benthos.

Aquatic organisms that live in close association with the bottom, or substrate, of a body of water, are collectively called benthos. Given the susceptibility of the proposed project area to currents and water movement and the subsequent shoaling, the sandy sediments would not be expected to support significant numbers of organisms within benthic communities. Common benthic organisms in these sediments would likely include polychaetes, amphipods, decapods, and mollusks.

Overall, initial dredging (new construction) results in more impacts on benthos than maintenance of existing channels. The biggest impact occurs on the sea floor and results in the removal of upper layers of substrate and the placement of large amount of material (smothering, benthos in the placement area). However, removal of benthos and benthic habitat represents a minor resource loss since the channel bottom and dredged material placement areas will become recolonized by benthic organisms within a matter of months (but never fully recover due to the regular maintenance of the channels). Benthic invertebrates exhibit strong seasonality in reproduction, meaning that the seasonal timing of dredging can influence recovery rates within the limited dredging footprint. However, not all benthic taxa reproduce most intensively during the same season, so timing of dredging can select for dominance of different taxa during

the recovery process (Michel 2013). In addition, effects to benthos outside the area of dredging and placement is not expected, allowing for the continued presence of these species in the surrounding areas throughout the estuary.

Environmental Impacts.

Alternative 1 - No Action:
Near-continuous dredging to maintain the historic channel would mean a constant disturbance to the benthos present within the dredged areas, which would result in permanent impacts to the benthos since there would be no opportunity for recovery between dredging events. This would be localized to the area of dredging within the channel. Placement activity for the sidecast dredge would be directed towards an ebb tide which would carry most dredge sediments away into deeper waters. Sidecast material would scatter and is not likely to smother benthos, however the special purpose hopper would dump approximately 300-500 CYs at a time in a designated nearshore area and is likely to cause smothering within the localized area. Benthos within nearshore areas are expected to recover after 6-9 months (Wilbur, 2001).

Alternative 2 - Maintenance of the horseshoe route between 1 October and 31 March with permission required for hot spot dredging outside of that timeframe:

Since the proposed corridor is the best water for navigation at this time, channel maintenance will be necessary, and limited to the locations where shoaling occurs. Initial dredging would impact relatively small areas of benthic communities, since identified shoaling areas make up a small percentage of the overall footprint of the channel (2%). Effects related to the different dredge types would be like those of the No Action alternative. The affected area would be very small relative to the amount of benthic habitat present on the seafloor; therefore, the ecological significance of temporary benthic losses is considered minor.

Alternative 3 (Proposed Action) – Government Plant maintenance of the horseshoe route between 1 October and 31 March except for Sloop Channel North and Hatteras Connector Channel which can be maintained any time of year:

The effects of dredging and dredged material placement in the warmer months would be more severe than dredging in colder months of the year, since benthos and bottom feeding fish would be more abundant during the warmer months of the year. Warm weather dredging would occur for all three alternatives, therefore the effect on benthos and benthos recovery would be the same. However, effects to benthos would be limited to the areas of dredging within the proposed corridor and placement areas, allowing benthos to survive throughout the rest of the estuary and continue to provide feeding opportunities for bottom feeding fish.

Alternatives 2 and 3 have the same dredging footprint and the time of year that dredging occurs would not differ much. Periods between dredge events would allow for some benthic recovery however, the continual sedimentation and shoaling that results in the need for maintenance dredging is ongoing, and therefore the benthic populations in the

channel areas may not fully recover, despite the time of year they are dredged. Therefore, impacts of the proposed action will be the same as Alternative 2 and would not result in significant impacts on benthic invertebrates.

5.6 Essential Fish Habitat.

The 1996 Congressional amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (Public Law 94-265) set forth new 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. The EFH assessment is included in the body of this EA and will be coordinated with NMFS Habitat Conservation Division (HCD) upon its circulation.

The EFH assessment includes fish species managed under MSFCMA that may occur in the vicinity of the Project. Categories of EFH and Habitat Areas of Particular Concern (HAPC) for managed species are identified as potentially occurring in southeastern states in the Fishery Management Plan Amendments of the South Atlantic Fishery Management Council.

Tables 2a and 2b show the categories of EFH habitat located within the project vicinity of Pamlico Sound, Hatteras Inlet and beach and nearshore placement areas (www.habitat.noaa.gov/apps/efhmapper). They include Coastal Migratory Pelagics, Snapper Grouper, and Spiny Lobster EFH species of the South Atlantic. These are described below along with HAPCs and other designated managed fishery habitats within the project area.

Table 2a. Essential Fish Habitat within the Study Area

Habitat	**Species**
Pelagic waters	Albacore tuna[1], Atlantic angel shark[1], Atlantic butterfish[2], Atlantic sharpnose shark (Atlantic stock)[1], Bluefin tuna[1], Bluefish[3], Common thresher shark[1], Monkfish (eggs, larvae)[4], Sailfish[1], Sand tiger shark[1], Sargassum[5], Smoothhound shark complex (Atlantic stock)[1], Snapper-grouper[6], Spinner shark[1], Spiny dogfish[7], Summer flounder (larvae)[8], Tiger shark (adult)[1], Wahoo[9], Windowpane flounder (larvae)[10], Yellowfin tuna[1]
Shallow coastal	Atlantic angel shark[1], Atlantic butterfish[2], Blacktip shark (Atlantic stock)[1], Bluefish[3], Coastal migratory pelagics[11], Dusky shark (neonate)[1], Sand tiger shark[1], Sandbar shark[1], Scalloped hammerhead shark[1], Spinner shark[1], Tiger shark (juvenile)[1]
Soft bottom (sand)	Clearnose skate[13], Rock shrimp [12], Scup[14], Slipper lobster [15], Spiny lobster [16], Summer flounder (adult)[16], White shrimp[12]
SAV	Black sea bass[16], Brown shrimp[12], Pink shrimp[12], Scup[14], Slipper lobster[15], Snapper-grouper[6], Spiny lobster[15], Summer flounder (adult)[16], White shrimp[12]
Tidal marsh	Brown shrimp[12], Pink shrimp[12], Rock shrimp[12], White shrimp[12]
Inlets	Dusky shark (neonate)[1], Atlantic Blue Crab

Sources: [1]NOAA Fisheries 2017; [2]MAFMC and NOAA Fisheries 2011; [3]MAFMC and ASMFC 1999; [4]NEFMC 2016; [5]SAFMC 2002; [6]SAFMC 1983; [7]MAFMC 2014; [8]MAFMC 1987; [9]SAFMC 2003; [10]NEFMC 2016; [11]SAFMC 1998; [12]SAFMC 1993; [13]NEFMC 2016; [14]MAFMC 1996; [15]CFMC 1981; [16]MAFMC 1987

Table 2b. Categories of EFH Habitat

Species	Adult	Juvenile	Neonatal	Spawning
Atlantic Angel Shark	x	x	x	x
Atlantic Sharpnose Shark (Atlantic Stock)	x	x	x	
Blacknose Shark (Atlantic Stock)	x	x		
Blacktip Shark (Atlantic Stock)	x	x		
Common Thresher Shark	x	x	x	x
Dusky Shark			x	
Sand Tiger Shark	x	x	x	
Sandbar Shark	x	x	x	
Scalloped Hammerhead Shark	x	x		
Smoothhound Shark Complex (Atlantic Stock)	x	x	x	x
Spinner Shark	x	x	x	
Tiger Shark	x	x	x	
Albacore Tuna		x		
Bluefin Tuna	x	x	x	
Sailfish	x	x		
Yellowfin Tuna		x		

5.6.1 Coastal Migratory Pelagics.

Essential fish habitat for coastal migratory pelagic species includes sandy shoals of capes and offshore bars, high profile rocky bottom, and barrier island ocean-side waters from the surf to the shelf break zone. In addition, all coastal inlets, all state-designated nursery habitats of particular importance to coastal migratory pelagics (for example, in North Carolina this would include all Primary Nursery Areas (PNA) and all Secondary Nursery Areas). For Cobia essential fish habitat also includes high salinity bays, estuaries, and seagrass habitat. In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse coastal migratory pelagic larvae. For king and Spanish mackerel and cobia, essential fish habitat occurs in the South Atlantic and Mid-Atlantic Bights.

5.6.2 Snapper-Grouper.

Essential fish habitat for snapper-grouper species includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs, and medium to high profile outcroppings on and around the shelf break zone from shore to at least 600 feet (at least 2,000 feet for wreckfish) where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including Sargassum, required for larval survival and growth up to and including settlement. In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse snapper grouper larvae. For specific life stages of estuarine dependent and nearshore snapper-grouper species, essential fish habitat includes areas inshore of the 100-foot contour, such as attached macroalgae; submerged rooted vascular plants (seagrasses); estuarine emergent vegetated wetlands (saltmarshes, brackish marsh); tidal creeks; estuarine scrub/shrub (mangrove fringe); oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and coral reefs and live/hard bottom.

5.6.3 Spiny Lobster.

Essential fish habitat for spiny lobster includes nearshore shelf/oceanic waters; shallow subtidal bottom; seagrass habitat; unconsolidated bottom (soft sediments); coral and live/hard bottom habitat; sponges; algal communities (Laurencia); and mangrove habitat (prop roots). In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse spiny lobster larvae. EFH for the spiny lobster fishery in the U.S. Caribbean consists of all waters from mean high water to the outer boundary of the EEZ – habitats used by phyllosome larvae –and seagrass, benthic algae, mangrove, coral, and live/hard bottom substrates from mean high water to 100 fathoms depth.

5.6.4 Coastal Inlet HAPC

Additionally, Habitat Areas of Particular Concern (HAPC) were reviewed using the EFH Mapper to identify any HAPC located within the vicinity of the project areas. The HAPC are special habitat areas designated by NMFS to further the conservation and enhancement of EFH. The NMFS Mapper shows HAPC present within the inshore areas of Pamlico Sound, Hatteras Inlet, and outer portions of beach and nearshore placement areas (EFH Mapper 2021). HAPC include species of penaeid shrimp, within

all coastal inlets, all state-designated nursery habitats of particular importance to shrimp (for example, in North Carolina this would include all PNA and all Secondary Nursery Areas), and state-identified overwintering areas. Hatteras Inlet is also an HAPC for the snapper-grouper complex.

5.6.5 Submerged Aquatic Vegetation (SAV) and Shellfish Beds.
SAV and shellfish beds do not occur in areas intended for dredging (within the proposed corridor limits). SAV are prolific in estuaries of Pamlico Sound and portions of Rollinson Channel outside of the project area behind Hatteras Island. SAV provide food and shelter for multiple species important to the overall system ecology; commercial and recreational fisheries; and other species including shellfish, manatees, and sea turtles. Although SAV can quickly populate shallow bottom when conditions are conducive, the currents, sand movement, and turbid water in the project area can minimize or eliminate the presence of SAV.

The NCDMF online resources (http://portal.ncdenr.org/web/mf/habitat/SAV) show identified SAV in large clusters within the inshore areas of the project area. These mapped areas provide maximum historic extent from 1981 – 2015, however USACE analysis of SAV over the last 20 years has shown a significant decline in SAV abundance. This may be due to the high erosion rates of the Hatteras and Ocracoke shorelines and the expansion of the inlet. Many acres of upland habitat are now subtidal shoals that have covered existing SAV beds, and continuous shifting of this material may prevent large colonies from forming.

Figure 6 depicts the presence and locations of SAV from 2019 – 2021 within a half mile of the corridor using aerial imagery. The closest SAV to the corridor are approximately 360 feet west of the Barney Slough Channel and approximately 400 feet north of Hatteras Connector Channel. Prior to each dredging event, USACE will identify SAV using the latest aerial photography and GIS imagery. No dredging or placement, including sidecasting of dredged material, will occur within 100 feet of identified SAV for any of the three alternatives analyzed. For spring and summertime dredging, a 300-foot buffer will be implemented in the vicinity of SAVs identified to protect them from potential effects of turbidity and sedimentation.

Shellfish beds are not present within the proposed corridor or impact area of the sidecast dredge but they are present within Pamlico Sound. The dominant species are the American oyster (*Crassostrea virginica*) and the Atlantic hard clam (*Mercenaria mercenaria*). Due to the dynamic conditions present within Hatteras Inlet and the project area, significant numbers of shellfish would not be expected.

There are no NCDMF-listed oyster sanctuaries within the project area.

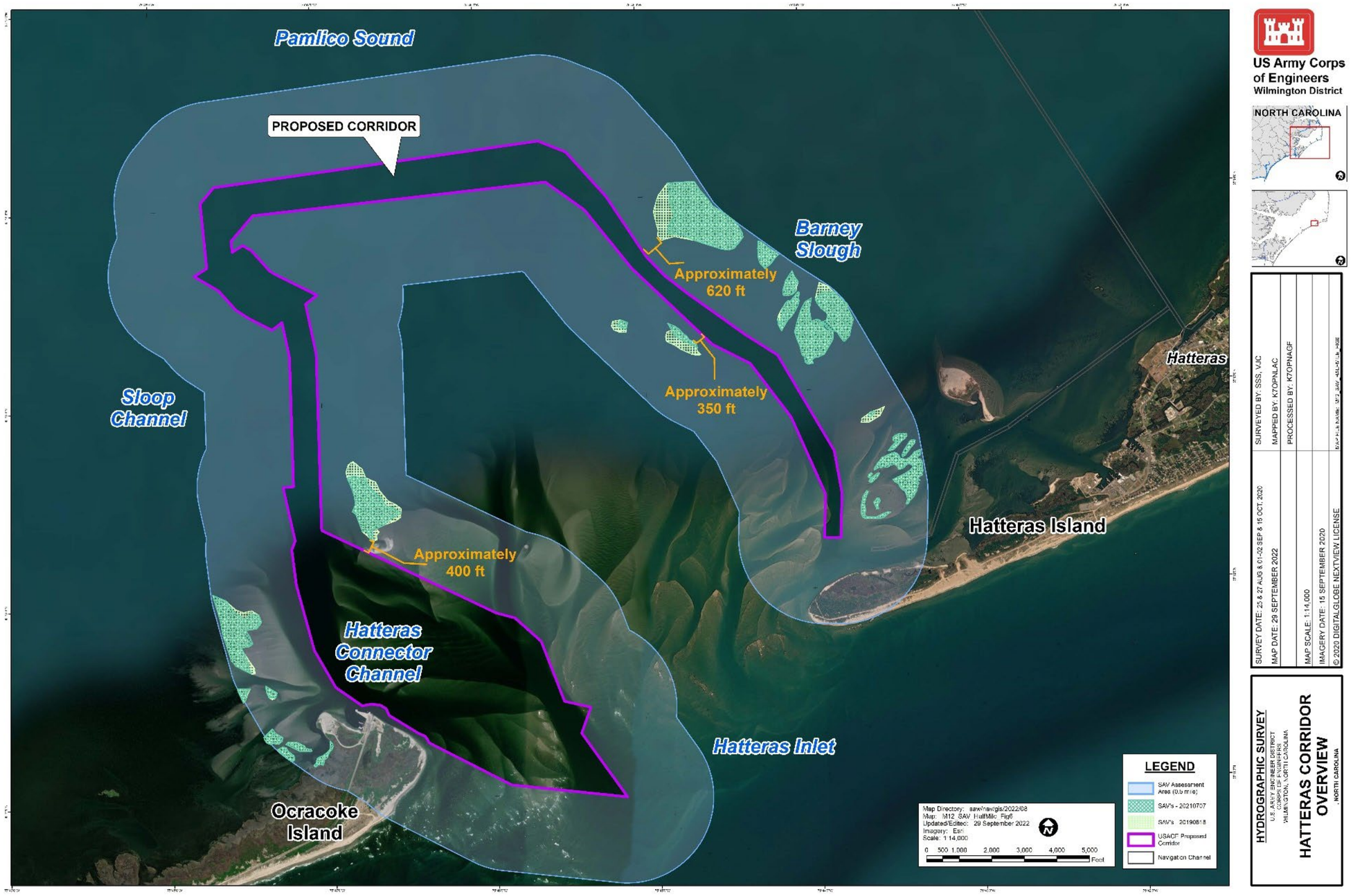


Figure 6. Proposed corridor with half-mile buffer showing SAV locations, 2019 and 2021.

5.6.6 Crab Spawning Sanctuary.

The Atlantic blue crab spawns in high salinity soft-bottom inlet habitat such as that of Hatteras Inlet. According to An Assessment of Fisheries Species to Inform Time-of-Year Restrictions for North Carolina and South Carolina (Wickliffe, 2019), spawning occurs during the months of April through September, so female blue crabs are present in the inlet during these months. New Crab Spawning Sanctuaries were established in April 2020 under the Blue Crab Fishery Management Plan, Amendment 3. During March 1 – October 31, inlets are now closed to use of trawls, pots, fishing equipment and mechanical methods for oysters and clams to protect females that congregate in inlet systems to spawn.

Figure 7 shows the designated Hatteras Inlet Area Crab Spawning Sanctuary (CSS) with its described boundaries detailed in 15A NCAC 03R .0110.

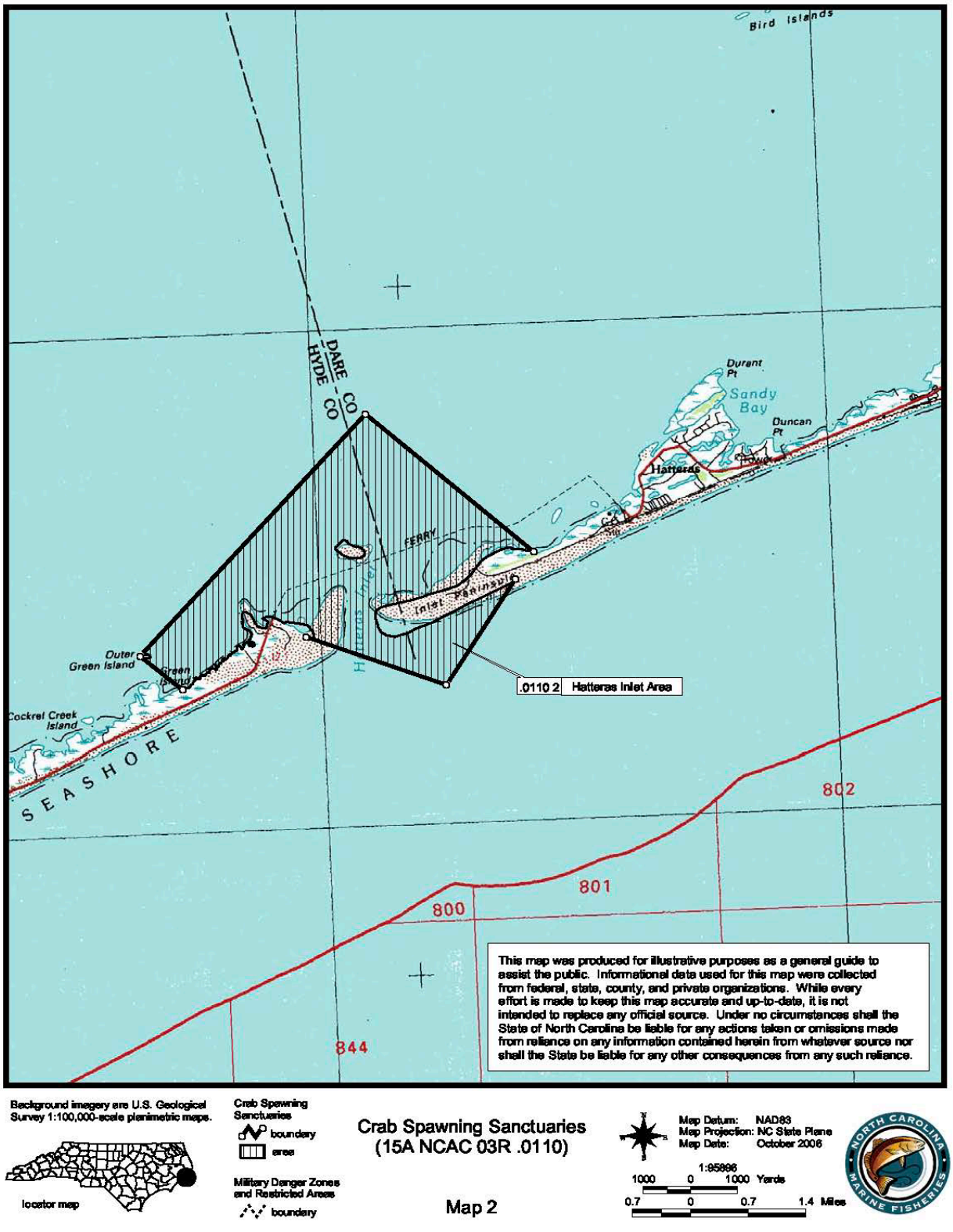


Figure 7. Hatteras Inlet Area Crab Spawning Sanctuary (CSS) 15A NCAC 03R .0110
https://deq.nc.gov/news/press-releases/2020/04/17/new-blue-crab-management-measures-implemented

5.6.7 Primary Nursery Areas.
The State of North Carolina defines Primary Nursery Areas (PNAs) as tidal saltwater, which provides essential habitat for the early development of commercially important fish and shellfish (15 NCAC 3B .1405). It is in these estuarine areas that many fish species undergo initial postlarval development. PNAs are designated by the North Carolina Marine Fisheries Commission (NCMFC). The NCMFC does not classify the project area as PNA.

5.6.8 Anadromous Fish Spawning Areas.
Anadromous Fish Spawning Areas (AFSA) are designated and regulated by the Marine Fisheries Council and the Wildlife Resources Commission. Hatteras Inlet provides anadromous fish access to the Neuse River, Tar/Pamlico River and Roanoke River AFSAs, which contain spawning areas upstream for species such as Atlantic sturgeon, blueback herring, alewife, hickory shad and striped bass. All inshore areas of Pamlico Sound are designated Striped Bass Management Area (15A NCAC 03R .0201).

Environmental Impacts
As discussed at the beginning of this Section (Section 5), the area of effects from dredging, placement, or water quality changes is expected to be spatially and temporally minimal, based on the dredge equipment proposed, sand with less than 10% fines that will be dredged, and limited action area. This also included a discussion about the potential effects of entrainment to benthic species and those in the water column. Since agencies have raised concerns about protecting benthic species, especially blue crabs, the effects were considered based on the time of year of work occurring from the data presented in the Assessment of Fisheries Species to Inform Time-of-Year Restrictions for North Carolina and South Carolina (Wickliffe, 2019). Generally speaking, female blue crabs release their eggs into the water column when present in inlets in warmer months, including in the proposed corridor route. The larvae then travel with currents to ocean environments outside the proposed corridor where they undergo multiple life stages before again passing through the project area as they move within the water column to lower and upper estuary areas where they become benthic. Once reaching the benthic lifestage, male and female crabs forage in back estuary areas well outside the project area. Therefore, the maintenance dredging of the proposed horseshoe corridor, even if it occurs during months when spawning may occur, will have limited effects on crabs.

For blue crabs or any other benthic species, water quality changes from dredging sand with less than 10% fines is also minimal and limited to a small area around the dredge where overflow occurs with sand falling out quickly, thereby also limiting effects to benthic species like female crabs. Also, larvae being carried through the inlet would have a limited area of effects and only from areas where special hopper dredges were overflowing, sidecasting, or the small area around the suction created by these dredges. All areas would have small temporal and spatial effects to species and habitat, regardless of time of year. Sidecast dredging could affect benthic species and habitat but will be limited due to the lack of seagrasses in the area; also, dredged material

would be cast in a way that creates a thin layer of material that most benthic species can survive.

Alternative 1 - No Action:
Near-constant dredging of the direct route would have minor impacts on fisheries and localized impacts to fish habitat, limited to the dredged area within the channel and sidecast placement area. Commercially and ecologically important fisheries species, including blue crab, are present within the inlet and constant dredging may continue to disturb feeding, mating, spawning and migration within the limited area of the channel where dredging is actively occurring or in areas where placement of material occurs. This is not expected to adversely affect the blue crab population based on effects that may occur during the limited spatial and temporal areas affected by dredging or placement. Overall, the quality of bottom habitat in the channel and sidecast placement areas may decline due to repeated maintenance. Areas adjacent to the channel are expected to recover since many of the areas that shoal frequently are naturally dynamically changing all the time; placement in areas with seagrasses will be avoided to the maximum extent practicable, and sidecast dredging will spread thin layers of material in a localized area immediately adjacent to the channel where benthic species are likely to recolonize between dredging events.

Alternative 2 - Maintenance of the horseshoe route between 1 October and 31 March with permission required for hot spot dredging outside of that timeframe:

Under the second alternative, regular maintenance dredging would occur between the months of October and March by pipeline dredge once every 3-5 years and by special purpose or sidecast dredge 3-4 times annually for 2–3-week periods (approximately). Based on historic shoaling rates in Hatteras Connector Channel, dredging would still be required during the months of April to September and would be coordinated with resource agencies in advance of dredging. SAVs within the area of effect would be identified and avoided to the maximum extent practicable. Dredge events would occur once funding and dredge availability is secured and last if these variables permit. Impacts to fisheries and fish habitat (like those above) during these coordinated events are anticipated to be minor, as they would be short-term (3 days to 3 weeks) and localized. This method of reactive dredging, however, could result in delayed ferry services and more frequent dredge events during the warmer season as was the case in 2021.

Alternative 3 (Proposed Action) – Government Plant maintenance of the horseshoe route between 1 October and 31 March except for Sloop Channel North and Hatteras Connector Channel which can be maintained any time of year:

Government Plant dredging any time of year within Sloop Channel North and Hatteras Connector Channel is expected to have minor, localized, and short-term impacts on fisheries and fish habitat within the Hatteras Inlet area. As with Alternatives 1 and 2, to the effects to benthic resources, including sessile and slow-moving organisms from

entrainment, would be limited to a small area under and around dredging. Sidecast material adjacent to the channel will also have limited spatial and temporal impacts to spawning blue crabs and fish species in egg and larval stages through burial within the 80 feet adjacent to the channel. Mobile benthic species may survive the placement and those in the surrounding area are expected to repopulate. When sidecasting during spring and summer months, a 300-foot buffer will be implemented in the vicinity of identified SAVs, and discharge would be directed towards an ebb tide to carry material out to deeper waters. Since dredging will be in areas ≥90% sand, SAV located at least 300 feet from the dredging footprint is not expected to be impacted.

Contract pipeline dredging during the November – March timeframe every 3-5 years is not expected to have adverse effects on fisheries and fish habitat. Sidecast and special purpose hopper dredging any time of year in Sloop Channel North and Hatteras Connector Channel is expected to have minor adverse impacts to EFH, HAPC, or EFH species since these habitat areas are subject to high energy and natural sedimentation and therefore less optimal to species. Dredging effects would be minor when considering the vast area of habitat in the inlet and sound, as compared to the footprint of the shoaling areas within the channel and areas disturbed by placement.

A revised EFH assessment was provided to NMFS-HCD on 27 January 2022 based on agency comments on the Draft EA and NC Division of Coastal Management (NCDCM) consistency determination and includes the information below:

Potential impacts of using Government Plant during April – September may include:

1. Entrainment into the dredge – Considering the small size of the dragheads (2ft x 3ft); the slow velocity of the dredges during operation (1-2 knots); the low suction power (100-110HP) of the dragheads; and the operation of the dredges (pumps on only while dragheads are on the bottom or during flushing), potential entrainment impacts to critical life stages (eggs, larvae) of important fisheries are expected to be minor even within highly productive areas. This has been documented in the 1999 NMFS Government Plant Biological Opinion and the 2020 NMFS South Atlantic Regional Biological Opinion (SARBO).

2. Harm caused by sidecast material – During sidecasting, the effluent/slurry coming from the dredge pipe is approximately 1 part sediment to 3 parts water, as the vessel continues to move at approximately 1-2 knots. The slurry splashes down and the sand immediately begins to fall towards the bottom, dispersing with the current and tides. For these reasons, fisheries in egg and larval stages of development are not expected to become buried. Potential for abrasion from falling sand may occur within the path of discharge, approximately 80 feet from the starboard or port side of the vessel. Different species of fish have different levels of tolerance to harm from abrasion; some are more tolerant at the egg stage than at the larval stage. It is unknown exactly which species/life stage of

fish are present and when they are within the area of dredging, or which species is more tolerant than others, making it difficult to know when to avoid actions between April and September. USACE relies on the expertise of resource agencies to help identify these resources, as well as the timeframes when they are present, and to make recommendations regarding how best to avoid and minimize impacts.

3. Potential burial/sedimentation of SAVs – USACE has committed to a 300-foot buffer around identified SAVs while dredging between April – September and a 100-foot buffer when dredging between October – March. Indirect impacts to SAV are not anticipated since beach quality dredged material will settle very quickly. Sidecasting is expected to result in less impacts overall than natural changes that occur due to the dynamic nature of the inlet complex. The Hatteras Plume Study conducted by ERDC in Feb 2012 concluded that "the plume is not predicted to spread over the SAV beds which are at least 350 ft from the centerline of the discharge". The study looked at the impacts of SAVs that were between 350 and 500 feet from the sidecast location and determined there were no impacts to the SAVs at those distances.

   Spring/summer dredging in Barney Slough and Sloop Channel South has been eliminated from the preferred alternative due to concerns for SAV. After assessing shoaling rates, it has been determined that these channel areas can be maintained during colder months. The USACE has committed to monitor SAV growth using aerial imagery before and after dredging events and will provide this information to resource agencies.

4. Sound disturbance from dredging – Pumps, engines and friction associated with dredging creates noise that could potentially disturb fish behaviors during foraging, feeding and mating/spawning. Dredging occurs within the navigation channel where noise is created by passing private and commercial vessels, which can be nearly constant during the daytime in spring/summer. Dredging with Government Plant only occurs during daylight hours, allowing quiet time at night when other vessels are less likely to navigate. Therefore, additional noise from dredging is not expected to significantly alter behaviors of important fisheries.

A Hatteras Inlet Management Plan (HIMP) is under development that prioritizes maintenance dredging during the fall/winter. The USACE has accepted additional recommendations to minimize potential impacts during spring/summer dredging as requested by NMFS, letter dated 28 February 2022. With implementation of the HIMP, USACE will notify resource agencies prior to dredging of the presence of SAV within the dredging vicinity. Coordination with agencies to obtain input will not be required prior to

normal, scheduled maintenance dredging events, but would be required for emergencies, such as unexpected shoaling due to storm events.

5.7 Endangered and Threatened Species.
The Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531–1543), provides a program for the conservation of threatened and endangered (T&E) plants and animals and the habitats in which they are found. In accordance with section 7 (a)(2) of the ESA, USACE has coordinated with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) to ensure that effects of the proposed project would not jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat of such species.

Federally listed T&E species (aquatic and terrestrial) with the potential to occur in the vicinity of the project area are listed in Table 3. This list includes species that could be present in the area based upon their historical occurrence or potential geographic range. However, the actual occurrence of a species in the area depends upon the availability of suitable habitat, the season of the year relative to a species' temperature tolerance, migratory habits, and other factors.

Table 3. Federally Listed Threatened & Endangered Species (aquatic and terrestrial)

Species	**Status (T/E)**	**USFWS/NMFS**	**Present?**
Green sea turtle (*Chelonia mydas*)	T	Both	Yes
Loggerhead sea turtle (*Caretta caretta*)	T	Both	Yes
Leatherback sea turtle (*Dermochelys coriacea*)	E	Both	Rare
Hawksbill sea turtle (*Eretmochelys imbricate*)	E	Both	Rare
Kemp's ridley sea turtle (*Lepidochelys kempii*)	E	Both	Yes
Red knot (*Calidris canutus rufa*)	T	USFWS	Yes
Piping plover (*Charadrius melodus*)	E	USFWS	Yes
Roseate tern (*Sterna dougallii dougallii*)	E	USFWS	No

Species	Status (T/E)	USFWS/NMFS	Present?
Eastern Black Rail (*Laterallus jamaicensis*)	T	USFWS	No
West Indian manatee (*Trichechus manatus*)	E	USFWS	Rare
Sensitive joint-vetch (*Aeschynomene virginica*)	T	USFWS	No
Seabeach amaranth (*Amaranthus pumilus*)	T	USFWS	Yes
North Atlantic right whale (*Eubalaena glacialis*)	E	NMFS	No
Shortnose sturgeon (*Acipenser brevirostrum*)	E	NMFS	Rare
Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*)	E	NMFS	Yes
Giant manta ray (*Manta birostris*)	T	NMFS	Yes
Smalltooth sawfish (*Pistis pectinata*)	E	NMFS	Yes

USFWS.
An updated list of T&E species for the project area within Dare and Hyde Counties, North Carolina was obtained from the USFWS Information, Planning and Conservation System (IPAC) website (http://ecos.fws.gov/ipac/) (Appendix C). The list of species is shown in Table 3, which includes T&E species that could be present in the area based on their historical occurrence or potential geographic range. The species and critical habitats under the purview of the USFWS are:

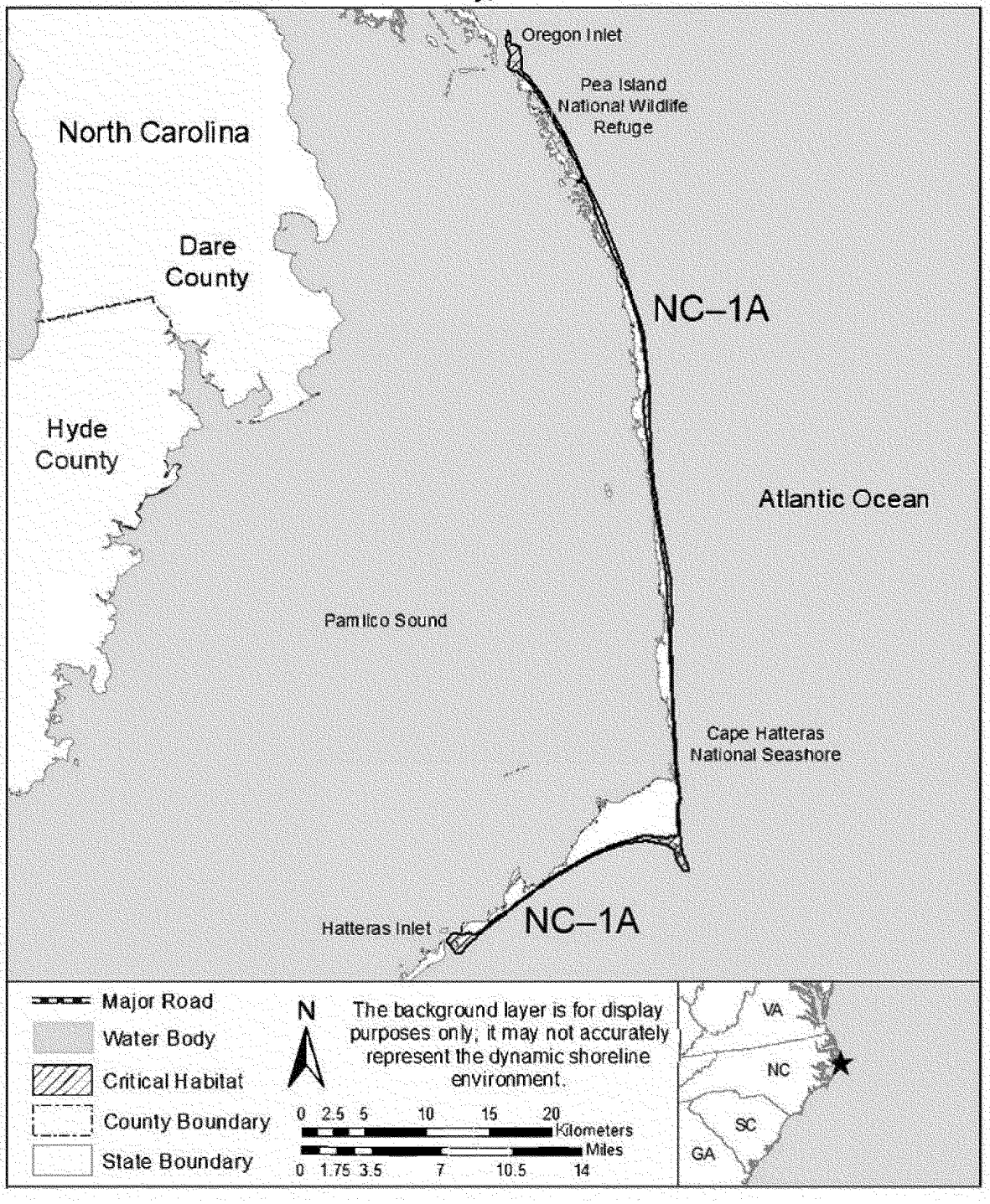
> Sea turtles [green (*Chelonia mydas*), loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*), Hawksbill (*Eretmochelys imbricate*), and Kemp's ridley (*Lepidochelys kempii*)]; red knot (*Calidris canutus rufa*); piping plover (*Charadrius melodus*); roseate tern (*Sterna dougallii dougallii*); Eastern Black Rail (*Laterallus jamaicensis*); West Indian manatee (*Trichechus manatus*); Sensitive joint-vetch (*Aeschynomene virginica*) and Seabeach Amaranth (*Amaranthus pumilus*).

