US Army Corps of Engineers ®
Wilmington District

WILMINGTON HARBOR AND MOREHEAD CITY HARBOR MAINTENANCE DREDGING AND BED LEVELING

FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

February 2021

Wilmington District – U.S. Army Corps of Engineers

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US Army Corps
of Engineers ®
Wilmington District

Finding of No Significant Impact (FONSI)

Wilmington Harbor and Morehead City Harbor

Maintenance Dredging and Bed Leveling

Brunswick, New Hanover and Carteret Counties

North Carolina

The U.S. Army Corps of Engineers, Wilmington District (Corps), has conducted an environmental analysis in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended. The Corps assessed the effects of the following actions in the Final Environmental Assessment Wilmington Harbor and Morehead City Harbor Maintenance Dredging and Bed Leveling, dated February 2021.

As District Commander, it is my duty in the role of responsible Federal official to review and evaluate, 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. PROJECTION DESCRIPTION

Development of the alternatives for the Wilmington Harbor and Morehead City Harbor Maintenance Dredging and Bed Leveling addresses changes in the timing of maintenance dredging, using a hopper dredge, for the North Carolina State Ports' entrance channels to Wilmington and Morehead City Harbors. For all alternatives considered there are no changes proposed to the maintenance dredging and disposal/placement practices; maintenance dredging will not occur more frequently nor will more material be removed annually. The Corps collected information and coordinated with Federal, State, and local agencies with existing and gained knowledge of the project resources. The data collection, agency comments, and findings of the Project Development Team (PDT) resulted in the Proposed Action, which consists of elimination of the historic dredging window (1 December – 15 April) so that dredging

and bed leveling may occur at any time of year using a risk-based assessment approach.

The Proposed Action would allow for maintenance dredging in the proposed channels to continue on an annual basis with reduced concern for unawardable bids or draft restrictions. Resulting increased dredging efficiency would improve navigability and safety for commercial vessels calling on the Ports while also reducing costs to taxpayers for maintenance of these important deep draft harbors.

The Proposed Action is also about shifting dredging to a risked-based assessment approach. The intent is to balance the financial costs, availability of equipment, and navigational needs with opportunities to protect species by timing projects and choosing equipment types that avoid adverse effects and minimize take of protected species to the maximum extent possible. The current seasonal restrictions are species-specific and do not consider a larger eco-system wide approach. These restrictions are also static and often buffered to be protective of a wide range of seasonal scenarios. Removing the seasonal dredging windows is not intended to allow year-round dredging in every location. It is about using the best available information to make informed decisions based on the current situation.

2. COORDINATION

A scoping letter describing the Proposed Action and requesting agency participation was circulated by email April 8, 2020 and a scoping meeting was held virtually on April 23, 2020. Wilmington District coordinated the Proposed Action with Federal, state, and local agencies and issued a Public Notice on August 17, 2020, to solicit comments. Agency and public comments were received from: US National Marine Fisheries Service, NC Division of Environmental Quality, NC Wildlife Resources Commission, South Atlantic Fisheries Management Council, Southern Environmental Law Center, NC Ports Authority, Audubon North Carolina, Village of Bald Head Island, Town of Oak Island, and Town of Kure Beach. A spreadsheet of all comments and comment responses is 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 mentioned above to include the Environmental Protection Agency. An Interagency Team has been developed to continue coordination and monitor/assess environmental effects of hopper dredging for the next 3 years.

The Proposed Action is covered under Section 7(a)(1) of the Endangered Species Act by the 2020 South Atlantic Biological Opinion. As per 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 January 21, 2021 (Appendix G). The North Carolina Division of Coastal Management provided their final federal consistency decision on

December 31, 2020 (Appendix F).

The Final EA is available on the Wilmington District Website at:

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

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 but is not likely to adversely affect: leatherback, loggerhead, hawksbill, Kemp's Ridley and green sea turtles; West Indian manatee; Blue, Sei, Sperm, Finback and North Atlantic right whales; Atlantic and shortnose sturgeon; and giant manta ray. The proposed action may affect but is not likely to adversely affect Atlantic sturgeon and North Atlantic right whale Critical Habitats.

b. No significant cumulative or secondary impacts would result from implementation of this action.

c. The proposed action would not significantly impact cultural resources.

d. The proposed action would result in no significant impacts to air or water quality.

e. The proposed action would result in no significant adverse impact to fish and wildlife resources.

f. 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."
FONSI-3

g. 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 Wilmington Harbor and Morehead City Harbor Maintenance Dredging and Bed Leveling Proposed Action would result in no significant environmental impacts.

Date: 25 Feb 2021

Benjamin A. Bennett
Colonel, U.S. Army
District Commander

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FINAL ENVIRONMENTAL ASSESSMENT AND

FINDING OF NO SIGNIFICANT IMPACT

Wilmington Harbor and Morehead City Harbor

Maintenance Dredging and Bed Leveling

Brunswick and Carteret Counties, North Carolina

February 2021

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1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Wilmington District has prepared this Environmental Assessment (EA) to address impacts of maintenance dredging and bed leveling in Wilmington and Morehead City Harbors with offshore or nearshore placement of dredged material. Previous analyses had assumed a hopper dredging window of 1 December to 15 April, while this analysis will consider the ability to use a hopper dredge any time of year. The current South Atlantic Regional Biological Opinion (2020 SARBO) calls for risk-based management of dredging rather than specific environmental windows for portions of these harbors. In addition, hopper dredge availability is limited, making it very challenging to maintain these harbors using the window previously analyzed. Eliminating the window will allow the use of the risk-based analysis and increase efficiency in maintaining the harbors while improving navigability and safety.

While other methods of dredging are available besides hopper dredging, hopper dredging is preferred in the portions of the harbors covered in this EA due to efficiency, safety and economic advantage over cutter suction pipeline or mechanical (bucket and barge) dredging and will be the focus of this EA. Out of the three dredge types, hopper dredging is the only one that currently has a dredging window. There is no window for pipeline dredging. Mechanical dredging, though least likely to occur, is currently available year-round in the project area. There is no existing environmental window for the placement of dredged material within the designated offshore or nearshore areas.

The USACE South Atlantic Division and Bureau of Ocean Energy Management (BOEM) completed the 2020 SARBO with the National Marine Fisheries Service (NMFS) in March 2020 changing how maintenance dredging and protection of Endangered Species Act (ESA)-listed species are managed. Historic seasonal dredging restrictions in the 1997 SARBO were solely focused on protection of sea turtles listed as threatened or endangered pursuant to the Endangered Species Act of 1973 (ESA-listed). The 1997 SARBO did not require seasonal dredging windows in North Carolina. The 2020 SARBO has replaced seasonal windows with a risk-assessment framework intended to optimize the dredging program along the southeast coast. The 2020 SARBO is available for reference on the NMFS website at:

https://www.fisheries.noaa.gov/content/endangered-species-act-section-7-biological-opinions-southeast.

Section 6.1.1 of the 2020 SARBO provides a discussion of the factors that will be used for the risk-based analysis. The USACE will use the risk-based assessment framework to evaluate risk to all species and habitat in the area by considering the possible routes of effects based on project location, timing, equipment, and minimization measures available. The assessment will consider the risks and benefits at a local, regional, and national level and prioritize protection of the most vulnerable species based on population status and the best-available information. All current and upcoming projects are reviewed with NMFS and BOEM as part of monthly and annual discussions, which

includes the risk assessment process. Risk assessment for the 2020 SARBO is not a static decision, but instead an ongoing process that takes into account historic information, project detail decisions made pre-construction, adjustments made during construction, and a post-construction assessment of lessons learned to document an evolving understanding of the project area, species and habitat, and risk associated with these projects. The 2020 SARBO provides a total take limit for USACE and BOEM projects covered under the 2020 SARBO in North Carolina, South Carolina, Georgia, Florida along the Atlantic coast, Puerto Rico, and the U.S. Virgin Islands for species and critical habitat under NMFS purview. The risk of take of ESA-listed species under NMFS purview is evaluated at a regional level and not limited to a single project, such as Morehead City or Wilmington Harbor.

The National Environmental Policy Act of 1969 (NEPA), as amended, requires consideration of the environmental impacts for major federal actions. The purpose of this EA is to ensure the environmental consequences of the proposed action are considered and that environmental and project information is available to the public. This EA has been prepared in accordance with NEPA (under the 1978 regulations and their existing NEPA procedures), the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations (CFR) parts 1500- 1508), and Engineering Regulation (ER) 200-2-2.[1]

1.1 Project Areas and Locations

This EA addresses changes in the timing of maintenance dredging, using a hopper dredge, for the North Carolina State Ports' entrance channels to Wilmington and Morehead City Harbors (Figure 1). Deep draft navigation in North Carolina is limited to these two ports, which serve industrial, commercial and recreational navigation purposes. The USACE has responsibility for operating and maintaining the federal inlets, channels and basins associated with these two harbor projects.

[1] Please note that the Federal Register notice accompanying the NEPA regulations published in 2020 allowed the use of the 1978 regulations for projects begun under those existing regulations; this project was begun under the 1978 regulations and will be completed using the procedures outlined therein.

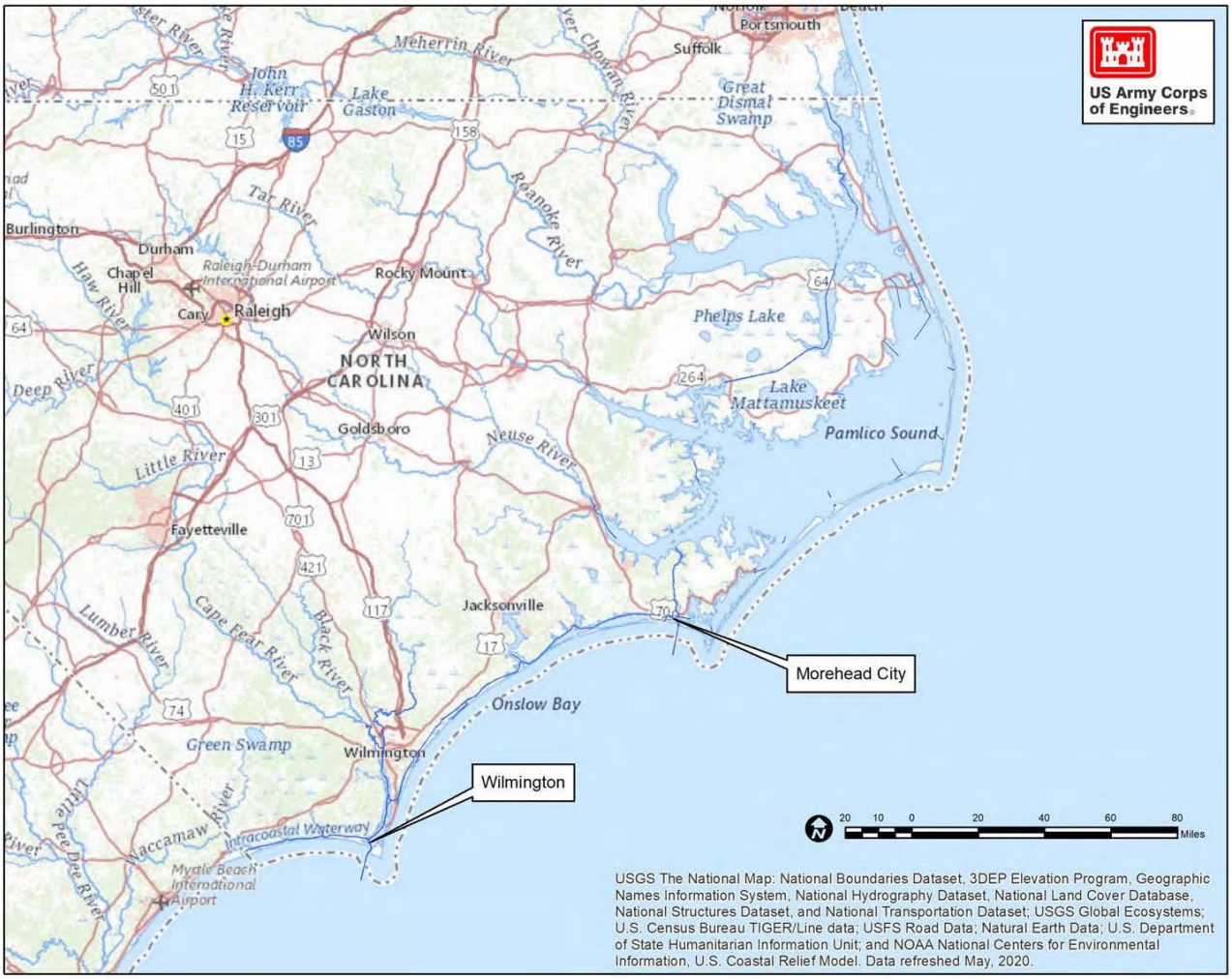

Figure 1. Project Location Map

Wilmington Harbor (WH)

The navigation channels within the Wilmington Harbor, covered in this EA, include the Outer Bar Channel (Baldhead Shoal Range 3), the Inner Bar Channels (Baldhead Shoal Ranges 1&2, Smith Island, Baldhead-Caswell, Southport and Battery Island Channels), and the Mid-River channels (Lower Swash, Snows Marsh and Horseshoe Shoal) (Figure 2).

Material dredged from the Outer Bar is made of up of mostly silt that is not suitable for beach placement, therefore it is placed offshore in the WH Ocean Dredged Material Disposal Site (ODMDS). Material in the Outer Bar channel accumulates rapidly and requires maintenance annually to maintain navigability for ships to safely enter the harbor.

The Inner Bar Channels are composed of mostly beach quality sand (material ≥90% sand) and dredged material from these channels is typically removed by cutter-suction/pipeline dredge and beneficially placed on the adjacent shorelines of Oak Island or Bald Head Island, approximately every 2-3 years in accordance with the 2011 Wilmington Harbor Sand Management Plan (SMP). During years when there is no beach placement, accumulated material is removed by hopper dredge and taken to the ODMDS.

The lower channels of the Mid-River section of WH contain beach quality sand as well; however, these reaches are out of range for economical beach placement. In the past, this dredged material has been pumped by pipeline dredge to an upland disposal area (DA 4) or onto adjacent bird islands managed by the State of North Carolina; or taken offshore to the ODMDS by means of bucket and barge or hopper dredge. When sediments accumulate within Horseshoe Shoal and Snows Marsh channels, the District strives to use the sand material beneficially when possible and when funding allows. This effort requires administering material by control-of-effluent (pipeline dredge) onto adjacent South Pelican and Ferry Slip Islands to replenish nesting habitat for colonial waterbirds and shorebirds. The USACE acknowledges that placement on the bird islands is important, therefore pipeline dredging in these reaches will take priority over hopper dredging as much as possible.

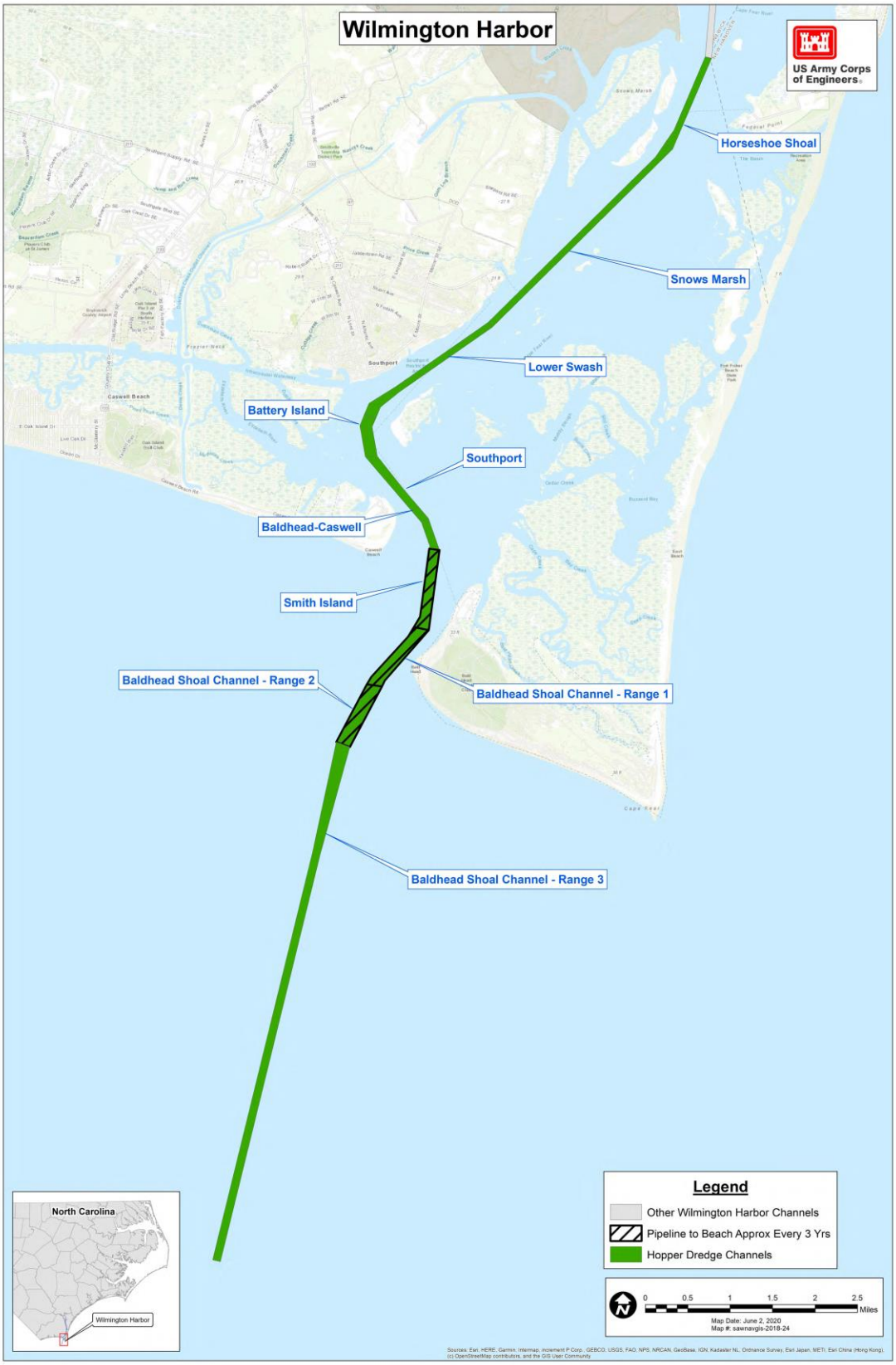

Figure 2. Wilmington Harbor Project Area

The authorized navigation channel dimensions for WH are described as follows:

1. Baldhead Shoal Channels through Battery Island Channel (~2 miles) consists of a required depth of -44 feet mean lower low water (MLLW) (-45 feet required in areas containing rock) with an allowable overdepth of 2 feet to -46 feet;
2. Lower Swash Channel through Horseshoe Shoal Channel consists of a required depth of -42 feet MLLW (-43 feet required in areas containing rock) with an allowable overdepth of 2 feet to -44 feet;
3. Authorized channel widths in the lower harbor vary from 400 – 675 feet

The table below shows a summary of current dredging methods and placement locations.

Table 1. Summary of Current Dredging and Placement Practices for Wilmington Harbor

Harbor Section	Channel Reaches	Shoaling Rate (CY/year)	Dredging Frequency (years)	Placement Location	Dredge Type	Sediment (% Sand)
Outer Bar	Baldhead Range 3	800,000	1	ODMDS	Hopper	47% to 90%
Inner Bar	Baldhead Range 2	300,000	2	BHI/OI beaches	Pipeline	≥90%
	Baldhead Range 1	200,000	2	BHI/OI beaches	Pipeline	≥90%
	Smith Is	257,800	2	BHI/OI beaches	B&B/Hopper	≥90%
	Baldhead-Caswell	11,000	4	ODMDS	B&B/Hopper	≥90%
	Southport	18,000	4	ODMDS	B&B/Hopper	≥90%
	Battery Is	25,300	4	ODMDS	B&B/Hopper	≥90%
Mid-River	Lower Swash	12,000	2	ODMDS	B&B/Hopper	≥90%
Mid-River	Snows Marsh	21,800	2	ODMDS/Bird Islands/DA	B&B/Hopper/ pipeline	≥90%
Mid-River	Horseshoe Shoals	45,900	2	ODMDS/Bird Islands/DA	B&B/Hopper/ pipeline	≥90%

ODMDS: Ocean Dredged Material Disposal Site; BHI: Bald Head Island; OI: Oak Island; B&B: bucket and barge; DA: Disposal Area

Morehead City Harbor (MHC)

The Morehead City Harbor sections of the project maintained by hopper dredge include the Outer Entrance Channel and the Outer Harbor. The Outer Entrance Channel (Range A Station 110+00 outbound) is authorized to a project depth of -47 feet + 2 feet overdepth. This portion of the channel requires maintenance approximately every 3 years by hopper dredge and contains material that is not beach quality, and therefore is placed into the Morehead City ODMDS (see Figure 3).

Most of the Outer Harbor channels (lower half of Range C, Range B and the Cutoff) are maintained to -45 feet + 2 feet overdepth; however, Range A (Station 21+00 to 110+00) is maintained to -47 feet + 2 feet overdepth. Maintenance of these channels is typically accomplished annually by a hopper or pipeline dredge. Dredged material is beach quality sand that is placed either in the approved nearshore placement areas to the east and west of Beaufort Inlet, on the shoreline at Fort Macon State Park and Atlantic Beach, or in the designated sand placement zone of the ODMDS (northern half). Beach placement occurs about every 3 years as described in the 2017 Morehead City Harbor Dredged Material Management Plan (DMMP). Hopper or pipeline placement to the Nearshore East and Nearshore West Placement Areas (NPAs) is also an option, as covered in the DMMP. For hopper dredges, nearshore placement is limited to those dredges that can navigate the fairly shallow nearshore areas and open their haul doors to release material safely. These vessels must operate with loaded drafts less than 25 feet.

<u>Morehead City Harbor, Summary of Authorized Depths and Widths:</u>

Range A:	47 feet deep MLLW by 450 to 800 feet wide from deep water in the Atlantic Ocean to Cutoff Channel
Cutoff:	45 feet deep MLLW with varying widths of 600 to 800 feet; connecting Range A with Range B.
Range B:	45 feet deep MLLW by 400 feet wide; connecting the Cut-off Channel with Range C.
Range C:	45 feet deep MLLW by varying width of approximately 400 to 1,350 feet.

Hopper dredge contracts are solicited annually to maintain the Outer Harbor Channels and the Outer Entrance Channel. Approximately 900,000 CYs of material is removed each year and placed in the NPAs or the ODMDS.