Designated critical habitat (DCH) for wintering piping plover is present within the project area on federally managed National Park Service land on both sides of Hatteras Inlet.

The NC-4 Hatteras Island unit includes all emergent sandbars within Hatteras Inlet between Hatteras Island and Ocracoke Island, sandy shoals and beachfronts of Hatteras and Ocracoke Islands including lands owned by the State of North Carolina.

Also, currently under USFWS consideration is the proposed DCH for Red Knot, posted July 15, 2021 (Figure 8). This includes Outer Banks Units NC-1A and NC-1B and encompasses the same lands as the piping plover DCH.

Critical Habitat for Rufa Red Knot
NC–1A Outer Banks-Hatteras Island and Shoals;
Dare County, North Carolina



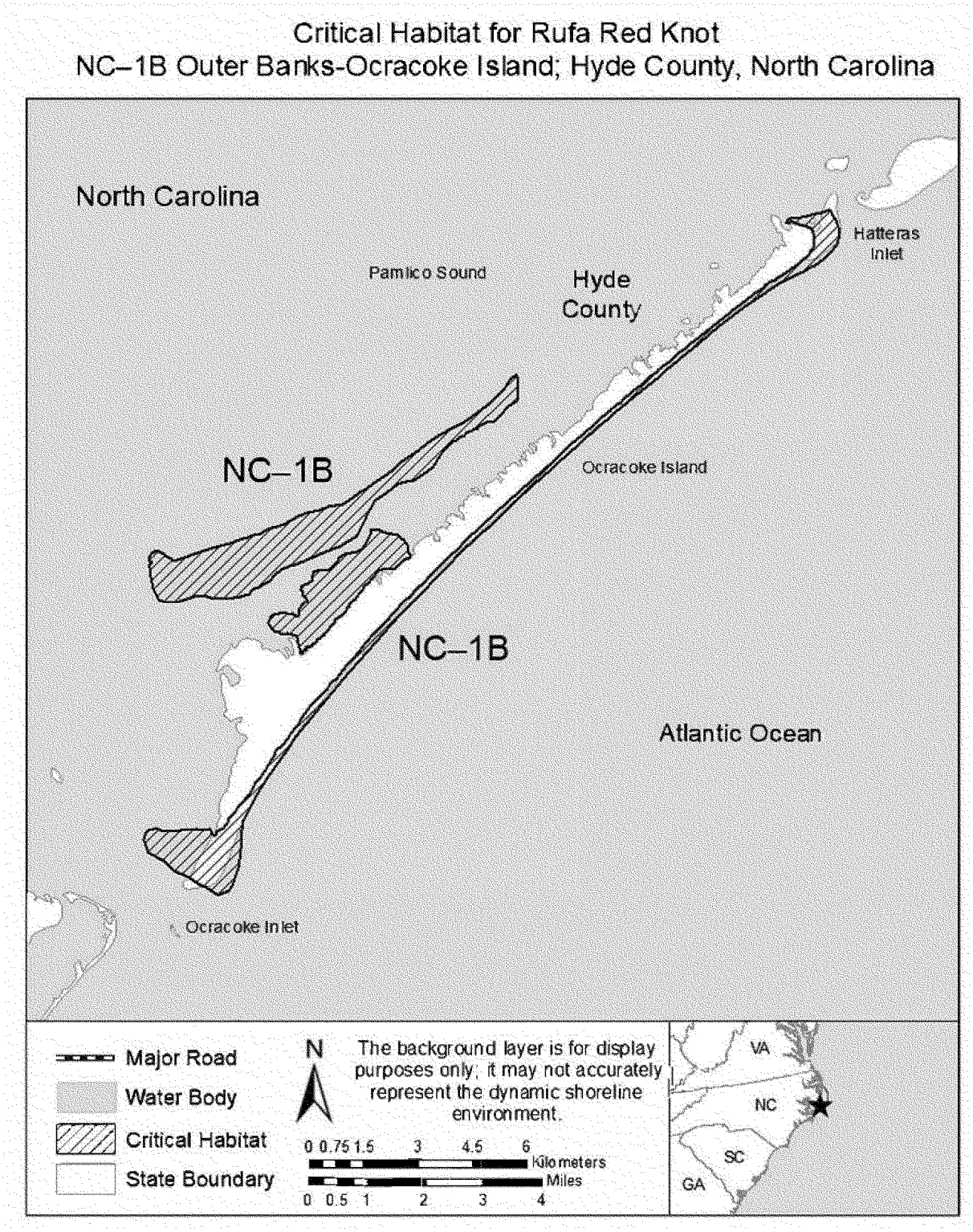


Figure 8. NC-1A and NC-1B, Proposed Rufa Red Knot Critical Habitat
https://www.federalregister.gov/documents/2021/07/15/2021-14406/endangered-and-threatened-wildlife-and-plants-designation-of-critical-habitat-for-rufa-red-knot

Sea turtle nesting may occur on the beachfronts of Ocracoke and Hatteras islands where beach quality dredged material may be placed; however, placement will occur during 16 November to 31 March to avoid nesting season. Likewise, control of effluent practices on bird islands will adhere to the 1 September to 31 March timeframe, thereby protecting nesting piping plovers and visiting red knots. All conditions and conservation recommendations of the USFWS 2017 North Carolina Coastal Beach Sand Placement, Statewide Programmatic Biological Opinion will be abided by; therefore, no impacts to T&E species including Seabeach Amaranth are anticipated. The roseate tern, eastern black rail and sensitive joint-vetch are not expected to occur within the project area. The Westin Indian manatee may be present; however, by following the 2017 USFWS Guidelines for Avoiding Impacts to the West Indian Manatee, no impacts are anticipated.

Formal consultation was not required with USFWS for this project.

NMFS.

Regarding T&E species under the purview of NMFS Protected Resources Division (PRD), the proposed project activities are maintenance dredging and material placement activities that are covered by the South Atlantic Regional Biological Opinion (SARBO) issued by the NMFS on March 27, 2020, as revised on July 30, 2020 (NMFS 2020). The 2020 SARBO can be located at https://www.fisheries.noaa.gov/content/endangered-species-act-section-7-biological-opinions-southeast.

The species and critical habitats under the purview of the NMFS are the following:

> Sea turtles [green (*Chelonia mydas*), loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*), Hawksbill (Eretmochelys imbricate), and Kemp's ridley (*Lepidochelys kempii*)]; Blue Whale (*Balaenoptera musculus); Sei Whale (Balaenoptera Borealis); Sperm whale (Physeter Macrocephalus); Finback whale* (*Balaenoptera physalus);* North Atlantic right whale (*Eubalaena glacialis*); shortnose sturgeon (*Acipenser brevirostrum*); Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*); Giant Manta Ray (*Manta birostris*); and Smalltooth sawfish (*Pistis pectinata*).

The project will comply with all relevant SARBO project design criteria (PDC) requirements. PDC requirements include training and education of on-site personnel (vessel captain, crew, etc.) of project requirements, and completing work in a manner that will minimize effects to species. This includes, but is not limited to, the list provided above. All work, including equipment, staging areas, and placement of materials, will be done in a manner that does not block access of ESA-listed species from moving around or past construction. Equipment will be staged, placed, and moved in areas and ways that minimize effects to species and resources in the area, to the maximum extent possible. All work that may generate turbidity will be completed in a way that minimizes the risk of turbidity and sedimentation to the maximum extent practicable. Beach placement will be conducted in a manner that minimizes turbidity in nearshore waters by

using methods that promote settlement before water returns to the water body (i.e., shore parallel dikes). Turbidity and marine sedimentation will be further controlled using land-based erosion and sediment control measures to the maximum extent practicable. Land-based erosion and sediment control measures will (1) be inspected regularly to remove excess material that could be an entanglement risk, (2) be removed promptly upon project completion, (3) and will not block entry to or exit from designated critical habitat for ESA-listed species. Lighting associated with beach placement activities will be minimized through reduction, shielding, lowering, and/or use of turtle friendly lights, to the extent practicable without compromising safety, to reduce potential disorientation effects on female sea turtles approaching the nesting beaches and sea turtle hatchlings making their way seaward from their natal beaches. The conservation measures will be revaluated annually and project changes, including time and/or equipment, may be altered, based on new information and experience.

The focus for this EA is the identified corridor and placement areas to include routes taken to transport dredged material (either by moving dredge or pipeline route). The USACE acknowledges the presence of sea turtles within adjacent waters of the Atlantic Ocean and Pamlico Sound year-round. Atlantic Sturgeon may also be present throughout the year, feeding along nearshore areas and migrating through Hatteras Inlet during spawning migrations. Whale species are not expected to be within the project area, as water depths would be too shallow. However, crew onboard the special purpose hopper dredges will be required to watch for possible whales during transit to the nearshore during migration months of November – March.

Formal consultation with NMFS PRD was not required for this project.

Environmental Impacts

Alternative 1 - No Action:
Near-continuous dredging using Government Plant may have minor impacts on listed marine species present within the Hatteras Inlet area. According to the 2020 SARBO, the risk to ESA-listed species under NMFS purview from activities covered under this EA including dredging and dredged material placement using the proposed equipment, effects from noise, water quality changes, and blocking migration were determined to be insignificant and not result in take. These risks to ESA-listed species under USFWS purview are also expected to be low and these species will be able to avoid disturbances without harm.

All dredging and placement activities for the No Action alternative would be conducted in accordance with the PDCs of the 2020 SARBO and the terms and conditions of the USFWS Statewide Programmatic BO, thereby leading to a may affect, not likely to adversely affect determination for sea turtles, sturgeon, manta rays, sawfish, manatee, and whales.

Alternative 2 - Maintenance of the horseshoe route between 1 October and 31 March with permission required for hot spot dredging outside of that timeframe:

Impacts relative to Alternative 2 would be the same as the No Action Alternative except that dredging events would be a lot less frequent with Alternative 2. Regardless of the time of year or type of dredge plant used, maintenance of the horseshoe route will adhere to all the relevant PDCs of the 2020 SARBO and Statewide Programmatic BO for all dredging and placement activities. Incidental takes are not anticipated, lethal or non-lethal, as risk of entrainment, ship strikes, etc. with pipeline and Government Plant dredges is very low. Dredging during winter months when the North Atlantic right whale (NARW) is migrating is not anticipated to negatively impact the NARW physically or behaviorally.

The placement of beach quality dredged material and the associated construction activities during the 16 November – 31 March timeframe may have minor and temporary impacts on piping plover and red knot foraging, sheltering, and roosting habitat. It may impact the constituent elements for piping plover nesting and wintering habitat. Bird island placement of dredged material onto Cora June and DOT Islands is expected to enhance nesting habitat for piping plovers. All placement activities will follow the terms and conditions and conservation recommendations of the 2017 Statewide Programmatic BO and the PDCs of the 2020 SARBO.

Consequently, Alternative 2 dredging may affect, but is not likely to adversely affect sea turtles, sturgeon, manta rays, sawfish and whales under NMFS purview. However, as stated in the 2017 Statewide Programmatic BO, dredged material placement activities may affect and will likely adversely affect sea turtles, piping plover, red knot, and seabeach amaranth.

<u>Alternative 3 (Proposed Action) – Government Plant maintenance of the horseshoe route between 1 October and 31 March except for Sloop Channel North and Hatteras Connector Channel which can be maintained any time of year:</u>

Impacts of Alternative 3 would be the same as Alternative 2 except that dredging events in Sloop Channel North and Hatteras Connector Channel would occur during April to September without agency coordination. The 2020 SARBO PDCs will be adhered to, and NMFS-HCD conservation recommendations will be adopted by USACE, thus reducing dredging risks and impacts to NMFS-listed species. Therefore, any associated physical or behavioral affects are expected to be minor and temporary. Consequently, Alternative 3 dredging may affect but is not likely to adversely affect sea turtles, sturgeon, manta rays, sawfish, and whales.

As stated in analysis of impacts for Alternative 2, the placement of dredged material onto beachfronts and bird islands may affect and is likely to adversely affect sea turtles, piping plovers, red knots, seabeach amaranth, piping plover wintering critical habitat, and proposed red knot habitat (even if conducted during the fall and winter months and adhering to the 2017 Statewide Programmatic BO).

With adherence to the 2017 Manatee Guidelines, the USFWS concurs that the project may affect but is not likely to adversely affect the West Indian manatee.

5.8 Cultural Resources.

The North Carolina State Historic Preservation Office's (SHPO) HPOWEB Map Service was queried to identify known cultural resources in and near the project area (North Carolina State Historic Preservation Office 2021). This service provides information for sites listed on the National Register of Historic Places, sites designated as Local Landmarks, and other data useful in considering potential impacts to cultural resources, but typically does not include submerged resources. According to HPOWEB, the resource closest to the project area is the Hatteras Inlet Lifesaving Station (Site ID HY0672); however, this site was destroyed by a hurricane in the 1950s (Figure 9).

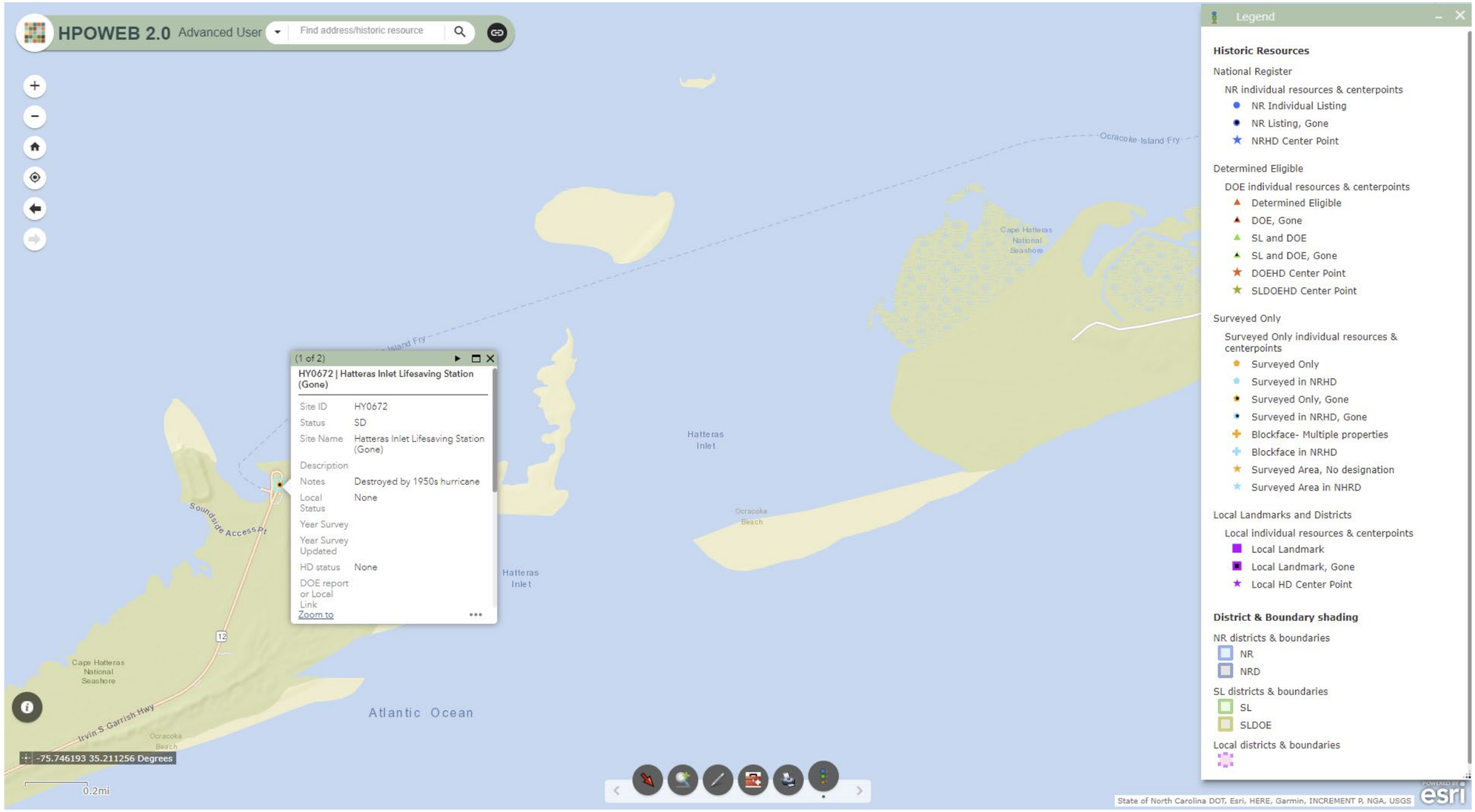


Figure 9. Cultural Resources Near Proposed Project Area according to HPOWEB

Regarding submerged cultural resources within the project's area of potential effects (APE), USACE coordinated multiple iterations of the proposed action with the SHPO under tracking number ER 16-2031 and later tracking number ER 20-0716. Tracking numbers for multiple review requests initiated by the USACE and by other entities were consolidated under ER 20-0716 by SHPO due to overlap of review request interests and physical geography. By letters dated 11 February 2021, 7 April 2021, and 1 August 2022, the SHPO recommended to the USACE that this dredging project proceed without the need for further archaeological investigation with the understanding that identified restricted areas were depicted on maps and implemented, and pending the results of multiple remote sensing surveys conducted by the NCDOT in previously unsurveyed areas within the "horseshoe route". These recommendations were made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800. The USACE understands that all required surveys have now been successfully coordinated with the SHPO. Restricted areas defined during coordination with the NCDOT's archaeological surveys, and additional restricted areas, are shown in Figure 10. The SHPO's recommendations also assume that dredging will take place only within the identified corridor and as described throughout this Environmental Assessment, as shown in Figure 10. The USACE will assume responsibility for avoidance of all identified restricted areas during dredging operations.

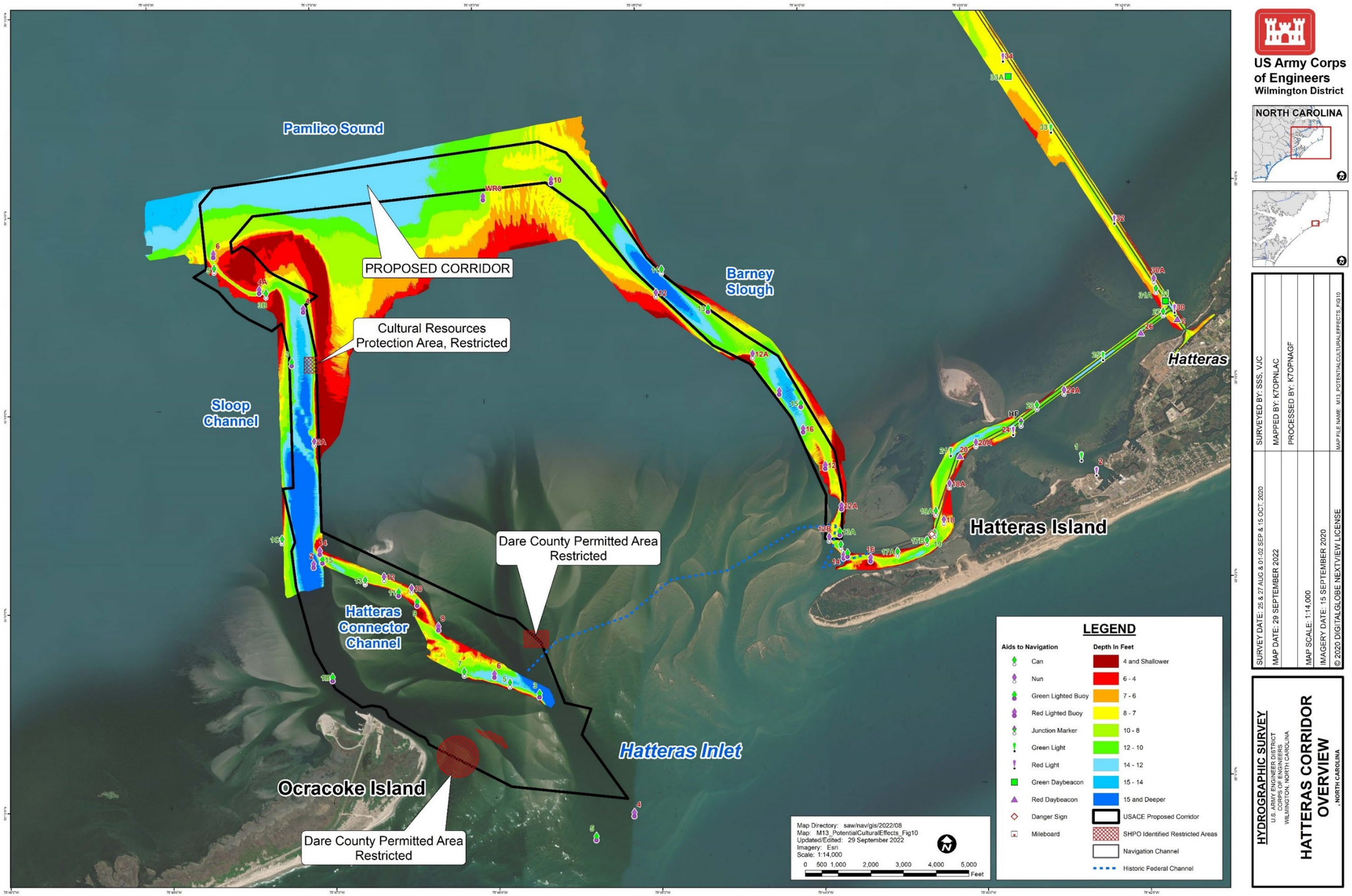


Figure 10. Area of Potential Cultural Effects (with three SHPO-identified restricted areas)

If significant deviation from the proposed corridor occurs, regarding dredging, SHPO will be consulted for comment. Additionally, should dredged material placement include any ground disturbing activity (e.g., anchoring associated with piping dredged material to an upland location), such placement will be coordinated with SHPO prior to implementation.

Executive Order 11593 states that the Federal Government shall provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the Nation. Federal agencies shall administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations, initiate measures necessary to direct their policies, plans and programs in such a way that federally owned sites, structures, and objects of historical, architectural or archaeological significance are preserved, restored, and maintained for the inspiration and benefit of the people, and, in consultation with the Advisory Council on Historic Preservation (16 U.S.C. 470i), institute procedures to assure that Federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures and objects of historical, architectural or archaeological significance.

Environmental Impacts.

No alternatives considered would adversely affect known cultural resources; however, in the event cultural resources, including, but not limited to, cultural artifacts, relics, remains, or objects of antiquity are discovered in the project area, the resource(s) in question will be protected from further disturbance until instructed otherwise based on coordination with SHPO. All alternatives will be in full compliance with Executive Order 11593 following completion of the NEPA process.

5.9 Climate Change and Sea Level Change.

In accordance with ER 1100-2-8162, dated 31 December 2013, potential relative sea level change must be considered in every USACE coastal activity as far inland as the extent of estimated tidal influence. The entirety of the proposed horseshoe corridor is in presently submerged and may be minimally affected by sea level rise. The tide gauge used in this analysis is a long-term data gauge with a 53-year data record used to develop mean sea level rise trends and was used here to develop “low” and “high” scenarios. Using the historic sea level rise rate (“low”), extrapolation produced a sea level rise increase of approximately 0.035 meters in the project area by the year 2033 while using National Research Council curve 3 (“high”) predicted a sea level rise over the same period of approximately 0.410 meters; the result is a 0.375-meter difference between “low” and “high” scenarios.

A review of the U.S. Environmental Protection Agency’s analysis for climate change for North Carolina titled *What Climate Change Means for North Carolina* (https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-nc.pdf) states that the sea level rise along the coast of NC is expected to likely rise anywhere from one to four feet in the next 100 years. Barrier island features, such as beaches and bird island placement areas addressed in

this EA, are likely to experience higher water levels causing beach erosion and opening of new or changing of alignments of existing inlets during larger storm events.

Environmental Impacts.

The three alternatives will not increase the effects of climate change or sea level rise in the project area; however, all alternatives are likely to be affected by climate change in the future due to the project area being on the coast where effects of climate change, such as increased storm events and sea level rise, will likely be more dramatic than inland portions of the State. For all three alternatives considered, rising sea levels may increase water depths in the coming years, which could reduce required dredging volumes and frequencies.

5.10 Socioeconomics.

The project area is in Pamlico Sound, Hatteras Inlet, and the nearshore Atlantic Ocean, but socio-economic effects of the project can be felt locally throughout Hyde and Dare Counties and Statewide. Hatteras to Hatteras Inlet Channel provides important economic and recreational benefits to local communities and the Nation as a much-navigated thoroughfare for commercial and recreational activities, as well as delivery of supplies and daily transport. Safety and security provided by USCG also has an influence on the socioeconomics of the region as well.

5.10.1 Ferry Services.

The NC ferry system is extremely important to Ocracoke and Hatteras Island residents as a major transportation corridor (part of NC Highway 12). Ocracoke Island is only accessible by boat, and water transportation to the island is provided almost exclusively by ferry. Currently, there are no alternatives for travel between Hatteras and Ocracoke beyond ferry service. This route is essential to daily commutes to school and work, access to mainland supplies and services, medical care, and emergency evacuations. The NC Ferry Division's reports show the Hatteras-Ocracoke route supports a total of 3,360 jobs resulting in earned wages of approximately $123 million. This translates into $19.5 million in local and State tax revenue (NC Department of Commerce, 2018). These socioeconomic resources are expected to increase in the future.

Since the horseshoe route was first utilized in 2013, 6-7 ferry vessels requiring 5 to 6-foot drafts are in constant operation during daylight hours of peak season transporting people goods, and services. In the past 5 years, vessels have transported an average of 600,000 people and 240,000 vehicles, but those numbers have declined each year due to navigation issues. Ferry transits have been reduced from 72 per day to 60 per day to allow for safe passage through Sloop Channel.

5.10.2 Tourism.

A scenic setting is provided by the ocean, sound and coastal beaches which lure millions of visitors per year from thousands of miles away. The marine environment offers boating and fishing and a multitude of seasonal recreational opportunities for residents and visitors, providing significant socioeconomic benefits. Hotels, rental

homes, restaurants, and other related businesses depend on the transport of visitors by ferry, mainly between the months of May and August. During the peak season, the population of Ocracoke and Hatteras Islands triples, boosting overall business output.

5.10.3 Recreational and Commercial Fishing.
Recreational and commercial fishermen extensively utilize the nearshore marine and estuarine waters of the Hatteras Inlet area between May and October but also on a year-round basis. The USACE maintains navigation channels in Pamlico Sound and Hatteras Inlet that are actively fished, or provide passage to other waters, including the Atlantic Ocean. Species that bring in the highest annual revenue include summer and southern flounder, blue crab, brown shrimp, yellowfin tuna, and swordfish.

Commercial seafood landings in Hatteras total $3.3 million, with a total economic impact of almost $10 million. For-hire fishing vessels in Hatteras, which routinely go offshore, generate approximately $8.4 million in revenue, and the total economic impact of off-boat spending by passengers on for-hire fishing vessels total almost $100 million.

The area supports at least 8 fishing tournaments between May and October each year, which helps contribute to an overall business output of $414 million for the Outer Banks. Fishing tournaments within the Hatteras Inlet area take place inshore, onshore (surf fishing), nearshore and offshore (deep sea fishing). Offshore fishing tournaments in Hatteras currently generate approximately $500,000 in economic impacts a year. These tournaments have experienced an almost 30% reduction in boats participating due to shoaling conditions in Hatteras Inlet.

5.10.4 U.S. Coast Guard.
The territory of the U.S. Coast Guard Station Hatteras Inlet covers over 2,350 nautical miles of Atlantic Ocean, approximately one-third of Pamlico Sound, as well as Hatteras Inlet, and Ocracoke Inlet. The station operates 4 vessels, which require minimum depths of 4 feet and 6 feet to perform search and rescue operations (approximately 20 – 40 rescues per year). The number of rescues is highest during peak season.

Environmental Impacts.

Alternative 1 - No Action: Attempts to keep the historic route open with continuous dredging may not be successful in maintaining the fully authorized width and depth of the channel, either due to lack of funding, dredge availability, or storm events. Ultimately, this could raise the cost of goods and have a wide-spread effect on the regional economy. Both the NC Ferry Division and Dare County would have to fund any dredging and maintenance efforts of the horseshoe route, and ultimately those expenses would be a burden to local taxpayers. The Hatteras to Ocracoke ferry transported 875,000 passengers in 2010, but by 2019, the number of passengers had fallen to 524,000. This is a direct result of having to light load ferries and limit the number of vehicles and passengers to ensure safe passage between the islands. The No Action alternative could result in significant adverse effects to the regional economy, by adversely affecting tourism, the ferry system (transport of goods and services

between the islands), fishing tournaments, commercial and recreational fishing, and USCG rescue efforts.

Alternative 2 - Maintenance of the horseshoe route between 1 October and 31 March with permission required for hot spot dredging outside of that timeframe:

Dredging within the proposed corridor between the months of October and March would be a significant improvement for the ferry service, tourism, fishing and USCG. As with Hatteras Connector Channel, unanticipated dredging events during the months of April – September may occur, however the time needed for the Wilmington District to coordinate with resource agencies may have an adverse effect (strandings, delays, safety concerns etc.) during times when immediate dredging is needed most.

With this alternative, USCG may experience a significant decline in the ability to perform rescues due to limited access to the inlet between the months of April – September when needed most. Likewise, delays to ferry services during peak months may occur because of time needed to declare an emergency, procure funding and an available dredge and coordinate with resource agencies.

Alternative 3 (Proposed Action) – Government Plant maintenance of the horseshoe route between 1 October and 31 March except for Sloop Channel North and Hatteras Connector Channel which can be maintained any time of year:

The project area provides important economic benefits to the Nation as a much-navigated thoroughfare for commerce. Year-round navigability of the channel will require dredging in Sloop Channel North and Hatteras Connector Channel periodically throughout the year, and lifting time of year dredging restrictions would mean USACE could plan dredging events in advance to take advantage of dredge availability and funding to stay ahead of shoaling. Proactive dredging would allow for dredging of high shoaling areas prior to them becoming a hazard, therefore the proposed action would benefit the regional economy by ensuring consistently safe, reliable navigation for the ferry service, USCG, and all other mariners attempting to navigate between Ocracoke and Hatteras Islands.

5.11 Environmental Impact Comparison of Alternatives.
Table 4 below provides a summary and comparison of impacts to the physical and natural environment for the alternatives considered.

Table 4. Comparison of Environmental Impacts

Project Area Resource	Alternative 1 No Action Maintain Historic Route	Alternative 2 Maintain Horseshoe with Seasonal Restriction	Alternative 3 (proposed action) Maintain Horseshoe with Season Restriction, except Sloop Channel North and Hatteras Connector Channel (no Seasonal Restriction)
Sediments	Minor effects due to near-constant dredging.	Minor effects due to movement of material.	Minor effects due to movement of material (same as Alt 2).
Hydrology	Minor and localized effects via channel deepening.	Temporary and minor effects via channel deepening.	Temporary and minor effects via channel deepening (same as Alt 2).
Water Quality	Minor effects via turbidity increases at dredging and placement locations.	Temporary and minor effects via turbidity increases at dredging and placement locations.	Temporary and minor effects via turbidity increases at dredging and placement locations (same as Alt 2).
Wetlands & Floodplains	No effects within the historic route.	No effects within the proposed corridor.	No effects within the proposed corridor.
Air Quality	Minor effects due to constant dredging.	No effects within the proposed corridor.	No effects within the proposed corridor.
Noise	Minor and localized effects due to near-constant dredging.	Temporary, minor, and localized effects within the proposed corridor.	Temporary, minor, and localized effects within the proposed corridor (same as Alt 2).
Nekton	Minor and localized effects due to near-constant dredging.	Temporary and minor effects within the proposed corridor.	Temporary and minor effects within the proposed corridor (same as Alt 2).
Benthos	Minor and localized effects due to near-constant dredging.	Temporary and minor effects at dredging and placement locations.	Temporary and minor effects at dredging and placement locations (same as Alt 2).
Fisheries & Fish Habitat	Minor effects due to near-constant dredging within the historic route.	Temporary and minor effects at dredging and placement locations in terms of turbidity increases and egg/larval entrainment/burial.	Temporary and minor effects at dredging and placement locations in terms of turbidity increases and egg/larval entrainment/burial (same as Alt 2).

Table 5. Comparison of Environmental Impacts (continued)

Project Area Resource	Alternative 1 No Action Maintain Historic Route	Alternative 2 Maintain Horseshoe with Seasonal Restriction	Alternative 3 (Proposed Action) Maintain Horseshoe with Seasonal Restriction, except Sloop Channel North and Hatteras Connector Channel (no Seasonal Restriction)
T&E Species (under NMFS purview)	May affect, not likely to adversely affect species within the historic route.	May affect, not likely to adversely affect species via increase in turbidity and noise, removal of bottom habitat/benthos.	May affect, not likely to adversely affect species via increase in turbidity and noise, removal of bottom habitat/benthos.
T&E Species (under USFWS purview)	May affect, likely to adversely affect species via dredged material placement; MANLAA for manatee under 2017 Guidelines	May affect, likely to adversely affect species via dredged material placement; MANLAA for manatee under 2017 Guidelines	May affect, likely to adversely affect species via dredged material placement; MANLAA for manatee under 2017 Guidelines
Cultural Resources	No effect.	No effect. Dredging will not occur in identified restricted areas.	No effect. Dredging will not occur in identified restricted areas.
Climate Change & SLR	No effect.	No effect.	No effect.
Socioeconomics	May adversely affect ferry service, tourism, fishing and USCG	Improvements to the ferry service, tourism, fishing and USCG relative to the No Action alternative due to a consistent more reliable channel.	Significant improvements to ferry service, tourism, fishing and USCG relative to the No Action alternative due to a consistent more reliable channel.

6.0 STATUS OF ENVIRONMENTAL COMPLIANCE.

6.1 National Environmental Policy Act (NEPA).
This EA has been prepared in accordance with the NEPA, the Council on Environmental Quality regulations (40 Code of Federal Regulations (CFR) parts 1500-1508,1515-1518) recently updated in 2020, and Engineering Regulation (ER) 200-2-2 and Engineering Regulation (ER) 200-2-2. To ensure the EA included an assessment of impacts on all significant resources in the project area, the Wilmington District circulated a scoping letter by email dated February 23, 2021, to state and federal resource agencies and members of the public for a 30-day comment period. A formal scoping meeting was conducted virtually on March 16, 2021 and attended by USEPA, USFWS, NMFS, NPS, NCDCM, NCDMF, NCWRC, USCG, NCDOT and Dare County representatives. Concerns expressed by the resource agencies included increased dredging effects in the spring and summer months; disruption to migratory species; turbidity and entrainment effects on critical life stages of important fisheries; and the need for a thorough alternatives analysis of environmental impacts.

The Draft EA was released for 30-day public review and comment on October 2021 and a total of 121 comments were received. On July 12, 2022, a second public notice was released to the 121 individuals and organizations (to include resource agencies) who commented on the Draft EA to inform them of a change in project scope: Hatteras Connector Channel corridor was expanded by 149 acres to include a new deep water route accessing the inlet gorge. This was in response to shoaling that occurred, blocking off the formerly preferred route. NCDMF provided comments expressing concerns regarding potential impacts to SAV adjacent to Hatteras Connector Channel.

A spreadsheet including all comments received and USACE responses is included as Appendix E. All identified agency and stakeholder concerns were considered and addressed during the development of the Final EA. Pursuant to NEPA, a new EA will be prepared if there are significant changes proposed to the project or new circumstances or information relevant to the environmental impacts of the proposed action.

6.2 North Carolina Coastal Zone Management Program.
The actions addressed in this EA for the proposed action will take place in the designated coastal zone of the State of North Carolina. Pursuant to the Federal Coastal Zone Management Act (CZMA) of 1972, as amended (P.L. 92-583), federal activities are required to be consistent to the maximum extent practicable with the federally approved coastal management program of the state in which their activities would be occurring.

On October 18, 2021, USACE submitted a copy of the Draft EA and federal consistency determination to the NCDCM in accordance with Section 307(c)(1) of the Federal Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1456(c)(1)(C)). NCDCM requested additional time to allow USACE and resource agencies to resolve agency concerns. The USACE submitted an addendum to the consistency on January 24, 2022, to include a shoaling analysis and revised plan for Government Plant dredging of the high shoaling areas.