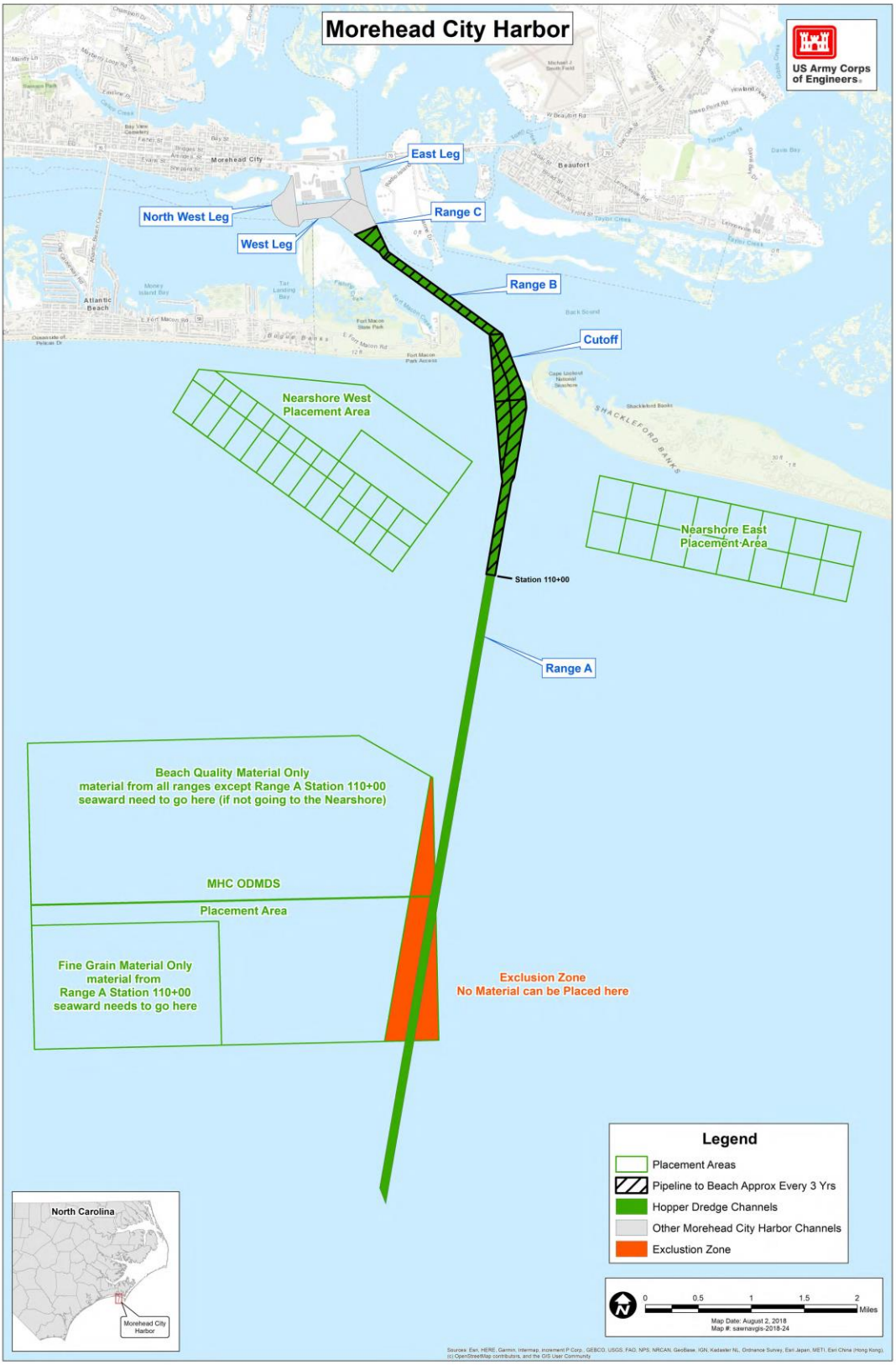

Figure 3. Morehead City Harbor Project Area

The Table below summarizes the type of material, frequency of dredging and placement location associated with dredging in the MHC Outer Harbor and Outer Entrance Channels.

Table 2. Summary of Dredging and Placement Practices for Morehead City Harbor (Morehead City Harbor DMMP 2017)

Harbor Section	Channel Reaches	Shoaling Rate (CY/year)	Dredging Frequency (years)	Placement Location	Dredge Type	Sediment (% Sand)
Outer Harbor	Lower Part of Range C	80,500	2 to 3	Beach/NPA*/ODMDS	Pipeline/Hopper	≥90%
	Range B	171,000	2	Beach/NPA*/ODMDS	Pipeline/Hopper	≥90%
	Cutoff	324,500	1	Beach/NPA*/ODMDS	Pipeline/Hopper	≥90%
	Range A out to Station 110+00	630,500	1	Beach/NPA*/ODMDS	Pipeline/Hopper	≥90%
Outer Entrance Channel	Range A, Sta. 110+00 seaward	118,500	1 to 3	ODMDS	Hopper	47% to 90%

ODMDS: Ocean Dredged Material Disposal Site; NPA: Nearshore Placement Area (*If the NPA is inaccessible, the contractor is given the option of placing material in the ODMDS Sand Zone); Beach: Fort Macon State Park/Atlantic Beach

2.0 PURPOSE AND NEED

The purpose of this action is to increase flexibility and assurance in maintaining the Wilmington and Morehead City entrance channel areas while maintaining compliance with the 2020 SARBO that provides ESA Section 7 coverage for maintenance dredging in these areas and compliance with the Federal Standard. Pursuant to 33 C.F.R. § 335.7, Federal Standard means the dredged material disposal alternative or alternatives identified by the USACE are required to represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the Clean Water Act Section 404(b)(1) evaluation process or ocean dumping criteria.

Based on the revisions in the 2020 SARBO, the USACE South Atlantic Division is reevaluating how to manage the limited national supply of hopper dredges as the demand for dredging continues to increase while maximizing protection of species and habitat across the southeast from North Carolina to the Caribbean. The previous NEPA document analyzed hopper dredging within the project areas for the period of 1 December to 15 April (approximately 135 days, or just over one third of the year). The result has been several failed contract awards in the Wilmington District, with either bids exceeding the independent government estimate (IGE) by an unacceptable amount[2] or no bids received at all. Since 2013, seven contracts soliciting hopper dredges for maintenance of the two harbors (out of a total of 35 channel maintenance contracts District-wide) have not been successful/awardable due to the shortage of hopper dredges and the short timeframes, constrained by dredging windows, for the work to be accomplished. In addition, the 2020 SARBO requires a risk-based management approach to consider the best timing and equipment to be protective of species under NMFS purview with an emphasis on shifting work completed when North Atlantic right whales are present to be protective of this most critically endangered species.

Currently there are fifteen hopper dredges available that support dredging needs across the nation. Based on increases in overall dredging requirements, peak dredging needs in other parts of the country, particularly in the February - May timeframes, and specific configurations of specific hopper dredges, the availability to meet the needs of the Atlantic Coast can be significantly limited during certain times of the year.

The dredge industry has recently responded to this growth in demand by announcing their plans to invest hundreds of millions of dollars in the construction of additional hopper dredges to the U.S. fleet. Although adding additional dredges to the fleet will eventually provide some relief from the hopper dredge shortfall, that shortfall is not expected to change in the near future. In addition, USACE has no authority as it relates to the dredge industry's hopper fleet, and it is subject to change based on decisions made by the individual companies. Expanding the dredging window for WH and MHC increases flexibility for contractors by providing a wider window for work to be

[2] By statute, USACE may only award contracts where the lowest bid exceeds the IGE by no more than 25%.

accomplished; thus increasing the assurance that hopper dredges will be available when they are needed to maintain North Carolina's two deep draft harbors (before shoaling becomes a hazard). An expanded window also reduces contractor scheduling conflicts, which leads to decreased maintenance dredging costs.

An unawardable contract requires the District to reassess and modify the scope of the project which results in major delays in project timing, often limiting the dredging to critical shoaling areas only (not dredging the full channel dimensions). Delays in maintenance dredging of the harbors results in draft restrictions, forcing larger ships to light-load, waiting on high tides to sail in and out, or preventing ships from calling on a Port altogether. This results in cost increases that may affect the local and regional economy.

Since 2017, maintenance of WH and MHC has been accomplished using a Regional Harbor Dredge Contract (RHDC). This is an effort implemented by the USACE South Atlantic Division (SAD) to reduce costs of individual harbor contracts within the Wilmington, Charleston and Savannah Districts. By combining the maintenance of predominantly hopper portions of all harbors into one contract, the Region has saved significantly on mobilization costs and has guaranteed the annual maintenance dredging of Morehead City Harbor, the smallest federally-maintained Port in the region. Prior to the RHDC, USACE had many failed contracts; since then bids on hopper work have been very good. However, for various reasons, window extensions were required every year for work to be completed. Hopper dredging under the RHDC last year at MHC was completed solely due to an extension to work until July 31.

Increasing flexibility and assurance to the maximum extent possible in performing maintenance of portions of WH and MHC will improve navigability and safety for commercial vessels calling on the Ports while also reducing costs to taxpayers for maintenance of these important deep draft harbors (refer to Section 4.4., Cost Summary). Coastal navigation is a key element of State and local government economic development and job-creation efforts and is essential in maintaining economic competitiveness and national security.

The purpose of this action is to increase flexibility in maintaining the WH and MHC entrance channel areas to meet the risk-based assessment requirements of the 2020 SARBO and maintain compliance with the Federal Standard. The proposed action identified in this EA provides the least cost, engineeringly sound, environmentally acceptable alternative for maintenance dredging the Wilmington and Morehead City Harbor outer channels and therefore meets the Federal Standard.

3.0 INCORPORATION BY REFERENCE

The USACE has produced a number of environmental and planning reports that describe the WH and MHC navigation projects. These documents were used in the writing and development of this EA and are cited in the References section.

Wilmington Harbor:

a. U.S. Army Corps of Engineers, Wilmington District. Final Environmental Impact Statement (FEIS), Maintenance of Wilmington Harbor, North Carolina, dated April 1977.

b. U.S. Army Corps of Engineers, Wilmington District. FEIS, Long-term Maintenance of Wilmington Harbor, North Carolina, dated October 1989.

c. U.S. Army Corps of Engineers, Wilmington District. Environmental Assessment and Finding of No Significant Impact, Wilmington Harbor Ocean Bar Channel Deepening, Wilmington Harbor, North Carolina, dated June 1993.

d. U.S. Army Corps of Engineers, Wilmington District. Final Feasibility Report and Environmental Impact Statement on Improvement of Navigation, Cape Fear - Northeast Cape Fear Rivers Comprehensive Study, Wilmington, North Carolina, 1996.

e. U. S. Army Corps of Engineers, Wilmington District. Preliminary Assessment, Dredged Material Management Plan (DMMP), Wilmington Harbor, North Carolina, 1996.

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g. U.S. Army Corps of Engineers, Wilmington District. Environmental Assessment Preconstruction Modifications of Authorized Improvements, Wilmington Harbor, North Carolina, February 2000.

h. U.S. Army Corps of Engineers, Wilmington District. Finding of No Significant Impact, Preconstruction Modifications of Authorized Improvements, Wilmington Harbor, North Carolina, August 2000.

i. U. S. Army Corps of Engineers, Wilmington District. Phase II Dredged Material Management Plan Study, Volumes I-V, Upper Portion of Wilmington Harbor, North Carolina, 2001.

j. U. S. Army Corps of Engineers, Wilmington District. Reevaluation Report, Sand Management Plan, Wilmington Harbor Navigation Project, North Carolina, 2011

Morehead City Harbor:

a. U.S. Army Corps of Engineers, Wilmington District. May 1976. Final Environmental Statement, Morehead City Harbor, North Carolina.

b. U.S. Army Corps of Engineers, Wilmington District. May 1976. Morehead City Harbor, North Carolina, General Design Memorandum.

c. U.S. Army Corps of Engineers Wilmington District. October 1983. Morehead City Harbor Beach Disposal, Carteret County, North Carolina, Environmental Assessment.

d. U.S. Army Corps of Engineers, Wilmington District. June 1990 and revised December 1990. Feasibility Report and Environmental Assessment, Morehead City Harbor Improvement, Morehead City, North Carolina.

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f. U.S. Army Corps of Engineers, Wilmington District. August 1994a. Environmental Assessment, Designation and Use of a Placement Area for Underwater Nearshore Berm, Morehead City Harbor Project, Morehead City, North Carolina.

g. U.S. Army Corps of Engineers, Wilmington District. December 1994b. Finding of No Significant Impact, Designation and Use of a Placement Area for Underwater Nearshore Berm, Morehead City Harbor Project, Morehead City, North Carolina.

h. U.S. Army Corps of Engineers. 2001. Section 111 Report, Morehead City Harbor/Pine Knoll Shores North Carolina, U.S. Army Corps of Engineers, Wilmington District, South Atlantic Division

i. U.S. Army Corps of Engineers, Wilmington District. March 2017. Morehead City Harbor Integrated Dredged Material Management Plan and Environmental Impact Statement (DMMP), Morehead City, North Carolina.

j. U.S. Army Corps of Engineers, Wilmington District. March 2018. Environmental Assessment and Finding of No Significant Impact, Morehead City Harbor Federal Navigation Project Navigation Corridor, Morehead City, North Carolina.

4.0 ALTERNATIVES

As noted in Section 1.0, this EA addresses changes only in the timing of maintenance dredging, using a hopper dredge, for the North Carolina State Ports' entrance channels to Wilmington (WH) and Morehead City Harbors (MHC). For all alternatives considered there are no changes proposed to the maintenance dredging and disposal/placement practices for WH and MHC nor in the frequency or volume of dredging these areas. All maintenance activities will continue as they have in the past, as discussed in the

documents incorporated by reference in Section 3.0 with the ability to shift the time of year in which dredging will occur in WH or MHC.