On February 14, 2022, NCDCM responded with a federal consistency concurrence indicating that the proposed action to enable dredging in North Sloop Channel and Hatteras Connector Channel any time of year was consistent with the relevant enforceable policies of North Carolina's coastal management program. Dredging in remaining locations of the channel would be required to occur during the recommended timeframe of October 1 – March 31 to avoid potential impacts to important fisheries and fish habitats. The federal consistency concurrence is attached as Appendix F.

Congruent with the July 12, 2022 Public Notice, a revised federal consistency determination was submitted to NCDCM to incorporate the 149-acre Connector Channel. NCDCM provided a federal consistency concurrence dated September 16, 2022 which is also included as Appendix F.

Section 1102 (a) states that "clean, beach quality material from navigation channels within the active nearshore, beach, or inlet shoal systems must not be removed permanently from the active nearshore, beach or inlet shoal system unless no practicable alternative exists. Preferably, this dredged material will be disposed of on the ocean beach or shallow active nearshore area where environmentally acceptable and compatible with other uses of the beach." When considering a project's compliance with Section 1102, NCDCM has stated that the section should be read in concert with NCAC 7H.0208 (2)(G), which does provide some flexibility for publicly funded projects, allowing them to be considered by review agencies on a case-by-case basis with respect to dredged material placement. Placement of dredged material will be done in accordance with this regulation with the majority of the clean, beach quality material (i.e., ≥90% sand) being placed within approved nearshore placement areas, on bird islands, beachfronts or in the ferry landing scour hole.

6.2.1 Areas of Environmental Concern (AECs).
The proposed action would take place in or near areas designated under the NC Coastal Management Program as AECs (15A NCAC 7H .0100). Specifically, the activities will occur in three AECs, Estuarine Waters, Ocean Hazard, and Public Trust Area. The following determination has been made regarding the consistency of the proposed action with the State's management objective for the AECs that may be affected:

Estuarine Waters: Estuarine Waters are the state's oceans, sounds, tidal rivers, and their tributaries, which stretch across coastal North Carolina and link to the other parts of the estuarine system: public trust areas, coastal wetlands, and coastal shorelines. For regulatory purposes, the inland, or upstream, boundary of estuarine waters is the same line used to separate the jurisdictions of the NC Division of Marine Fisheries (NCDMF) and the NC Wildlife Resources Commission (NCWRC). However, many of the fish and shellfish that spend part of their lives in estuaries move between the "official" estuarine and inland waters.

The proposed action would not adversely impact estuarine waters, since dredging and placement will be temporary, and effects are considered to be minor.

Ocean Hazard: The Ocean Hazard System is made up of oceanfront lands and the inlets that connect the ocean to the sounds. Hatteras Inlet is within the designated Ocean Hazard System.

The proposed action would not adversely affect oceanfront lands or inlets since no new or additional work is proposed within the Ocean Hazard area.

Public Trust Areas: These areas include waters of the Atlantic Ocean and the lands there under from the mean high-water mark to the 3-mile limit of state jurisdiction. The nearshore placement areas located off Ocracoke and Hatteras islands are within these Public Trust Areas. Acceptable uses include those that are consistent with protection of the public rights for navigation and recreation, as well as conservation and management to safeguard and perpetuate the biological, economic, and aesthetic value of these areas. The activities that comprise the proposed action are not intended to adversely impact public rights for navigation and recreation and are consistent with conservation of the biological, physical, and aesthetic values of public trust areas.

6.2.2 Other State Policies.

The following state policies found in the NC Coastal Management Program document are also applicable to the proposed action in terms of nearshore placement of sand.
Shoreline Erosion Response Policies: NC Administrative Code 7M - Section .0200 addresses beneficial use of dredged material as feasible alternatives to the loss or massive relocation of oceanfront development when public beaches and public or private properties are threatened by erosion; when beneficial use is determined to be socially and economically feasible and causes no significant adverse environmental impacts; and the project is consistent with state policies for shoreline erosion response and state use standards for Ocean Hazard and Public Trust Areas AECs.
Policies on Beneficial Use of Materials from the Excavation or Maintenance of Navigation Channels: NC Administrative Code 7M - Section .1101 states that it is the policy of the state that material resulting from the excavation or maintenance of navigation channels be used in a beneficial way wherever practicable. Policy statement .1102 (a) indicates that "clean, beach quality material dredged from navigation channels

within the active nearshore, beach, or inlet shoal systems must not be removed permanently from the active nearshore, beach, or inlet shoal system unless no practicable alternative exists. Preferably, this dredged material will be placed on the ocean beach or shallow active nearshore area where environmentally acceptable and compatible with other uses of the beach."

6.3 Clean Water Act.
Pursuant to Section 401 of the Clean Water Act, the proposed action requires a water quality certification issued by NCDWR for the dredging portion of the project and dredged material placement in open water and within the ferry landing scour hole. Dredged material placed in the authorized beachfront and nearshore placement areas is covered under WQC #4500, and placement in the nearshore areas and by control-of-effluent on the bird islands is covered under WQC #4152 by means of authorization letter dated September 30, 2019. The USACE has been issued NCDWR Individual WQC #5186 dated September 19, 2022 for all dredging and sidecasting and scour hole placement options. A copy of all WQCs can be found in Appendix B.

The proposed action has been evaluated under Section 404(b)(1) (P.L. 95-2017) and is included in Appendix H.

The proposed project is in compliance with Sections 404 and 401 of the Clean Water Act.

6.4 Endangered Species Act.
The Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531–1543), provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. In accordance with section 7 (a)(2) of the ESA, and under the purview of the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), USACE will ensure that effects of the proposed project would not jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat of such species. USACE dredging and placement will operate under the 2017 USFWS NC Statewide Programmatic Biological Opinion which lays out the terms and conditions and conservation recommendations for beach placement activities for the protection of sea turtles, manatee, piping plover, red knot and seabeach amaranth. This BO is expected to be updated for Red Knot Critical Habitat in the near future.

The 2020 SARBO includes requirements for yearly reporting to NMFS for agency review and evaluation of all projects to make sure no threatened and endangered species are being negatively impacted. Also, monthly calls between agencies (USACE SAD/ BOEM/ NMFS) are ongoing to discuss the progress of existing projects, completed projects, new work, and risk to threatened and endangered species and the environment associated with all known dredging work covered by the 2020 SARBO.

While the effects to species populations from maintenance dredging and material placement activities were evaluated under the 2020 SARBO, a risk-based adaptive project management process is also required and used by USACE when considering the appropriate project components, timing, and risk minimization measures to apply to each activity. For example, project timing requirements are included the North Atlantic Right Whale Conservation Plan (2020 SARBO Appendix F) and are considered for projects when and where North Atlantic Right Whales may be present. The risk-based adaptive project management process includes a review of current available information on species use in the area, lessons learned from prior work completed in the area, information provided by various federal and state resource agencies, and other relevant information.

All work done for the proposed project will comply with the 2020 SARBO https://www.fisheries.noaa.gov/content/endangered-species-act-section-7-biological-opinions-southeast. No additional risk-minimization measures beyond those considered in this EA are deemed warranted due to the low risk of harm from the dredge equipment proposed, sediments to be dredged, placement areas, and species likely to be present, regardless of time of year when work occurs.

6.5 Magnuson-Stevens Fishery Conservation and Management Act.

The 1996 Congressional amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (PL 94-265) 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.

USACE EFH coordination with NMFS Habitat Conservation Division (HCD) is complete with release of the Final EA/FONSI. NMFS-HCD provided a letter dated September 1, 2022 (Appendix G) that recommends that USACE develop a Hatteras Inlet Management Plan (HIMP) in coordination with Dare County and NCDOT. USACE's final response dated September 9, 2022 (Appendix G) outlines commitments a-d to reduce impacts to EFH and commits to developing and implementing the HIMP. This plan is in early development and will not be included with the Final EA/FONSI.

6.6 Environmental Justice.

Executive Order 12898 requires federal agencies to address environmental justice in relation to proposed actions. Environmental justice is defined as the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of

environmental laws, regulations, and policies. EPA further defines fair treatment to mean that no group of people should bear a disproportionate share of the negative environmental consequences of industrial, governmental, or commercial operations or policies. Furthermore. Executive Order 13045 Federal agencies identify and assess environmental health and safety risks that may disproportionately affect children as a result of the implementation of federal policies, programs, activities, and standards.

Data from the EPA's EJSCREEN (https://www.epa.gov/ejscreen) mapping tool primarily shows consistency between the demographics of resident populations and the larger Census Block Groups and local municipalities. Of note is statistically significant local population of residents over 64 years of age. It does not appear that significant minority populations, low-income populations, or children under age 5 are present.

Neither the proposed action, alternative 2, nor the no action alternative will adversely affect environmental justice in minority populations and/or low-incomes populations, or disproportionately affect children and will be in full compliance with Executive Orders 12898 and 13045 following completion of the NEPA process.

The proposed action and alternative 2 would allow the Hatteras to Hatteras Inlet Channel to remain safely navigable and would benefit the local economy through allowing for channel use by recreational and commercial vessels as well as the North Carolina Ferry Service. The proposed action and alternative 2 would positively benefit the economy and socioeconomics within and beyond the project area.

The no action alternative may result in adverse effects to socioeconomics resources; failure to maintain a navigable channel in the future could result in more frequent navigability difficulties in frequently shoaled areas, which has the potential to impact the local economy.

It has been determined that the Environmental Justice executive orders have been met. The USACE ensures that protected populations are not disproportionately or adversely impacted by the proposed project."

6.7 Public Laws and Executive Orders.
Table 5 lists the compliance status of all executive orders considered for the proposed Hatteras to Hatteras Inlet Channel Realignment project. Further descriptions of proposed project compliance with executive orders are below.

Table 6. The Relationship of the Proposed Action to Federal Laws and Policies

Title of Public Law	US CODE	*Compliance Status
Abandoned Shipwreck Act of 1987	43 USC 2101	Full Compliance
Anadromous Fish Conservation Act of 1965, As Amended	16 USC 757 et seq.	Full Compliance
Antiquities Act of 1906, As Amended	16 USC 431	Full Compliance
Archeological and Historic Preservation Act of 1974, As Amended	16 USC 469	Full Compliance
Archeological Resources Protection Act of 1979, As Amended	16 USC 470	Full Compliance
Clean Air Act of 1972, As Amended	42 USC 7401 et seq.	Full Compliance
Clean Water Act of 1972, As Amended	33 USC 1251 et seq.	Full Compliance
Coastal Zone Management Act of 1972, As Amended	16 USC 1451 et seq.	Full Compliance
Endangered Species Act of 1973	16 USC 1531	Full Compliance
Estuary Program Act of 1968	16 USC 1221 et seq.	Full Compliance
Equal Opportunity	42 USC 2000d	Full Compliance
Farmland Protection Policy Act	7 USC 4201 et seq.	Full Compliance
Fish and Wildlife Coordination Act of 1958, As Amended	16 USC 661	Full Compliance
Historic and Archeological Data Preservation	16 USC 469	Full Compliance
Historic Sites Act of 1935	16 USC 461	Full Compliance
Magnuson Fishery Conservation and Management Act – Essential Fish Habitat	16 USC 1801	Full Compliance
National Environmental Policy Act of 1969, As Amended	42 USC 4321 et seq.	Full Compliance
National Historic Preservation Act of 1966, As Amended	54 USC 306108	Full Compliance

Title of Public Law	US CODE	*Compliance Status
Native American Religious Freedom Act of 1978	42 USC 1996	Full Compliance
Executive Orders		
Protection and Enhancement of Environmental Quality	11514/11991	Full Compliance
Protection and Enhancement of the Cultural Environment	11593	Full Compliance
Floodplain Management	11988	Full Compliance
Protection of Wetlands	11990	Full Compliance
Federal Actions to Address Environmental Justice and Minority and Low-Income Populations	12898	Full Compliance
Implementation of the North American Free Trade Agreement	12889	Full Compliance
Invasive Species	13112	Full Compliance

*Full compliance once the NEPA process is complete.

The proposed action will not adversely affect natural and cultural resources and will be in full compliance with Executive Orders stated above following completion of the NEPA process.

6.8 National Park Service Special Use Permit.
The National Park Service (NPS) has identified areas of beachfront within the Cape Hatteras National Seashore as eligible for receiving sand for purposes of habitat restoration and enhancement through the process of obtaining a Special Use Permit (SUP). The NPS completed the Sediment Management Framework Environmental Impact Statement (EIS) in 2021 that will facilitate and expedite the SUP process.

Figure 11 shows the extent of placement areas on Ocracoke and Hatteras Islands approved by the NPS.

Figure 11. Placement Areas on Ocracoke and Hatteras Islands (shown in yellow and black) as Approved by the NPS

6.9 Coordination of This Document.

Prior to the release of the Draft EA, several meetings took place with state and federal resource agencies to resolve comments and concerns raised during the scoping period. Following the March 16, 2021 virtual Scoping Presentation, the USACE held agency meetings on April 30 and May 4, 2021 to discuss comments and concerns. On July 1, 2021, USACE held an in-person meeting to discuss the importance of Government Plant dredging without timeframes to support the proposed action.

The proposed action and the environmental impacts of the proposed action are thoroughly addressed in this EA. On October 18, 2021, he Draft EA was made available to an extensive list of Tribes, local, State, and federal regulatory agencies, elected officials, and members of the public for a 30-day review and comment period. A list of recipients has been included as Appendix D of this document.

Since the release of the Draft, extensive coordination has taken place with state and federal resource agencies. The Final EA/FONSI has been distributed to the same list of recipients mentioned above. It is also accessible on the Wilmington District Website at:

http://www.saw.usace.army.mil/Missions/Navigation/Dredging/

7.0 ENVIRONMENTAL COMMITMENTS.

To proceed with the proposed alternative of dredging and placement with Government Plant without seasonal restrictions, USACE will follow the environmental commitments listed below:

- Agency notification will occur ~2 weeks prior to dredging between 1 April – 30 September.

- Beach placement and bird island placement will only occur during the relevant timeframes for the protection of nesting sea turtles and birds.

- Prior to each dredging event, SAVs in the project area will be identified using recent aerial imagery and avoided to the maximum extent practicable. An SAV buffer will be established avoiding dredging or sidecasting of material within 100 feet of identified SAVs during the months of October to March and 300 feet during months of April – September.

- A Special Use Permit will be obtained from the NPS prior to commencement of work on beachfronts.

- The USACE will abide by the USFWS 2017 Statewide Programmatic Beach Placement BO and 2017 Manatee Guidelines.

- The USACE will abide by the NMFS 2020 SARBO and relevant PDCs.

- Any changes in the proposed plan will be coordinated in advance with resources agencies.

8.0 CONCLUSION.

Based on findings described in this EA, it is in the federal interest to implement the proposed alternative to allow Government Plant dredging to occur in Sloop Channel North and Hatteras Connector Channel without seasonal restrictions. The 1 October – 31 March timeframe will remain for Government Plant dredging throughout the rest of the corridor (Barney Slough, Pamlico Sound and Sloop Channel South), and contracted pipeline dredging will occur during appropriate timeframe to protect shorebird and sea turtle nesting. Overall, the impacts associated with the government plant dredges are minor and volumes of material to be dredged are limited to small areas of shoaling. Furthermore, dredged material is beach quality sand and settles quickly with minimal turbidity within the water column. Maintenance dredging within the corridor may result in minor, short-term and localized impacts to water quality, noise, benthic organisms, important fisheries and protected marine species and critical habitat. Impacts to natural resources associated with sidecast and special purpose hopper dredging during the months of April – September are expected to be minor and short-term and will only include dredging of Sloop Channel and Hatteras Connector Channel.

The overall benefit of the proposed action is that it will allow flexibility for Government Plant to accomplish maintenance dredging in a proactive manner and provide a safer, more navigable channel for ferries, fishermen and the USCG.

9.0 POINT OF CONTACT.

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Appendix A:

USACE Sediment Analysis

USACE GEOTECHNICAL SEDIMENT ANALYSIS
HATTERAS TO HATTERAS CHANNEL REALIGNMENT
ROLLINSON CHANNEL NAVIGATION PROJECT, NORTH CAROLINA

Location: The Rollinson Channel Navigation project is located within the eastern side of Pamlico Sound in Dare County, North Carolina. The project authorizes a 10-foot-deep channel with an additional 2-feet overdepth, from Pamlico Sound to the Hatteras Ferry terminal/basin located on the southwestern side of Hatteras Island. The project also provides for a navigation corridor along the sound side of Hatteras Island to Hatteras Inlet (Figure 1). The 8.5-mile-long corridor is located within the Hatteras Inlet complex between Ocracoke Island (Hyde County) and Hatteras Island (Dare County). The Hatteras Island side begins near greenlight buoy 15 and includes Barney Slough, Pamlico Sound, Sloop Channel and the Hatteras Connector Channel.

Impediments to Navigation and Proposed Work: The northwestern corner of Sloop Channel has shoaled in significantly and is impeding ferry travel for the Hatteras-Ocracoke ferries. Hydrographic surveys (see Figure 1) indicate that shoaling is most problematic between buoys #4 to #6; however, significant shoaling is also present along the Barney-Slough portion of the navigation channel near buoy #10 and between buoys #16 and #14. With respect to Hatteras Inlet, this shoaling is occurring where the navigation channel overlies the distal edge of the Hatteras Inlet flood tidal shoal.

USACE plans to improve navigation along the navigation corridor which includes Sloop and Barney Slough Channels. The new corridor will follow naturally deep water, and will be maintained at the authorized dimensions of 100 feet wide and 10 feet deep plus 2 feet allowable overdepth referencing mean lower low water (MLLW). USACE has an environmental material constraint for side-cast placement; the in-situ material within the dredge prism must contain no more than 10% fines. This is the same constraint used by USACE for beach nourishment projects.

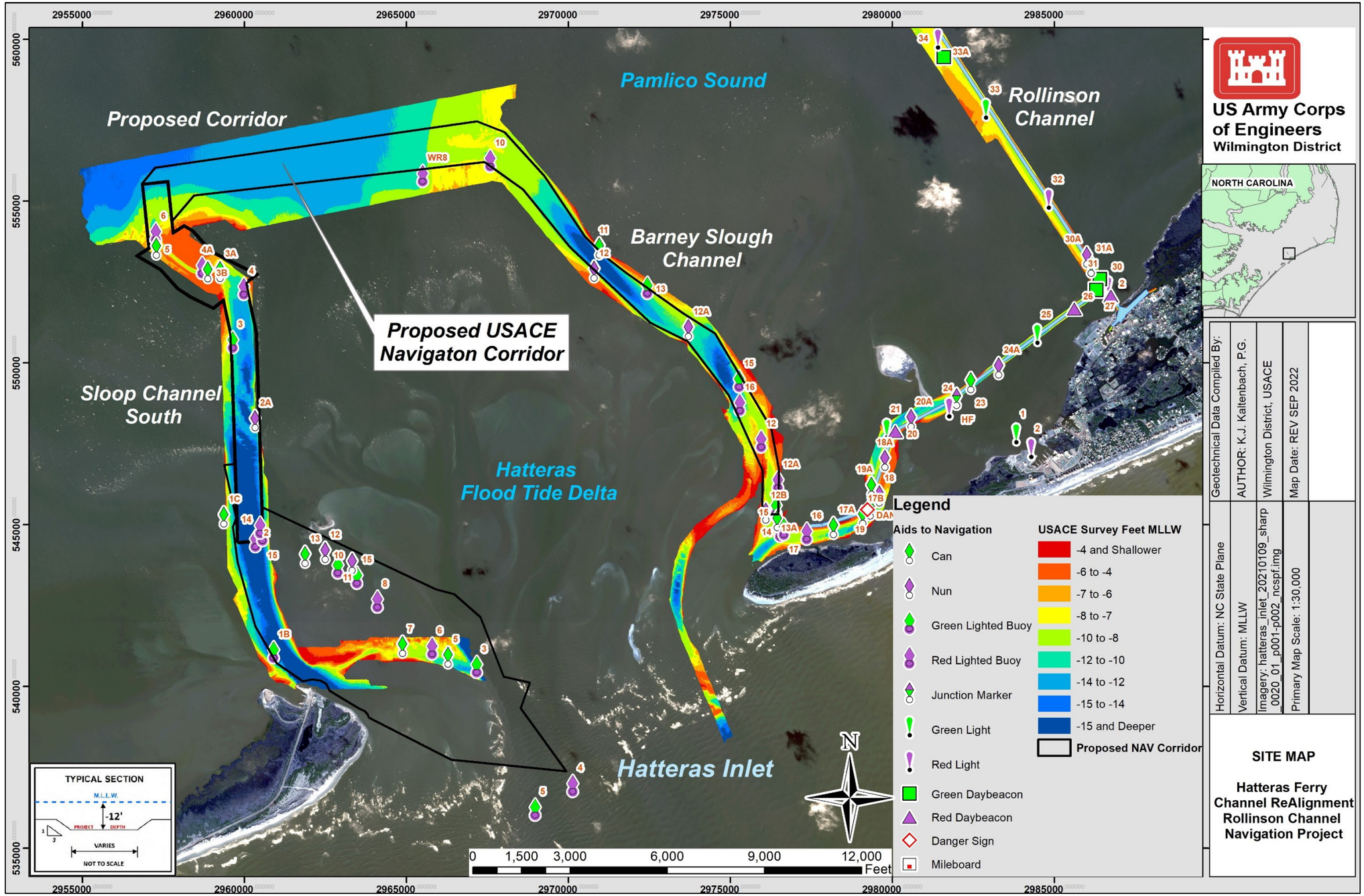

Figure 1. Hatteras to Hatteras Inlet Channel Re-Alignment Project Area. Note that the proposed corridor follows naturally deep water around the Hatteras flood tide delta.

Project Geologic Setting: The geology of the project area is shown in Figure 2. The project site lies adjacent to Hatteras Island within the Atlantic Coastal Plain of North Carolina, on the eastern edge of the Pamlico Sound drowned-river estuary. The Atlantic Coastal Plain of North Carolina is comprised of a seaward thickening wedge of sedimentary strata that extends to the modern-day continental shelf break (Klitgord and Behrend, 1979; Harris et al., 1979; Harris and Zullo, 1991). This sedimentary wedge is composed of stratigraphically complex sequences of Cretaceous (145.5-65.5 Ma) to Quaternary (2.58 Ma-Present) sediments that overlie warped and faulted crystalline basement rock, which controlled the formation of paleo-depositional basins that would eventually form the Albemarle and Pamlico Sounds in North Carolina (Harris et al., 1979; Sohl and Owens, 1991). Structural warping about the Cape Fear Arch changed the elevation of the paleo-continental shelf relative to sea-level, which influenced sedimentation and depositional patterns from the Cretaceous to the Quaternary (Sohl and Owens, 1991; Ward et al., 1991). Geologic strata underlying Pamlico Sound contains thick sequences of unconsolidated Pliocene (5.3 Ma-2.58 Ma) and Quaternary sediments draped unconformably atop Cretaceous-aged units that are only exposed in upland stream bank outcrops (Mallinson et al., 2010). The configuration of inland dunes and terraces and formation of the drowned estuaries within the North Carolina Coastal Plain is attributed to cyclic sea-level fluctuation resulting from multiple ice ages during the Pliocene and early Pleistocene periods (Ward et al., 1991). Approximately 5,000 years before present, the rate of sea-level rise slowed enough to allow wave, current, and wind action to begin accreting enough sand to build the present-day barrier islands. Reworked modern and relict sands and gravels were deposited by wind or storm over wash atop finer-grained, estuarine to fluvial sediments. During this time, many of the oldest and largest of the Outer Banks sand dunes were formed as the material for the islands accreted atop older, exposed Pleistocene headlands (Dolan and Lins, 2000). Large back-barrier dune fields formed during periods of accretion, building atop and in front of older dunes on complex island segments (Havholm et al., 2004). Sand rich islands of the Outer Banks may have measured a mile across; interconnecting these larger islands were narrow, sand-poor, over wash dominated simple barrier islands and spits that were periodically breached to form temporal inlets (Dolan and Lins, 2000). A major breach occurred circa 1000 A.D., which resulted in the collapse of a 31-mile section of the Southern Outer Banks in the vicinity of Portsmouth, Ocracoke, and Hatteras Island (Culver et al., 2007). The collapse is believed to have been caused by a combination of major storm activity and transgressive conditions that existed during a warm climatic interval known as the Medieval Warm Period (Culver et al., 2007; Mallinson et al., 2008). Following the collapse, the affected areas were transformed into a large submarine shoal system, allowing open communication between Pamlico Sound and the Atlantic Ocean. The deposition of fine sand, marine foraminifera, and Gulf Stream plankton atop of organic-rich estuarine mud records this dramatic shift in environmental conditions (Culver et al., 2007). Marine conditions persisted within southern Pamlico Sound for approximately 500 years, upon which simple barrier islands reformed, resulting in a shift back to a low-energy estuarine environment (Riggs et al., 2009). In 1846, a hurricane breached the Outer Banks near Hatteras, forming what is now the Hatteras Inlet (Mallinson et. al., 2009). The present-day Hatteras Island is still

very much a dynamic system that is being constantly changed by the rising sea-level, tides, longshore current, and nearby inlet dynamics.

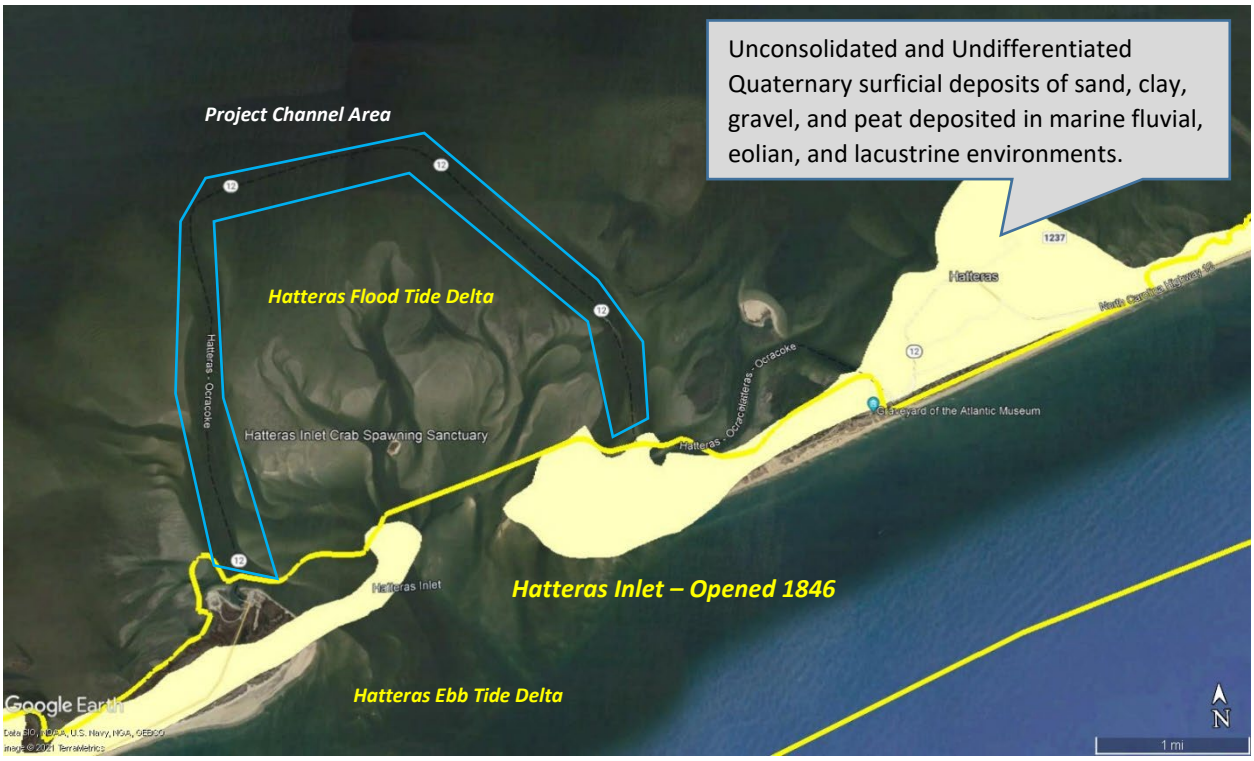

Figure 2. Generalized geology of the project area, from North Carolina Geological Survey (1985).

Historical Dredging and Previous Subsurface Investigations: USACE has conducted routine dredging within most of Rollinson Channel since its authorization and construction in 1962. When the original Hatteras to Hatteras Inlet Channel shoaled in and became impassible, Sloop Channel and Barney Slough were utilized in 2012 to provide passage to Ocracoke Island. Naturally deep water occurs along the periphery of the Hatteras flood tide delta, which USACE seeks to utilize for an enduring navigation project. Despite this, shoaling still occurs due to the large amount of sediment transport between Pamlico Sound and Hatteras Inlet. USACE dredges the navigation channel segments on a semi-annual basis (see Table 1). The typical method of placement has been via side-cast or special purpose hopper dredge with material placement in the nearshore off Ocracoke Island. The current project is maintained at an authorized depth of -10 feet MLLW with an additional 2-feet of overdepth. The project's dredging history is detailed in Table 1.

Table 1. USACE Dredging History of Hatteras Ferry Channel System

ROLLLINSON CHANNEL (FEDERAL)		HATTERAS CONNECTOR CHANNEL (NON-FEDERAL)	
DREDGING DATE RANGE	**PLANT**	**DREDGING DATE RANGE**	**PLANT**
July 27 - 31, 2016	MERRITT		
August 7 - 19, 2016	MERRITT		
December 26, 2016 - January 11, 2017	MERRITT		
February 5 - 9, 2017	MERRITT		
April 21 -24, 2017	MERRITT		
May 11 - June 2, 2017	MERRITT		
June 1 - 2, 2017	MERRITT		
August 9 -11, 2017	MERRITT		
September 17 - 24, 2017	MERRITT		
March 20 - 29, 2018	CURRITUCK	March 30 - 31, 2018	CURRITUCK
December 15 -19, 2018	CURRITUCK		
December 29, 2018 - January 2, 2019	CURRITUCK		
January 2 - 15, 2019	MURDEN		
March 20 - April 10, 2019	MERRITT	March 16 - April 11, 2019	MERRITT
August 8 - 17, 2019	MERRITT		
September 26 - 30, 2019	MERRITT		
October 1 - 11, 2019	MERRITT		
December 27, 2019 - January 8, 2020	MERRITT		
January 29 - February 13, 2020	MERRITT	January 25 - February 11, 2020	MERRITT
July 23 - August 25, 2020	MERRITT	July 23 - September 2, 2020	MERRITT
December 1, 2, 9, 15, 2020	MERRITT	December 3 - 19, 2020	MERRITT
March 2 -22, 2021	MERRITT	March 2 - 18, 2021	MERRITT
March 27, 2021 - ongoing	MERRITT / MURDEN	March 27, 2021 - ongoing	MERRITT / MURDEN

To date, there have been five previous subsurface investigations conducted within the Rollinson Channel Project by both USACE and NCDOT (see Figure 3):

- USACE 2003, Vibracore investigation of the Rollinson Channel. USACE drilled 34 vibracores using the S/B Snell. Borings that were drilled into the inlet throat, the flood tide delta, and nearby channel shoals encountered fine to medium-grained, poorly-graded sand with little to trace amounts of fines (SP, SP-SM). Borings that were drilled in the ferry channel segments behind Hatteras and Ocracoke Islands encountered 3 to 4 feet of silty, fine-grained material overlying fine-medium grained sand. Marina areas contained possible organics from spilled fuel/engine oil.

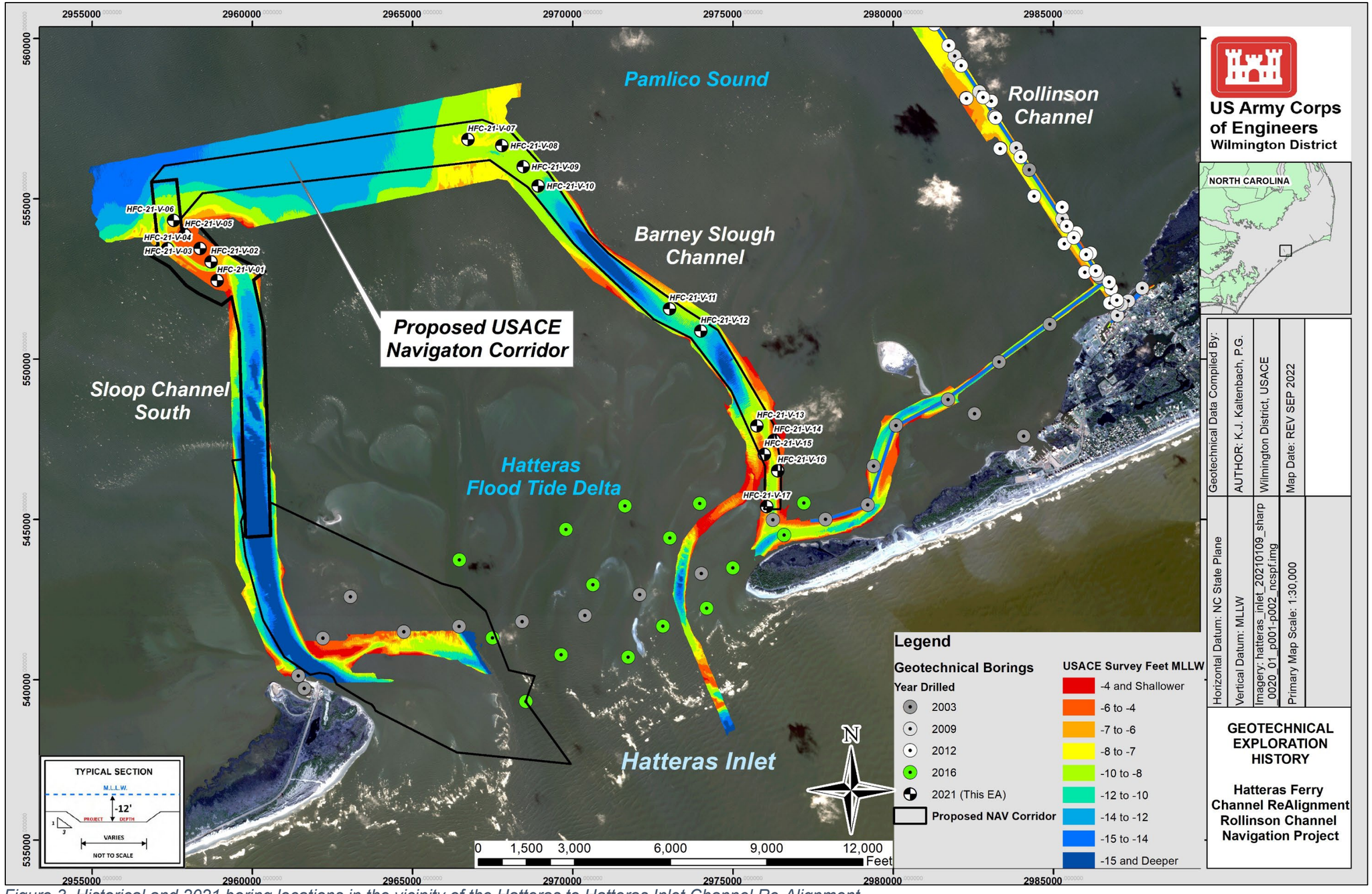

Figure 3. Historical and 2021 boring locations in the vicinity of the Hatteras to Hatteras Inlet Channel Re-Alignment.

- USACE 2009, Vibracore investigation of Rollinson Channel. The purpose of this investigation was to evaluate the composition of shoaling material within the main Rollinson Channel segment for maintenance dredging and side-cast disposal. USACE drilled a total of 19 vibracores using the S/B Snell sampling several shoal deposits that were impinging upon the navigation channel. No borings were taken along the realignment Channel.

- USACE 2012, Vibracore investigation of Rollinson Channel. The purpose of this investigation was to validate the findings from the 2009 investigation and to thoroughly characterize the main Rollinson Channel segment for future maintenance dredging and material disposal. USACE drilled a total of 19 vibracores using the S/B Snell, targeting shoal deposits that had accumulated adjacent to the channel since it was dredged in 2009.

- USACE 2016, Vibracore investigation of realignment Channel. The purpose of this investigation was to evaluate several possible channel alternatives for a new alignment that cross cuts the Hatteras Inlet flood tide delta. USACE contracted with Athena Technologies to drill 15 vibracores within the flood tide delta. Most of the material encountered consisted of medium to fine-grained, poorly-graded sand (SP), with lesser amounts of coarse-grained, well-graded sand (SW) and fine-grained, poorly-graded sand with silt (SP-SM).
- NCDOT 2018, Vibracore investigation of Sloop Channel segment, Rollinson Channel project. NCDOT contracted with Catlin Engineering in 2018 to drill 5 vibracore borings in Sloop Channel to evaluate shoaled soils within an area of the channel that contains unspecified cultural resources. It is assumed that NCDOT is considering dredging this area to improve channel navigability for their ferry system. Their borings have been integrated into the USACE dataset for evaluation.

Current Investigation Scope: The purpose and scope of the present investigation is to evaluate the suitability of the shoal material within the proposed channel realignment (Sloop Channel and Barney Slough) for side-cast placement.

USACE conducted hydrographic surveys of the channel alignment from late-August to mid- October 2020. Shoaling areas that impinge upon the proposed alignment were targeted for vibracore sampling. A total of 17 vibracore targets were designated and provided to an A-E Contractor (Figure 4). USACE awarded the contract to AMDRILL, Inc. which mobilized to the project site on 16MAR2021, and began drilling operations on 17MAR2021. The field work was concluded on 24MAR2021. No field work was conducted between 18-23MAR2021 due to adverse sea/weather conditions.

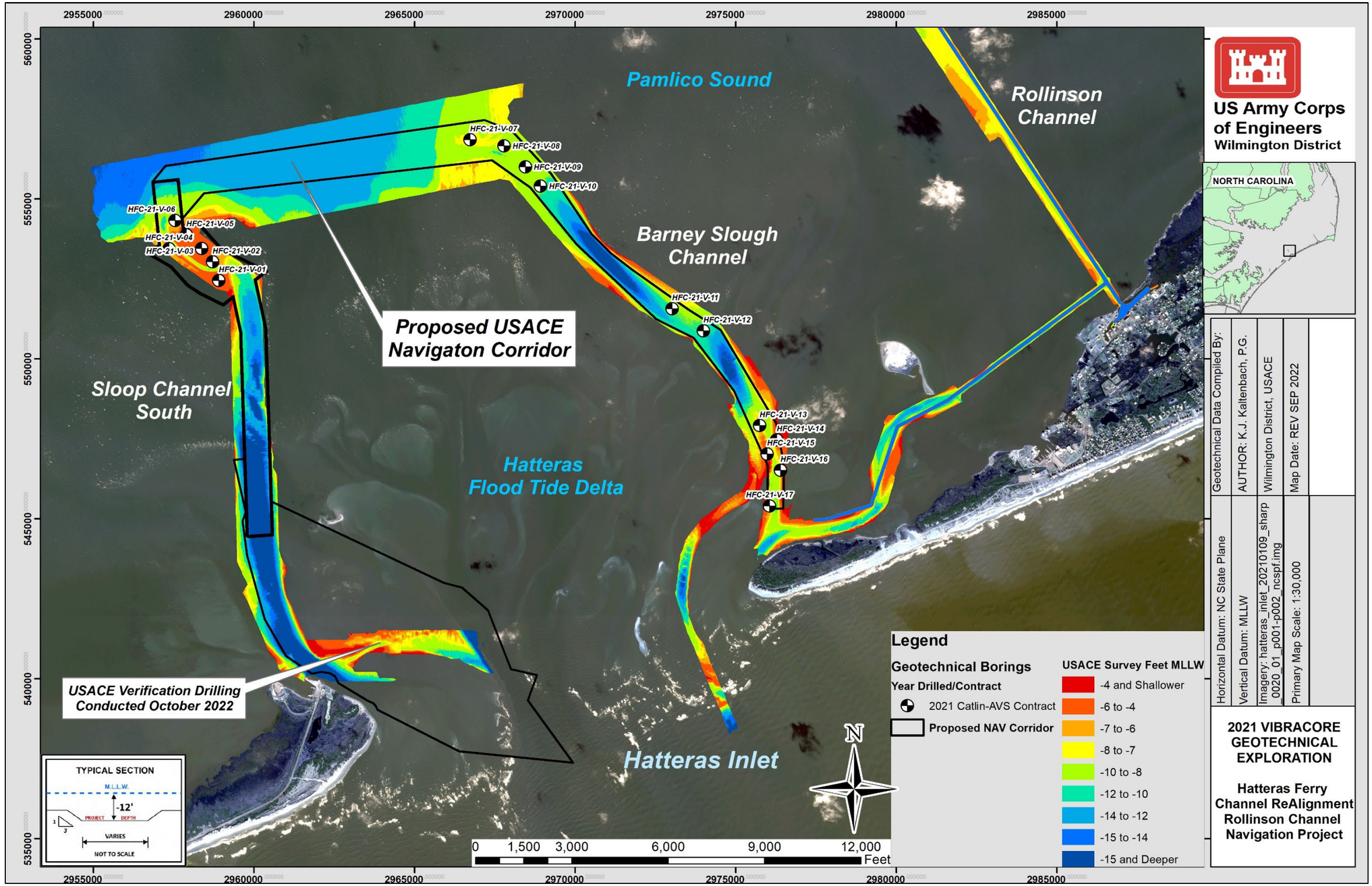

Figure 4. Location map of 2021 vibracore borings in project area.

Floating Plant and Sampling Details:
AMDRILL, Inc. utilized the 34-foot Scully, which is an aluminum hulled, shallow draft vessel (Figure 5), to act as the sampling platform for this project. The Scully was equipped with all required United States Coast Guard (USCG) safety gear and was operated by a USCG-certified 100 Ton Master Captain. A Garmin 547XS Global Positioning System (GPS) was utilized for primary navigation. Once on station, hydraulic spuds were lowered to secure the vessel at which time the sampling location (GPS coordinates) was recorded and compared to the proposed station to ensure the samples were within 20 horizontal feet of the proposed location. After verification of acceptable positioning, the water depth was measured with a lead line and recorded along with the GPS locations and transmitted to CATLIN's survey support vessel equipped with a Seafloor Systems Hydrolite Echosounder interfaced with a Real Time Kinematic (RTK) Trimble R12i global navigation satellite system (GNSS). This survey package provided horizontal and vertical accuracy to less than 0.2 feet. Horizontal coordinates were recorded in North American Datum of 1983 State Plane Coordinate System, North Carolina (Zone 3200), U.S. International Feet. Vertical elevation post processed to convert to feet, MLLW by applying a 0.39 feet correction factor as determined from the National Oceanic and Atmospheric Administration (NOAA) Tide Station #8654467 located at the USCG Station Hatteras, N.C.

Figure 5. Vessel "Scully" owned and operated by AMDRILL, Inc.,

AMDRILL, Inc. utilized a Rossfelder P-5 vibro-percussive sampling device to collect the geotechnical vibracores. The vibracore assembly was lowered to the channel bottom by electric winch and cable until the bottom of the barrel was directly above the sediment surface. The vibracore machine was turned on and the sample barrel penetrated until the bottom of the sample barrel reached a minimum depth of 10 feet below sediment surface, or until refusal was encountered. The vibracore was then retrieved and the recovered length was recorded. All vibracores were advanced to a maximum depth of 10 feet below the seafloor, or until vibracore refusal was met. "Vibracore Refusal" was defined as the sampling barrel having a penetration rate of less than 0.2 feet over a 2-minute period. Generally, most of the vibracores achieved 80% or greater recovery. A penetrometer was used to determine depth advancement into the seafloor and the penetration rates were recorded.

Vibracore Logging and Sample Selection: All vibracores were split-open longitudinally at CATLIN's processing facility and geotechnical laboratory in Wilmington, N.C. The stratigraphy and lithology of the sampled strata were logged and visually

classified by Athena in accordance with ASTM 2488-09A. Supplemental information including depths for the length of recovered material, boring recovery, penetrometer data and refusal depth were provided on drilling logs (SAW Form 1836-A). Depth corrected draft drilling logs and photo-mosaic images of the cores were provided to USACE for selection of soil lab testing intervals. USACE selected granular soil samples for testing that were considered representative of the soil layer. Upon receipt of sample selections from USACE, CATLIN extracted the soil-samples for granulometric testing.

Soils Laboratory Methods: A total of 68 soil samples were designated for testing by USACE. The following laboratory methods were used to analyze the soil samples:

- ASTM D6913, "Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis," modified by using the following sieve sizes: 1-in., 3/8-in., No. 4, No. 7, No. 10, No. 14, No. 18, No. 25, No. 35, No. 45, No. 60, No. 80, No. 120, No. 170, No. 200, and No. 230.

- ASTM D2487 "Standard Practice for Classification of Soils for Engineering Purposes (Unified Soils Classification System (USCS))."

- Visual, volumetric percentage of shell and rock fragment determination. Visual percent shell content and visual percent rock fragment content shall be estimated for the 1-in., $^{3}/_{8}$-in., and No. 4 sieve sizes.

Evaluation of 2021 Subsurface Data: The Wilmington District conducted an inventory of archived geotechnical data within the extent of the current 2021 Environmental Assessment (EA). No previous USACE sampling attempts were made within the proposed navigation corridor. The purpose of this investigation was to characterize materials within the proposed navigation corridor that lie above the dredging elevation of -12 feet MLLW (project depth of -10 feet MLLW plus -2 feet of over depth). The results of this investigation will determine the most suitable disposal/placement options.

Six vibracore borings (HFC-21-V-01 through HFC-21-V-06) were drilled in North Sloop Channel between navigation buoys #4 and #6 to sample a thick shoal that ranges in elevation from -4 to -8 feet MLLW (Figure 6). Four vibracore borings (HFC-21-V-07 through HFC-21-V-10) were drilled in the proposed Hatteras Channel corridor, near the northern extent of Barney Slough Channel, buoy #10 to target a relatively thin shoal between elevations -8 to -9 feet MLLW (Figure 7). To the southeast, two additional vibracores (HFC-21-V-11 and HFC-21-V-12) were drilled into a minor shoal that is present between navigation buoys #13 and #14 between elevations -8 and -10 ft MLLW (Figure 8). The remaining five vibracores (HFC-21-V-13 through HFC-21-V-17) were drilled in the southern extent of Barney Slough Channel to sample widespread shoaling present between navigation buoys #12 and #12B, between elevations -4 and -8 feet MLLW (Figure 9).

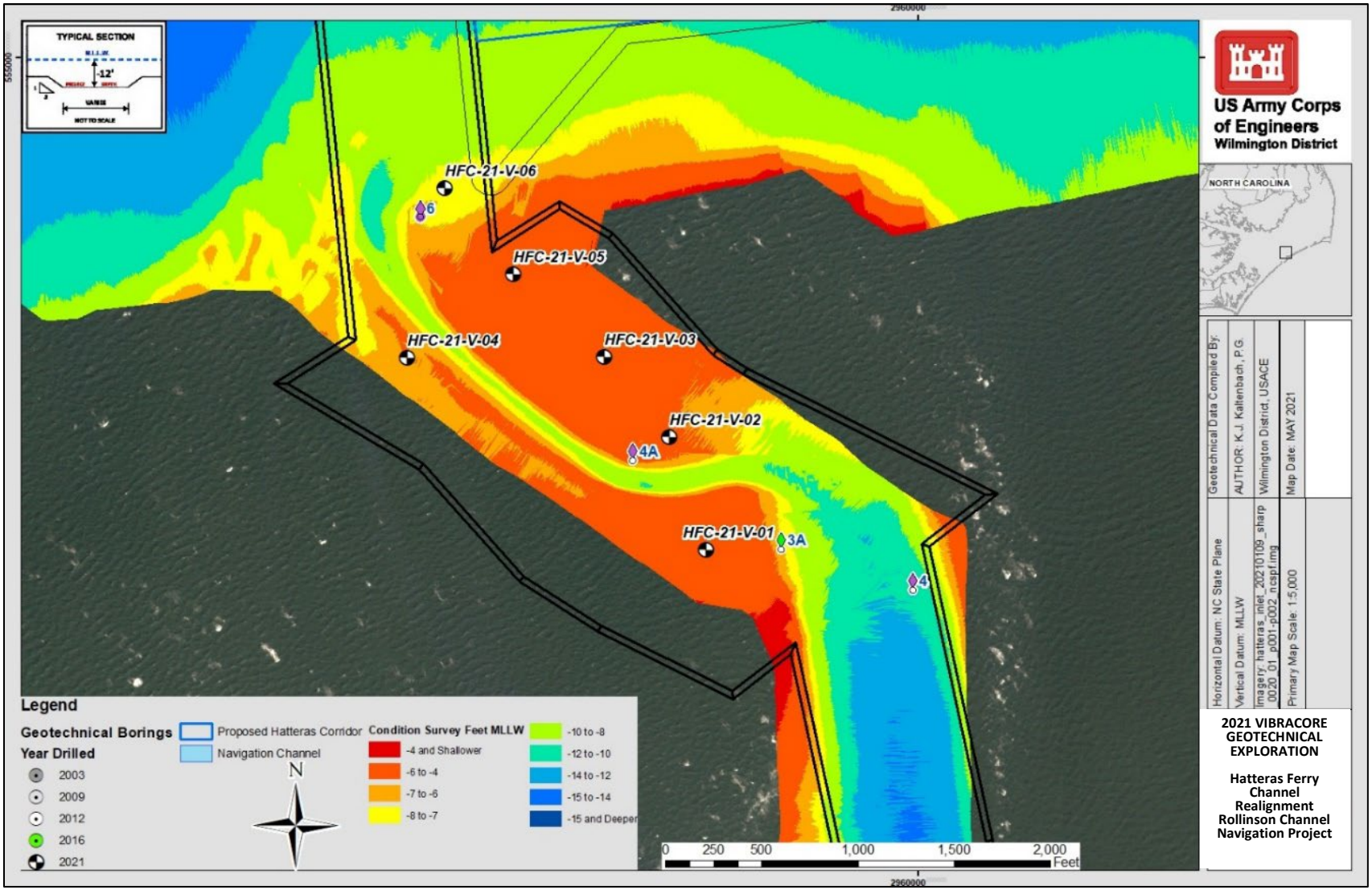

Figure 6. 2021 vibracore locations in South Sloop Channel between buoys #4 and #6.

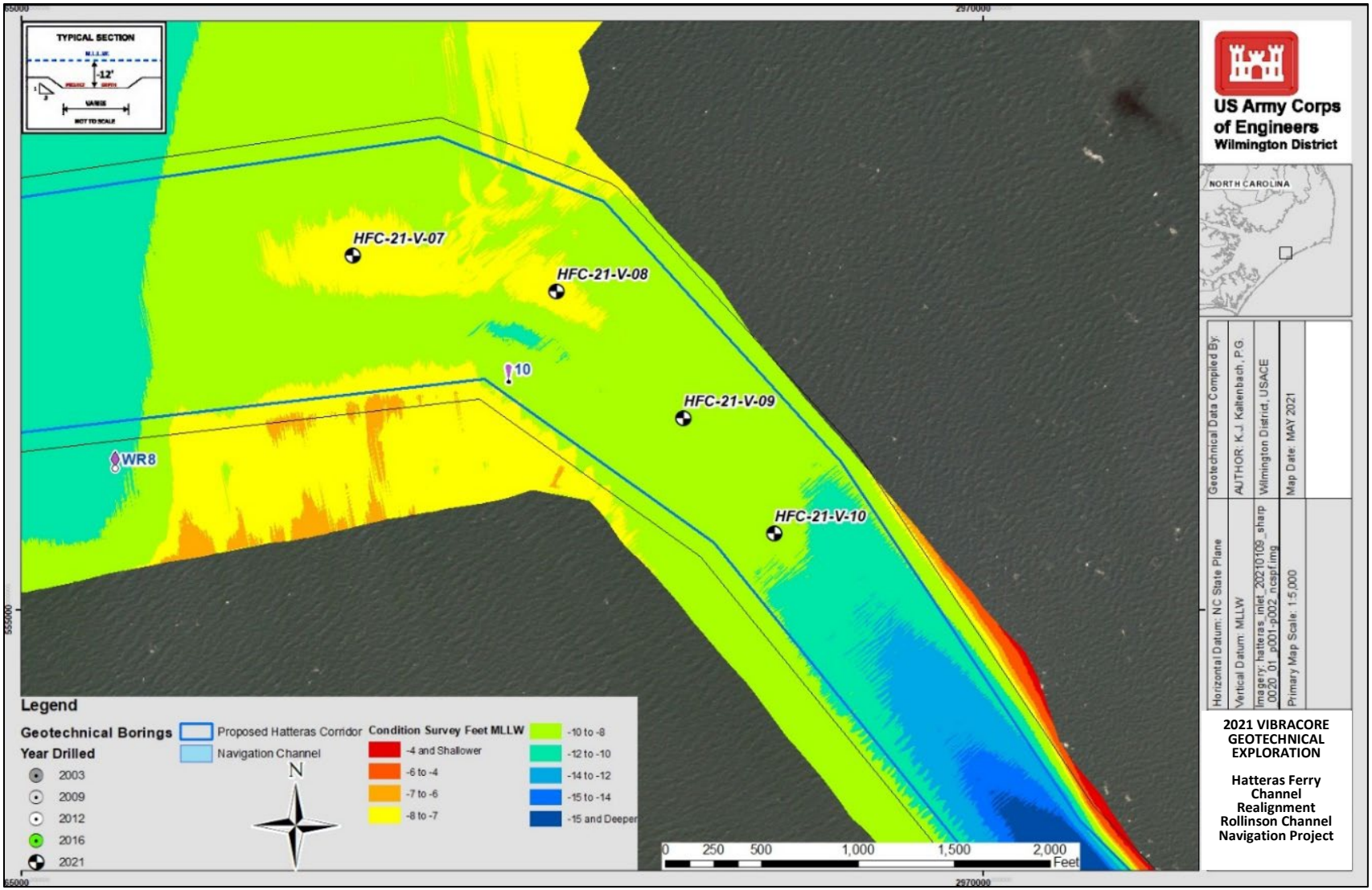

Figure 7. 2021 vibracore locations in the proposed Hatteras Channel Corridor, near buoy #10.

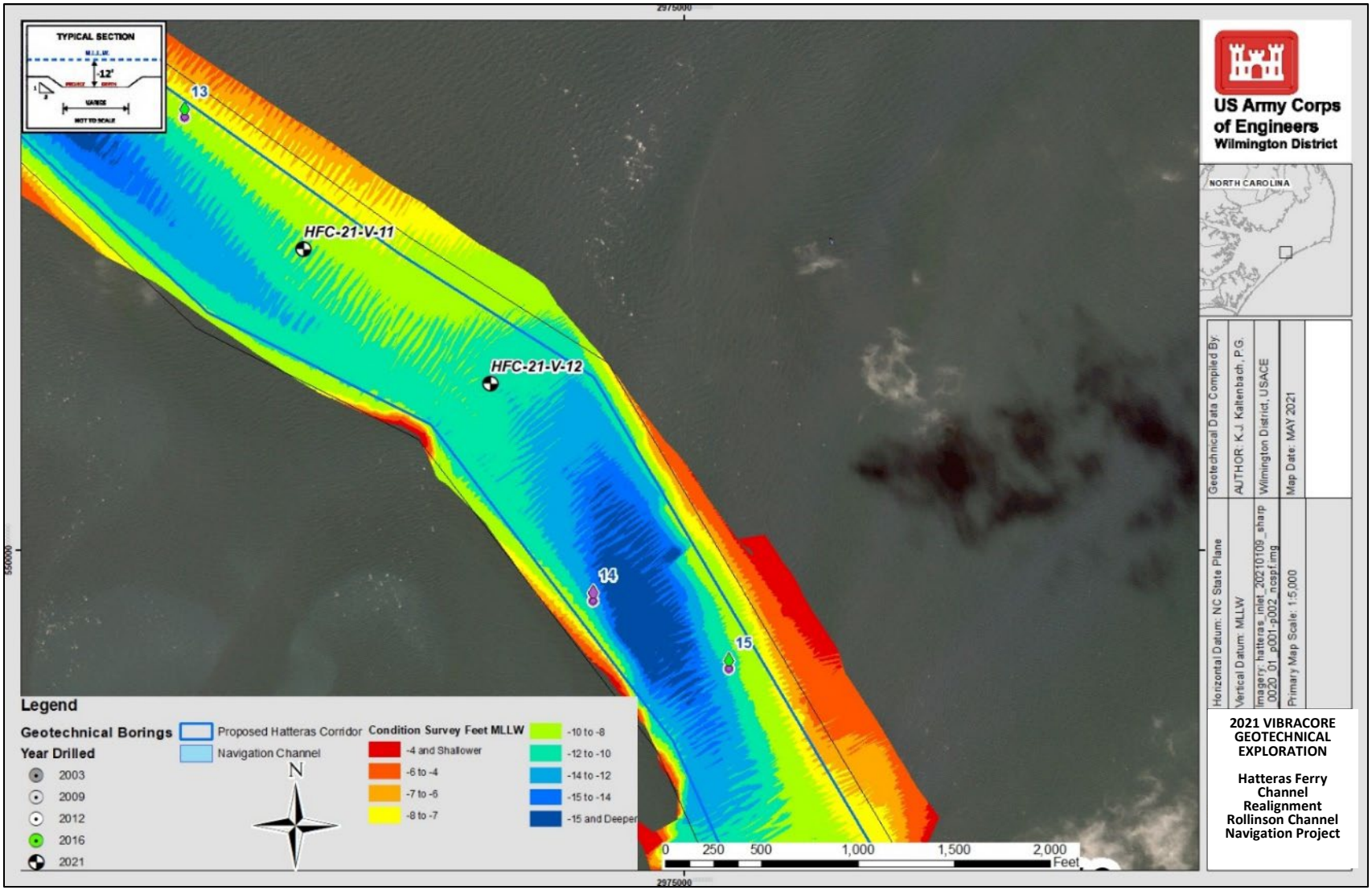

Figure 8. 2021 vibracore locations in Barny Slough channel segment between buoys #13 and #14.

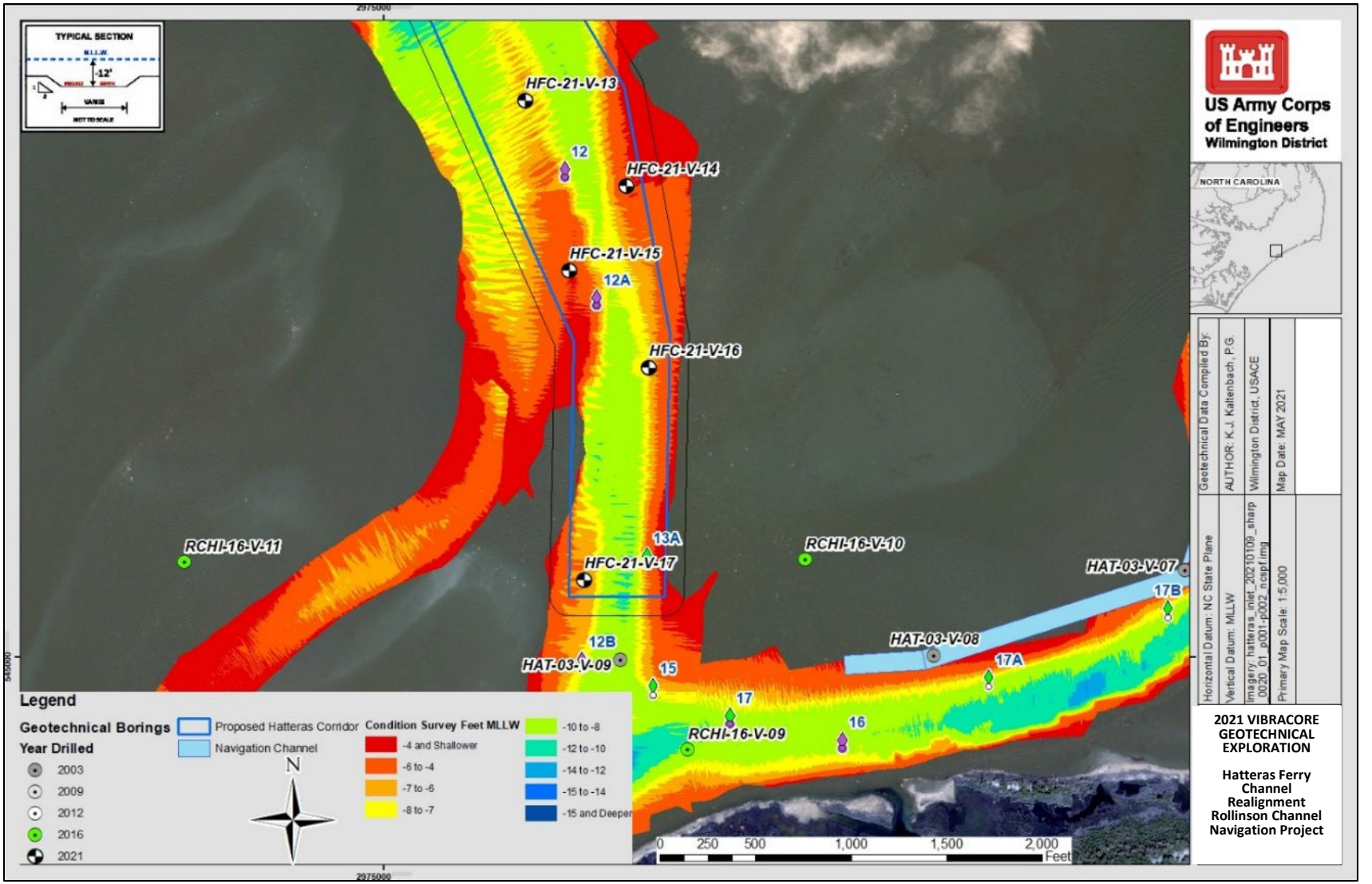

Figure 9. 2021 vibracore locations in southern portion of Barney Slough Channel, in the vicinity of buoys #12 and #12B.

Soil sampled between the channel bottom and -12 feet MLLW was characterized based upon the field visual classification and laboratory granulometric determination (see granulometric tables 2-3, map figures 10-13, and cross-sectional figures 14-17). For the granulometric determination, soil samples between the channel bottom elevation and maximum dredge elevation (-12 MLLW) were selected for testing. The test sample results were then weight-averaged over this depth interval for each boring. Table 2 summarizes the soils lab test results for each boring, while the granularmetric summary for the entire sampling effort is shown in Table 3.

Color symbology was established to facilitate characterization of the shoal material within the proposed navigation corridor, within the specified project depth:

- Red = Dredge prism soils that contain greater that 10% fines
- Green = Dredge prism soils that contain less than or equal to 10% fines.

The distribution of sampled soils for each of the channel segments is shown in Figures 10 through 13. Sampling and testing of shoal material above -12 feet MLLW indicates that it consists of sand containing less than 10% fines, which is suitable for beach disposal. Most of this material consists of poorly graded sand (SP), with a fines content of less than 5%. Interbedded poorly graded sand with silt (SP-SM) is also present, but it is still acceptable for beneficial use placement. Lab testing of SP-SM soils indicate it has a fines content between 6.7 and 9.1%. Cross-sectional fence diagrams were then constructed to evaluate the sampled soils against the project depth and maximum dredge depth limits. Geologic cross sections drafted from the borings (see Figures 14 through 17) indicate that the most likely material to be encountered during dredging of shoals down to -12 feet MLLW is most likely to be SP and SP-SM soils.

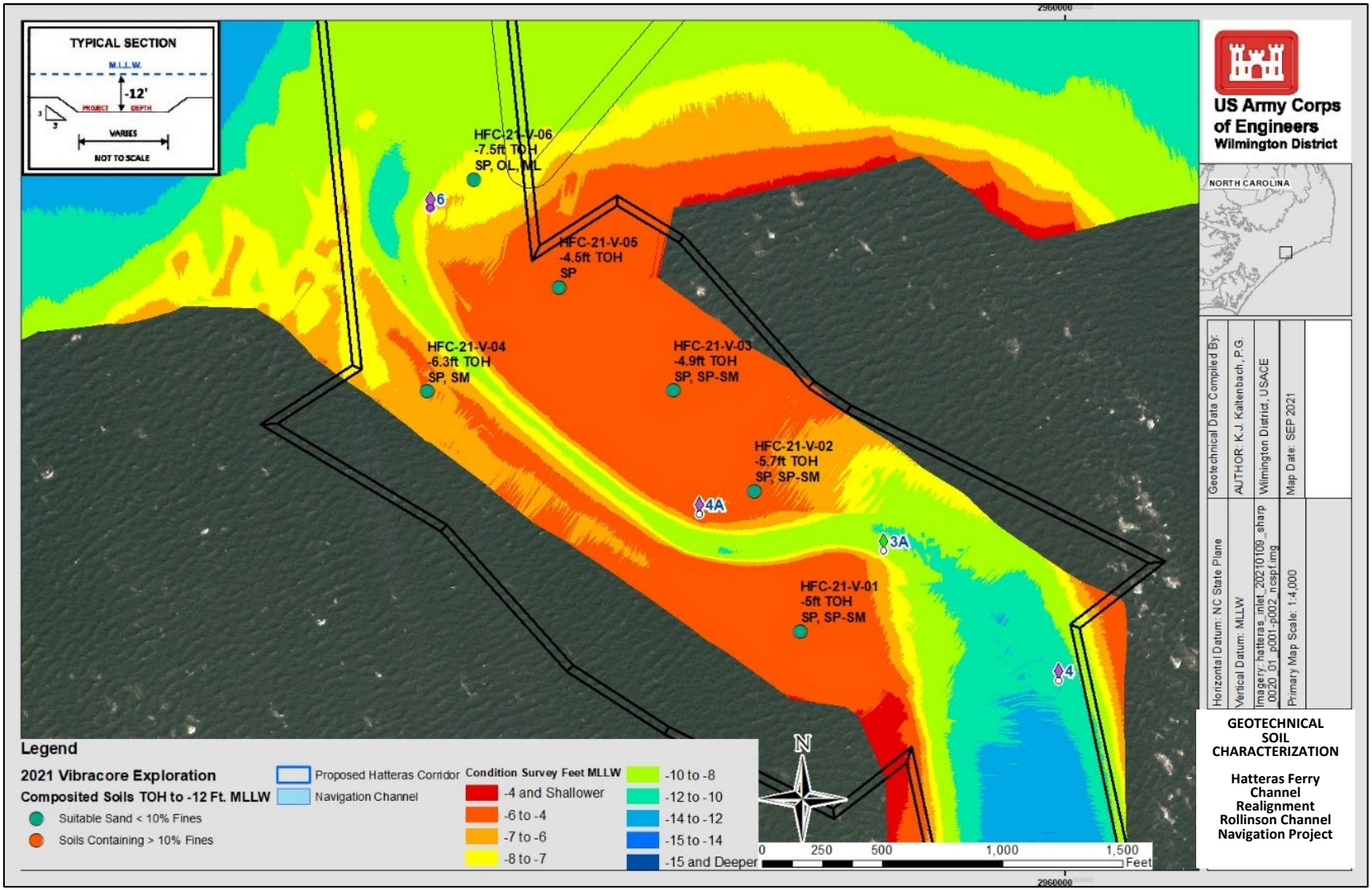

Figure 10. Geotechnical soils characterization of shoal material from vibracores taken in vicinity of South Sloop Channel.

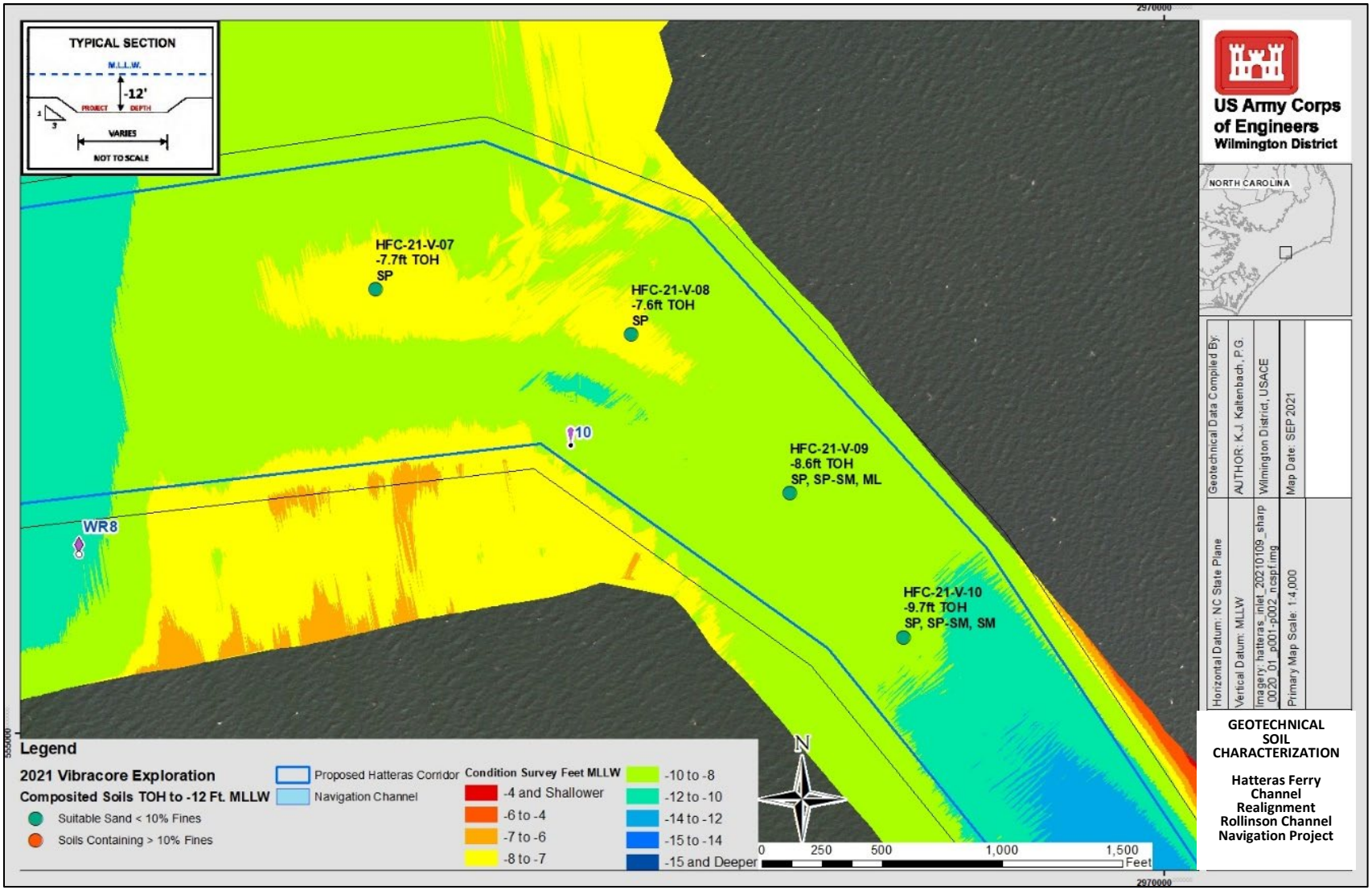

Figure 11. Geotechnical soils characterization of shoal material from vibracores taken within the northern portion of the proposed channel corridor.