Viable alternatives that address the hopper dredge shortage and risk of maintaining WH and MHC are very limited. Below is a summary of alternatives considered but eliminated early in the planning process.

- Avoid Use of Hopper Dredges: Entrance channel dredging has primarily been performed with a hopper dredge; however, the USACE contract specifications allow a contractor to perform work with any type of dredge. One alternative considered was to specify (in contracts) that work shall be done with a cutterhead pipeline dredge. Most of the dredged material for the channel areas covered in this EA is unsuitable for beach placement and placed in the ODMDSs. Dredging using a pipeline would require several thousand feet of pipe to reach the ODMDS, exposing the pipe to open sea conditions resulting in a high risk of losing or damaging pipe. Contractors offset this risk by substantially increasing bid prices. Requiring contractors to use a pipeline dredge would result in contracts that are cost prohibitive.

- Solicit Contracts Early in the Year: Another option considered was to solicit contracts earlier in the year in an attempt to award contracts ahead of other USACE regions; however, contract awards are driven by funding and contracts are awarded as soon as is reasonable following receipt of funds, which results in many Districts competing for the same dredging contractors at the same time. In 2019, Wilmington District solicited the Regional Harbor Dredge Contract (RHDC) in October, and the first dredge arrived in Wilmington in late April of the next year and didn't complete MHC until July 30th. In 2020, the RHDC was solicited in August, and the first dredge isn't expected to arrive in Savannah District until the May/June timeframe of 2021, so the earlier solicitation didn't encourage the dredge to arrive any sooner.

- Decouple from the Regional Harbor Dredge Contract (RHDC): Also considered was decoupling the dredging of WH and MHC from the RHDC. However, this would result in increased costs (potentially substantial) in maintaining these harbors. Historically, some bids received substantially exceeded the Independent Government Estimate (IGE) and in some cases no bids were received at all. WH and MHC are relatively small ports that do not rank favorably when compared to larger ports in the US (MHC is ranked #105 nationwide as of 2019). For that reason, contractors are not going to prioritize these harbors over other larger ports and adjust their schedules to dredge NC's ports in the winter at a reasonable cost. This alternative is not viable since decoupling from the RHDC would increase the risk that WH and MHC would not be adequately maintained.

4.1 No Action: Continue to Dredge and Bed Level within the Existing Window

The No Action Alternative, or status quo, would mean continuing to limit maintenance dredging using a hopper dredge in WH and MHC from 1 December – 15 April. Following several loggerhead sea turtle takes at Morehead City in the late 1990's, the Wilmington District implemented a self-imposed hopper dredging window of 1 January to 31 March coordinated with National Marine Fisheries Service Habitat Conservation Division (NMFS HCD) and with State agencies through the Federal Coastal Zone Management Act (CZMA) process. This window restriction substantially limits the period when dredging can be accomplished, resulting in dredging price increases by either cost per cubic yard of material dredged, per dredge/equipment mobilization, or both. Often, the Wilmington District does not receive adequate funds to cover these cost increases, so maintenance dredging has to be reduced to the bare minimum to keep channels open to navigation. This routinely leads to the need for draft restrictions and in some cases, impedes safe navigation.

Hopper dredges are used for deep water dredging of either sand or fine-grained material with placement either in the ODMDS or approved nearshore area. In the last ten years, hopper dredges have been in high demand across the country, and widespread increased shoaling due to storm events has made it difficult and expensive to secure hopper dredges to perform maintenance when needed. Currently, at Wilmington and Morehead City Harbors, hopper dredging is restricted to 1 December - 15 April by the federal consistency concurrences, dated June 15, 2017 (Appendix A). Historically, this window has been utilized to reduce risks associated with entrainment of federally listed species such as sea turtles and sturgeon. Accomplishing work in the winter also avoided periods of high biological activity, reducing risks to fisheries species managed under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

Sea turtles, sturgeon and the critically endangered North Atlantic Right Whale (NARW) (amongst others) are protected under the South Atlantic Regional Biological Opinion (SARBO) issued by NOAA on March 20, 2020. The NARW (possibly including pregnant females and calves) is present within the project area during the months of November – April; therefore focus under the new SARBO has been to shift away from hopper dredging during these months to avoid vessel strikes by vessels over 33-ft in length and transitioning to offshore disposal sites. The No Action alternative could possibly put the NARW at risk of injury or death.

Bed leveling is a type of dredging that often accompanies hopper dredging and involves the use of a drag bar or I-beam to level or smooth out the channel bottom. Bed leveling may be performed after hopper dredging to "clean up" remaining high spots. Use of bed leveling can decrease the number of days needed to dredge. Bed leveling was deemed consistent under the CZMA in 2019 but since used primarily with hopper dredging was anticipated for use in the 1 December – 15 April window (Appendix A, Wilmington District Consistency Determination and DCM Consistency Concurrence). From an

economic and environmental perspective, bed leveling has proven to be the ideal tool to "clean up" maintenance dredged areas, as there are no pumps or mechanics involved and no material is actually removed from the channel. Therefore, the status quo significantly limits the use of bed leveling which could potentially increase the amount of hopper dredging and thus increase impacts to marine species.

Status quo also could result in the continuance of unsuccessful contract awards and/or possible draft restrictions at the State Ports while increasing risk to endangered species such as the NARW. If the historic hopper dredging window remains in place, it is likely the WH and MHC will have to decouple from the regional contract, putting them at risk of not being dredged on a regular basis or at a reasonable cost. Therefore, continuing to hopper dredge and bed level only between 1 December and 15 April does not meet the stated purpose and need.

4.2 Expansion of the Hopper Dredging Window and Addition of Bed Leveling Technique

A proposed alternative assessed in this document is the expansion of the environmental window for hopper dredging and bed leveling in the WH and MHC identified reaches. As mentioned, the existing window of 1 December to 15 April is very limiting to the available hopper dredge fleet. Expanding the window by several months would offer more flexibility for dredges to complete work at a reasonable cost.

Based on existing research and scoping comments received from resource agencies, the months prior to the existing window (July – November) are a less sensitive time period to dredge than the months following (April – June). Therefore, an expanded window of 1 July to 15 April was considered. This window would allow four and a half additional months of hopper dredging and bed leveling while avoiding the months of highest biological activity.

Although expanding the hopper dredging window to 1 July to 15 April reduces window restrictions, it does not completely eliminate restrictions. Work would be constrained to 8.5 months of the year. Based on past experience soliciting contracts for hopper dredging, the more time available during the year to accomplish the work, the better the chances of maintaining WH and MHC at reasonable cost. This window would provide a few months outside of the time frame when calves and adult NARW are in the area (July through October). Maximum flexibility (timeframe for dredging) in scheduling of dredges is needed to reduce risks associated with hopper dredge availability, so the outer portions of the WH and MHC may be maintained when needed and before shoaling becomes a hazard. While the expanded window provides four months to minimize risk to the NARW and accomplish the dredging, it still limits the flexibility needed to assure that hopper dredges are available to accomplish maintenance dredging of the harbors to avoid draft restrictions or threats to safe navigation. An

expanded window, although an improvement to the existing window, does not meet the purpose and need.

4.3 Proposed Action: Elimination of Historic Hopper Dredging Window

The ability to dredge any time of year is necessary to maintain the outer reaches of the WH and MHC to full project depth and width at reasonable cost. Eliminating the dredging window would provide maximum flexibility to obtain contract dredges when maintenance dredging is most needed and allow minimizing of risk to listed species as outlined in the 2020 SARBO. Removing window restrictions would also allow dredges to continue working until project completion, rather than having to stop and return at a later date to complete the work. Additionally, elimination of the historic hopper dredging window would alleviate the need to limit the scope of dredging to the bare minimum needed to keep channels open since work could be performed any time of year. This would allow the USACE to perform maintenance dredging to full authorized project dimensions.

Removing the historic seasonal window is about more than just increasing dredging efficiency, it is also about shifting dredging to a risked-based management approach. The intent is to provide the option to choose when to dredge based on all the information available at the time, so that decisions can be made that balance the financial costs, availability of equipment, and navigational needs with opportunities to protect species by timing projects and choosing equipment types that avoid adverse effects and minimize take of ESA-listed species to the maximum extent possible. The current seasonal restriction does not consider an ecosystem-wide approach. Removing the historic seasonal dredging window is not intended to allow dredging any time of year in every location. It is about using the best available information to make informed decisions based on the current situation.

Following receipt of public comments on the draft EA, the Wilmington District worked with the NMFS Habitat Conservation Division (HCD) and North Carolina state resource agencies, including the Division of Coastal Management (DCM), Division of Marine Fisheries (DMF), Wildlife Resources Commission(WRC), and Division of Water Resources (DWR), to initiate a risk-based management process for maintaining the harbors. For the next three years the Wilmington District may accomplish maintenance dredging any time of year while implementing a monitoring plan that will be collaboratively developed in partnership with State agencies and NMFS HCD. The monitoring by the USACE and others will provide data regarding impacts of dredging outside the historic window. Refer to Section 7.3 for a more detailed discussion of the monitoring. The data collected during monitoring will be evaluated and used to make informed decisions about maintenance dredging in the future, and if necessary, will consider windows or other dredging practices to protect species or habitat determined to be at high risk.

The EA addresses impacts of concern; primarily impingement and entrainment of federal and state protected species, effects of seasonally increased turbidity levels and sedimentation on sensitive species and habitat, and possible disturbance to migrating anadromous fish and spawning blue crabs. Similar to the Beaufort Inlet study that was done during hopper dredging of summer 2020, USACE will employ the Engineer Research and Development Center (ERDC) to conduct water quality sampling and analysis in both harbors. An ERDC research ecologist monitored water quality adjacent to the dredge in Range B, Beaufort Inlet using sondes set at different water depths along the dredge path and found there to be low levels of increased turbidity and decreased dissolved oxygen for short durations (USACE ERDC, 2020).

Hopper dredging within portions of the Wilmington and Morehead City Harbors any time of year utilizing risk-based management will provide the flexibility and assurance needed to achieve successful contract awards thus sustaining the regional economy while protecting listed species. Eliminating the historic hopper dredging window, with the plan to adaptively manage these projects, would give the USACE the greatest flexibility to maintain the harbors and balance contract schedules with protection of listed species, thereby best satisfying the stated purpose and need.

4.4 Cost Summary

The cost estimate in the EA is based on costs of dredging and dredged material placement and nothing else. Since it is difficult to determine if or when trawling may be required, developing a reasonable cost is not possible, but those costs will be evaluated annually as part of the annual assessment under the SARBO. The goal, using all available information is to balance the financial costs, availability of equipment, and project needs with opportunities to protect resources by timing projects and choosing equipment types that avoid adverse effects.

This cost analysis was performed to evaluate the costs of the three (3) alternatives considered for maintenance dredging of the outer portion of the channels at WH and MHC. The cost analysis does not include the costs of bed leveling or monitoring (3 years). Based on past experience with monitoring, it is expected that monitoring costs would be minimal as compared to the dredging and placement costs. If this assumption is incorrect and monitoring costs are substantially greater than expected that will be evaluated to ensure our maintenance practices continue to meet the Federal Standard.

Alternative 1 is the baseline (no action) and assumes continuation of dredging during the 1 December through 15 April window. Alternative 2 assumes expansion of the environmental window to 1 July through 15 April. Alternative 3 assumes removal of the historic hopper window to allow dredging any time of year with risk-based management, as described above and in Sections 5.7 and 7.3.

Quantities for the analysis were determined by average quantities for the two harbors in the last 3 years of the South Atlantic Division (SAD) Regional Harbor Dredge Contract (RHDC). Mobilization/demobilization cost assumes pairing the two projects together under one contract. Expansion of the environmental window will allow flexibility in planning for contractors which will allow contractors to better coordinate their dredge fleet to reduce mobilization/demobilization distances, resulting in cost savings. Additionally, calmer seas are assumed in summer months which would allow increases to production rates, also resulting in cost savings.