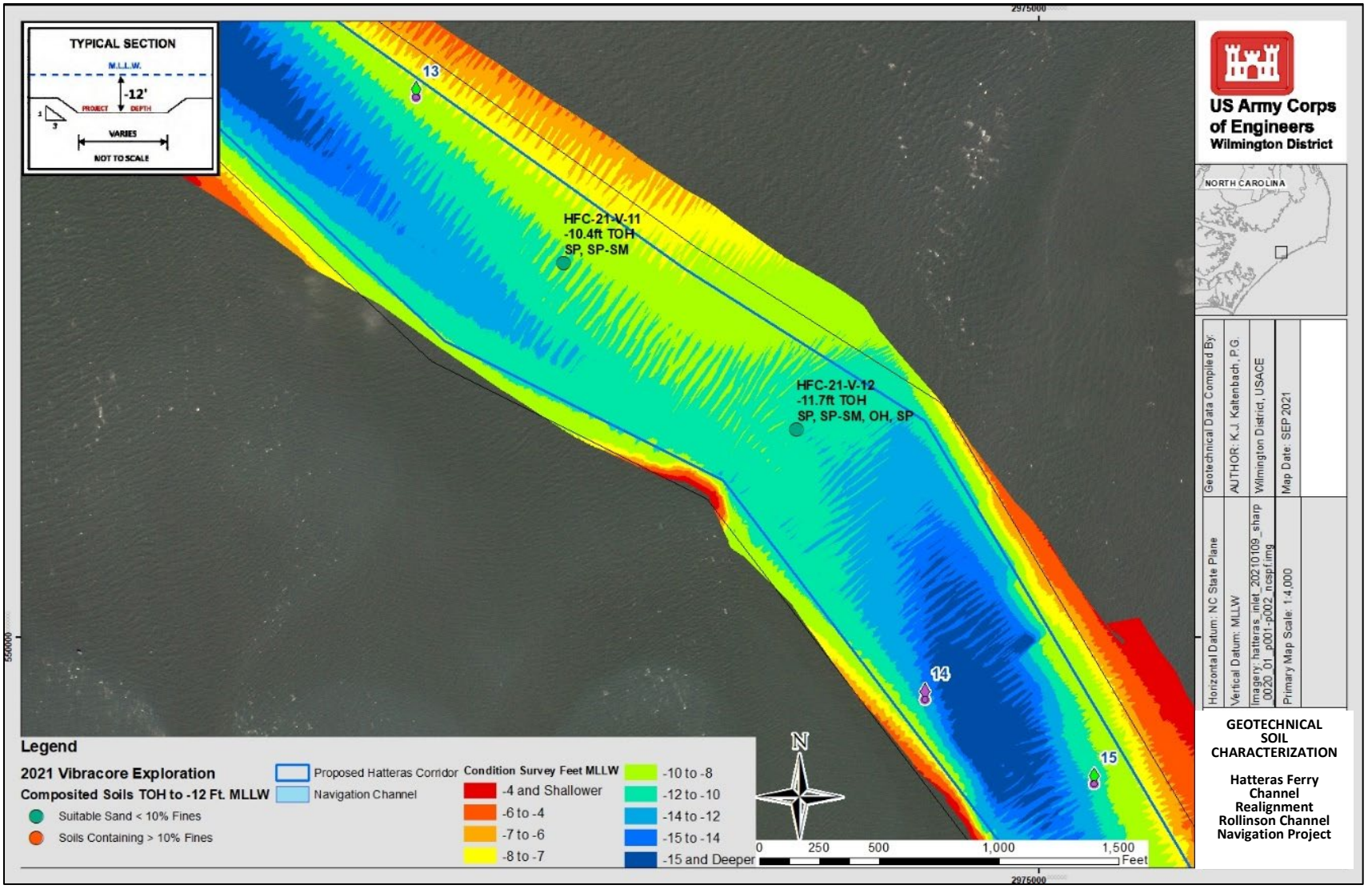

Figure 12. Geotechnical soils characterization of shoal material from vibracores taken within Barney Slough Channel segment.

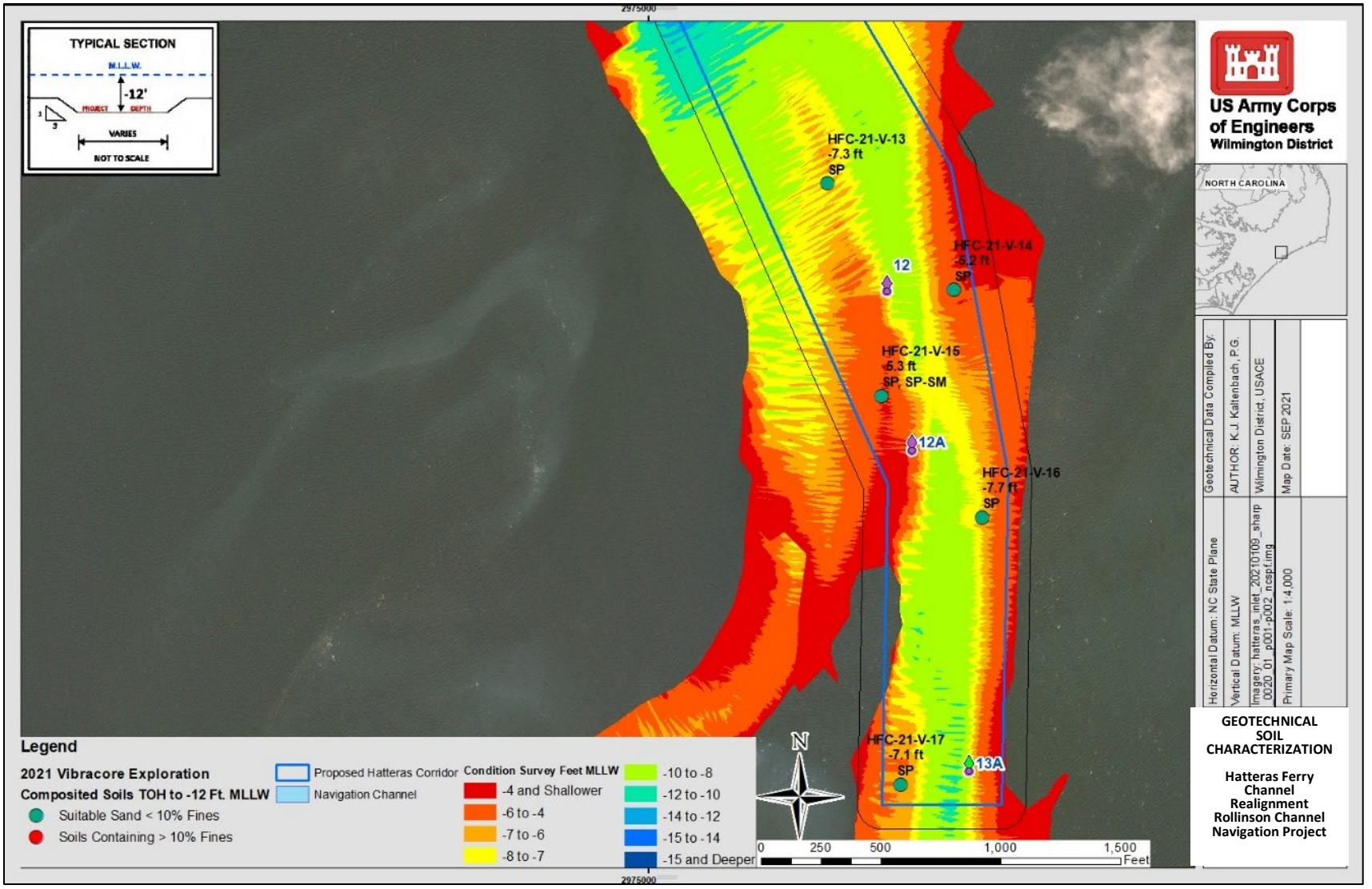

Figure 13. Geotechnical soils characterization of shoal material from vibracores taken within Barney Slough Channel segment.

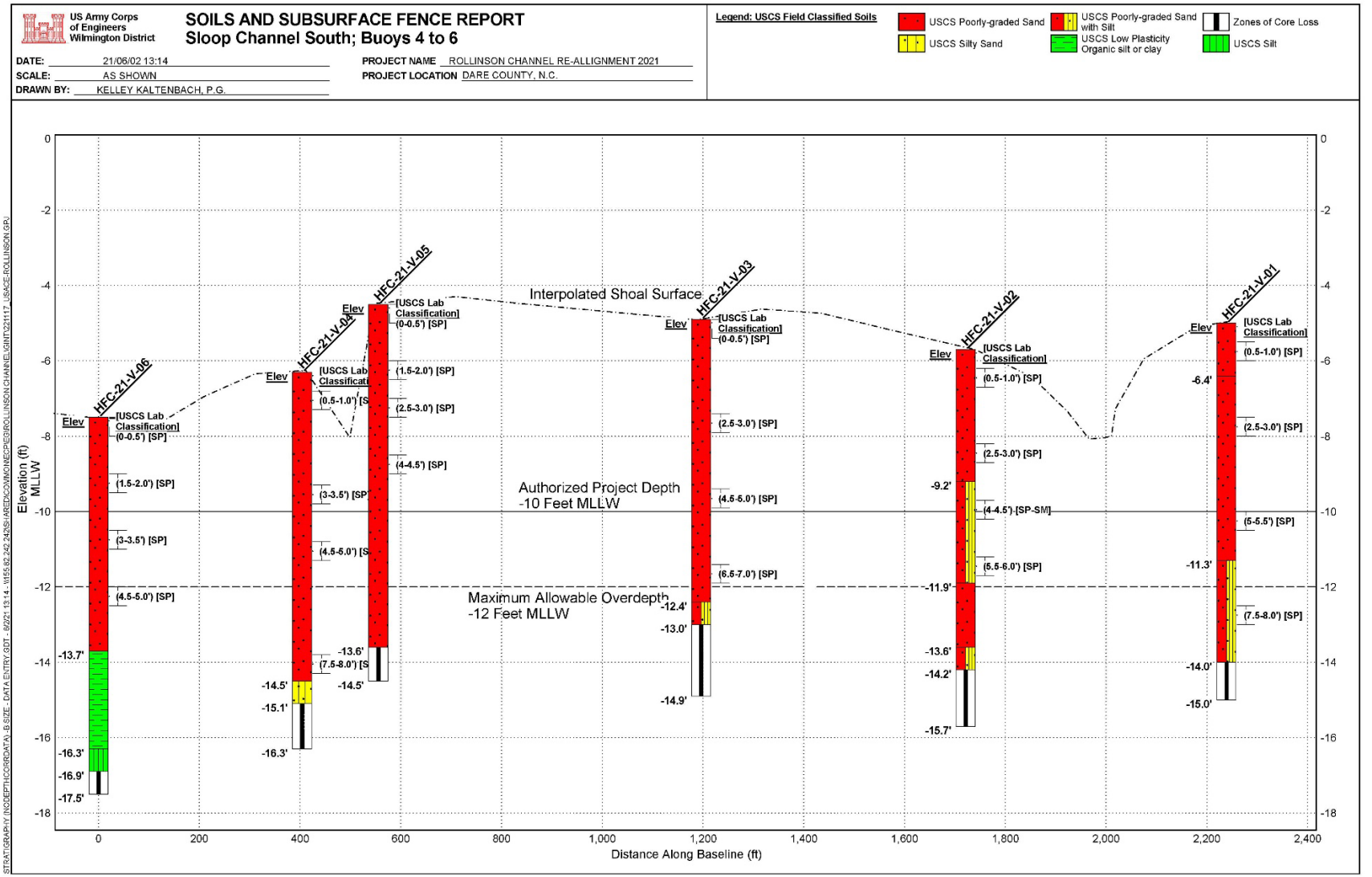

Figure 14. Fence cross-section, borings in Sloop Channel South.

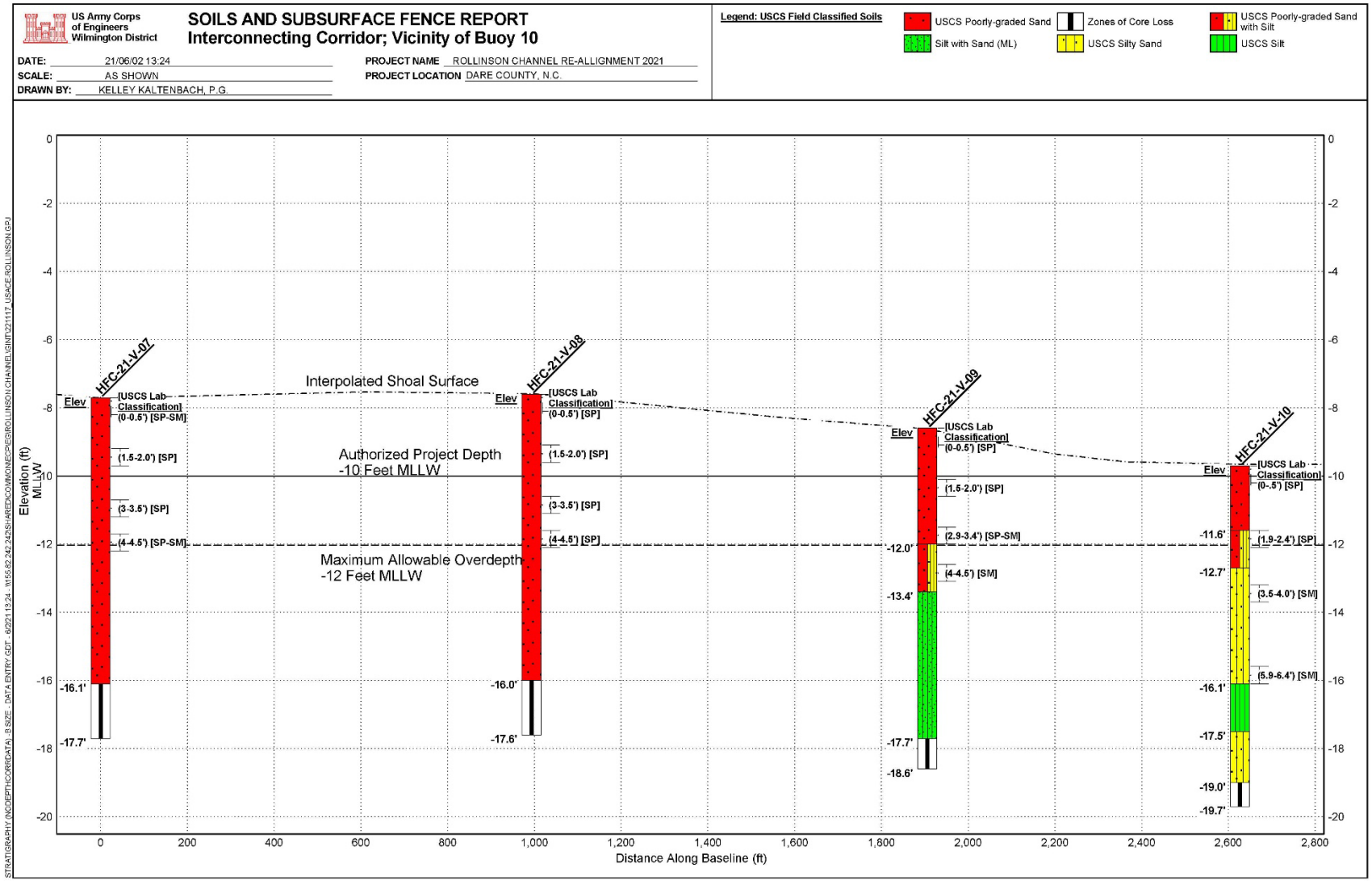

Figure 15. Fence cross-section, borings in interconnecting corridor.

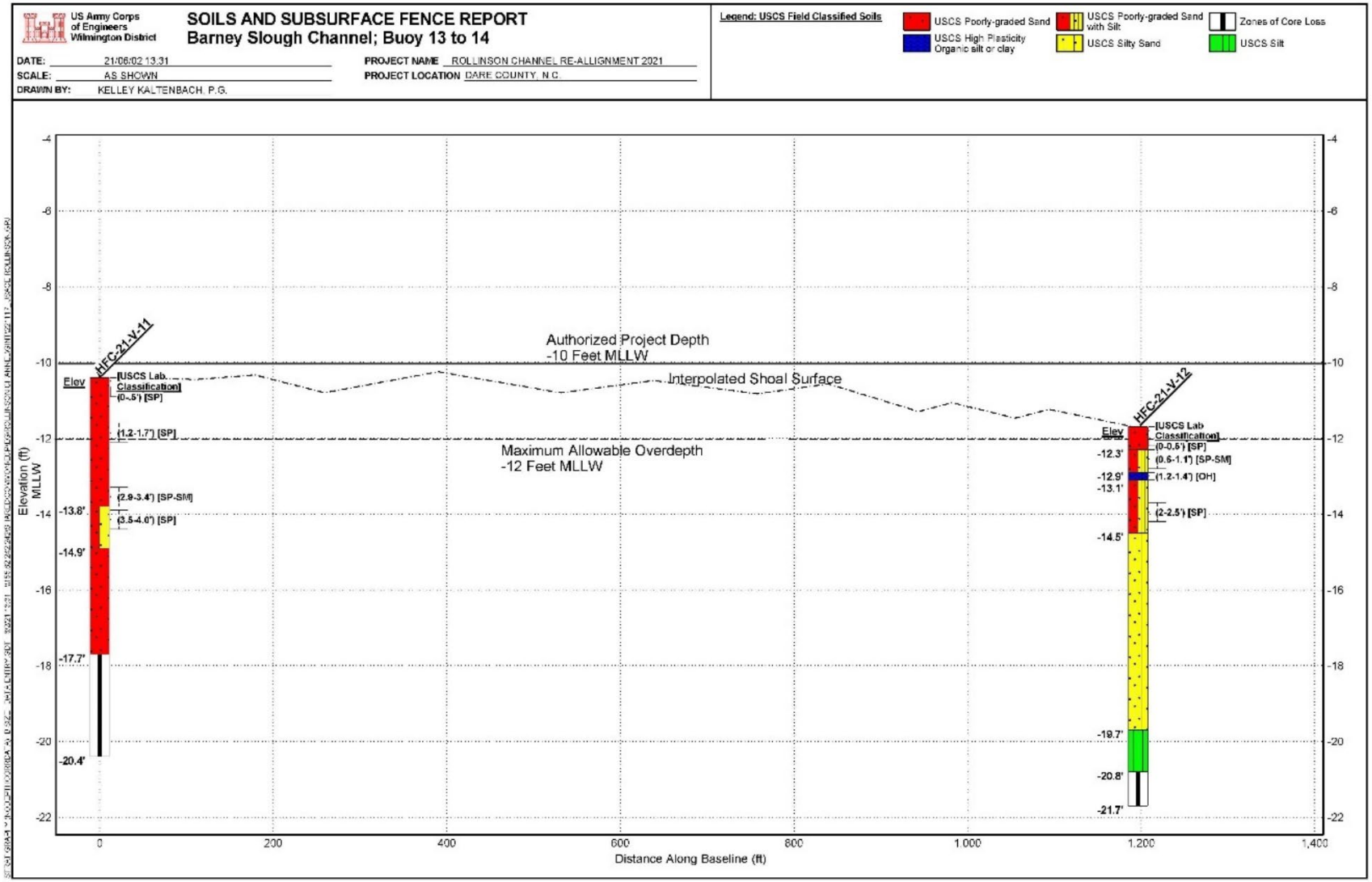

Figure 16. Fence cross-section, borings in Barney Slough Channel.

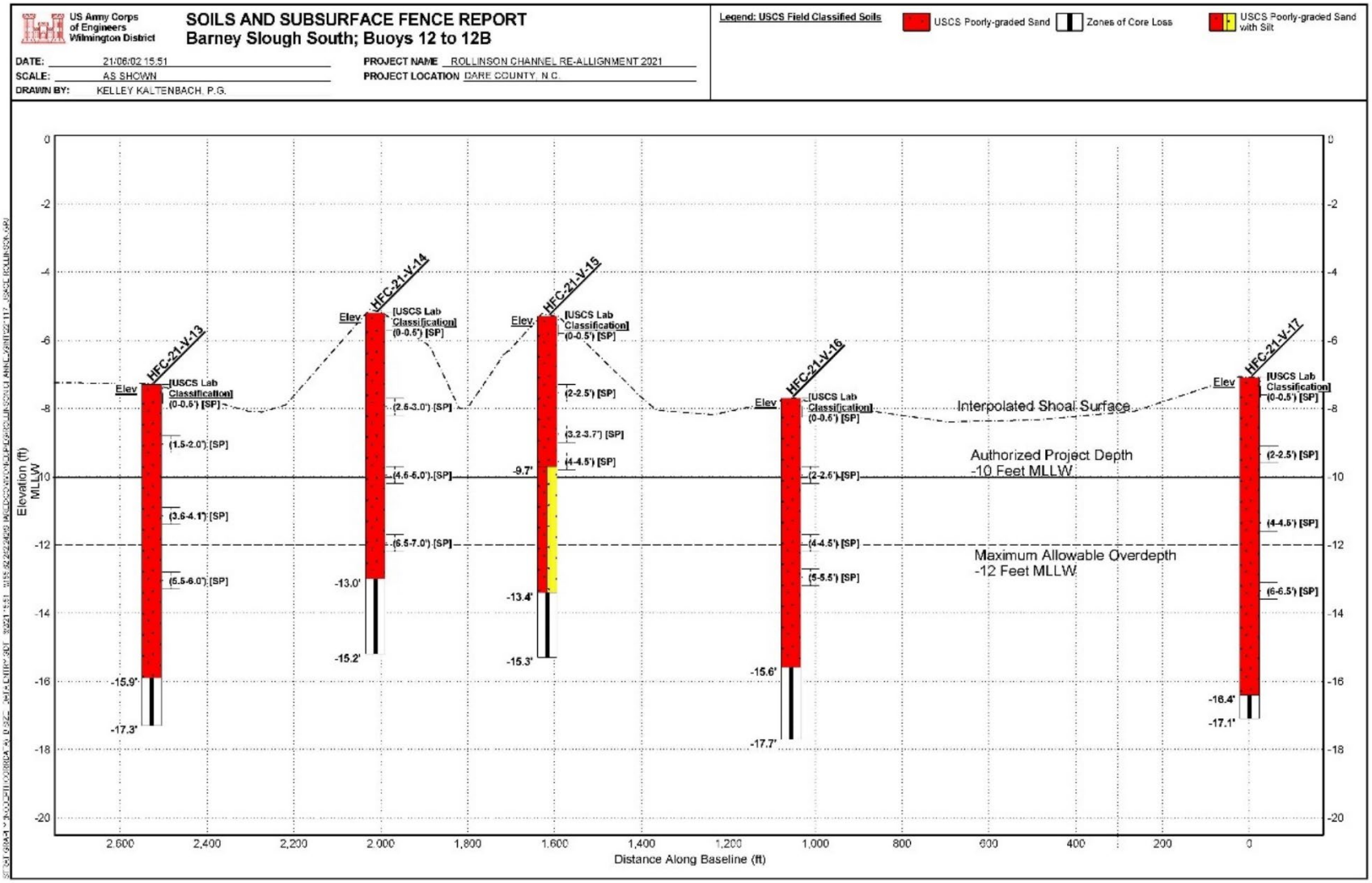

Figure 17. Fence cross-section, borings in Barney Slough Channel South.

A summary of the laboratory testing is provided in Table 2 below. The calculated percent passing and retained on the #10 Sieve, percent passing the #200, percent shell, and mean grain size (in mm), for all borings and sampled stratum that lies within the proposed dredging depths is presented. Top of hole (TOH) elevations are provided in feet, MLLW. The sampled stratum lies specifically between the surveyed channel bottom and -12 feet MLLW elevation (refer to Figures 14 through 17). Table 3 provides the weighted average of the percent retained and passing the #10 sieve, percent passing the #200, and mean grain size (mm) for all sampled material within the vertical dredging limits. On average, the material is best characterized as a fine-grained, poorly-graded sand (SP), with a weighted mean grain size of 0.18 millimeters, a mean shell content of 0.17%, and a mean fines content of 2.5%. It is suitable for many uses, such as; granular construction fill, beach nourishment material, substrate for spawning fish habitat, or bird habitat restoration.

Table 2. Granulometric Summary of Vibracore Borings to -12 MLLW, Hatteras to Hatteras Inlet Channel Realignment.

Boring ID	Elev. TOH Ft. MLLW	% Retained #10	% Pass #10	% Pass #200	% Shell	Mean grain (mm)
HFC-21-V-01	-5	0.00	100.00	2.19	0.00	0.17
HFC-21-V-02	-5.7	0.02	99.98	3.62	0.00	0.16
HFC-21-V-03	-4.9	0.05	99.95	2.75	0.00	0.15
HFC-21-V-04	-6.3	0.03	99.97	2.93	0.00	0.17
HFC-21-V-05	-4.5	0.16	99.84	1.89	0.00	0.17
HFC-21-V-06	-7.5	0.42	99.58	1.43	0.11	0.17
HFC-21-V-07	-7.7	0.18	99.82	5.45	0.02	0.16
HFC-21-V-08	-7.6	0.10	99.90	3.48	0.03	0.17
HFC-21-V-09	-8.6	0.64	99.36	3.57	0.45	0.19
HFC-21-V-10	-9.7	0.25	99.75	1.50	0.12	0.21
HFC-21-V-11	-10.4	0.45	99.55	2.35	0.29	0.20
HFC-21-V-12	-11.7	0.06	99.94	1.69	0.00	0.21
HFC-21-V-13	-7.3	0.07	99.93	0.71	0.08	0.19
HFC-21-V-14	-5.2	0.51	99.49	2.11	0.07	0.20
HFC-21-V-15	-5.3	0.90	99.10	1.47	0.59	0.18
HFC-21-V-16	-7.7	1.55	98.45	2.69	1.00	0.21
HFC-21-V-17	-7.1	1.66	98.34	1.18	0.63	0.26

Table 3. Granulometric Summary of Dredge-Shoal Material to -12 MLLW, Hatteras to Hatteras Inlet Channel Re-Alignment.

% Retained #10	% Pass #10	% Pass #200	% Shell	Mean Phi	Std. Dev	Mean grain size (mm)
0.38	99.62	2.49	0.17	2.48	0.45	0.18

Table 4 and Figure 18 provide rough volume estimates of shoal material within the most likely channel routes. The volumes were estimated using ArcGIS to delineate the area (yd^2) for the most likely navigation channel corridors through each shoal segment, and the average thickness was estimated from the bathymetry. Within the project channel

segments, the maximum amount of material present is approximately 852,659 cubic yards (cy) of beach quality material. It should be noted that the actual volume of material within the dredging prism will likely be less depending upon the channel prism geometry and path taken. In addition, these volume calculations do not take into consideration volume losses due to dredging and disposal operations.

Table 4. Maximum volume estimates for most likely channel corridors.

Accumulation Type	Location	Area (sq. yds.)	Avg. Thickness (feet)	Volume (cu. yds.)
Sand Shoal	Buoys #4 - #6	186,000	4	242,000
Sand Shoal	Vic. Buoy #10	405,000	3	405,000
Sand Shoal	Buoys #13 - #14	117,000	1	35,000
Sand Shoal	Buoys #15-#12B	131,000	4	170,000

Drilling Logs, Lab Data, Cross Sections: The 2021 boring logs, core photos, and lab test data used to produce this geotechnical appendix to the EA is available from the Wilmington District, upon request. In addition to this dataset, an additional three vibracore borings will be drilled into the Hatteras Ferry Connector Channel Addition in October 2022, by USACE. These data will also be made available, when complete, upon request.

The Action POC for requesting geotechnical data collected during this EA is:

Ms. Emily Hughes
CESAW-ECP-PE
U.S. Army Engineer District, Wilmington,
69 Darlington Avenue, Wilmington, North Carolina 28403-1343.
Telephone (910) 251-4635
Email Emily.b.hughes@usace.army.mil

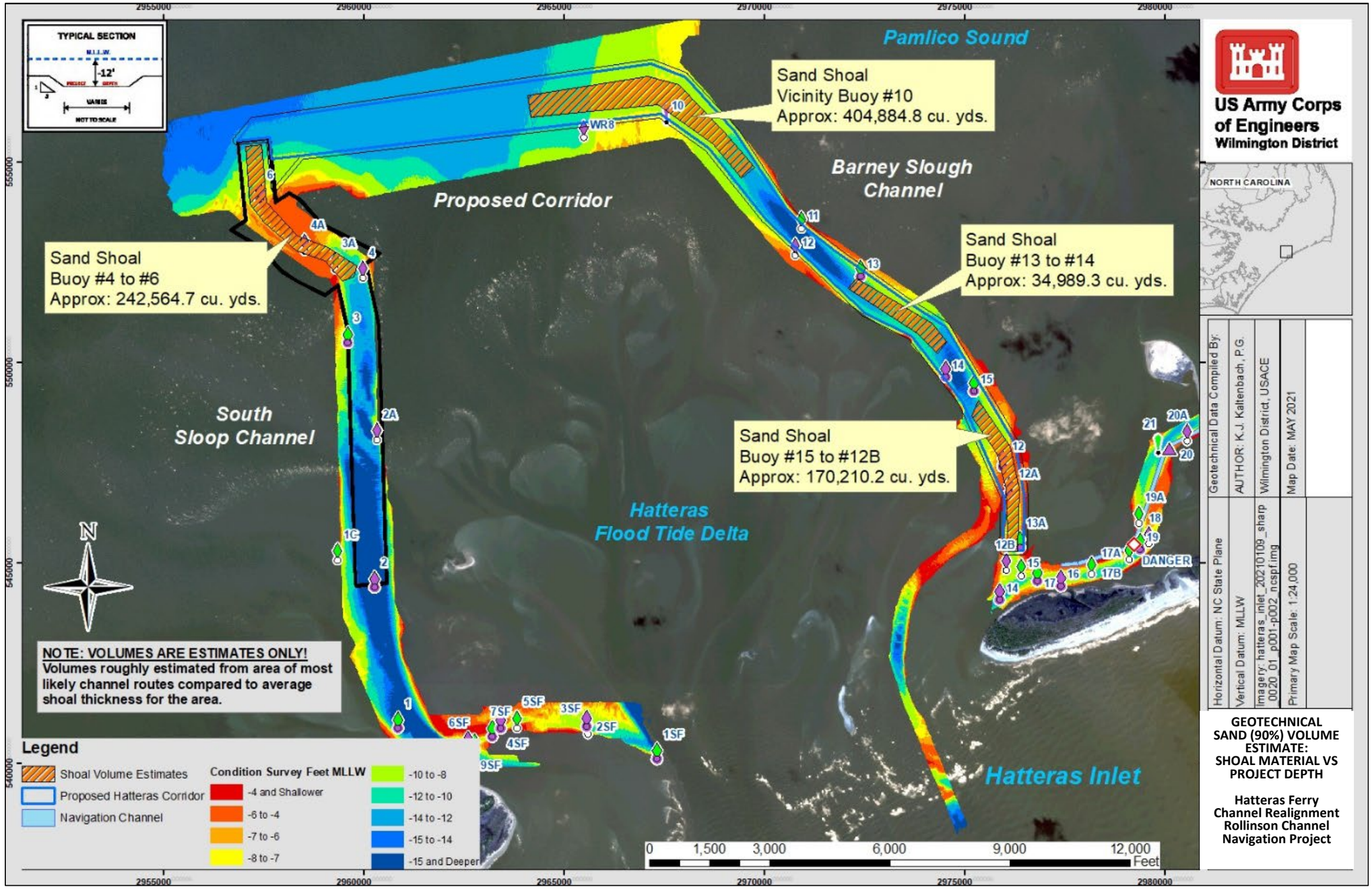

Figure 18. Volume estimates for 90% sand material along most likely channel corridors.

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Appendix B:

NCDEQ-DWQ Approval Use of General Certificates #4152 and #4500

Individual Water Quality Certification #5186

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
LINDA CULPEPPER
Director

NORTH CAROLINA
Environmental Quality

September 30, 2019

DWR # 08-0806 v5
Brunswick, New Hanover, Onslow, Pender, Dare, Currituck, & Hyde Counties

U.S. Army Corps of Engineers, Wilmington District
Attn: Ms. Jenny Owens, Chief Environmental Resources Section
69 Darlington Avenue
Wilmington, NC 28403

Subject: **APPROVAL OF 401 WATER QUALITY CERTIFICATION WITH ADDITIONAL CONDITIONS**
Corps of Engineers (ILM) Maintenance Dredging/Disposal/Beach Renourishment Program

Dear Ms. Owens:

You have our approval for the impacts listed below for the purpose described in your application dated August 6, 2019, received by the Division of Water Resources (Division) on August 9, 2019. These impacts are covered by the attached Water Quality General Certification Numbers 4137, 4142, 4146, 4151, and 4152 and the conditions listed below. Please note that you should get any other federal, state or local permits before proceeding with your project, including those required by (but not limited to) Sediment and Erosion Control, Non-Discharge, and Water Supply Watershed regulations. **This approval to proceed with your proposed impacts or to conduct impacts to waters as depicted in your application shall expire upon the expiration of the above General Certifications.**

This approval requires you to follow the conditions listed in the enclosed certifications and the following additional conditions:

1. The following impacts are hereby approved provided that all of the other specific and general conditions of the Certification are met. No other impacts are approved, including incidental impacts. [15A NCAC 02H .0506(b) and/or (c)]

Type of Impact	Amount Approved (units) Permanent	Amount Approved (units) Temporary
Stream	NA	NA
404/401 Wetlands	NA	NA
Open Waters	Multi acres Maintenance Dredging	

2. This approval is for the purpose and design described in your application. The plans and specifications for this project are incorporated by reference as part of the Certification. If you change your project, you must notify the Division and you may be required to submit a new application package with the appropriate fee. If the property is sold, the new owner must be given a copy of this approval letter and General Certification(s)/Permit/Authorization and is responsible for complying with all conditions. [15A NCAC 02H .0507(d)(2)]

3. Work Moratoriums
   The permittee shall adhere to all appropriate in-water work moratoriums as prescribed by the NC Wildlife Resources Commission, the US Fish and Wildlife Service, and National Marine Fisheries Service.

This approval and its conditions are final and binding unless contested. [G.S. 143-215.5]

This Certification can be contested as provided in Articles 3 and 4 of General Statute 150B by filing a written petition for an administrative hearing to the Office of Administrative Hearings (hereby known as OAH) **within sixty (60) calendar days**.

A petition form may be obtained from the OAH at http://www.ncoah.com/ or by calling the OAH Clerk's Office at (919) 431-3000 for information. A petition is considered filed when the original and one (1) copy along with any applicable OAH filing fee is received in the OAH during normal office hours (Monday through Friday between 8:00am and 5:00pm, excluding official state holidays).

The petition may be faxed to the OAH at (919) 431-3100, provided the original and one copy of the petition along with any applicable OAH filing fee is received by the OAH within five (5) business days following the faxed transmission.

Mailing address for the OAH:

If sending via US Postal Service:	*If sending via delivery service (UPS, FedEx, etc):*
Office of Administrative Hearings 6714 Mail Service Center Raleigh, NC 27699-6714	Office of Administrative Hearings 1711 New Hope Church Road Raleigh, NC 27609-6285

One (1) copy of the petition must also be served to Department of Environmental Quality:

William F. Lane, General Counsel
Department of Environmental Quality
1601 Mail Service Center
Raleigh, NC 27699-1601

This letter completes the review of the Division under section 401 of the Clean Water Act. Please contact Chad Coburn at 910-796-7215 or chad.coburn@ncdenr.gov if you have any questions or concerns.

Sincerely,

DocuSigned by:
Morella Sanchez-King
E3ABA14AC7DC434...

Morella Sanchez-King, Regional Supervisor
Water Quality Regional Operations Section
Wilmington Regional Office
Division of Water Resources, NCDEQ

Enclosures: GC 4137, 4142, 4146, 4151, and 4152

cc: Emily Hughes - USACE Wilmington Regulatory Field Office (via email)
DWR WaRO (via email)

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER RESOURCES

WATER QUALITY GENERAL CERTIFICATION NO. 4146

GENERAL CERTIFICATION FOR PROJECTS ELIGIBLE FOR US ARMY CORPS OF ENGINEERS

- **REGIONAL GENERAL PERMIT 198000048 (EMERGENCY ACTIVITIES ON OCEAN BEACHES)**

Water Quality Certification Number 4146 is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina in 15A NCAC 02H .0500 and 15A NCAC 02B .0200 for the discharge of fill material to surface waters and wetland areas as described in the US Army Corps of Engineers Wilmington District's Regional General Permit 198000048.

The State of North Carolina certifies that the specified category of activity will not violate applicable portions of Sections 301, 302, 303, 306 and 307 of the Public Laws 92-500 and 95-217 if conducted in accordance with the conditions hereinafter set forth.

Effective date: December 1, 2017

Signed this day: December 1, 2017

By

for Linda Culpepper
Interim Director

Activities meeting any one (1) of the following thresholds or circumstances require *written approval* for a 401 Water Quality Certification from the Division of Water Resources (DWR):

a) If any of the Conditions of this Certification (listed below) cannot be met; or
b) Any permanent fill into or modification of wetlands and/or waters; or
c) Any impacts to streams from excavation or dredging other than excavation that is conducted as preparation for installing permanent fill or structures; or
d) Any stream relocation or stream restoration; or
e) Any permanent impacts to waters, or to wetlands adjacent to waters, designated as: ORW (including SAV), HQW (including PNA), SA, WS-I, WS-II, Trout, or North Carolina or National Wild and Scenic River; or
f) Any impacts to coastal wetlands [15A NCAC 07H .0205], or Unique Wetlands (UWL); or
g) Any permanent impact associated with a Notice of Violation or an enforcement action for violation(s) of NC Wetland Rules (15A NCAC 02H .0500), NC Isolated Wetland Rules (15A NCAC 02H .1300), NC Surface Water or Wetland Standards (15A NCAC 02B .0200), or State Regulated Riparian Buffer Rules (15A NCAC 02B .0200); or
h) Any impacts to subject water bodies and/or state regulated riparian buffers along subject water bodies in the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman Lake, Jordan Lake or Goose Creek Watersheds (or any other basin or watershed with State Regulated Riparian Area Protection Rules [Buffer Rules] in effect at the time of application) *unless:*
    i. The activities are listed as "EXEMPT" from these rules; or
    ii. A Buffer Authorization Certificate is issued by the NC Division of Coastal Management (DCM); or
    iii. A Buffer Authorization Certificate or a Minor Variance is issued by a delegated or designated local government implementing a state riparian buffer program pursuant to 143-215.23.

Activities included in this General Certification that do not meet one of the thresholds listed above do not require written approval.

I. ACTIVITY SPECIFIC CONDITIONS:

1. The discharge shall not contain levels of pollutants that would result in a violation of state water quality and wetland standards. [15A NCAC 02H .0200]

II. GENERAL CONDITIONS:

1. When written authorization is required, the plans and specifications for the project are incorporated into the authorization by reference and are an enforceable part of the Certification. Any modifications to the project require notification to DWR and may require an application submittal to DWR with the appropriate fee. [15A NCAC 02H .0501 and .0502]

2. No waste, spoil, solids, or fill of any kind shall occur in wetlands or waters beyond the footprint of the impacts (including temporary impacts) as authorized in the written approval from DWR; or beyond the thresholds established for use of this Certification without written authorization. [15A NCAC 02H .0501 and .0502]

   No removal of vegetation or other impacts of any kind shall occur to state regulated riparian buffers beyond the footprint of impacts approved in a Buffer Authorization or Variance or as listed as an exempt activity in the applicable riparian buffer rules. [15A NCAC 02B .0200]

3. In accordance with 15A NCAC 02H .0506(h) and Session Law 2017-10, compensatory mitigation may be required for losses of greater than 300 linear feet of perennial streams and/or greater than one (1) acre of wetlands. Impacts associated with the removal of a dam shall not require mitigation when the removal complies with the requirements of Part 3 of Article 21 in Chapter 143 of the North Carolina General Statutes. Impacts to isolated and other non-404 jurisdictional wetlands shall not be combined with 404 jurisdictional wetlands for the purpose of determining when impact thresholds trigger a mitigation requirement. For linear publicly owned and maintained transportation projects that are not determined to be part of a larger common plan of development by the US Army Corps of Engineers, compensatory mitigation may be required for losses of greater than 300 linear feet per perennial stream.

   Compensatory stream and/or wetland mitigation shall be proposed and completed in compliance with G.S. 143-214.11. For applicants proposing to conduct mitigation within a project site, a complete mitigation proposal developed in accordance with the most recent guidance issued by the US Army Corps of Engineers Wilmington District shall be submitted for review and approval with the application for impacts.

4. All activities shall be in compliance with any applicable State Regulated Riparian Buffer Rules in Chapter 2 of Title 15A.

5. When applicable, all construction activities shall be performed and maintained in full compliance with G.S. Chapter 113A Article 4 (Sediment and Pollution Control Act of 1973). Regardless of applicability of the Sediment and Pollution Control Act, all projects shall incorporate appropriate Best Management Practices for the control of sediment and erosion so that no violations of state water quality standards, statutes, or rules occur. [15A NCAC 02H .0506(b)(3) and (c)(3) and 15A NCAC 02B .0200]

   Design, installation, operation, and maintenance of all sediment and erosion control measures shall be equal to or exceed the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*, or for linear transportation projects, the *NCDOT Sediment and Erosion Control Manual*.

   All devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) sites, including contractor-owned or leased borrow pits associated with the project. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

For borrow pit sites, the erosion and sediment control measures shall be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*. Reclamation measures and implementation shall comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-I, WS-II, High Quality Waters (HQW), or Outstanding Resource Waters (ORW), then the sedimentation and erosion control designs shall comply with the requirements set forth in 15A NCAC 04B .0124, *Design Standards in Sensitive Watersheds*.

6. Sediment and erosion control measures shall not be placed in wetlands or waters except within the footprint of temporary or permanent impacts authorized under this Certification. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0501 and .0502]

7. Erosion control matting that incorporates plastic mesh and/or plastic twine shall not be used along streambanks or within wetlands. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02B .0201]

8. An NPDES Construction Stormwater Permit (NCG010000) is required for construction projects that disturb one (1) or more acres of land. The NCG010000 Permit allows stormwater to be discharged during land disturbing construction activities as stipulated in the conditions of the permit. If the project is covered by this permit, full compliance with permit conditions including the erosion & sedimentation control plan, inspections and maintenance, self-monitoring, record keeping and reporting requirements is required. [15A NCAC 02H .0506(b)(5) and (c)(5)]

   The North Carolina Department of Transportation (NCDOT) shall be required to be in full compliance with the conditions related to construction activities within the most recent version of their individual NPDES (NCS000250) stormwater permit. [15A NCAC 02H .0506(b)(5) and (c)(5)]

9. All work in or adjacent to streams shall be conducted so that the flowing stream does not come in contact with the disturbed area. Approved best management practices from the most current version of the *NC Sediment and Erosion Control Manual*, or the *NC DOT Construction and Maintenance Activities Manual*, such as sandbags, rock berms, cofferdams, and other diversion structures shall be used to minimize excavation in flowing water. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0506(b)(3) and (c)(3)]

10. If activities must occur during periods of high biological activity (e.g. sea turtle nesting, fish spawning, or bird nesting), then biological monitoring may be required at the request of other state or federal agencies and coordinated with these activities. [15A NCAC 02H .0506(b)(2) and 15A NCAC 04B .0125]

All moratoriums on construction activities established by the NC Wildlife Resources Commission (WRC), US Fish and Wildlife Service (USFWS), NC Division of Marine Fisheries (DMF), or National Marine Fisheries Service (NMFS) shall be implemented. Exceptions to this condition require written approval by the resource agency responsible for the given moratorium. A copy of the approval from the resource agency shall be forwarded to DWR.

Work within a designated trout watershed of North Carolina (as identified by the Wilmington District of the US Army Corps of Engineers) or identified state or federal endangered or threatened species habitat, shall be coordinated with the appropriate WRC, USFWS, NMFS, and/or DMF personnel.

11. Culverts shall be designed and installed in such a manner that the original stream profiles are not altered and allow for aquatic life movement during low flows. The dimension, pattern, and profile of the stream above and below a pipe or culvert shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed culvert shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. [15A NCAC 02H .0506(b)(2) and (c)(2)]

    Placement of culverts and other structures in streams shall be below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20% of the culvert diameter for culverts having a diameter less than or equal to 48 inches, to allow low flow passage of water and aquatic life.

    If multiple pipes or barrels are required, they shall be designed to mimic the existing stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel shall be avoided.

    When topographic constraints indicate culvert slopes of greater than 5%, culvert burial is not required, provided that all alternative options for flattening the slope have been investigated and aquatic life movement/connectivity has been provided when possible (e.g. rock ladders, cross vanes, etc.). Notification, including supporting documentation to include a location map of the culvert, culvert profile drawings, and slope calculations, shall be provided to DWR 60 calendar days prior to the installation of the culvert.

    When bedrock is present in culvert locations, culvert burial is not required provided that there is sufficient documentation of the presence of bedrock. Notification, including supporting documentation such as, a location map of the culvert, geotechnical reports, photographs, etc. shall be provided to DWR a minimum of 60 calendar days prior to the installation of the culvert. If bedrock is discovered during construction, then DWR shall be notified by phone or email within 24 hours of discovery.

    If other site-specific topographic constraints preclude the ability to bury the culverts as described above and/or it can be demonstrated that burying the culvert would result in destabilization of the channel, then exceptions to this condition require application to and written approval from DWR.

Installation of culverts in wetlands shall ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. When roadways, causeways, or other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges shall be provided to maintain the natural hydrology of the system as well as prevent constriction of the floodway that may result in destabilization of streams or wetlands.

The establishment of native woody vegetation and other soft stream bank stabilization techniques shall be used where practicable instead of rip-rap or other bank hardening methods.

12. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means to the maximum extent practicable (e.g. grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0506(b)(5)]

13. Application of fertilizer to establish planted/seeded vegetation within disturbed riparian areas shall be conducted at agronomic rates and shall comply with all other Federal, State and Local regulations. Fertilizer application shall be accomplished in a manner that minimizes the risk of contact between the fertilizer and surface waters. [15A NCAC 02B .0200 and 15A NCAC 02B .0231]

14. If concrete is used during construction, then all necessary measures shall be taken to prevent direct contact between uncured or curing concrete and waters of the state. Water that inadvertently contacts uncured concrete shall not be discharged to waters of the state. [15A NCAC 02B .0200]

15. All proposed and approved temporary fill and culverts shall be removed and the impacted area shall be returned to natural conditions within 60 calendar days after the temporary impact is no longer necessary. The impacted areas shall be restored to original grade, including each stream's original cross sectional dimensions, planform pattern, and longitudinal bed profile. For projects that receive written approval, no temporary impacts are allowed beyond those included in the application and authorization. All temporarily impacted sites shall be restored and stabilized with native vegetation. [15A NCAC 02H .0506(b)(2) and (c)(2)]

16. All proposed and approved temporary pipes/culverts/rip-rap pads etc. in streams shall be installed as outlined in the most recent edition of the *North Carolina Sediment and Erosion Control Planning and Design Manual* or the *North Carolina Surface Mining Manual* or the *North Carolina Department of Transportation Best Management Practices for Construction and Maintenance Activities* so as not to restrict stream flow or cause dis-equilibrium during use of this Certification. [15A NCAC 02H .0506(b)(2) and (c)(2)]

17. Any rip-rap required for proper culvert placement, stream stabilization, or restoration of temporarily disturbed areas shall be restricted to the area directly impacted by the approved construction activity. All rip-rap shall be placed such that the original stream elevation and streambank contours are restored and maintained. Placement of rip-rap or other approved materials shall not result in de-stabilization of the stream bed or banks upstream or downstream of the area or in a manner that precludes aquatic life passage. [15A NCAC 02H .0506(b)(2)]

18. Any rip-rap used for stream or shoreline stabilization shall be of a size and density to prevent movement by wave, current action, or stream flows and shall consist of clean rock or masonry material free of debris or toxic pollutants. Rip-rap shall not be installed in the streambed except in specific areas required for velocity control and to ensure structural integrity of bank stabilization measures. [15A NCAC 02H .0506(b)(2)]

19. Applications for rip-rap groins proposed in accordance with 15A NCAC 07H .1401 (NC Division of Coastal Management General Permit for construction of Wooden and Rip-rap Groins in Estuarine and Public Trust Waters) shall meet all the specific conditions for design and construction specified in 15A NCAC 07H .1405.

20. All mechanized equipment operated near surface waters shall be inspected and maintained regularly to prevent contamination of surface waters from fuels, lubricants, hydraulic fluids, or other toxic materials. Construction shall be staged in order to minimize the exposure of equipment to surface waters to the maximum extent practicable. Fueling, lubrication and general equipment maintenance shall be performed in a manner to prevent, to the maximum extent practicable, contamination of surface waters by fuels and oils. [15A NCAC 02H .0506(b)(3) and (c)(3) and 15A NCAC 02B .0211 (12)]

21. Heavy equipment working in wetlands shall be placed on mats or other measures shall be taken to minimize soil disturbance. [15A NCAC 02H .0506(b)(3) and (c)(3)]

22. In accordance with 143-215.85(b), the applicant shall report any petroleum spill of 25 gallons or more; any spill regardless of amount that causes a sheen on surface waters; any petroleum spill regardless of amount occurring within 100 feet of surface waters; and any petroleum spill less than 25 gallons that cannot be cleaned up within 24 hours.

23. If an environmental document is required under the State Environmental Policy Act (SEPA), then this General Certification is not valid until a Finding of No Significant Impact (FONSI) or Record of Decision (ROD) is issued by the State Clearinghouse. If an environmental document is required under the National Environmental Policy Act (NEPA), then this General Certification is not valid until a Categorical Exclusion, the Final Environmental Assessment, or Final Environmental Impact Statement is published by the lead agency. [15A NCAC 01C .0107(a)]

24. This General Certification does not relieve the applicant of the responsibility to obtain all other required Federal, State, or Local approvals before proceeding with the project, including those required by, but not limited to, Sediment and Erosion Control, Non-Discharge, Water Supply Watershed, and Trout Buffer regulations.

25. The applicant and their authorized agents shall conduct all activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act), and any other appropriate requirements of State and Federal Law. If DWR determines that such standards or laws are not being met, including failure to sustain a designated or achieved use, or that State or Federal law is being violated, or that further conditions are necessary to assure compliance, then DWR may revoke or modify a written authorization associated with this General Water Quality Certification. [15A NCAC 02H .0507(d)]

26. The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this Certification. A copy of this Certification, including all conditions shall be available at the project site during the construction and maintenance of this project. [15A NCAC 02H .0507 (c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]

27. When written authorization is required for use of this Certification, upon completion of all permitted impacts included within the approval and any subsequent modifications, the applicant shall be required to return a certificate of completion (available on the DWR website: https://edocs.deq.nc.gov/Forms/Certificate-of-Completion). [15A NCAC 02H .0502(f)]

28. Additional site-specific conditions, including monitoring and/or modeling requirements, may be added to the written approval letter for projects proposed under this Water Quality Certification in order to ensure compliance with all applicable water quality and effluent standards. [15A NCAC 02H .0507(c)]

29. If the property or project is sold or transferred, the new permittee shall be given a copy of this Certification (and written authorization if applicable) and is responsible for complying with all conditions. [15A NCAC 02H .0501 and .0502]

III. GENERAL CERTIFICATION ADMINISTRATION:

1. In accordance with North Carolina General Statute 143-215.3D(e), written approval for a 401 Water Quality General Certification must include the appropriate fee. An applicant for a CAMA permit under Article 7 of Chapter 113A of the General Statutes for which a Water Quality Certification is required shall only make one payment to satisfy both agencies; the fee shall be as established by the Secretary in accordance with 143-215.3D(e)(7).

2. This Certification neither grants nor affirms any property right, license, or privilege in any waters, or any right of use in any waters. This Certification does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person and this Certification does not create any prescriptive right or any right of priority regarding any usage of water. This Certification shall not be interposed as a defense in any action respecting the determination of riparian or littoral rights or other rights to water use. No consumptive user is deemed by virtue of this Certification to possess any prescriptive or other right of priority with respect to any other consumptive user regardless of the quantity of the withdrawal or the date on which the withdrawal was initiated or expanded.

3. This Certification grants permission to the Director, an authorized representative of the Director, or DWR staff, upon the presentation of proper credentials, to enter the property during normal business hours. [15A NCAC 02H .0502(e)]

4. This General Certification shall expire on the same day as the expiration date of the corresponding Nationwide Permit and/or Regional General Permit. The conditions in effect on the date of issuance of Certification for a specific project shall remain in effect for the life of the project, regardless of the expiration date of this Certification. This General Certification is rescinded when the US Army Corps of Engineers reauthorizes any of the corresponding Nationwide Permits and/or Regional General Permits or when deemed appropriate by the Director of the Division of Water Resources.

5. Non-compliance with or violation of the conditions herein set forth by a specific project may result in revocation of this General Certification for the project and may also result in criminal and/or civil penalties.

6. The Director of the North Carolina Division of Water Resources may require submission of a formal application for Individual Certification for any project in this category of activity if it is deemed in the public's best interest or determined that the project is likely to have a significant adverse effect upon water quality, including state or federally listed endangered or threatened aquatic species, or degrade the waters so that existing uses of the water or downstream waters are precluded.

History Note: Water Quality Certification (WQC) Number 4146 issued December 1, 2017 replaces WQC4099 issued March 3, 2017; WQC 3908 issued March 19, 2012; WQC 3703 issued November 1, 2007; WQC 3640 issued March 2007; WQC 3493 issued December 2004; and WQC 3372 issued March 18, 2002.

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER RESOURCES

WATER QUALITY GENERAL CERTIFICATION NO. 4152

GENERAL CERTIFICATION FOR THE US ARMY CORPS OF ENGINEERS DREDGING ACTIVITIES INVOLVING CONTROL OF EFFLUENT DISPOSAL OF DREDGED MATERIAL IN EXISTING DREDGE MAINTENANCE SITES WITHIN NORTH CAROLINA

Water Quality Certification Number 4152 is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Regulations in 15A NCAC 02H .0500 and 15A NCAC 02B .0200 for the discharge of fill material to surface waters and wetland areas which are waters of the United States as described in 33 CFR 325 Appendix A of the US Army Corps of Engineers regulations.

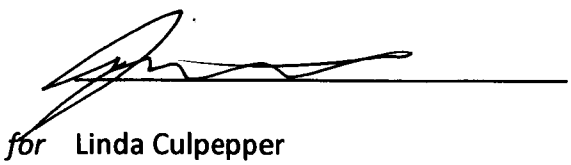
This General Certification is issued only for existing dredge sites at the following locations:

1. Manteo--Shallowbag Bay,
2. Hatteras Inlet (Cora June Island),
3. Oregon Inlet (Wells and Parnell Islands),
4. Wilmington Harbor--Bird Islands and Eagle Island,
5. Harkers Island area (Sandbag Island),
6. New River Inlet (Uni, New River 1, 2, and 3, DOT Island),
7. Atlantic (New Dump Island),
8. Wilmington Harbor (Cape Fear waterbird islands),
9. Big Foot Slough, and
10. Wainwright Slough.

The State of North Carolina certifies that the specified category of activity will not violate applicable portions of Sections 301, 302, 303, 306 and 307 of the Public Laws 92-500 and 95-217 if conducted in accordance with the conditions hereinafter set forth.

Effective date: December 1, 2017
Signed this day: December 1, 2017

By



for Linda Culpepper
Interim Director

Activities meeting any one (1) of the following thresholds or circumstances require *written approval* for a 401 Water Quality Certification from the Division of Water Resources (DWR):

a) If any of the conditions of this Certification (listed below) cannot be met; or
b) Any permanent fill into or modification of wetlands and/or waters; or
c) Any stream relocation or stream restoration; or
d) Any permanent impacts to Unique Wetlands (UWL); or
e) Any impact associated with a Notice of Violation or an enforcement action for violation(s) of NC Wetland Rules (15A NCAC 02H .0500), NC Isolated Wetland Rules (15A NCAC 02H .1300), NC Surface Water or Wetland Standards (15A NCAC 02B .0200), or State Regulated Riparian Buffer Rules (15A NCAC 02B .0200); or
f) Any impacts to subject water bodies and/or state regulated riparian buffers along subject water bodies in the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman Lake, Jordan Lake or Goose Creek Watersheds (or any other basin or watershed with State Regulated Riparian Area Protection Rules [Buffer Rules] in effect at the time of application) *unless*
    i. The activities are listed as "EXEMPT" from these rules; or
    ii. A Buffer Authorization Certificate is issued by the NC Division of Coastal Management (DCM); or
    iii. A Buffer Authorization Certificate or a Minor Variance is issued by a delegated or designated local government implementing a state riparian buffer program pursuant to 143-215.23.

Activities included in this General Certification that do not meet one of the thresholds listed above do not require written approval from the DWR.

I. ACTIVITY SPECIFIC CONDITIONS:

1. The appropriate turbidity water quality standard shall not be exceeded or be above natural background conditions as stipulated in 15A NCAC 02B .0211(21) or 02B .0220(19) beyond an appropriate mixing zone if one is established for a project by DWR. Methods of control may include silt curtains, reducing dredging intensity, or other practicable methods to ensure minimization of turbidity during project construction. [15A NCAC 02B .0200]

2. The terminal end of the pipeline from the dredge shall be positioned at the highest point possible on the dredge disposal site to allow maximum distance for settling of suspended solids. [15A NCAC 02H .0506 (b)(4) and (c)(4)]

3. The flow of discharge shall be directed away from any emergent vegetation along the shoreline unless it can be clearly shown by the applicant that a different design will result in less environmental impact (e.g. berm at Wainwright Slough disposal site). [15A NCAC 02H .0506 (b)(4) and (c)(4)]

II. GENERAL CONDITIONS:

1. When written authorization is required, the plans and specifications for the project are incorporated into the authorization by reference and are an enforceable part of the Certification. Any modifications to the project require notification to DWR and may require an application submittal to DWR with the appropriate fee. [15A NCAC 02H .0501 and .0502]

2. No waste, spoil, solids, or fill of any kind shall occur in wetlands or waters beyond the footprint of the impacts (including temporary impacts) as authorized in the written approval from DWR; or beyond the thresholds established for use of this Certification without written authorization. [15A NCAC 02H .0501 and .0502]

   No removal of vegetation or other impacts of any kind shall occur to state regulated riparian buffers beyond the footprint of impacts approved in a Buffer Authorization or Variance or as listed as an exempt activity in the applicable riparian buffer rules. [15A NCAC 02B .0200]

3. In accordance with 15A NCAC 02H .0506(h) and Session Law 2017-10, compensatory mitigation may be required for losses of greater than 300 linear feet of perennial streams and/or greater than one (1) acre of wetlands. Impacts associated with the removal of a dam shall not require mitigation when the removal complies with the requirements of Part 3 of Article 21 in Chapter 143 of the North Carolina General Statutes. Impacts to isolated and other non-404 jurisdictional wetlands shall not be combined with 404 jurisdictional wetlands for the purpose of determining when impact thresholds trigger a mitigation requirement. For linear publicly owned and maintained transportation projects that are not determined to be part of a larger common plan of development by the US Army Corps of Engineers, compensatory mitigation may be required for losses of greater than 300 linear feet per perennial stream.

   Compensatory stream and/or wetland mitigation shall be proposed and completed in compliance with G.S. 143-214.11. For applicants proposing to conduct mitigation within a project site, a complete mitigation proposal developed in accordance with the most recent guidance issued by the US Army Corps of Engineers Wilmington District shall be submitted for review and approval with the application for impacts.

4. All activities shall be in compliance with any applicable State Regulated Riparian Buffer Rules in Chapter 2 of Title 15A.

5. When applicable, all construction activities shall be performed and maintained in full compliance with G.S. Chapter 113A Article 4 (Sediment and Pollution Control Act of 1973). Regardless of applicability of the Sediment and Pollution Control Act, all projects shall incorporate appropriate Best Management Practices for the control of sediment and erosion so that no violations of state water quality standards, statutes, or rules occur. [15A NCAC 02H .0506(b)(3) and (c)(3) and 15A NCAC 02B .0200].

   Design, installation, operation, and maintenance of all sediment and erosion control measures shall be equal to or exceed the requirements specified in the most recent version

of the *North Carolina Sediment and Erosion Control Manual*, or for linear transportation projects, the *NCDOT Sediment and Erosion Control Manual*.

All devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) sites, including contractor-owned or leased borrow pits associated with the project. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

For borrow pit sites, the erosion and sediment control measures shall be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*. Reclamation measures and implementation shall comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-I, WS-II, High Quality Waters (HQW), or Outstanding Resource Waters (ORW), then the sedimentation and erosion control designs shall comply with the requirements set forth in 15A NCAC 04B .0124, *Design Standards in Sensitive Watersheds*.

6. Sediment and erosion control measures shall not be placed in wetlands or waters except within the footprint of temporary or permanent impacts authorized under this Certification. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0501 and .0502]

7. Erosion control matting that incorporates plastic mesh and/or plastic twine shall not be used along streambanks or within wetlands. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02B .0201]

8. An NPDES Construction Stormwater Permit (NCG010000) is required for construction projects that disturb one (1) or more acres of land. The NCG010000 Permit allows stormwater to be discharged during land disturbing construction activities as stipulated in the conditions of the permit. If the project is covered by this permit, full compliance with permit conditions including the erosion & sedimentation control plan, inspections and maintenance, self-monitoring, record keeping and reporting requirements is required. [15A NCAC 02H .0506(b)(5) and (c)(5)]

   The North Carolina Department of Transportation (NCDOT) shall be required to be in full compliance with the conditions related to construction activities within the most recent version of their individual NPDES (NCS000250) stormwater permit. [15A NCAC 02H .0506(b)(5) and (c)(5)]

9. All work in or adjacent to streams shall be conducted so that the flowing stream does not come in contact with the disturbed area. Approved best management practices from the most current version of the *NC Sediment and Erosion Control Manual*, or the *NC DOT Construction and Maintenance Activities Manual*, such as sandbags, rock berms, cofferdams, and other diversion structures shall be used to minimize excavation in flowing

water. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0506(b)(3) and (c)(3)]

10. If activities must occur during periods of high biological activity (e.g. sea turtle nesting, fish spawning, or bird nesting), then biological monitoring may be required at the request of other state or federal agencies and coordinated with these activities. [15A NCAC 02H .0506(b)(2) and 15A NCAC 04B .0125]

    All moratoriums on construction activities established by the NC Wildlife Resources Commission (WRC), US Fish and Wildlife Service (USFWS), NC Division of Marine Fisheries (DMF), or National Marine Fisheries Service (NMFS) shall be implemented. Exceptions to this condition require written approval by the resource agency responsible for the given moratorium. A copy of the approval from the resource agency shall be forwarded to DWR.

    Work within a designated trout watershed of North Carolina (as identified by the Wilmington District of the US Army Corps of Engineers) or identified state or federal endangered or threatened species habitat, shall be coordinated with the appropriate WRC, USFWS, NMFS, and/or DMF personnel.

11. Culverts shall be designed and installed in such a manner that the original stream profiles are not altered and allow for aquatic life movement during low flows. The dimension, pattern, and profile of the stream above and below a pipe or culvert shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed culvert shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. [15A NCAC 02H .0506(b)(2) and (c)(2)]

    Placement of culverts and other structures in streams shall be below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20% of the culvert diameter for culverts having a diameter less than or equal to 48 inches, to allow low flow passage of water and aquatic life.

    If multiple pipes or barrels are required, they shall be designed to mimic the existing stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel shall be avoided.

    When topographic constraints indicate culvert slopes of greater than 5%, culvert burial is not required, provided that all alternative options for flattening the slope have been investigated and aquatic life movement/connectivity has been provided when possible (e.g. rock ladders, cross vanes, etc.). Notification, including supporting documentation to include a location map of the culvert, culvert profile drawings, and slope calculations, shall be provided to DWR 60 calendar days prior to the installation of the culvert.

    When bedrock is present in culvert locations, culvert burial is not required provided that there is sufficient documentation of the presence of bedrock. Notification, including supporting documentation such as a location map of the culvert, geotechnical reports,

photographs, etc. shall be provided to DWR a minimum of 60 calendar days prior to the installation of the culvert. If bedrock is discovered during construction, then DWR shall be notified by phone or email within 24 hours of discovery.

If other site-specific topographic constraints preclude the ability to bury the culverts as described above and/or it can be demonstrated that burying the culvert would result in destabilization of the channel, then exceptions to this condition require application to and written approval from DWR.

Installation of culverts in wetlands shall ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. When roadways, causeways, or other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges shall be provided to maintain the natural hydrology of the system as well as prevent constriction of the floodway that may result in destabilization of streams or wetlands.

The establishment of native woody vegetation and other soft stream bank stabilization techniques shall be used where practicable instead of rip-rap or other bank hardening methods.

12. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means to the maximum extent practicable (e.g. grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0506(b)(5)]

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14. If concrete is used during construction, then all necessary measures shall be taken to prevent direct contact between uncured or curing concrete and waters of the state. Water that inadvertently contacts uncured concrete shall not be discharged to waters of the state. [15A NCAC 02B .0200]

15. All proposed and approved temporary fill and culverts shall be removed and the impacted area shall be returned to natural conditions within 60 calendar days after the temporary impact is no longer necessary. The impacted areas shall be restored to original grade, including each stream's original cross sectional dimensions, planform pattern, and longitudinal bed profile. For projects that receive written approval, no temporary impacts are allowed beyond those included in the application and authorization. All temporarily impacted sites shall be restored and stabilized with native vegetation. [15A NCAC 02H .0506(b)(2) and (c)(2)]

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19. Applications for rip-rap groins proposed in accordance with 15A NCAC 07H .1401 (NC Division of Coastal Management General Permit for construction of Wooden and Rip-rap Groins in Estuarine and Public Trust Waters) shall meet all the specific conditions for design and construction specified in 15A NCAC 07H .1405.

20. All mechanized equipment operated near surface waters shall be inspected and maintained regularly to prevent contamination of surface waters from fuels, lubricants, hydraulic fluids, or other toxic materials. Construction shall be staged in order to minimize the exposure of equipment to surface waters to the maximum extent practicable. Fueling, lubrication and general equipment maintenance shall be performed in a manner to prevent, to the maximum extent practicable, contamination of surface waters by fuels and oils. [15A NCAC 02H .0506(b)(3) and (c)(3) and 15A NCAC 02B .0211 (12)]

21. Heavy equipment working in wetlands shall be placed on mats or other measures shall be taken to minimize soil disturbance. [15A NCAC 02H .0506(b)(3) and (c)(3)]

22. In accordance with 143-215.85(b), the applicant shall report any petroleum spill of 25 gallons or more; any spill regardless of amount that causes a sheen on surface waters; any petroleum spill regardless of amount occurring within 100 feet of surface waters; and any petroleum spill less than 25 gallons that cannot be cleaned up within 24 hours.

23. If an environmental document is required under the State Environmental Policy Act (SEPA), then this General Certification is not valid until a Finding of No Significant Impact (FONSI) or Record of Decision (ROD) is issued by the State Clearinghouse. If an environmental document is required under the National Environmental Policy Act (NEPA), then this

General Certification is not valid until a Categorical Exclusion, the Final Environmental Assessment, or Final Environmental Impact Statement is published by the lead agency. [15A NCAC 01C .0107(a)]

24. This General Certification does not relieve the applicant of the responsibility to obtain all other required Federal, State, or Local approvals before proceeding with the project, including those required by, but not limited to, Sediment and Erosion Control, Non-Discharge, Water Supply Watershed, and Trout Buffer regulations.

25. The applicant and their authorized agents shall conduct all activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act), and any other appropriate requirements of State and Federal Law. If DWR determines that such standards or laws are not being met, including failure to sustain a designated or achieved use, or that State or Federal law is being violated, or that further conditions are necessary to assure compliance, then DWR may revoke or modify a written authorization associated with this General Water Quality Certification. [15A NCAC 02H .0507(d)]

26. The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this Certification. A copy of this Certification, including all conditions shall be available at the project site during the construction and maintenance of this project. [15A NCAC 02H .0507 (c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]

27. When written authorization is required for use of this Certification, upon completion of all permitted impacts included within the approval and any subsequent modifications, the applicant shall be required to return a certificate of completion (available on the DWR website: https://edocs.deq.nc.gov/Forms/Certificate-of-Completion). [15A NCAC 02H .0502(f)]

28. Additional site-specific conditions, including monitoring and/or modeling requirements, may be added to the written approval letter for projects proposed under this Water Quality Certification in order to ensure compliance with all applicable water quality and effluent standards. [15A NCAC 02H .0507(c)]

29. If the property or project is sold or transferred, the new permittee shall be given a copy of this Certification (and written authorization if applicable) and is responsible for complying with all conditions. [15A NCAC 02H .0501 and .0502]

III. GENERAL CERTIFICATION ADMINISTRATION:

1. In accordance with North Carolina General Statute 143-215.3D(e), written approval for a 401 Water Quality General Certification must include the appropriate fee. An applicant for a CAMA permit under Article 7 of Chapter 113A of the General Statutes for which a Water

Quality Certification is required shall only make one payment to satisfy both agencies; the fee shall be as established by the Secretary in accordance with 143-215.3D(e)(7).

2. This Certification neither grants nor affirms any property right, license, or privilege in any waters, or any right of use in any waters. This Certification does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person and this Certification does not create any prescriptive right or any right of priority regarding any usage of water. This Certification shall not be interposed as a defense in any action respecting the determination of riparian or littoral rights or other rights to water use. No consumptive user is deemed by virtue of this Certification to possess any prescriptive or other right of priority with respect to any other consumptive user regardless of the quantity of the withdrawal or the date on which the withdrawal was initiated or expanded.

3. This Certification grants permission to the Director, an authorized representative of the Director, or DWR staff, upon the presentation of proper credentials, to enter the property during normal business hours. [15A NCAC 02H .0502(e)]

4. This General Certification shall expire on the same day as the expiration date of the corresponding Nationwide Permit and/or Regional General Permit. The conditions in effect on the date of issuance of Certification for a specific project shall remain in effect for the life of the project, regardless of the expiration date of this Certification. This General Certification is rescinded when the US Army Corps of Engineers reauthorizes any of the corresponding Nationwide Permits and/or Regional General Permits or when deemed appropriate by the Director of the Division of Water Resources.

5. Non-compliance with or violation of the conditions herein set forth by a specific project may result in revocation of this General Certification for the project and may also result in criminal and/or civil penalties.

6. The Director of the North Carolina Division of Water Resources may require submission of a formal application for Individual Certification for any project in this category of activity if it is deemed in the public's best interest or determined that the project is likely to have a significant adverse effect upon water quality, including state or federally listed endangered or threatened aquatic species, or degrade the waters so that existing uses of the water or downstream waters are precluded.

History Note: Water Quality Certification (WQC) Number 4152 issued December 1, 2017 replaces WQC 4105 issued March 3, 2017; WQC Number 3904 issued March 19, 2012 replaces WQC Number 3684 issued November 1, 2007; WQC Number 3649 issued March 19, 2007 WQC Number 3368 issued March 18, 2002; and WQC Number 3122 issued February 11, 1997.

ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
RICHARD E. ROGERS, JR.
Director

NORTH CAROLINA
Environmental Quality

September 19, 2022

DWR # 20080806 Version 7
New Hanover County

U.S. Army Corps of Engineers, Wilmington District
Attn: Emily Hughes
69 Darlington Avenue
Wilmington, NC 28403
(delivered via email to Emily.b.hughes@usace.army.mil)

Subject: Approval of Individual 401 Water Quality Certification
Hatteras Ferry Channel Realignment Dredging and Maintenance Modification

Ms. Hughes,

Attached hereto is a copy of Certification No. WQC005186 issued to Emily Hughes and U.S. Army Corps of Engineers, dated September 19, 2022. **This Certification replaces the Certification issued on December 21, 2021.** This modification is issued to acknowledge a re-alignment of the "horseshoe route" between Hatteras and Ocracoke Islands to include the South Ferry Channel which connects Sloop Channel to the Hatteras Inlet. This realignment is a new deep-water route known as the Connector Channel. The Connector Channel connects Sloop Channel South and to the South Ferry Channel and includes an expended area of approximately 149 acres. This approval is for the purpose and design described in your application. The plans and specifications for this project are incorporated by reference as part of this Water Quality Certification. If you change your project, you must notify the Division and you may be required to submit a new application package with the appropriate fee. If the property is sold, the new owner must be given a copy of this Certification and is responsible for complying with all conditions. [15A NCAC 02H .0507(d)(2)].

This Water Quality Certification does not relieve the permittee of the responsibility to obtain all other required Federal, State, or Local approvals before proceeding with the project, including those required by, but not limited to, Sediment and Erosion Control, Non-Discharge, Water Supply Watershed, and Trout Buffer regulations.

This Water Quality Certification neither grants nor affirms any property right, license, or privilege in any lands or waters, or any right of use in any waters. This Water Quality Certification does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person and does not create any prescriptive right or any right of priority regarding any usage of water. This Water Quality Certification shall not be interposed as a defense in any action respecting the determination of riparian or littoral rights or other rights to water use. No consumptive user is deemed by virtue of this Water Quality Certification to possess any prescriptive or other right of priority with respect to any other consumptive user.

Upon the presentation of proper credentials, the Division may inspect the property.

This Water Quality Certification shall expire on the same day as the expiration date of the corresponding Section 404 Permit. The conditions shall remain in effect for the life of the project, regardless of the expiration date of this Water Quality Certification.

Non-compliance with or violation of the conditions herein set forth may result in revocation of this Water Quality Certification for the project and may also result in criminal and/or civil penalties.

If you are unable to comply with any of the conditions of this Water Quality Certification you must notify the Wilmington Regional Office within 24 hours (or the next business day if a weekend or holiday) from the time the permittee becomes aware of the circumstances.

The permittee shall report to the Wilmington Regional Office any noncompliance with, and/or any violation of, stream or wetland standards [15A NCAC 02B .0200] including but not limited to sediment impacts to streams or wetlands. Information shall be provided orally within 24 hours (or the next business day if a weekend or holiday) from the time the permittee became aware of the non-compliance circumstances.

This approval and its conditions are final and binding unless contested [G.S. 143-215.5].

This Certification can be contested as provided in Chapter 150B of the North Carolina General Statutes by filing a Petition for a Contested Case Hearing (Petition) with the North Carolina Office of Administrative Hearings (OAH) **within sixty (60) calendar days**. Requirements for filing a Petition are set forth in Chapter 150B of the North Carolina General Statutes and Title 26 of the North Carolina Administrative Code. Additional information regarding requirements for filing a Petition and Petition forms may be accessed at http://www.ncoah.com/ or by calling the OAH Clerk's Office at (919) 431-3000.