Alternative 2 results in roughly a 5% savings over Alternative 1, and Alternative 3 results in roughly a 7% savings over Alternative 1. These costs are calculated through measurable production rates, and over a 20-year period. It would be reasonable to assume further savings in final price through increased competition, which is variable, and not measurable to a high level of confidence. This analysis shows the reasonable savings to be expected, though further savings are possible. The proposed action provides the least cost, engineeringly sound, environmentally acceptable alternative for maintenance dredging of the outer portions of WH and MHC Harbor and therefore meets the Federal Standard.

Table 3. Dredging Window Alternatives Cost Comparison

ALTERNATIVE 1: Environmental Window 1 Dec - 15 Apr					
Project	**Quantity**	**Unit**	**Unit Cost**	**Total**	**Cost Savings Over 20 Years**
Mobilization/Demobilization	1	Job	$1,005,000	$1,005,000	
Wilmington Harbor	850,000	CY	$4.85	$4,122,500	
Morehead City Harbor	1,200,000	CY	$4.00	$4,800,000	
					0
Total				**$9,927,500**	**0**
ALTERNATIVE 2: Environmental Window 1 Jul - 15 Apr					
Project	**Quantity**	**Unit**	**Unit Cost**	**Total**	
Mobilization/Demobilization	1	Job	$945,000	$945,000	

Wilmington Harbor	850,000	CY	$4.65	$3,952,500	
Morehead City Harbor	1,200,000	CY	$3.90	$4,680,000	
					5%
Total				**$9,577,500**	**$7,000,000**

ALTERNATIVE 3: No Environmental Window

Project	**Quantity**	**Unit**	**Unit Cost**	**Total**	
Mobilization/Demobilization	1	Job	$910,000	$910,000	
Wilmington Harbor	850,000	CY	$4.55	$3,867,500	
Morehead City Harbor	1,200,000	CY	$3.75	$4,500,000	
					7%
Total				**$9,277,500**	**$13,000,000**

As shown in Table 3, Alternative 3 is the least costly alternative, as it provides the most savings over a 20-year period. Alternative 2 results in a cost savings of $7 million and Alternative 3 results in a cost savings of $13 million (a very conservative estimate). This demonstrates that having the flexibility to dredge any time of year (based on risk assessment) meets the Federal Standard as identified in Section 2.0.

4.5 Application of Environmental Windows in NC

Following passage of the National Environmental Policy Act (NEPA) in 1969, resource agencies began recommending implementation of environmental windows to limit dredging to specific times of year for the protection of sensitive resources. By the late 70's environmental windows had become a prevalent dredging management practice across the US and in North Carolina. Coastal managers from federal and state agencies in NC have always worked with each other and agreed upon dredging windows to protect seasonal migrations of anadromous species as well as sensitive life states of estuarine-dependent species (NOAA 2019). The Wilmington District has a long history of working closely with the resources agencies to implement many of the windows recommended; however, it is not clear how effective these windows have been in protecting the resources intended. This is predominantly due to lack of scientific information on the susceptibility of the resources to dredging and dredged material

placement or the actual pathways of impact. Because new scientific information is frequently lacking, resource agencies charged with protecting public resources have often adopted a conservative or risk-averse approach, resulting in recommendations for dredging windows that may be overly restrictive. This lack of new information also results in dredging windows that remain static for many, many years. Several windows currently implemented by Wilmington District date back to the early 1980's.

Due to the dynamic and ever-changing nature of coastal environments, environmental windows should be evaluated on a regular basis so adjustments may be made to protect the most at-risk resources, such as the endangered North Atlantic right whale (NARW), listed as critically endangered in 2020. As new data and information are acquired and experience is gained, they should be fed back into the process. A risk-based approach will allow the USACE to be protective of at-risk resources by using the latest information and experience to inform decisions about the timing of dredging, equipment types or impact minimization measures. This will allow the USACE to better balance environmental concerns while adequately maintaining Wilmington and Morehead City Harbors.

5.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

This section addresses the impacts of the three alternatives considered to important resources in the project area. The three alternatives are: 1) No Action, 2) Expansion of the hopper dredging window and the addition of bed leveling, and 3) Elimination of the historic hopper dredging window and the addition of bed leveling. The focus of the following sections is to describe the affected environment and impacts associated with proposed changes in the timeframe to accomplish maintenance dredging and the addition of bed leveling. All alternatives involve the continued maintenance of the authorized project dimensions, utilizing a hopper dredge, with no change in the footprint of disturbance between any of the alternatives. Dredged material quantities will not increase and will remain the same year-to-year as in the past. All placement of dredged material will be in the approved ODMDSs or the Morehead City Nearshore East and West Placement Areas. The alternatives evaluated here do not include consideration of beach placement of material, as hopper dredging for navigation purposes in these harbors has not in recent memory involved beach placement. Certain reaches of these channels are maintained by cutterhead suction dredges with associated beach placement, but the associated pathways of impacts are substantially different and not considered here. Only those resources/topics that have differing impacts associated with the three alternatives carried forward for full evaluation will be addressed below. One exception to this is sediments. Sediments will be discussed below since sediment quality affects placement options and has implications for impacts to some resources. For several resources/topics, the three alternatives carried forward result in no impacts or there are no differences in impacts between the alternatives, so they are not addressed in the following sections. These topics, which have been discussed in detail

in past NEPA documents for maintenance dredging, include wetlands, floodplains, Hazardous, Toxic and Radioactive Wastes, air quality, aesthetics, cultural resources, climate change, sea level rise, and terrestrial resources (vegetation and wildlife).

5.1 General Harbor Setting

Wilmington Harbor

The WH project area addressed in this EA encompasses the outer ocean channel marine environment and the connecting Cape Fear River Inlet; and the channels within the estuarine areas of the lower river system (Figure 2 and Table 1). The Outer Ocean Bar (Baldhead Shoal Range 3) requires maintenance every year and is dredged by a hopper dredge under the RHDC. Approximately 800,000 CYs of fine, silty material are transported offshore and placed in the Wilmington Harbor ODMDS.

Baldhead Reaches 1 & 2 and Smith Island Channel of the Inner Ocean Bar are typically maintained by pipeline dredge every 3 years, and this beach quality material is placed on either Oak Island or Bald Head Island beaches. During years when there isn't a sufficient quantity of sand for beach placement, the USACE maintains these channels by hopper dredge which transports minimal quantities (under 100,000 CYs per dredging event) to the ODMDS in accordance with the 2011 Wilmington Harbor Sand Management Plan (SMP). Remaining channels in the Inner Ocean Bar (Baldhead-Caswell, Southport and Battery Island Channels) do not require regular maintenance (Table 1), and therefore would only occasionally be hopper dredged. These channels also contain material that is ≥ 90% sand; however, the distance from these reaches to the nearest beach is too far to make the beach a feasible placement location.

The lower Mid River channels have been historically maintained either by hopper, pipeline or mechanical dredge. Horseshoe Shoals and Snows Marsh Channels contain beach quality sand (≥90% sand) that develops into "string bean shoals"' or sand waves on the river bottom that can build abruptly and severely impede navigation. These channels are included in this EA because the USACE needs to have the flexibility to hopper dredge these channels quickly and economically when other dredge types are not available. These reaches contain relatively small volumes (around 100,000 CYs per project) that may be transported to the ODMDS.

The USACE is also considering utilization of a bed leveler (drag bar) during hopper dredge contracts throughout the WH reaches described above. Bed leveling is a practice that typically accompanies hopper dredging, as the hopper removes material in "rows" and often leaves behind peaks and valleys that require "clean up" (leveling) afterwards. Bed leveling may occur in place of hopper dredging as well; material from high spots can be pushed into low spots, eliminating the need to hopper dredge at all in some localized areas.

Morehead City Harbor

The Morehead City Harbor project area covered in this EA encompasses the Outer Entrance Channel and the Outer Harbor Channels of Beaufort Inlet (refer to Figure 3 and Table 2). Maintenance dredging is required annually, and placement options are determined by the composition of the material, as described below.

The Outer Entrance Channel (Range A from Station 110+00 seaward) is maintained once every three years by hopper dredge. Approximately 150,000 CYs of fine, silty material was carried offshore and placed in the Morehead City ODMDS in 2013, and approximately 600,000 CYs will be placed in 2021.

Similar to Wilmington Harbor's Inner Ocean Bar, Range A from Station 21+00 to 110+00, Cutoff Channel and Range B contain beach quality sand and are usually maintained annually due to the high shoaling rates within Beaufort Inlet. Approximately every 3 years, maintenance is performed by pipeline dredge with placement on Fort Macon and /or Atlantic Beach beaches. For the other two years of the three-year cycle, this beach quality material may be placed in the Nearshore East or West Placement Areas to ameliorate sand losses in the ebb-tide delta, or material may be placed in the sand zone of the Morehead City ODMDS (in accordance with the Morehead City Harbor DMMP), making it accessible to be used for future beach placement. There is no environmental window for placement of material in the Nearshore Placement Areas (NPAs) or in the ODMDS. In the event shoaling occurs when a pipeline dredge is not available, the lower half of Range C may also be included in the hopper dredge contract.

The USACE also proposes to bed level any time of year throughout the MHC reaches, to include the Inner Harbor. The Inner Harbor (upper portion of Range C, East Leg, West Leg and Northwest Leg, Figure 3) is typically maintained by a pipeline dredge that pumps material into nearby Brandt Island. Bed leveling may be performed between dredging events by using a tugboat and drag bar or I-beam to push material from the berths and fueling docks into the basins and channels for easier clean up. In the Outer Harbor channels and Outer Entrance Channel, bed leveling would occur after dredging to smooth the channel bottom surface, thereby avoiding the need for additional hopper dredging. Leveling occurs at a slow pace (1-2 knots) with little or no risk to marine resources (refer to Appendix A, Wilmington District Consistency Determination and DCM Consistency Concurrence).

5.2 Sediments

The material removed from within the navigation channels is an accumulation of sediments from the last time the channel was maintained and typically does not change substantially over time. As mentioned in Tables 1a and 1b, shoaled material is mostly

made up of ≥90% sand, suitable for beach placement, with the outer entrance channels having a higher content of fine-grained material.

Shoaled sediments within the authorized channels of the USACE's WH and MHC federal navigation projects are regularly tested and analyzed pursuant to Section 103 of the Marine Protection, Research, and Sanctuaries Act (MPRSA). Section 103 testing ensures acceptability of sediments proposed for placement within US Environmental Protection Agency (EPA)-designated ocean dredged material disposal sites (ODMDS). These sediments are shown to not unreasonably degrade or endanger human health or the marine environment. Testing occurs approximately every three years and is closely coordinated with EPA Region 4. If USACE analysis of testing results conclude that sediments are appropriate for ODMDS placement pursuant to Section 103 MPRSA, and EPA concurs with the USACE's conclusions, tested sediments may be placed in either the New Wilmington ODMDS or Morehead City ODMDS for a period of three years following the date of EPA's concurrence letter. Should shoaled sediments originating in authorized navigation channels be comprised of ≥90% sandy material, they may be beneficially used in beach nourishment. Additionally, the New Wilmington ODMDS and Morehead City ODMDS site management and monitoring plans (SMMP) and the Morehead City Harbor DMMP may inform placement options for dredged sediments based on grain size and disposal/placement site availability. Refer to Sections 5.3 and 7.2 for additional information regarding the MPRSA and coordination between the USACE and EPA regarding ODMDS use.

Wilmington Harbor

Sediments of the WH vicinity generally consist of sands, silts, and clays occurring in various mixtures. Occasionally, gravel, shell fragments, limestone fragments, and organic material may also be present. The sediments are generally unconsolidated and relatively soft. They overlie carbonate rocks having different degrees of cementation

Morehead City Harbor

The Beaufort Inlet complex has been heavily influenced by historic dredging of varying degrees dating back to the original 1910 project authorization. The inlet complex is a convergent nodal point, with net sand transport toward the inlet from both north and south. Shoaling patterns off Shackleford Banks create restrictions in the Cutoff portion of the navigation channel, which moves the natural deep water west, toward Fort Macon. To a lesser degree, a similar pattern is seen within Range A where sediment transport toward the inlet is transported into the navigation channel, resulting in a more natural deep water channel on the eastern side of the authorized channel.