One (1) copy of the Petition must also be served to the North Carolina Department of Environmental Quality:

William F. Lane, General Counsel
Department of Environmental Quality
1601 Mail Service Center
Raleigh, NC 27699-1601

This letter completes the Division's review under section 401 of the Clean Water Act and 15A NCAC 02H .0500. Please contact Paul Wojoski at Paul.Wojoski@ncdenr.gov if you have any questions or concerns.

Sincerely,

DocuSigned by:
Paul Wojoski
949D91BA53EF4E0...

Paul Wojoski, Supervisor
401 & Buffer Permitting Branch

cc: Todd Bowers, USEPA
401 & Buffer Permitting Branch Electronic file

Filename: 20080806 Ver 7_Hatteras Ferry Chl Realignment Dredging & Maint_New Hanover_401 IC

NORTH CAROLINA 401 WATER QUALITY CERTIFICATION

CERTIFICATION #WQC005186 is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to North Carolina's Regulations in 15 NCAC 02H .0500 and 15A NCAC 02B .0200, to Emily Hughes and U.S. Army Corps of Engineers, who have authorization for the impacts listed below, as described within your application received by the N.C. Division of Water Resources (Division) on October 20, 2021 and subsequent information on December 20, 2021, and by Public Notice issued by the U. S. Army Corps of Engineers and received by the Division on October 18, 2021, and described in your modification request received by the N.C. Division of Water Resources (Division) on July 13, 2022 and subsequent information on July 20, 2022.

The State of North Carolina certifies that this activity will comply with water quality requirements and the applicable portions of Sections 301, 302, 303, 306, 307 of the Public Laws 92-500 and PL 95-217 if conducted in accordance with the application, the supporting documentation, and conditions hereinafter set forth.

The following impacts are hereby approved. No other impacts are approved, including incidental impacts. [15A NCAC 02H .0506(b)]

Type of Impact	Amount Approved (units) Permanent	Amount Approved (units) Temporary	Plan Location or Reference
Open Waters			
Horseshoe Corridor Dredging	0 (acres)	110 (acres)	Army Corps of Engineers Public Notice dated October 18, 2021
Sidecasting	0 (acres)	110 (acres)	Army Corps of Engineers Public Notice dated October 18, 2021
Ferry Landing Scour Hole	0 (acres)	0.5 (acres)	Army Corps of Engineers Public Notice dated October 18, 2021
Connector Channel	0 (acres)	149 (acres)	Figure 1 – New Corridor, dated 6/30/22 Figure 2 – Shoal Areas dated 6/23/22 Figure 3 – Material Placement Area, dated 6/30/22
TOTAL Corridor	0 (acres)	1,729 (acres)	Figure 1 – New Corridor, dated 6/30/22
TOTAL Shoaled Area to be Maintained	0 (acres)	110 (acres)	Figure 2 – Shoal Areas dated 6/23/22

This approval requires you to follow the conditions listed in the certification below.

CONDITIONS OF CERTIFICATION [15A NCAC 02H .0507(c)]:

1. If activities must occur during periods of high biological activity (e.g. sea turtle nesting, fish spawning, or bird nesting), then biological monitoring may be required at the request of other state or federal agencies and coordinated with these activities.

   All moratoriums on construction activities established by the NC Wildlife Resources Commission (WRC), US Fish and Wildlife Service (USFWS), NC Division of Marine Fisheries (DMF), or National Marine Fisheries Service (NMFS) shall be implemented. Exceptions to this condition require written approval by the resource agency responsible for the given moratorium. A copy of the approval from the resource agency shall be forwarded to DWR.

   Work within a designated trout watershed of North Carolina (as identified by the Wilmington District of the US Army Corps of Engineers) or identified state or federal endangered or threatened species habitat, shall be coordinated with the appropriate WRC, USFWS, NMFS, and/or DMF personnel.

   Citation: 15A NCAC 02H .0221; 15A NCAC 02H .0507(c)

   Justification: In order to protect against impairment of water quality standards and best usage of receiving and downstream waters, water quality based management practices must be employed to protect against direct or indirect discharge of waste or other sources of water pollution. Surface water quality standards require that conditions of waters be suitable for all best uses provided for in state rule (including, at minimum: aquatic life propagation, survival, and maintenance of biological integrity, wildlife, secondary contact recreation, agriculture, and shellfishing for marketing purposes) and that activities must not cause water pollution that precludes any best use on a short-term or long-term basis.

2. Dredging shall not cause Shellfish Closures. The effluent water from the dredge spoil should not be released into open shellfish waters. Shellfish Sanitation and the Division of Water Quality must be notified if this is to occur.

   Citation: 15A NCAC 02H .0221; 15A NCAC 02H .0507(c)

   Justification: In order to protect against impairment of water quality standards and best usage of receiving and downstream waters, water quality based management practices must be employed to protect against direct or indirect discharge of waste or other sources of water pollution. Surface water quality standards require that conditions of waters be suitable for all best uses provided for in state rule (including, at minimum: aquatic life propagation, survival, and maintenance of biological integrity, wildlife, secondary contact recreation, agriculture, and shellfishing for marketing purposes) and that activities must not cause water pollution that precludes any best use on a short-term or long-term basis.

3. The permittee shall report to the DWR Wilmington Regional Office any noncompliance with, and/or any violation of, stream or wetland standards [15A NCAC 02B .0200], including but not limited to sediment

impacts to streams or wetlands. Information shall be provided orally within 24 hours (or the next business day if a weekend or holiday) from the time the permittee became aware of the non-compliance circumstances.

Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

Justification: Timely reporting of non-compliance is important in identifying and minimizing detrimental impacts to water quality and avoiding impacts due to water pollution that precludes any best use on a short-term or long-term basis.

4. No waste, spoil, solids, or fill of any kind shall occur in wetlands or waters beyond the footprint of the approved impacts (including temporary impacts).

   Citation: 15A NCAC 02H .0221; 15A NCAC 02H .0507(c)

   Justification: In order to protect against impairment of water quality standards and best usage of receiving and downstream waters, water quality based management practices must be employed to protect against direct or indirect discharge of waste or other sources of water pollution. Surface water quality standards require that conditions of waters be suitable for all best uses provided for in state rule (including, at minimum: aquatic life propagation, survival, and maintenance of biological integrity, wildlife, secondary contact recreation, agriculture, and shellfishing for marketing purposes) and that activities must not cause water pollution that precludes any best use on a short-term or long-term basis.

5. When applicable, all construction activities shall be performed and maintained in full compliance with G.S. Chapter 113A Article 4 (Sediment and Pollution Control Act of 1973). Regardless of applicability of the Sediment and Pollution Control Act, all projects shall incorporate appropriate Best Management Practices for the control of sediment and erosion so that no violations of state water quality standards, statutes, or rules occur.

   Design, installation, operation, and maintenance of all sediment and erosion control measures shall be equal to or exceed the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*, or for linear transportation projects, the *North Caroline Department of Transportation Sediment and Erosion Control Manual*.

   All devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) sites, including contractor-owned or leased borrow pits associated with the project. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

   For borrow pit sites, the erosion and sediment control measures shall be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*. Reclamation measures and implementation shall comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-I, WS-II, High Quality Waters (HQW), or Outstanding Resource Waters (ORW), then the sedimentation and erosion control designs shall comply with the requirements set forth in 15A NCAC 04B .0124, *Design Standards in Sensitive Watersheds*.

Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231

Justification: A project that affects waters shall not be permitted unless the existing uses, and the water quality to protect such uses, are protected. Activities must not cause water pollution that precludes any best use on a short-term or long-term basis. As cited in Stream Standards: (12) Oils, deleterious substances, or colored or other wastes: only such amounts as shall not render the waters injurious to public health, secondary recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses; and (21) turbidity in the receiving water shall not exceed 50 Nephelometric Turbidity Units (NTU) in streams not designated as trout waters and 10 NTU in streams, lakes, or reservoirs designated as trout waters; for lakes and reservoirs not designated as trout waters, the turbidity shall not exceed 25 NTU; if turbidity exceeds these levels due to natural background conditions, the existing turbidity level shall not be increased. As cited in Wetland Standards: (c)(1) Liquids, fill or other solids, or dissolved gases shall not be present in amounts that may cause adverse impacts on existing wetland uses; and (3) Materials producing color or odor shall not be present in amounts that may cause adverse impacts on existing wetland uses.

6. If the project is covered by NPDES Construction Stormwater Permit Number NCG010000 or NPDES Construction Stormwater Permit Number NCG250000, full compliance with permit conditions including the erosion & sedimentation control plan, inspections and maintenance, self-monitoring, record keeping and reporting requirements is required.

   Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231

   Justification: A project that affects waters shall not be permitted unless the existing uses, and the water quality to protect such uses, are protected. Activities must not cause water pollution that precludes any best use on a short-term or long-term basis. As cited in Stream Standards: (12) Oils, deleterious substances, or colored or other wastes: only such amounts as shall not render the waters injurious to public health, secondary recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses; and (21) turbidity in the receiving water shall not exceed 50 Nephelometric Turbidity Units (NTU) in streams not designated as trout waters and 10 NTU in streams, lakes, or reservoirs designated as trout waters; for lakes and reservoirs not designated as trout waters, the turbidity shall not exceed 25 NTU; if turbidity exceeds these levels due to natural background conditions, the existing turbidity level shall not be increased. As cited in Wetland Standards: (c)(1) Liquids, fill or other solids, or dissolved gases shall not be present in amounts that may cause adverse impacts on existing wetland uses; and (3) Materials producing color or odor shall not be present in amounts that may cause adverse impacts on existing wetland uses.

7. All mechanized equipment operated near surface waters shall be inspected and maintained regularly to prevent contamination of surface waters from fuels, lubricants, hydraulic fluids, or other toxic materials. Construction shall be staged in order to minimize the exposure of equipment to surface waters to the maximum extent practicable. Fueling, lubrication, and general equipment maintenance shall be performed in a manner to prevent, to the maximum extent practicable, contamination of surface waters by fuels and oils.

   Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231

   Justification: A project that affects waters shall not be permitted unless the existing uses, and the water quality to protect such uses, are protected. Activities must not cause water pollution that precludes any best use on a short-term or long-term basis. As cited in Stream Standards: (12) Oils, deleterious substances, or colored or other wastes: only such amounts as shall not render the waters injurious to public health, secondary recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses. As cited in Wetland Standards: (c)(1) Liquids, fill or other solids, or dissolved gases shall not be present in amounts that may cause adverse impacts on existing wetland uses; and (3) Materials producing color or odor shall not be present in amounts that may cause adverse impacts on existing wetland uses.

8. In accordance with 143-215.85(b), the permittee shall report any petroleum spill of 25 gallons or more; any spill regardless of amount that causes a sheen on surface waters; any petroleum spill regardless of amount occurring within 100 feet of surface waters; and any petroleum spill less than 25 gallons that cannot be cleaned up within 24 hours.

   Citation: 15A NCAC 02H .0507(c); N.C.G.S 143-215.85(b)

   Justification: Person(s) owning or having control over oil or other substances upon notice of discharge must immediately notify the Department, or any of its agents or employees, of the nature, location, and time of the discharge and of the measures which are being taken or are proposed to be taken to contain and remove the discharge. This action is required in order to contain or divert the substances to prevent entry into the surface waters. Surface water quality standards require that conditions of waters be suitable for all best uses provided for in state rule (including, at minimum: aquatic life propagation, survival, and maintenance of biological integrity; wildlife; secondary contact recreation; agriculture); and that activities must not cause water pollution that precludes any best use on a short-term or long-term basis.

9. The permittee and their authorized agents shall conduct all activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act), and any other appropriate requirements of State and Federal Law.

   Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

   Justification: Surface water quality standards require that conditions of waters be suitable for all best uses provided for in state rule, and that activities must not cause water pollution that precludes any best use on a short-term or long-term basis. The Division must evaluate if the activity has avoided

and minimized impacts to waters, would cause or contribute to a violation of standards, or would result in secondary or cumulative impacts.

10. The permittee shall require its contractors and/or agents to comply with the terms and conditions of this certification in the construction and maintenance of this project and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this Water Quality Certification. A copy of this Water Quality Certification shall be available at the project site during the construction and maintenance of this project.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

    Justification: Those actually performing the work should be aware of the requirements of this 401 Water Quality Certification to minimize water quality impacts.

This approval to proceed with your proposed impacts or to conduct impacts to waters as depicted in your application shall expire upon expiration of the Federal Authorization or CAMA Permit. The conditions in effect on the date of issuance shall remain in effect for the life of the project, regardless of the expiration date of this Certification. [15A NCAC 02H .0507(c)]

This, the 19th day of September 2022

DocuSigned by:
Paul Wojoski
949D91BA53EF4E0...

Paul Wojoski, Supervisor
401 & Buffer Permitting Branch

Enclosures: Figure 1 – New Corridor, dated 6/30/22
Figure 2 – Shoal Areas dated 6/23/22
Figure 3 – Material Placement Area, dated 6/30/22

PAW
WQC005186

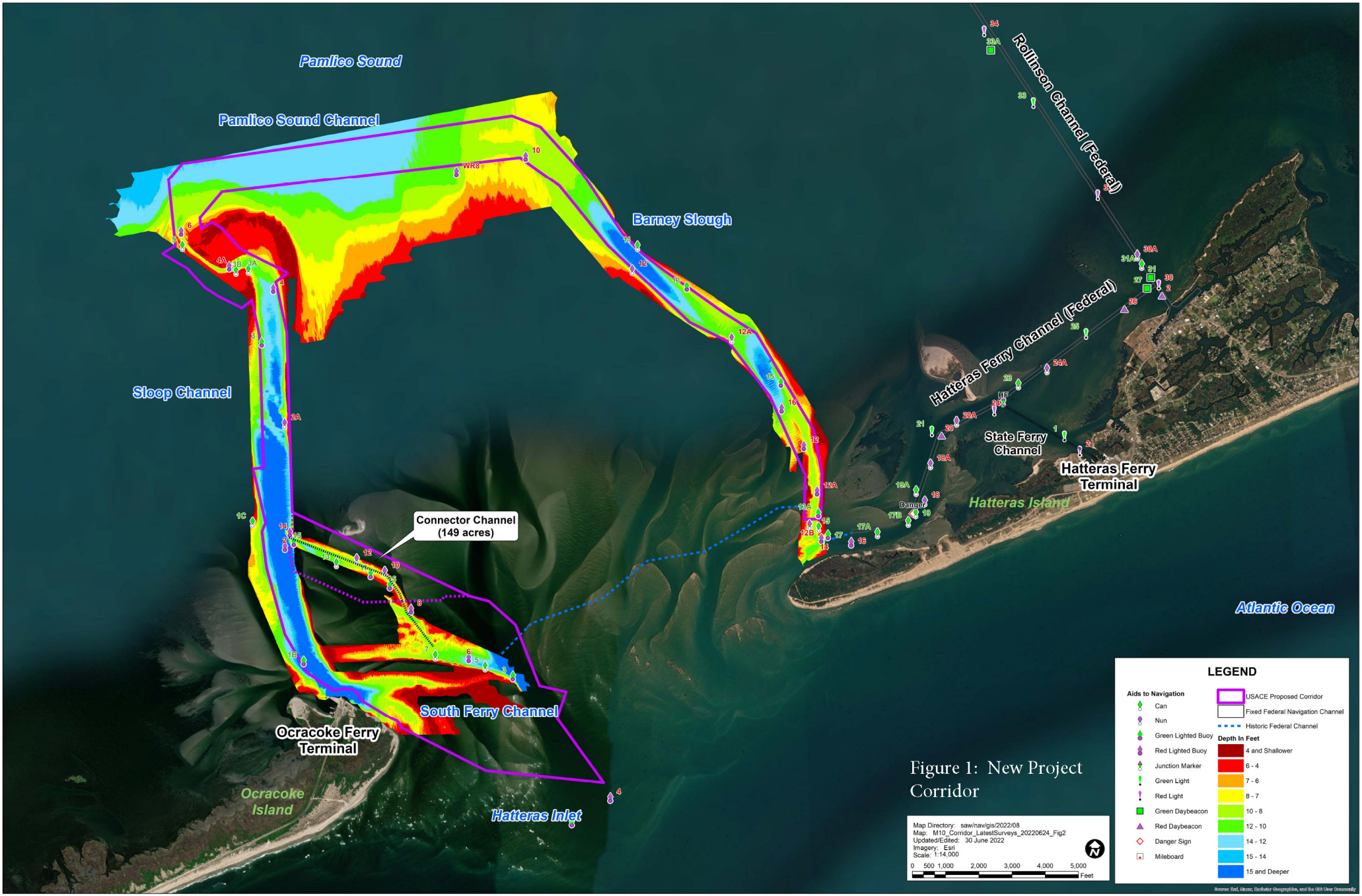


Figure 1: New Project Corridor

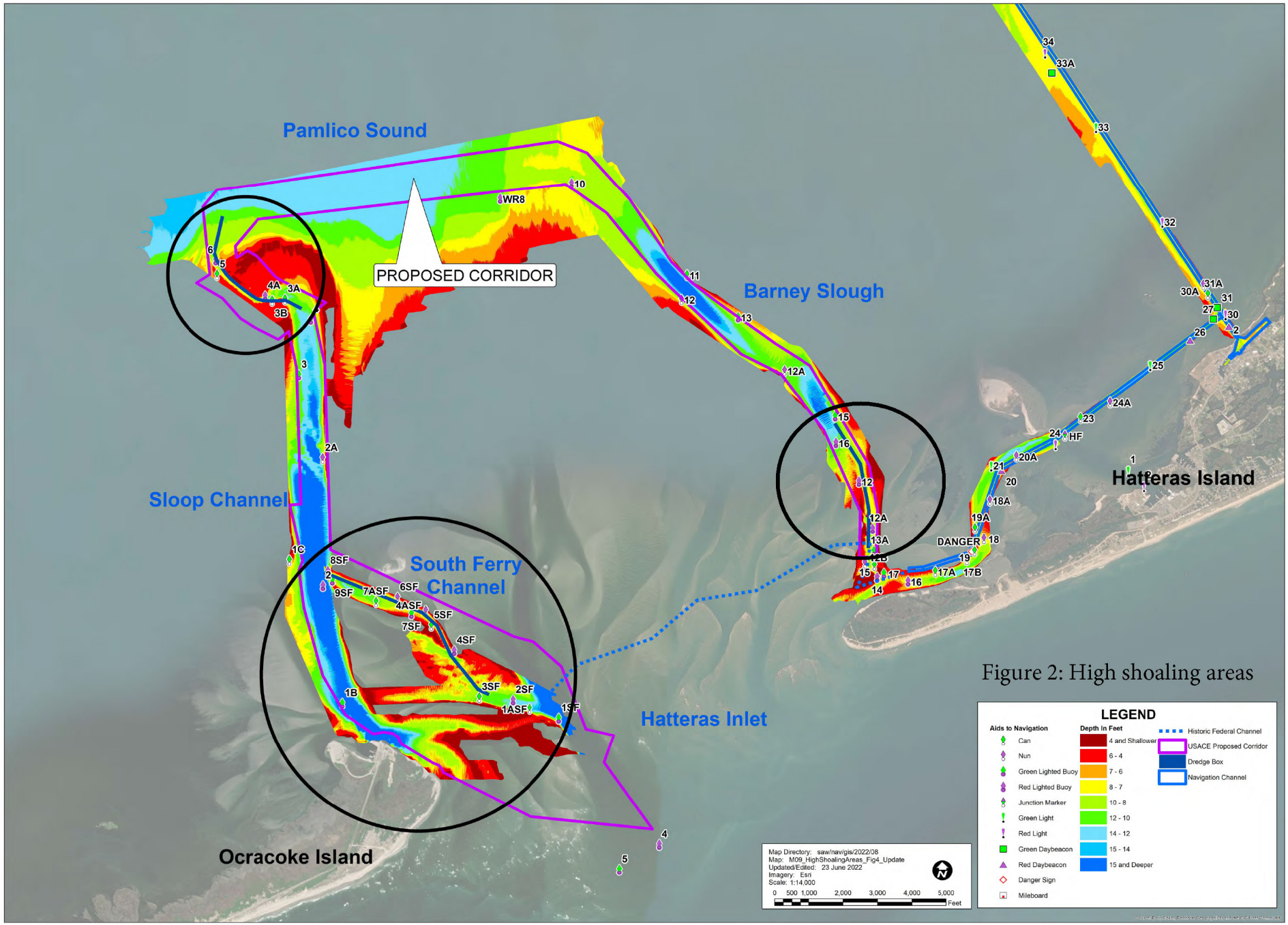
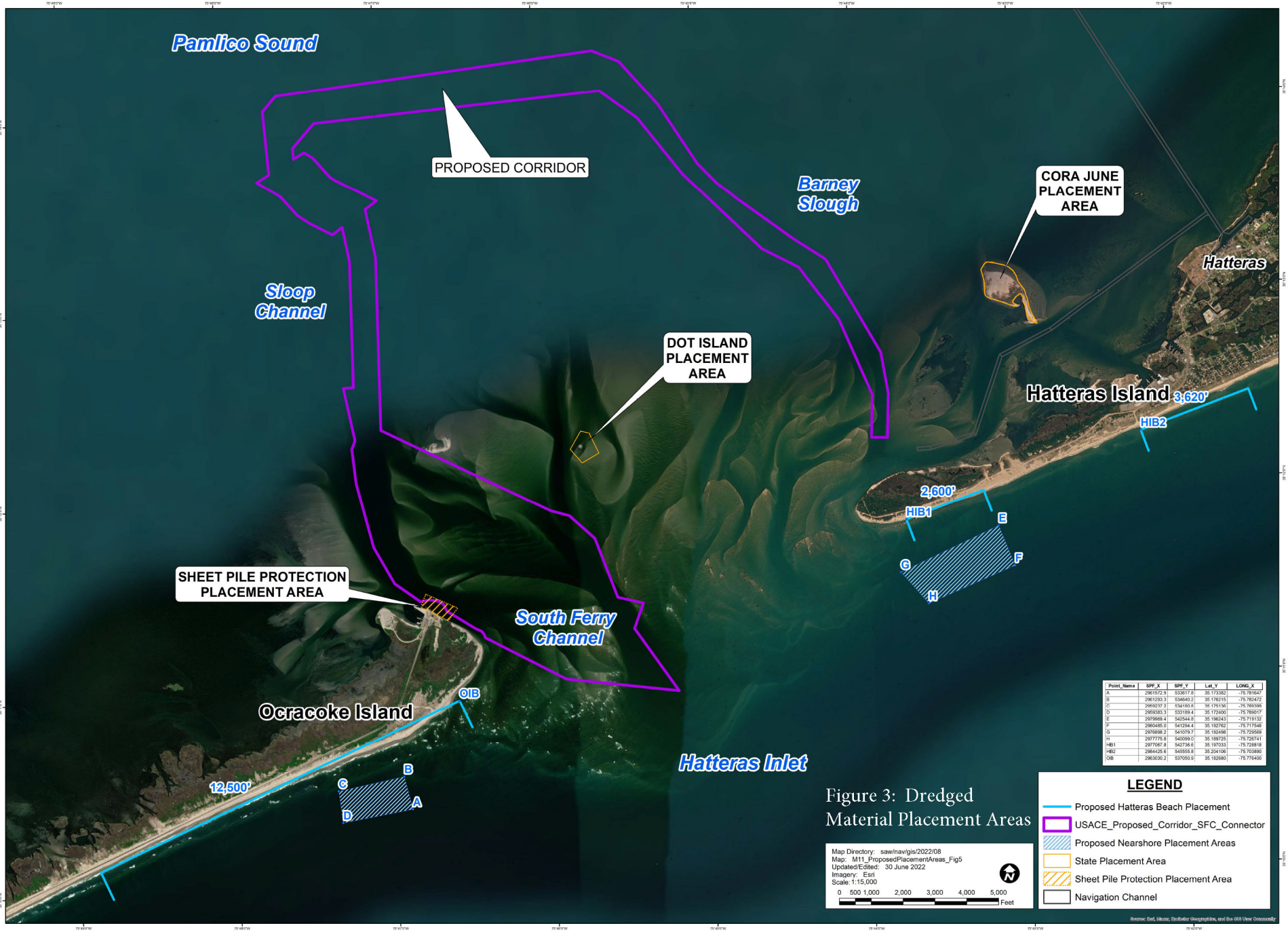


Figure 2: High shoaling areas



Point_Name	SPF_X	SPF_Y	Lat_Y	LONG_X
A	2961572.9	533617.8	35.173382	-75.781647
B	2961293.3	534640.2	35.176215	-75.782472
C	2959237.2	534180.8	35.175136	-75.789399
D	2959383.3	533188.4	35.172400	-75.789017
E	2979669.4	542544.8	35.196243	-75.719132
F	2980485.0	541294.4	35.192762	-75.717546
G	2976898.2	541079.7	35.192498	-75.729569
H	2977775.8	540099.0	35.189725	-75.726741
HIB1	2977067.8	542736.6	35.197033	-75.728818
HIB2	2984425.6	545555.8	35.204106	-75.703890
OIB	2963030.2	537050.9	35.182680	-75.776400

Figure 3: Dredged Material Placement Areas

US Army Corps of Engineers
Wilmington District

NORTH CAROLINA

SURVEY DATE:
MAP DATE: 30 JUNE 2022
SURVEYED BY:
MAPPED BY: KTOPNLAC
MAP SCALE: 1:15,000
MAP FILE NAME: M11_PROPOSEDPLACEMENTAREAS_FIG5

HYDROGRAPHIC SURVEY
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
WILMINGTON, NORTH CAROLINA

HATTERAS INLET CORRIDOR PLACEMENT AREAS

HATTERAS, NORTH CAROLINA

Appendix C:

Updated Lists of ESA Listed Species (IPAC)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Ecological Services Field Office
Post Office Box 33726
Raleigh, NC 27636-3726
Phone: (919) 856-4520 Fax: (919) 856-4556

In Reply Refer To: July 23, 2021
Consultation Code: 04EN2000-2021-SLI-1617
Event Code: 04EN2000-2021-E-03504
Project Name: Rollinson Channel Realignment

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The species list generated pursuant to the information you provided identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Section 7 of the Act requires that all federal agencies (or their designated non-federal representative), in consultation with the Service, insure that any action federally authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any federally-listed endangered or threatened species. A biological assessment or evaluation may be prepared to fulfill that requirement and in determining whether additional consultation with the Service is necessary. In addition to the federally-protected species list, information on the species' life histories and habitats and information on completing a biological assessment or

evaluation and can be found on our web page at http://www.fws.gov/raleigh. Please check the web site often for updated information or changes

If your project contains suitable habitat for any of the federally-listed species known to be present within the county where your project occurs, the proposed action has the potential to adversely affect those species. As such, we recommend that surveys be conducted to determine the species' presence or absence within the project area. The use of North Carolina Natural Heritage program data should not be substituted for actual field surveys.

If you determine that the proposed action may affect (i.e., likely to adversely affect or not likely to adversely affect) a federally-protected species, you should notify this office with your determination, the results of your surveys, survey methodologies, and an analysis of the effects of the action on listed species, including consideration of direct, indirect, and cumulative effects, before conducting any activities that might affect the species. If you determine that the proposed action will have no effect (i.e., no beneficial or adverse, direct or indirect effect) on federally listed species, then you are not required to contact our office for concurrence (unless an Environmental Impact Statement is prepared). However, you should maintain a complete record of the assessment, including steps leading to your determination of effect, the qualified personnel conducting the assessment, habitat conditions, site photographs, and any other related articles.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

Not all Threatened and Endangered Species that occur in North Carolina are subject to section 7 consultation with the U.S Fish and Wildlife Service. Atlantic and shortnose sturgeon, sea turtles,when in the water, and certain marine mammals are under purview of the National Marine Fisheries Service. If your project occurs in marine, estuarine, or coastal river systems you should also contact the National Marine Fisheries Service, http://www.nmfs.noaa.gov/

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office. If you have any questions or comments, please contact John Ellis of this office at john_ellis@fws.gov.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Raleigh Ecological Services Field Office
Post Office Box 33726
Raleigh, NC 27636-3726
(919) 856-4520

Project Summary

Consultation Code: 04EN2000-2021-SLI-1617
Event Code: 04EN2000-2021-E-03504
Project Name: Rollinson Channel Realignment
Project Type: DREDGE / EXCAVATION
Project Description: Maintenance of federal channel using side cast, hopper and pipeline dredging with open water, beach and bird island placement of dredged material.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@35.2158094,-75.76919841321183,14z

Counties: Dare and Hyde counties, North Carolina

Endangered Species Act Species

There is a total of 16 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened
Red Wolf *Canis rufus* Population: U.S.A. (portions of NC and TN) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/37	Experimental Population, Non-Essential
West Indian Manatee *Trichechus manatus* There is **final** critical habitat for this species. The location of the critical habitat is not available. ***This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.*** Species profile: https://ecos.fws.gov/ecp/species/4469	Threatened

Birds

NAME	STATUS
Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis*	Threatened
No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	
Piping Plover *Charadrius melodus*	Threatened
Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	
Red Knot *Calidris canutus rufa*	Threatened
There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1864	
Red-cockaded Woodpecker *Picoides borealis*	Endangered
No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7614	
Roseate Tern *Sterna dougallii dougallii*	Endangered
Population: Northeast U.S. nesting population No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	

Reptiles

NAME	STATUS
American Alligator *Alligator mississippiensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/776	Similarity of Appearance (Threatened)
Green Sea Turtle *Chelonia mydas* Population: North Atlantic DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
Hawksbill Sea Turtle *Eretmochelys imbricata* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3656	Endangered
Kemp's Ridley Sea Turtle *Lepidochelys kempii* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5523	Endangered
Leatherback Sea Turtle *Dermochelys coriacea* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1493	Endangered
Loggerhead Sea Turtle *Caretta caretta* Population: Northwest Atlantic Ocean DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1110	Threatened

Flowering Plants

NAME	STATUS
Seabeach Amaranth *Amaranthus pumilus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8549	Threatened
Sensitive Joint-vetch *Aeschynomene virginica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/855	Threatened

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Piping Plover *Charadrius melodus* https://ecos.fws.gov/ecp/species/6039#crithab	Final

Appendix D:

List of EA/FONSI Recipients

HATTERAS FERRY CHANNEL EA EMAIL LISTING		
Line No.	**Organization / Title**	**POC Name**
	ELECTED OFFICIALS	
01	U.S. Senator	Richard Burr
02	U.S. Senator	Thom Tillis
03	Representative	Gregory Murphy
04	Representative	Bobby Hanig
05	N.C. Senator	Bob Steinburg
06	Mayor (Kill Devil Hills)	Ben Sproul
	NON-PROFIT ORGANIZATIONS	
7	Audubon, North Carolina	Lindsay Addison
8	N.C. Coastal Federation	Kerri Allen
9	N.C. Coastal Federation	Ana Zivanovic-Nenadovic
10	N.C. Wildlife Federation	Manley Fuller
11	Southern Environmental Law Center	Melissa Whaling
12	Southern Environmental Law Center	Ramona McGee
13	Outer Banks Visitors Bureau	NA
14	Ocracoke Preservation Society	Andrea Powers
15	Ocracoke Tourism Development Authority	Helena Stevens
	RESOURCE AGENCIES	
16	Atlantic States Marine Fisheries Commission	Toni Kerns
17	Environmental Protection Agency (EPA)	Ntale Kajumba
18	N.C. Division of Coastal Management (NCDCM)	Braxton Davis
19	N.C. Division of Coastal Management (NCDCM)	Dan Govoni
20	N.C. Division of Marine Fisheries (NCDMF)	Anne Deaton
21	N.C. Division of Marine Fisheries (NCDMF)	Jimmy Harrison
22	N.C. Division of Water Resources (NCDWR)	Paul Wojoski
23	N.C. Wildlife Resources Commission (NCWRC)	Maria Dunn
24	National Marine Fisheries Service (NMFS)	Andy Herndon
25	National Marine Fisheries Service (NMFS)	Pace Wilber
26	National Marine Fisheries Service (NMFS)	Fritz Rohde
27	National Marine Fisheries Service (NMFS)	Twyla Cheatwood
28	National Park Service, CAHA	David Hallac
29	National Park Service, CAHA	Sabrina Henry
30	N.C. State Historical Preservation Officer	Renee Gledhill-Earley
31	NC State Historical Arch	Chris Southerly
32	NC State Historical Arch	Stephen Atkinson
33	U.S. Fish and Wildlife Service (USFWS)	Pete Benjamin
34	U.S. Fish and Wildlife Service (USFWS)	John Ellis
35	U.S. Fish and Wildlife Service (USFWS)	Kathy Matthews
36	USACE, Wilmington Regulatory	James Lastinger
37	USACE, Wilmington Regulatory	Tyler Crumbley
	TRIBES	
38	United Keetoowah Band of Cherokee Indians	Whitney Warrior
39	Eastern Band of Cherokee Indians	Jere Wilson

HATTERAS FERRY CHANNEL EA EMAIL LISTING		
Line No.	**Organization / Title**	**POC Name**
40	Cherokee Nation	Elizabeth Toombs
	OTHER	
41	U.S. Coast Guard	Lt. Greg Kennerley
42	N.C. Dept of Transportation	John Dixon
43	N.C. Dept of Transportation	Lance Winslow
44	N.C. Dept of Transportation	Brian Doliber
45	N.C. Dept of Transportation	Cat Peele
46	Dare Co. Waterways Commission	Steve Coulter
47	Dare County	Barton Grover
48	Dare County	Bobby Outten
49	Hyde County	Kris Noble

Appendix E:

Comments and Responses on the Draft EA

Item #	Subject	Comment Source	Comment	Response
1	**In favor of Proposed Alternative (Alt 3)**	General Public (36 total)	No specific comments/reasons supporting Alt 3. Does not require response.	Noted.
2	**In favor of Proposed Alternative (Alt 3)**	General Public (53 total)	Specific comments related to economic hardship, safety, and need for Alt 3. Does not require response.	Noted.
3	**Erosion and Sediment Control**	NCDEQ, Division of Land Quality (11/17/2021)	An E&SC plan will be required if 1+ acres are disturbed 30 days prior to dredged material placed on uplands; NPDES permit may also be needed.	Appropriate permits will be acquired prior to placement. E&SC permit will be requested from the Division of Land Quality for bird island placement however, no NPDES permits are needed.
4	**Clean Water Act Section 401**	NCDEQ, Division of Water Resources (11/17/2021)	A 401 Water Quality Certification is required from NCDWR.	WQC approval #5186 received, dated 19 Sep 2022 (Appendix B)
5	**Special Flood Hazard Area**	NC Department of Environmental Quality (11/17/2021)	From the information provided it appears the proposed project will encroach into Special Flood Hazard Area (SFHA). Therefore, the Floodplain Development Permits issued by Hyde County and Dare County will be required. Please coordinate with each county's Floodplain Administrator for permitting.	Noted. If required, the project will be coordinated with each county's Floodplain Administrator for permitting.
6	**Sediment Placement**	National Park Service, Cape Hatteras (11/18/2021)	Material must meet conditions as outlined (grain size, color, texture and geological characteristics); Sediments need to be a “close match” to native material for beach placement.	Concur. Sediments placed on the beach must be a "close match" to native material. Prior to any placement event, appropriate coordination with NPS will be completed to ensure sediments are acceptable for beach placement.
8	**Sediment Placement**	NPS, CAHA	Figure 5 must be updated to reflect exclusion zones; 1 mile south of Ramp 55 excludes sediment placement	Figure 5 has been updated to reflect the exclusion zone south of Ramp 55.
9	**Sediment Placement**	NPS, CAHA	NPS recommends placement onto Ocracoke over Hatteras for habitat restoration.	Noted. Material placement will depend on cost, distance from the dredge and available placement options. Pumping distance affects where material may be efficiently placed; the nearest available location is typically the least cost alternative.
10	**Agency Coordination and Monitoring**	NPS, CAHA	Appendix B, Step 4 of the NPS Sediment Management Final EIS states that habitat restoration may require an Interagency Agreement with federal agencies, specifically a maintenance and restoration plan for the project site. In addition, the agency permittee and the NPS would conduct efficacy monitoring which may include components of the monitoring strategy in Appendix B.	Prior to dredged material placement for habitat restoration, an Agreement will be developed with all required entities.
11	**Agency Coordination and Monitoring**	NPS, CAHA	NPS may require monitoring within an adjacent exclusion zone as a control to comparatively study impacts of the nourishment area. A monitoring strategy is outlined in Appendix C of the FEIS.	If monitoring within the exclusion zone is required, USACE will discuss further action with NPS.
12	**Sediment Placement**	NPS, CAHA	Beach placement is limited to 6.0 miles per year (Avon and Buxton already counted for in 2022); NPS suggests covering up sandbags along Hwy 12. This action would require consultation with the NCDOT Ferry Division.	Noted. If sandbag placement along Hwy 12 meets the Federal Standard, USACE may consider placement along Hwy 12 and if so, will coordinate with NCDOT prior to placement.
13	**Threatened and Endangered Species**	US Fish and Wildlife Service (11/16/2021)	For projects conducted within the winter work window (November 16 to April 30), the Corps may use the Statewide Programmatic Biological Opinion for NC Beach Sand Placement (SPBO) to meet its responsibilities under ESA Section 7(a)(2), if the Corps can comply with the terms and conditions (T&C). In addition, the Service issued a Programmatic BO to the National Park Service for the issuance of Special Use Permits associated with sediment management within Cape Hatteras National Seashore (NPS PBO). The Corps may be covered by both SPBO and NPS PBO, and the Service recommends that the Corps become familiar with the T&C for sand placement in the NPS PBO.	The Statewide Programmatic BO and NPS PBO will be used for beach and bird island placement between 16 Nov – 30 April.
14	**Threatened and Endangered Species**	USFWS	USFWS does not concur with Section 5 MANLAA determinations for sea turtles, PPLVR, RDKN, SBA and CH. We recommend that the species determinations in the EA be revised to May Affect, Likely to Adversely Affect for the species.	The determinations have been corrected to MALAA for all species listed. See section 5.7 and Table 4 for changes.
15	**Threatened and Endangered Species**	USFWS	Piping plover CH/Optimal Piping plover Area: USFWS recommends the USACE includes funding and plans for monitoring, required by the "A" set of terms and conditions in the SPBO.	USACE will meet the piping plover monitoring requirements as stated in the SPBO.
16	**Threatened and Endangered Species**	USFWS	Please note that dredging of any emergent shoals (above MLLW) would be a taking of piping plover wintering critical habitat, and further consultation would be required, perhaps with the issuance of an individual BO.	Noted. No dredging above MLLW will occur without prior USFWS consultation.
17	**Threatened and Endangered Species**	USFWS	The SPBO does not address summertime placement; this would require consultation.	Noted. Summertime placement is not expected for this project, but if it is considered, USACE will consult with USFWS prior to any activity occuring.
20	**Additional Info Needed**	National Marine Fisheries Service, Habitat Conservation Division (12/2/2021)	The Draft EA does not adequately address the potential impacts associated with year-round dredging in a highly productive inlet system. Once the Wilmington District provides a complete EFH assessment, NMFS may provide EFH conservation recommendations.	Noted. A revised and complete EFH assessment was provided to NMFS for review and response on 27 Jan 2022. All follow-on correspondence between NMFS and USACE is included in the final EA/FONSI as Appendix G.