Material dredged from the lower half of Range C, all of Range B, the Cutoff and Range A (from Station 21+00 to 110+00) is beach quality sand, and every effort will be made to retain the material within the littoral system. This will be accomplished through direct beach placement with a large pipeline dredge and through nearshore placement in the approved NPAs. Beach quality material may be taken to the ODMDS by hopper dredge

at times when sea conditions make nearshore placement too dangerous, or when nearshore capacity becomes too shallow to safely open the hopper doors. All placement of dredged material will be consistent with authorized placement methods documented in the 2017 Morehead City Harbor DMMP.

Environmental Impacts

Hopper Dredging Activity:

Under the three alternatives evaluated, No Action, Expanded Window and Bed Leveling and Elimination of the Historic Window and Bed Leveling, removal and placement of dredged sediments are not expected to produce any significant adverse geologic impacts. Sediment impacts from maintenance dredging will be the same amongst all three alternatives, since the sediment quality and volumes removed would not vary between alternatives. Sediments of the general vicinity, including the channel bottom, the Nearshore Placement Areas, and the ODMDSs, are continually subject to movement facilitated by strong currents. Redistribution of sediments is, therefore, a natural and continuous phenomenon.

Bed Leveling Activity:

No Action Alternative: Sediments would be redistributed during bed leveling, which would occur between 1 December and 15 April.

Expanded Window Alternative: Bed leveling would be extended to occur between 1 July and 15 April, redistributing material from one part of the channel to another to smooth out troughs and ridges created during dredging.

Elimination of the Historic Window Alternative: Bed leveling would occur any time of year, redistributing material from one part of the channel to another.

5.3 Water Quality

Sensitive aquatic systems within the project area that may be affected by water quality include nektonic species such as fish, shellfish, and marine reptiles and mammals. The following section describes existing water quality conditions that have a direct impact on these aquatic species.

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 saltwaters 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)

If a waterbody does not meet the state designated use standards, it is considered impaired and is placed on the 303(d) list. Section 303 (d) of the Clean Water Act authorizes the EPA to assist states in listing impaired waters and developing Total Maximum Daily Loads (maximum amount of pollutant allowed) for these waterbodies.

The potential water quality impacts of dredging and placement for both WH and MHC have been addressed in the documents incorporated by reference in Section 3.0. These impacts 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, according to North Carolina water quality standards. In the case of overflowing hopper dredges or scows to obtain economic loading, sediment that is ≥90% sand is not likely to produce significant turbidity or other water quality impacts (USACE 1997).

Previous NEPA documents prepared by the Wilmington District have not addressed water quality impacts related to hopper dredging in the spring and summer months. As water temperatures increase, more aquatic life becomes present, thus reducing dissolved oxygen (DO) levels in the water naturally. It is believed that the action of dredging reduces DO levels, thus putting greater strain on aquatic organisms that depend on it. However, this is dependent upon several factors: if sediment being suspended is nutrient-rich or contains oxygen deleting chemical; if the species present at the time are willing or able to avoid the area; and the spatial and temporal extent of the change in water quality and the species' tolerance to change. To understand this better, USACE Engineer Research and Development Center (ERDC) performed water quality sampling during the summer months of 2020 measuring turbidity and DO levels in the Cape Fear and Beaufort Inlets during dredging. Sampling units (EXO sondes) set up within the channel limits at various depths and distances continuously recorded data as the dredges moved and as tides shifted.

In the Cape Fear River, a mechanical clamshell dredge worked while continuous data was collected over six days; January 7-9, 2020 in the Military Ocean Terminal Sunny Point (MOTSU) (low flow, high silt) area and July 10-12, 2020 in Horseshoe Shoal Channel (high flow, ≥90% sand). A handheld unit was also deployed taking rapid assessments of water quality. At Beaufort Inlet, ERDC conducted water sampling in Range B (high flow, ≥90% sand) on July 14 and July 28-30 during hopper dredging events, again using the EXO sondes and a handheld device. Results for both studies showed negligible decreases in DO (USACE ERDC, 2020). Negligible increases in turbidity occurred in the Cape Fear River and Beaufort Inlet where sand is ≥90%; however, in the MOTSU area (outside of the WH project area), high bursts of NTUs were recorded due to much finer-grained material remaining in the water column.

North Carolina Division of Water Resources (NC DWR) 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. The implementation of Alternatives 1, 2, or 3 will not require a 401 WQC for the dredging portion, since there is no regulated discharge, pursuant to the Clean Water Act. Dredged material placement is within the preauthorized offshore and nearshore areas for all three alternatives. Placement into the nearshore areas is covered under WQC #4146 (previously under expired WQCs #4099 and #3908), as authorized through the 2017 Morehead City Harbor Dredged Material Management Plan.

Pursuant to Section 103 MPRSA, water samples have been taken from within the authorized channels of the USACE's WH and MHC federal navigation projects and used to conduct elutriate chemistry testing. Subsequent analyses have demonstrated elutriate chemistry satisfies the conditions of Section 103 MPRSA and is acceptable regarding ODMDS placement of shoaled sediments. Elutriate chemistry is considered in EPA Region 4 review of USACE analyses and conclusions, and influences EPA's concurrence decisions. Refer to Sections 5.2 and 7.2 for additional information regarding the MPRSA and ODMDS use.

Wilmington Harbor

The Cape Fear River mainstem waters from Horseshoe Shoals channel to the inlet mouth are classified as SA waters. SA waters are protected for commercial shellfishing along with all designated SB and SC uses. Class SA commercial shellfishing 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. A total of 1,200 acres of SA waters in the lower estuary of the Cape Fear River, along with a number of additional areas in tidal creeks, are designated as Prohibited on the NC 2018 303(d) list (NC DEQ 303(d) Online Map, 2018).

Ocean waters beyond the Cape Fear River inlet mouth (Atlantic Ocean) are classified as SB waters (15 NC Administrative Code 2B .0311).

Morehead City Harbor

Morehead City Harbor is located within the confluence of the Newport River and Bogue Sound, and waters within Ranges B and C and the Cutoff are classified as SA and HQW. Waters beyond Beaufort Inlet (Atlantic Ocean) are classified as SB primarily for recreation and are 303(d) listed as impaired due to a mercury fish advisory (NC DEQ 303(d) Online Map, 2018).

A review of North Carolina's 303(d) list of impaired waters 2018 Integrated Report Mapper shows the waters of the Newport River as being impaired and closed to shellfish harvesting (NC DEQ 303(d) Report Mapper, 2018).

Environmental Impacts

No significant adverse water quality effects are anticipated for the three alternatives. Short-term impacts to water quality in the form of transient and minor increases in turbidity during maintenance dredging, overflow and placement would occur. These impacts are anticipated to be minor and temporary, not causing a long-term negative impact on water quality.

The majority of the channel reaches within the project area are comprised of ≥90% sand with the exception of the outer entrance channels. Sandy material is heavier than fine silt or clay, so it falls out of suspension more quickly, resulting in less turbid waters. North Carolina State Water Quality standards require that waters not exceed 25 nephelometric turbidity units (NTUs) for non-trout streams. Based on past research, dredging and placing beach quality sand material have proven to have little to no effect on water quality since material will dissipate from the water column relatively rapidly.

The outer entrance channels of the two harbors contain fine-grained materials and have the potential to create turbidity plumes that may last throughout the dredging and placement period. During a standard maintenance contract, a hopper dredge will operate in each of the outer entrance channels for approximately 15-45 days consistently. Each day, the hopper is filled and dewatered, and material is transported to the ODMDS, making approximately 12-15 round trips per day. Fine-grained material is expected to remain in suspension during this period and can be transported by waves and currents. Depending on the sea conditions, a sediment plume may remain for days after dredging is complete; thus, estimating approximately 60 days of disturbance to water quality at maximum worst case scenario. However, the area of impact in the dredging and placement areas is not expected to result in the entire entrance channel to be affected the whole 60 days. The localized areas of increased turbidity are very small as compared to the vastness of area in the surrounding ocean. For instance, near-bottom plumes caused by hopper dredges may extend approximately 2,300 to 2,400 feet down-current from the dredge (ACOE 1983). According to Wilber and Clarke (2001), suspended sediment plumes can extend 3,900 feet. The total suspended solids (TSS) levels expected for hopper dredging (up to 475.0 mg/L) are below those shown to have adverse effects on fish (typically up to 1,000.0 mg/L; Wilber and Clarke 2001).

Potential impacts to species in the area of the temporary increase in turbidity are dependent on the species' response to the change and sensitivity to the change. As discussed in the 2020 SARBO in Section 3.1.1.2, changes in water quality conditions (e.g., water temperature or DO concentrations) can affect the physiological capacity of mobile species to respond to dredging and dredging-related impacts. The 2020 SARBO concludes that mobile species in open water environments are able to avoid temporarily elevated turbidity. The 2020 SARBO stated that in gathering information on water quality in sturgeon rivers, it became apparent that the majority of sturgeon rivers in the Southeast suffer from naturally occurring high water temperatures (e.g., 28-30°C) and low DO concentrations (e.g., less than 4.3 mg/L) during the summer months. Both areas

considered in this EA are tidally flushed and expected to have good water quality even during warm summer months. Marine mammals and sea turtles breathe air and are not expected to be affected by localized, temporary changes in water quality.

As mentioned above, the USACE participated in water quality sampling in Beaufort Inlet during July 2020 as a result of the resource agencies authorizing one-time hopper dredging outside of the 1 December – 15 April window for the RHDC. A member of the ERDC team measured turbidity plumes and dissolved oxygen (DO) levels at various depths adjacent to the active hopper dredge for several days. The Beaufort Inlet study reported negligible increases in turbidity and decreases in DO (USACE ERDC, 2020) consistent with the analysis in the 2020 SARBO. Hopper dredging in July in Range B, Beaufort Inlet observed turbidity that was elevated up to 11 NTU that dissipated within 10 minutes. Dissolved oxygen observed very minor decreases for less than 4 minutes and never dropped below 6 mg/L.

ERDC also sampled turbidity and DO levels in the Cape Fear River adjacent to an active mechanical dredge. Water quality studies occurred in January and July 2020 and did not observe any notable decreases in DO from mechanical clamshell dredging either time. The January sampling occurred in an area of relatively lower flows with silty-clay sediment which is sometimes anoxic. There was a drop in dissolved oxygen during the tide change; however, DO never dropped to a level that would be deleterious to aquatic organisms in the area. The July data were taken during the summer when dissolved oxygen mg/L is typically lowest throughout the year. The July sampling was conducted where sediments were mostly sand which are rarely anoxic. DO never deceeded 4.8mg/L (75% saturation) around the dredge during sampling operations which is over 2-times greater than values that are considered problematic (2.0mg/L) for sturgeon. Therefore, it is expected that dredging at any time of year by hopper dredge in Beaufort Inlet or Cape Fear River/Inlet will have no significant long-term impacts on water quality or mobile species in the area.

Species that are unable to avoid water quality changes and habitat in and around dredging may be affected by increased turbidity and sedimentation resulting from dredging. Sessile benthic organisms and species in egg and larva stages may be at highest risk during spring and summer months when they are most plentiful within inlets and estuaries. Impacts may include burial of organisms and habitat features, abrasion to eggs and larvae and clogged gills in small fish. Additional research is needed to fully understand effects of dredging on water quality and species that depend on it. The monitoring that will be accomplished by the USACE and others over the next 3 years (reference Section 7.3) will provide data to fill some of the existing data gaps. Below is a summary of expected effects for each alternative, based on existing data.

No Action: With the historic dredging window in place, water quality would remain undisturbed from hopper dredging during the 16 April – 30 November time period. When dredge activity occurs during the winter months it is expected to have less of an impact to marine resources due to the lower biological activity in the waters resulting in a lower

likelihood of encountering water quality changes. In addition, winter dredging avoids the majority of egg, larvae and early juvenile critical life stages of important fisheries that exist within the ocean, inlets and estuaries during spring and summer, reducing the likelihood of sedimentation effects.

Expanded Window and Bed Leveling: Expanding the dredging window would allow hopper dredging and bed leveling to occur during the months of July through November when water temperatures are warmer and biological activity is higher. DO levels decline naturally in the summer months in rivers in the southeast; however, data from Wilmington and Morehead City sampling do not indicate a significant drop in dissolved oxygen during summer months. In addition, dredging and bed-leveling completed in these areas must adhere to the project design criteria (PDCs) of the 2020 SARBO and are not expected to result in significant changes to ESA-listed or Atlantic sturgeon critical habitat, as analyzed in the 2020 SARBO. The water quality studies completed in 2020 (ERDC 2020) support that changes in water quality from dredging in these areas during summer months is localized and temporary. Therefore, dredging is not expected to have an adverse effect on mobile species from turbidity or reduced DO levels adjacent to the dredge. Increased turbidity, especially where fine-grained material is present, may have an effect on the egg, larvae and early juvenile critical life stages of important fisheries that exist within the ocean, inlets and estuaries from July through November. Table 3 summarizes the presence of these species during this timeframe according to the *Assessment of Fisheries Species to Inform Time of Year Restrictions for North and South Carolina* published by the National Oceanic and Atmospheric Administration, National Centers for Coastal Ocean Science (NOAA NCCOS) in 2019 (hereon referred to as NOAA Report, 2019). Effects to Atlantic sturgeon in Table 4 were already evaluated in the 2020 SARBO.

Table 4. Presence of important fishery species (eggs, larvae and early juveniles) from July - November

	July	*August*	*September*	*October*	*November*
River	River Herring	Atlantic sturgeon, River Herring	Atlantic sturgeon	Atlantic sturgeon	Atlantic sturgeon
Inlet	Pink Shrimp, Blue Crab	Blue Crab	Blue Crab	Blue Crab	Southern Flounder
Estuary	White Shrimp	Red Drum	Red Drum	Red Drum	N/A
Ocean	Pink Shrimp, Blue Crab	Blue Crab	Blue Crab	Brown Shrimp, Summer Flounder	Brown Shrimp, Summer & Southern Flounder
Total	**4 species**	**4 species**	**3 species**	**5 species**	**4 species**

Reduction in water quality during July – November due to hopper dredging and bed leveling may have minor and temporary adverse effects on these species in areas where sediments are fine-grained and are expected to remain in suspension for longer periods than would be associated with beach quality sediments. Water quality sampling and analysis are needed to determine what long-term effects (if any) may result from regular maintenance dredging during this time of year.

Elimination of the Historic Window and Bed Leveling: Hopper dredging and bed leveling would occur any time of year within the project area under the preferred alternative. Dissolved oxygen (DO) levels naturally decline in the summer months, and dredging is not expected to have an adverse effect on DO levels adjacent to the dredge. Increased turbidity, especially where fine-grained material is present, can occur during this time as well.

In addition to the species noted in the chart above, the 2019 NOAA Report identifies the following fishery species present during the months of April through June:

Table 5. Presence of important fishery species (eggs, larvae and early juveniles) from April - June

	April	*May*	*June*
River	Atlantic Sturgeon, American Shad, River Herring	Atlantic sturgeon, American Shad, River Herring	Atlantic sturgeon, American Shad, River Herring
Inlet	White Shrimp, Blue Crab, Gag Grouper, Summer Flounder	White Shrimp, Pink Shrimp, Blue Crab	White Shrimp, Pink Shrimp, Blue Crab
Estuary	White Shrimp	White Shrimp, Gag Grouper	White Shrimp, Gag Grouper
Ocean	Pink Shrimp, Blue Crab, Gag Grouper, Summer Flounder	Pink Shrimp, Blue Crab, Gag Grouper	Pink Shrimp, Blue Crab
Total	**8 species**	**8 species**	**7 species**

Twice as many important fishery species are present during the spring months of April – June as compared to July – November. Reduction in water quality during April – June (in addition to July – November noted above) due to hopper dredging and bed leveling may have minor and temporary adverse effects on these species in areas where sediments are fine-grained and expected to remain in suspension. As mentioned above, further water quality sampling and analysis are needed to gain more information

regarding any long-term effects of maintenance dredging without the historic window; however, due to the area of disturbance as compared to areas of non-disturbance, impacts are not expected to be significant. During any given dredging and placement activity, it's expected that mobile species, such as those shown in the charts above, will leave areas of disturbance, returning soon after turbidity dissipates.

5.4 Noise

Noise levels below the water surface within the project area vary throughout the year and often include underwater construction and commercial and recreational boat/ship traffic. The effects of noise from hopper dredging on marine species have been evaluated on marine mammals, reptiles and fish and have been determined to have no lethal or injurious effects and minimal behavioral effects. Sound from a hopper dredge is generated from the drag arm sliding along the bottom, the pumps filling the hopper, and operation of the ship engine/propeller. Based on studies, dredging is not as noisy at the source as seismic surveys, pile driving, and sonar, but it is louder than most merchant shipping operating offshore, wind turbines, and drilling (Thomsen et al. 2009).

Bed leveling does not create nearly as much noise as hopper dredging. Bed leveling is preferred in areas where sediments are loose and easy to move by a drag bar; it often follows after hopper dredging, therefore material moved is not packed. Aside from the sound created by the tugboat, bed leveling is expected to have only a minor increase on underwater noise levels.

Environmental Impacts

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). The significance of the noise generated by the equipment dissipates with increasing distance from the noise source. Major effects on fish populations are more likely when fish are exposed continuously to an intense sound source at levels well above ambient noise (Michel 2013). Consequently, the impacts of underwater sound on fish populations are expected to be temporary and localized.

Marine mammals are known to have the most sensitivity to underwater noise since they utilize sound for detecting prey, navigating, and communicating. According to Clarke et al. (2002), on the basis of (1) the predicted noise effect thresholds noted by Richardson et al. (1995), (2) the background noise that already exists in the marine environment, and (3) the ability of marine mammals to move away from the immediate noise source, noise generated by hopper dredge activities would not be expected to affect the migration, nursing/breeding, feeding/sheltering or communication of large whales. Although induced stress and behavioral effects are possible (i.e., a whale changing course to move away from a vessel), the number and frequency of hopper dredges present in a given project area would be small, and any behavioral impacts would be expected to be minor. Furthermore, Protected Species Observers (PSOs) are required

to be onboard hopper dredges year-round to record all whale and manatee sightings and note any potential behavioral impacts. Care must be taken not to closely approach (within 300 feet) any whales, manatees, or other marine mammals during dredging operations or transportation of dredged material.

Similar to conclusions made regarding effects of sound on marine mammals, non-injurious impacts to sea turtles and fish may also occur because of acoustic annoyance or discomfort. Although noise generated from dredging equipment is within the hearing range of sea turtles and some fish species, like marine mammals, effects would be minor because duration of exposure to dredging noise is short-term and temporary and species can easily flee from the area.

The three alternatives evaluated in this EA are not expected to result in any additional noise or increases in noise levels within the project area or nearby surrounding areas. The amounts and levels of dredge-related noise are expected to stay the same; however, the time of year in which the noise occurs can have a varying effect amongst the proposed alternatives due to the increased presence and numbers of species in the surrounding water during the spring and summer months, especially manatees, sea turtles and anadromous fish.

No Action: The no action alternative would limit hopper dredging and bed leveling to 1 December to 15 April, therefore, no changes will occur to noise levels or the effects of noise on the natural environment during the timeframe when biological activity is expected to be highest.

Expanded Window and Bed Leveling: Increased noise levels associated with hopper dredging and placement and bed leveling may occur during the months of July – November under the expanded window alternative. Sea turtles, manatee and anadromous fish present within hearing range of the dredge would be disturbed but not injured. Behavioral effects that include avoidance and redirection to inshore areas that may result in strandings, or the inability to communicate with others and find food are not expected to occur. Gravid sea turtles may be disturbed but it is unlikely the additional noise would prevent them from nesting on nearby beaches. Overall, noise impacts from hopper dredging during this timeframe are expected to be minor.

Elimination of the Historic Window and Bed Leveling: Under the preferred alternative, noise impacts would occur in the same manner as discussed above; however, more species of importance are present in the spring months that could be impacted. For example, anadromous fish tend to congregate and stage themselves in sections of the Cape Fear River during the spring migration season. However, studies in the James River, VA (Balazik 2020) indicate that sturgeon migrating upriver during cutterhead pipeline dredging in the springtime were not affected; all tagged fish were reported to have passed the active dredge within several feet several times with no behavioral effects.

It is anticipated that noise impacts during this timeframe may have a minor effect on species, but no long-term adverse effects would be expected. Furthermore, hopper dredging in the spring and summer would be beneficial to the North Atlantic Right Whale (NARW), since the NARW is only present within the action area during the winter months.

5.5 Fisheries and Fish Habitat

5.5.1 Estuarine Nursery Habitat

Ocean-spawned larvae are transported shoreward by the prevailing currents and eventually pass through tidal inlets and settle in estuarine nursery habitats. Juveniles remain in the estuarine nursery areas for one or more years before moving offshore and joining the adult spawning stock (NCDEQ 2016). Primary Nursery Areas (PNAs) are defined as “those areas in the estuarine system where initial post-larval development takes place” [15 North Carolina Administrative Code (NCAC) 3I .0101(b)(20)(E)] and are typically located in the upper reaches of the estuarine system.

Secondary Nursery Areas (SNAs) are defined as “those areas in the estuarine system where later juvenile development takes place.” Secondary Nursery Areas support uniform populations of developing subadults that have moved from PNAs to the middle portion of the estuarine system.

Underwater grasses, also known as submerged aquatic vegetation (SAV), are a critical nursery habitat for many aquatic creatures. These aquatic resources play a crucial role within our coastal ecosystems, with a single acre of grasses supporting as many as 40,000 fish and 50 million small invertebrates (APNEP 2020). In addition to providing habitat for creatures such as blue crabs, scallops, shrimp, and juvenile fish, SAVs improve water quality by absorbing excess nutrients, generating oxygen and holding sediment in place (APNEP 2020).

Wilmington Harbor

The Cape Fear River estuary is an important nursery area for many estuarine-dependent fish and invertebrate species that spawn offshore and use estuarine habitats for juvenile development. According to the NC Fishery Nursery Areas Map 30 (Figure 4) the nearest PNA to the project area is located on the sound side of Caswell Beach (in red) adjacent to Battery Island Channel. PNA within the mainstem of the Cape Fear River is located approximately 7 miles north of Horseshoe Shoals channel. There are no SNAs (Permanent Secondary) shown on the map. State-designated Special Secondary Nursery Areas (SSNA, in blue) are located just upstream of the project limits in waters east of the navigation channel. According to the NC Department of Water Resources (NCDWR) 2012-2014 SAV data layer, no SAVs exist within the lower Cape Fear River (http://data-ncdenr.opendata.arcgis.com/maps/edit?content=ncdenr%3A%3Asav-2012-2014-mapping).