21	**Environmental Window**	NMFS, HCD	Implementation of the preferred alternative would provide resource agencies with the least ability to offer recommendations and address concerns associated with dredging outside of the recommended window.	The USACE has committed to prioritize maintenance dredging during the 1 October - 31 March window in all areas except Sloop Channel North and Hatteras Connector Channel. The EFH consultation has been completed and the EFH recommendations will be implemented.
22	**Environmental Window**	NMFS, HCD	NMFS recommends the District consider the value to consistency with local dredging permits authorized within the area to conduct maintenance with use of environmental windows.	Concur. The USACE has considered the value of having consistent windows with local dredging permits and plans to prioritize normal maintenance dredging during the window; dredging during spring and summer months would only occur at Sloop Channel North and Hatteras Connector Channel.
23	**Environmental Window**	NMFS, HCD	Recommend the District develop a plan for pro-active maintenance of hot spots within the recommended windows to ensure minimization of impacts.	A pro-active maintenance plan for all channels within the horseshoe has been provided in Table 1 of the EA.
24	**SAV Concerns**	NMFS, HCD	Barney Slough dredging [outside of window] would lead to long-term impacts on SAV abundance.	The USACE has agreed to maintain Barney Slough within the 1 October - 31 March window. The USACE will coordinate with agencies if dredging outside of this window is required.
25	**SAV Concerns**	NMFS, HCD	The Draft EA does not consider the impacts from dredging to be significant to the surrounding SAV beds and offers a 300-foot buffer between dredging and identified SAVs to protect SAVs from the effects of turbidity and sedimentation. The NMFS appreciates this measure to minimize impacts to existing beds but feels it does not offer enough protection for SAVs during productive summer months critical to various life stages of NOAA-trust resources. The NMFS recommends the use of environmental windows to minimize impacts to SAVs.	The USACE plans to maintain this self-imposed 300-foot buffer for government plant dredging during summer months to the maximum extent practicable. During the reaminder of the year (Oct - Mar), a 100-foot buffer will apply. If the channel shifts closer to established SAV beds, or if SAV beds grow closer to the corridor, USACE will coordinate with resource agencies. See response to comment #27 for more information regarding impacts of sidecasting on SAV and measures that will be taken.
26	**Environmental Window**	NMFS, HCD	Enhanced coordination with USCG and NCDOT could minimize the need to dredge this area [Barney Slough} outside the recommended window.	USACE has agreed to maintain Barney Slough during the recommended window. If dredging is needed outside of the window, coordination with resource agencies will occur prior to dredging.
27	**Additional Info Needed**	NMFS, HCD	An analysis of the effects, including cumulative effects, of the action on EFH, the managed species and associated species by life history stage.	This comment is addressed in the revised EFH Assessment (provided in Section 5.6 and Appendix G). Government plant dredging will occur outside of the recommended window in only 2 locations, since shaoling rates have determined that dredging during this time of year is unavoidable. Impacts are estimated to be minor, since these small dredges operate at slow speeds under low suction/pumping power and during a limited amount of time needed to clear shoaling in the hot spots.
28	**Additional Info Needed**	NMFS, HCD	An evaluation of the impacts associated with year-round dredging in a highly productive system; can incorporate information from Deep Draft Harbors studies	The dredging proposed will be mostly within the window; spring/summer dredging will only occur as needed (using Government Plant) within Sloop Channel North and Hatteras Connector Channel to clear shoals that have occurred between maintenance events. Monitoring turbidity during sidecasting in Bogue and Oregon Inlets has shown that dredged material greater than 90% sand tends to fall out of the water column quickly, therefore not creating large turbidity plumes.
29	**Additional Info Needed**	NMFS, HCD	The NMFS support USACE conducting studies to examine shoaling rates and associated dredging impacts on SAV resulting from sidecast dredging in inlet systems. Please provide an evaluation of sidecast dredging impacts to SAV.	See response #23 above. Normal sidecast operations include casting material into deeper water on an ebb tide, typically away from the SAV, which would occur in shallower waters. Light sedimentation may occur, but burial of SAV is not expected. Due to the very dynamic nature of the project area, it would be difficult to analyze and evaluate the movement of suspended dredged material to distinguish the source of sediment in SAV (i.e. from the sidecasting or natural sediment dynamics).
30	**Additional Info Needed**	NMFS, HCD	Updates are needed to Table 2 (i.e., the categories of EFH are missing from the table contents).	Table 2 has been revised and included in the Final EA/FONSI.
31	**Additional Info Needed**	NMFS, HCD	Encourage the District to describe mitigation measures in the case that current best practices to minimize impacts through use if windows are not adopted (i.e. develop a plan for pro-active maintenance within the recommended windows)	The USACE will adopt the recommended window for all aspects of the project except Sloop Channel North and Hatteras Connector Channel. In addition to this, USACE will comply with NMFS conservation recommendations outlined in letter dated 1 September 2022, which includes development of a Hatteras Inlet Management Plan.
32	**General**	ironmental Protection Agency (12/1	The EPA has not identified any significant environmental impacts from the Proposed Action that would require substantive changes to the draft EA or require consideration of other alternatives for navigational improvements.	Noted.
33	**Env Justice**	USEPA	The EPA recommends that the EA include an Environmental Justice analysis or determination that a full analysis is not required; Please incorporate an environmental justice analysis in the EA and ensure protected populations are not disproportionately or adversely impacted by the proposed project.	An Environmental Justice analysis has been included in Section 6.6 of the Final EA/FONSI.

36	**Air Quality**	USEPA	During the dredging process, USACE should use clean dredge technology to the maximum extent possible. A preference should be given to dredge fleets operating Tier 3 or greater diesel engines.	Noted. Both the Merritt and Murden have Tier 2 engines. The Currituck is currently being outfitted with a new Tier 3 engine. Government Plant vessels only operate during daylight hours (12 hours/day) as opposed to commercial vessels which operate 24 hours/day.
37	**Corridor Expansion**	Division of Coastal Management-Department of Marine Fisheries (7/27/2022)	DMF has concerns with the proposed connector channel - specifically, that this brings the dredging corridor much closer to SAV than what was discussed when the resource agencies provided support for allowing year-round dredging within the Connector Channel (formerly, South Ferry Channel). As this connector channel is included as an aspect of the Federal Consistency request that was distributed earlier this month, DMF will provide comments regarding these concerns during the Federal Consistency determination process	As proposed, USACE will maintain a 300ft buffer (from the limit of sidecast) during SAV growing season (1 April – 30 September) and 100ft buffer during the remainder of the year. Maintenance events are estimated to occur a maximum of 3-4 times a year during 1 April – 30 September and last about 1-2 weeks. The USACE agrees to provide agencies maps of SAV using recent satellite imagery and visual identification before and after all dredging events. All of this information will be provided in the forthcoming Hatteras Inlet Management Plan.

Appendix F:

Coastal Zone Management Act Correspondence

ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
BRAXTON DAVIS
Director

NORTH CAROLINA
Environmental Quality

February 14, 2022

Ms. Jenny Owens
Chief, Environmental Resources Section
U.S. Army Corps of Engineers
69 Darlington Ave.
Wilmington, NC 28403

SUBJECT: Consistency Concurrence Concerning U.S. Army Corps of Engineers (Corps) Proposed Hatteras Ferry Channel Realignment and Maintenance (DCM#2022013)

Dear Ms. Owens:

We received your consistency submission on January 19, 2022, concerning the proposed dredging of federal channels within an identified corridor ("horseshoe route") located within waters of Pamlico Sound of the Hatteras Inlet area, Dare County, North Carolina. The horseshoe route is between Hatteras and Ocracoke Islands and the Channel connecting to the Hatteras Inlet Gorge. This route is used by the North Carolina Department of Transportation Ferry Division, which provides navigation for residents, visitors, supplies and services between Ocracoke and Hatteras Island. Additionally, this route provides access to the ocean for the U.S. Coast Guard and commercial/recreational fisherman. The horseshoe route is authorized to shift within the corridor to follow naturally-occurring deep water and currently contains 3-4 "hot spot" areas where shoaling is frequent. The proposal is to dredge the horseshoe route with a contracted pipeline dredge every 3-5 years and with government plant (sidecast and special purpose hopper) as needed 3-4 times per year without an environmental window.

On January 31, 2022, a meeting was held with the Corps, North Caroline Division of Coastal Management (DCM), North Carolina Division of Marine Fisheries (DMF), and the North Carolina Wildlife Resources Commission (WRC). During this meeting, the Corps provided additional information regarding the amount of material needed to be removed within individual areas and the number of anticipated dredge events per year at each individual section of the horseshoe route. The Corps provided information demonstrating that the South Ferry Channel and Sloop Channel North were of significant concern and would need to be dredge throughout the year to maintain safe navigation; all other areas of concern could be dredged during the winter adhering to the recommended dredge window of October 1-March 3 to avoid potential impacts to important fisheries and fish habitats.

DCM circulated this request and additional information to DMF and WRC for comments. Both agencies expressed significant, continuing concerns regarding the Corps proposal to dredge all areas identified, as needed, without an environmental window. DMF explained that they had "significant concerns with the preferred Alternative 3 presented in the Consistency Determination and the EA. While Section 5.6 of the EA describes the potential impacts to fisheries resources and fish habitat, including SAV, Anadromous Fish Spawning Areas (AFSA), and blue crabs, it does not sufficiently assess the potential effects from dredging during periods of high biological productivity which would be permitted if no environmental windows were required" and "removal of the environmental window would prevent the resource agencies from being able

to provide recommendations or object to operations occurring". WRC also commented that the "use of moratoria is an effective tool to avoid disturbances during critical spawning, breeding, and nesting periods. Avoidance of disturbance during these sensitive periods can be especially important depending upon the location, area impacted, and the multitude of resources that use the area". However, based on the additional information provided by the Corps explaining the past and future frequency of dredging in certain "hot spots" along the horseshoe route, both agencies agreed that South Ferry Channel and Sloop Channel North areas do not need to be subject to a dredge window given the importance of providing safe navigation.

North Carolina's coastal zone management program consists of, but is not limited to, the Coastal Area Management Act, the State's Dredge and Fill Law, Chapter 7 of Title 15A of North Carolina's Administrative Code, and the land use plan of the County and/or local municipality in which the proposed project is located. It is the objective of the Division of Coastal Management (DCM) to manage the State's coastal resources to ensure that proposed Federal activities would be compatible with safeguarding and perpetuating the biological, social, economic, and aesthetic values of the State's coastal waters.

DCM has reviewed the submitted information pursuant to the management objectives and enforceable policies of Subchapters 7H and 7M of Chapter 7 in Title 15A of the North Carolina Administrative Code and concurs that dredging South Ferry Channel and Sloop Channel North without an environmental window is consistent, to the maximum extent practicable, with the relevant enforceable polices of North Carolina's certified coastal management program. However, DCM finds that dredging Barney Slough South, Barney Slough North, Pamlico Sound Portion, and Sloop Channel South is inconsistent with the relevant enforceable polices of North Carolina's certified coastal management program. DCM is willing to reassess this inconsistency in the event new areas within the horseshoe route become programmatic and require dredging during the summer months to maintain safe navigation.

Prior to the initiation of the activities described, the applicant should obtain any additional State approvals or authorizations. Should the proposed action be modified, a revised consistency determination shall be required. This might take the form of either a supplemental consistency determination pursuant to 15 CFR 930.46, or a new consistency determination pursuant to 15 CFR 930.36. Likewise, if further project assessments reveal environmental effects not previously considered by the proposed development, a supplemental consistency certification may be required. If you have any questions, please contact me at (252) 808-2808. Thank you for your consideration of the North Carolina Coastal Management Program.

Sincerely,

Daniel Govoni

Daniel Govoni
Federal Consistency Coordinator

ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
BRAXTON DAVIS
Director

NORTH CAROLINA
Environmental Quality

September 16, 2022

Elden Gatwood
Chief, Planning and Environmental Branch
U.S. Army Corps of Engineers
69 Darlington Ave.
Wilmington, NC 28403

SUBJECT: Consistency Concurrence Concerning U.S. Army Corps of Engineers (Corps) Proposed Hatteras Ferry Channel Realignment and Maintenance (DCM#2022049)

Dear Mr. Gatwood:

The Division of Coastal Management (DCM) received your consistency submission of July 1, 2022, concerning the proposed dredging and maintenance of a realigned "horseshoe route" located within waters of Pamlico Sound of the Hatteras Inlet area, Dare County, North Carolina. The horseshoe route is between Hatteras and Ocracoke Islands and includes the South Ferry Channel which connects the Sloop Point Channel to the Hatteras Inlet gorge. Previously on February 14, 2022, DCM concurred that dredging the South Ferry Channel and Sloop Channel North without an environmental window is consistent, to the maximum extent practicable, with the relevant enforceable polices of North Carolina's certified coastal management program. However, DCM found that dredging Barney Slough South, Barney Slough North, Pamlico Sound Portion, and Sloop Channel South without an environmental window is inconsistent with the relevant enforceable polices of North Carolina's certified coastal management program. Since this last action, a new deep-water route has revealed itself connecting Sloop Channel South to the South Ferry Channel and is referred to as the Connector Channel. This new Connector Channel includes an expanded dredging corridor, and the Corps is seeking a new federal consistency determination to include this expanded route. Additionally, this new federal consistency determination is now only requesting dredging South Ferry Channel and Sloop Channel North without an environmental window and all other areas would adhere to the appropriate dredge window.

North Carolina's coastal zone management program consists of, but is not limited to, the Coastal Area Management Act, the State's Dredge and Fill Law, Chapter 7 of Title 15A of North Carolina's Administrative Code, and the land use plan of the County and/or local municipality in which the proposed project is located. It is the objective of the Division of Coastal Management (DCM) to manage the State's coastal resources to ensure that proposed Federal activities would be compatible with safeguarding and perpetuating the biological, social, economic, and aesthetic values of the State's coastal waters.

DCM has reviewed the submitted information pursuant to the management objectives and enforceable policies of Subchapters 7H and 7M of Chapter 7 in Title 15A of the North Carolina Administrative Code and concurs that the proposed action is consistent with North Carolina's approved coastal management program.

Prior to the initiation of the activities described, the Corps should obtain any required State approvals or

authorizations. Should the proposed action be modified, a revised consistency determination shall be required. This might take the form of either a supplemental consistency determination pursuant to 15 CFR 930.46, or a new consistency determination pursuant to 15 CFR 930.36. Likewise, if further project assessments reveal environmental effects not previously considered by the proposed development, a supplemental consistency certification may be required. If you have any questions, please contact me at (252) 515-5435.

Sincerely,

Daniel Govoni
Federal Consistency Coordinator

North Carolina Department of Environmental Quality | Division of Coastal Management
Morehead City Office | 400 Commerce Avenue | Moorehead City, North Carolina 28557
252.808.2808

Appendix G:

NMFS Essential Fish Habitat Correspondence

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
https://www.fisheries.noaa.gov/region/southeast

February 28, 2022 F/SER47:TC/jk

(Sent via Electronic Mail)

Colonel Benjamin A. Bennett, Commander
U.S. Army Corps of Engineers Wilmington District
69 Darlington Avenue
Wilmington, North Carolina 28403-1398

Attention: Emily Hughes

Dear Colonel Bennett:

NOAA's National Marine Fisheries Service (NMFS) reviewed the information provided by the Wilmington District, by email dated January 27, 2022, responding to recommendations the NMFS provided by letter dated December 2, 2021, for the work described in the *Draft Environmental Assessment for the Hatteras Ferry Channel Realignment*, dated October 2021 (Draft EA). The NMFS recommended the Wilmington District incorporate impact minimization measures, such as environmental windows, into the project. The NMFS also requested updates to the District's Essential Fish Habitat (EFH) assessment. Specifically, we requested an evaluation of the impacts associated with year-round dredging in a highly productive inlet system and an evaluation of sidecast dredging impacts to submerged aquatic vegetation (SAV). The NMFS also recommended the District to describe mitigation measures in the case that current best practices to minimize impacts through the use of environmental windows are not adopted or if impacts to SAV occur in new dredge areas. The documents provided by the District include a Draft Revised Plan and information intended to update the EFH assessment. In our letter dated December 2, 2021, the NMFS indicated we may provide EFH conservation recommendations in response to a complete EFH assessment. As the nation's federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, the NMFS provides the following comments and recommendations pursuant to authorities of the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

Draft Revised Plan

The Wilmington District's Preferred Alternative (Alternative 3) includes maintenance dredging portions of the horseshoe route throughout the year without the use of environmental windows. The Draft Revised Plan assesses each of the channel sections identified for annual maintenance dredging. The Plan also provides more detail on how the Preferred Alternative would be implemented, including the option to dredge year around with the focus on maintaining only the areas with the highest shoaling rate outside of the recommended dredging window from October 1 to March 31.

On January 31, 2022, the Wilmington District held a meeting with state and federal resource agencies to discuss the Draft Revised Plan along with additional information for the North Carolina Department of Coastal Management consistency request. The information provided included an analysis of potential shoaling rates and dredging frequency for each segment based on records from 2015 to 2021. Of the six identified segments (Barney Slough South, Barney Slough North, Pamlico Sound, Sloop Channel North, Sloop Channel South, South Ferry Channel), two areas are considered to be hot spots requiring multiple dredging events outside of the current dredging window. South Ferry Channel and Sloop Channel North are anticipated to require four to eight dredging events throughout the year compared to two (or less) events for the remaining four segments. South Ferry Channel and Sloop Channel North are both located within the estuary but not in close proximity to sensitive habitats. The NMFS appreciates the Wilmington District's approach to identifying hotspots within the new channel alignment and the District's commitment to minimizing planned dredging outside of the environmental window when possible. However, the other four segments remain areas of concern for EFH including managed species and SAV. The Wilmington District has not demonstrated a need for year round dredging in these additional segments of the new channel due to the stable nature of the area and the high likelihood of greater impacts to sensitive estuarine habitats associated with dredging outside of the recommended window from October 1 to March 31.

Alternative 2, with a modification to allow for dredging to occur on an as needed basis at both South Ferry Channel and Sloop Channel North, appears to be the least damaging practicable alternative. This alternative would provide safe navigation through the known higher shoaling areas of the horseshoe route while still providing protections to the highly sensitive areas along the portions of the route with demonstrated low shoaling rates and increased stability. Under this alternative, all remaining segments would be dredged within the recommended window from October 1 to March 31 and all dredging conducted outside of the October 1 to March 31 timeframe in any segment of the horseshoe route would require reporting of both start and completion of the dredge event to resource agencies.

<u>The Wilmington District's updates to the EFH Assessment</u>

The information provided by the District and intended to update the EFH Assessment omits an analysis of effects to important managed species and associated species by life history stage. Hatteras Inlet provides EFH and serves as a corridor for all fishes, including NOAA-trust resources, such as bluefish (*Pomatomus saltatrix*), summer flounder (*Paralichthys dentatus*), brown shrimp (*Farfantepenaeus aztecus*), pink shrimp (*Farfantepenaeus duorarum*), and white shrimp (*Litopenaeus setiferus*), with varying requirements for life stage development. As noted in the EA, the Hatteras Inlet is a Marine Fisheries Commission designated Crab Spawning Sanctuary providing protection of this species from bottom disturbing fishing gear from March 1 through October 31. Specific impacts related to spawning crabs and the species listed above are also not included in the District's response.

The information provided concludes impacts to managed species and associated species in the Hatteras Inlet Complex, a highly productive inlet system, would be minimal. This statement is attributed to the 2020 South Atlantic Regional Biological Opinion (SARBO). Please note SARBO evaluates the effects of maintenance dredging to species listed under the Endangered Species Act (ESA) and managed by NMFS. SARBO should not be used as a reference for

dismissing entertainment impacts to non-ESA listed managed species and associated species in the Hatteras Inlet Complex. Without the information requested, it is difficult to determine the cumulative impacts to managed species associated with the dredge events inside the dynamic inlet system especially in the case that current best practices to minimize impacts through the use of environmental windows are not followed.

Finally, the NMFS appreciates the Wilmington District eliminating plans to dredge in Barney Slough during the SAV growing season (April through September). However the District plans to dredge Sloop Channel North during the SAV growing season. The District concludes impacts would not occur to SAV from sidecast based on modeling completed by the U.S. Army Engineer Research and Development Center (ERDC) in 2012.[1] Any efforts to update the model inputs with sediment grain size or validate the model results over the last decade are not described. The District describes monitoring for SAV growth in Sloop Channel North. The NMFS requests additional information on monitoring proposed and we continue to encourage the District to develop plans to mitigate for the loss of SAV should the monitoring detect impacts associated with the maintenance dredging.

EFH Conservation Recommendations

Section 305(b)(4)(A) of the Magnuson-Stevens Act requires NMFS to provide EFH Conservation Recommendations for any federal action or permit which may result in adverse impacts to EFH. Therefore, NMFS recommends the following to ensure the conservation of EFH and associated fishery resources:

1. The Wilmington District should adopt Alternative 2 with a modification to allow for dredging to occur on an as needed basis at both South Ferry Channel and Sloop Channel North.
2. The Wilmington District should provide an annual report with the start date, completion date, dredge quantity, dredge days, dredge plant, and placement location for each segment dredged under this authorization. The projected start and end dates should be provided to NMFS prior to dredging each segment.
3. The Wilmington District should develop a plan to monitor for impacts to SAV in Barney Slough and Sloop Channel North. All monitoring reports should be sent to NMFS and the monitoring should include a pre-dredge baseline survey and one post-dredge event. In each event the edges of SAV beds should be mapped and the percent cover and composition of the SAV community should be characterized. The monitoring plan should be provided to the NMFS for review prior to finalizing. After the post-dredge event, the NMFS and the District should meet to determine if compensatory mitigation is needed to offset the loss of SAV.
4. If compensatory mitigation is needed to offset loss of SAV in the Hatteras Inlet Complex, the District should prepare a compensatory mitigation plan describing the mitigation type, location, and amounts. The plan should be provided to the NMFS for review prior to finalizing.

[1] Described in a memorandum from ERDC, dated February 22, 2012. Subject: Dredge Material Disposal Plume Characteristics for Hatteras Channels.

Section 305(b)(4)(B) of the Magnuson-Stevens Act and the implementing regulation at 50 CFR Section 600.920(k) require the Wilmington District to provide a written response to this letter within 30 days of its receipt. If it is not possible to provide a substantive response within 30 days, in accordance with the "findings" with the Wilmington District, an interim response should be provided to the NMFS. A detailed response then must be provided prior to final approval of the action. The detailed response must include a description of measures proposed by the Wilmington District to avoid, mitigate, or offset the adverse impacts of the activity. If the response is inconsistent with the EFH conservation recommendations, the Wilmington District must provide a substantive discussion justifying the reasons for not following the recommendations.

The NMFS appreciates the opportunity to provide these comments. Please direct related correspondence to the attention of Ms. Twyla Cheatwood at our Beaufort Field Office, 101 Pivers Island Road, Beaufort, North Carolina 28516-9722, at (252) 728-8758, or at Twyla.Cheatwood@noaa.gov.

Sincerely,

/ for

Pace Wilber
Acting Assistant Regional Administrator
Habitat Conservation Division

cc: COE, Emily.B.Hughes@usace.army.mil
NCDMF, Anne.Deaton@ncdenr.gov
NCDMF, James.Harrison@ncdenr.gov
NCDNER, Daniel.Govoni@ncdenr.gov
USFWS, Kathryn_Matthews@fws.gov
F/SER47, Twyla.Cheatwood@noaa.gov

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

September 1, 2022 F/SER47:TC/pw

(Sent via Electronic Mail)

Colonel Benjamin A Bennett, Commander
U.S. Army Corps of Engineers Wilmington District
69 Darlington Avenue
Wilmington, North Carolina 28403-1398

Attention: Emily Hughes

Dear Colonel Bennett:

NOAA's National Marine Fisheries Service (NMFS) reviewed the letter dated July 21, 2022, from the Wilmington District requesting consultation under the essential fish habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) for dredging needed to maintain safe navigation channels associated with Hatteras Inlet, Dare and Hyde Counties. The letter included an EFH Assessment meant to update the EFH review appearing in a Draft Environmental Assessment dated October 2021. The letter describes the dredging corridor to include the South Ferry Channel, Connector Channel, and "horseshoe route," whose components include Sloop Channel, Pamlico Sound Channel, and Barney Slough. As the nation's federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, the NMFS provides the following comments and recommendations pursuant to authorities of the Fish and Wildlife Coordination Act and the Magnuson-Stevens Act.

Previous correspondences from the Wilmington District and from NMFS describe EFH and fishery resources in the project area and the great value those resources present to the nation's and North Carolina's economies. We will not repeat the descriptions here except to note that Hatteras Inlet, the Hatteras Inlet Crab Spawning Sanctuary, and SAV habitat are Habitat Areas of Particular Concern (HAPCs) under three fishery management plans the South Atlantic Fishery Management Council administers and the ocean waters adjacent to the inlet are an HAPC under a fishery management plan NMFS administers. Four fishery management plans designate HAPCs in the area because of their importance as spawning, nursery, and migratory areas. To minimize impacts from dredging on these areas and the fishery resources using them, the NMFS and North Carolina Department of Environmental Quality, in the *North Carolina Coastal Habitat Protection Plan*, recommend dredging occur from October 1 to March 31, which is when the fishery resources are locally least abundant and the habitats are most resilient to sedimentation.

The updated EFH Assessment describes best management practices (BMPs) to minimize indirect impacts from the dredging, including buffers from SAV beds, strategies for sidecasting the dredged material, and adherence to the dredging window when practicable. The Wilmington District also commits to using aerial imagery to map SAV beds in certain circumstances. Collectively these BMPs address many of the concerns we raised in our comments on the Draft Environmental Assessment and subsequent meetings.

Our main concerns at this time are the differences between the BMPs used by the Wilmington District for its dredging operations and those required in the federal permits issued to Dare County and the North Carolina Department of Transportation (NCDOT) for their channels at the inlet. The Wilmington

District's updated EFH Assessment notes some of these differences. The differences are understandable given the variable funding streams and desires to avoid duplicative monitoring efforts. However, the current situation is a confusing matrix of locations and dredge types with each matrix element having different coordination triggers and protocols, and coping with this confusion is wasting human resources and slowing maintenance of the channels.

To rectify the situation and move towards efficient management of the inlet, the NMFS recommends the Wilmington District lead an interagency effort to develop a stand-alone Hatteras Inlet Management Plan that the District, Dare County, and NCDOT can use. Key elements of the plan would include:

- Identification of all dredging and disposal locations, including beneficial use sites;
- Identification of all dredge types used at the inlet;
- BMPs (by location and dredge type, if necessary) to minimize impacts to SAV, spawning sanctuaries, and fishery species traversing the inlet;
- Commitments (by location and dredge type, if necessary) for when all efforts will be made to limit the dredging to the period of October 1 to March 31;
- Descriptions of the annual reporting and the select circumstances when dredging-event-specific coordination is needed for emergency or urgent dredging; and
- SAV monitoring at the Inlet that dovetails with the monitoring done by the Albemarle-Pamlico National Estuary Partnership.

In closing, we acknowledge the challenges the Wilmington District, Dare County, and NCDOT face maintaining safe navigation at Hatteras Inlet. We appreciate the efforts by these agencies to work with the U.S. Coast Guard to relocate navigation channels to deeper waters when feasible and the frequent successful avoidance of dredging during summer months to protect fishery resources.

Thank you for the opportunity to provide these comments. Please direct related questions or comments to Ms. Twyla Cheatwood at Twyla.Cheatwood@noaa.gov after November 1, 2022. In the meantime, please direct comments to Pace.Wilber@noaa.gov.

Sincerely,

/ for

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

cc: COE, Emily.B.Hughes@usace.army.mil
NCDMF, Anne.Deaton@ncdenr.gov
NCDMF, James.Harrison@ncdenr.gov
NCDNER, Daniel.Govoni@ncdenr.gov
USFWS, Kathryn_Matthews@fws.gov
F/SER47, Twyla.Cheatwood@noaa.gov

Appendix H:

Section 404(b)(1) Guidelines
Analysis

November 2022

Prepared by:

Environmental Resources Section
U.S. Army Corps of Engineers, Wilmington District

HATTERAS TO HATTERAS INLET REALIGNMENT,

ROLLINSON CHANNEL NAVIGATION PROJECT

ENVIRONMENTAL ASSESSMENT

HYDE AND DARE COUNTIES, NORTH CAROLINA

Evaluation of Section 404 (b) (1) Guidelines 40 CFR 230:

This evaluation covers the placement of all fill material into waters of the United States required for the dredging and maintenance of the Hatteras to Hatteras Inlet Channel Realignment, Hyde and Dare Counties, North Carolina. The proposed project includes placement into open waters by means of sidecast dredging, placement into nearshore waters by means of special purpose hopper and placement onto bird islands and beachfronts of Ocracoke and Hatteras Islands by means of contracted pipeline. All required Section 401 Water Quality Certificates from the NC Division of Water Resources have been obtained for the project and all conditions/restrictions will be complied with.

Section 404 Public Notice No. CESAW-TS-PE-

1. Review of Compliance (230.10(a)-(d))	**Preliminary 1/**	**Final 2/**
A review of the NEPA Document indicates that:		
a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose (if no, see section 2 and NEPA document);	YES ☒ NO☐	YES ☒ NO☐
b. The activity does not: 1) violate applicable State water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of federally listed endangered or threatened species or their habitat; and 3) violate requirements of any federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies);	YES☒ NO☐*	YES☒ NO☐
c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values (if no, see section 2);	YES☒ NO☐	YES☒ NO☐
d Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5).	YES☒ NO☐*	YES☒ NO☐

Proceed to Section 2

2. Technical Evaluation Factors (Subparts C-F)	N/A	Not Significant	Significant
a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)			
(1) Substrate impacts.		X	
(2) Suspended particulates/turbidity impacts		X	
(3) Water column impacts.		X	
(4) Alteration of current patterns and water circulation.			
		X	
(5) Alteration of normal water fluctuations/hydroperiod.			
		X	
(6) Alteration of salinity gradients.		X	
b. Biological Characteristics of the Aquatic Ecosystem (Subpart D)			
(1) Effect on threatened/endangered species and their habitat.			
		X	
(2) Effect on the aquatic food web.		X	
(3) Effect on other wildlife (mammals birds, reptiles, and amphibians).			
		X	
c Special Aquatic Sites (Subpart E)			
(1) Sanctuaries and refuges.		X	
(2) Wetlands.	NA		
(3) Mud flats.	NA		
(4) Vegetated shallows.	NA		
(5) Coral reefs.	NA		
(6) Riffle and pool complexes.	NA		
d. Human Use Characteristics (Subpart F)			
(1) Effects on municipal and private water supplies.	NA		
(2) Recreational and commercial fisheries impacts		X	
(3) Effects on water-related recreation.		X	
(4) Aesthetic impacts.		X	
(5) Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves.			
		X	

Proceed to Section 3

3. Evaluation of Dredged or Fill Material (Subpart G) 3/

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

(1) Physical characteristics ☒

(2) Hydrography in relation to known or anticipated sources of contaminants ☒

(3) Results from previous testing of the material or similar material in the vicinity of the project ☒

(4) Known, significant sources of persistent pesticides from land runoff or percolation ☐

(5) Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances ☐

(6) Other public records of significant introduction of contaminants from industries, municipalities, or other sources ☒

(7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities ☐

(8) Other sources (specify). ☐

List appropriate references.

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to result in degradation of the disposal site.** YES ☒ NO ☐*

Proceed to Section 4

4. Disposal Site Determinations (230.11(f)).

a. The following factors as appropriate, have been considered in evaluating the disposal site.

(1) Depth of water at disposal site. ☒

(2) Current velocity, direction, and variability at disposal site ☒

(3) Degree of turbulence. ☒

(4) Water column stratification ☒

(5) Discharge vessel speed and direction ☒

(6) Rate of discharge ☒

(7) Dredged material characteristics (constituents, amount and type of material, settling velocities). ☒

(8) Number of discharges per unit of time. ☒

(9) Other factors affecting rates and patterns of mixing (specify)

List appropriate references.

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable. YES ☒ NO ☐*

5. Actions to Minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken, through application of recommendations of 230.70-230.77, to ensure minimal adverse effects of the proposed discharge. List actions taken. YES ☒ NO ☐*

Return to section 1 for final stage of compliance review.

6. Factual Determinations (230.11).

A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge as related to:

a. Physical substrate at the disposal site (review sections 2a, 3, 4, and 5). YES ☒ NO ☐*

b. Water circulation, fluctuation, and salinity (review sections 2a, 3, 4, and 5). YES ☒ NO ☐*

c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5). YES ☒ NO ☐*

d Contaminant availability (review sections 2a, 3, and 4). YES ☒ NO ☐*

e. Aquatic ecosystem structure and function (review sections 2b and c, 3, and 5). YES ☒ NO ☐*

f. Disposal site (review sections 2, 4, and 5). YES ☒ NO ☐*

g. Cumulative impact on the aquatic ecosystem. YES ☒ NO ☐*

h. Secondary impacts on the aquatic ecosystem. YES ☒ NO ☐*

7. Findings.

a.The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines. . . . . ☒

b.The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the following conditions:. . . . . ☐

c.The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reasons(s):

(1) There is a less damaging practicable alternative . . . . . ☐
(2) The proposed discharge will result in significant degradation of the aquatic ecosystem . . . . . ☐
(3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem. . . . . ☐

_____ Date: 11/30/22

Robert M. Burnham
LTC, U.S. Army
Acting District Commander

*A negative, significant, or unknown response indicates that the permit application may not be in compliance with the Section 404(b)(1) Guidelines.

1/ Negative responses to three or more of the compliance criteria at this stage indicate that the proposed projects may not be evaluated using this "short form procedure." Care should be used in assessing pertinent portions of the technical information of items 2 a-d, before completing the final review of compliance.

2/ Negative response to one of the compliance criteria at this stage indicates that the proposed project does not comply with the guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision-making process, the "short form evaluation process is inappropriate."

3/ If the dredged or fill material cannot be excluded from individual testing, the "short-form" evaluation process is inappropriate.