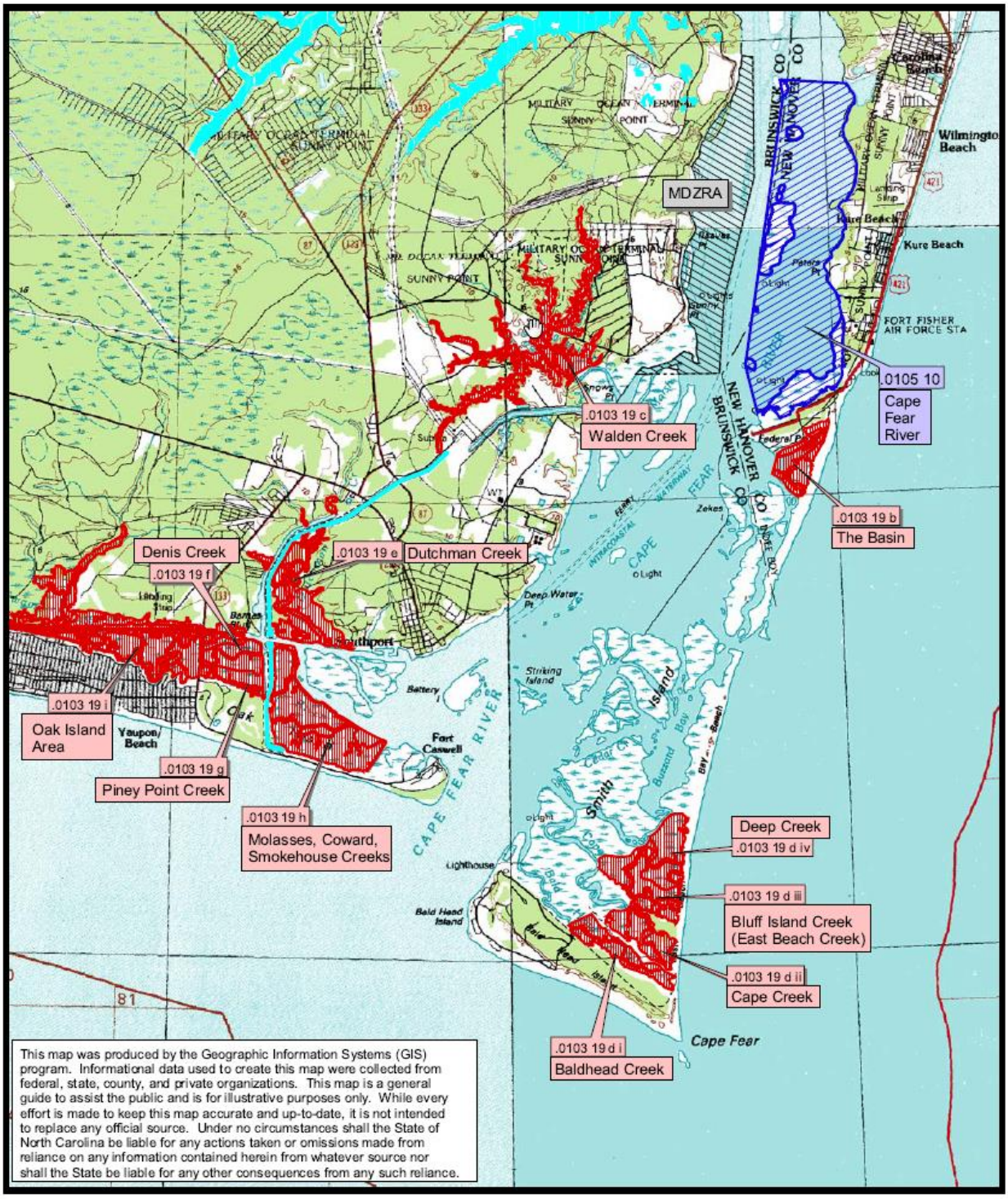

Figure 4. NC Fishery Nursery Area, Wilmington Harbor (Map 30)

Morehead City Harbor

According to the NC Fishery Nursery Areas Map 17 (Figure 5) the nearest PNA to the project area is located approximately 1-mile northwest of MHC within Calico Creek and Crab Point Bay (Figures 3 and 5, in red). There are no Secondary Nursery Areas (SNAs) identified on the map, and Special Secondary Nursery Areas (SSNA, in blue) are located at least 4 miles from the project area within the Newport River.

According to the NCDEQ 2012-2014 SAV data layer, a patch of SAVs exist 1 mile north of Range C in the shallow waters north of Radio Island (Figure 3), and small fragmented patches exist on the backside of Brandt Island approximately 1 mile south of Range C (as the crow flies).

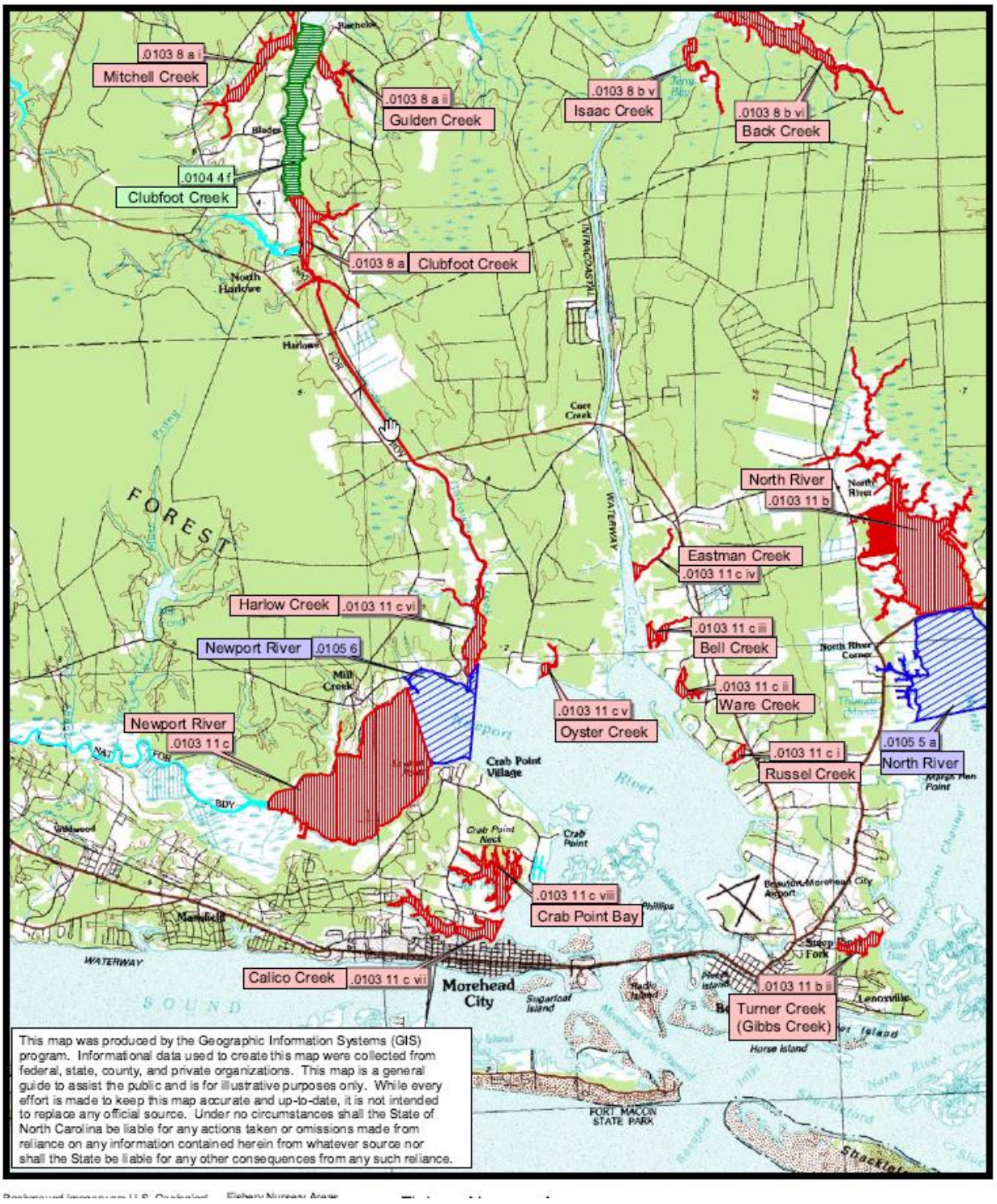

Figure 5. NC Fishery Nursery Area, Morehead City (Map 17)

Environmental Impacts

Due to the proximity of the channels to the designated nursery areas, no adverse effects are anticipated to occur to PNA, SNA, SSNA or SAV habitat. Potential sedimentation to these areas is unlikely, since the dredged areas contain beach quality sand and sediments are expected to fall out of suspension quickly.

Impacts to larvae and early juvenile stages of estuarine-dependent species (such as shrimp, gag grouper and red drum) pose a greater concern than adults because their powers of mobility are either absent or poorly developed, leaving them subject to transport by tides and currents. This physical limitation makes them potentially more susceptible to entrainment by an operating hopper dredge. Organisms close to the draghead may be captured by the effects of its suction and may be entrained in the flow of dredged sediment and water. As a worst-case, it may be assumed that entrained animals experience 100 percent mortality, although some small number may survive. Susceptibility to this effect depends upon avoidance reactions of the organism, the efficiency of its swimming ability, its proximity to the draghead, the pumping rate of the dredge, and possibly other factors. Behavioral characteristics of different species in response to factors such as salinity, current, and diurnal phase (daylight versus darkness) are also believed to affect their concentrations in particular locations or strata of the water column.

Assessment of the significance of entrainment on nursery habitat species is difficult, but most studies indicate that the significance of impact is low. Reasons for low levels of impact include: (1) the very small volumes of water pumped by dredges relative to the total amount of water in the vicinity, thereby impacting only a small proportion of organisms; (2) the extremely large numbers of larvae produced by most estuarine-dependent species, and (3) hopper dredge technologies and practices that are required by USACE dredge contracts. The latter has been demonstrated during hopper maintenance dredging contracts for the last two decades that require the dragheads to be buried at least 6 inches below the sea bottom while operating, and before being lifted, the pumps shut off. This requirement helps to prevent the taking of sea turtles and sturgeon, but also reduces entrainment for most other marine organisms.

No Action: Under the status quo, no dredging or bed leveling would occur during the 16 April to 30 November timeframe. According to the 2019 NOAA Report, critical life stages of brown and white shrimp are present in estuarine habitats during the months of March and April, therefore potential impacts during this time could occur; however, impacts would be temporary and minor.

Expanded Window and Bed Leveling: Hopper dredging and bed leveling during the months of July through November may create turbidity plumes that could have short-term and minor effects on critical life stages of white shrimp and red drum in the adjacent estuarine habitats (Table 3). Entrainment of estuarine organisms during this time is possible; however, with hopper dredge suction occurring mostly under the seabed within the ~40-foot-deep channel, only organisms that are present within a close distance of the dredge will be at high risk. Overall, bed leveling is anticipated to have

only minor increases on turbidity; impacts are limited to areas that have been recently impacted by the hopper dredge.

Elimination of the Historic Window and Bed Leveling: Spring and summertime hopper dredging and bed leveling in areas adjacent to estuarine habitats may potentially impact critical life stages of important fisheries to include brown and white shrimp, gag grouper and red drum species (Table 4) either by means of increased turbidity or hopper entrainment. As stated above, adverse effects associated with entrainment and turbidity are unlikely, since these estuarine dependent species will not be abundant at depths of near -40 feet near the active dragheads or moving drag bar (bed leveling), and sand sediments are expected to fall out before reaching shallow estuarine waters.

Turbidity sampling by the USACE within the Range B channel of Beaufort Inlet during active dredging in July 2020 provided beneficial information regarding dredging-related turbidity associated with the dredging of beach quality sediments in the vicinity of Beaufort Inlet. As expected, levels of TSS increased only slightly and turbidity levels returned to normal within minutes of the dredge passing (USACE ERDC, 2020). Under the 3-year monitoring plan, additional sampling will occur in the Beaufort and Cape Fear River Inlet areas. The information obtained, when combined with data obtained through monitoring by the State and other entities over the next 3 years, will provide information regarding the effects of dredging during times of high biological activity and will be used to inform decisions going forward. This risk-based management approach will allow future decisions regarding impact minimization measures, timing of dredging and dredge equipment to be adjusted based on new information.

Potential impacts to SAVs identified outside of the project area are not expected to occur due to the distance from the channels. For instance, sand dredged from Ranges B and C in Morehead City is not expected to remain suspended in the water column long enough to be carried 1-2 miles to the nearest identified patches of SAVs. Even during the spring and summer months, when SAVs are in their growing season and most vulnerable to sedimentation, impacts from hopper dredging will not be significant.

Overall, impacts of the proposed action on estuarine nursery habitat and associated species would be minimal and short-term.

5.5.2 Inlet and Nearshore Marine Habitat

Inlet Habitat:

Cape Fear and Beaufort Inlets are the only deep draft inlets on the NC coastline. These entranceways are very dynamic and offer the only ingress and egress to the Ports and upstream river habitats. They act as critical corridors to all fish, especially anadromous fish (Section 5.5.3) that spawn upstream and allow recruitment of egg and larval fish and shellfish to lower estuarine and nursery habitats.

DCM regulations have placed a standard moratorium on in-water work in inlets from April 1 – July 31 to have the least impact on the long-term population impacts of

managed fisheries species. According to the 2019 NOAA Report, these species include critical life stages of summer flounder, gag grouper, Atlantic blue crab, pink shrimp and white shrimp.

The Cape Fear River flows directly into the ocean, whereas the Newport River flows into Bogue Sound before it continues through Beaufort Inlet into the ocean. This can lead to differences in salinity which leads to distinct spatiotemporal differences in ecosystem characteristics critical to timing and movement of various species into and out of estuarine environments (NOAA 2019). It is important to understand the unique habitats of each inlet and the effects of dredging on them to determine if moratoriums are necessary and applicable.

The Atlantic blue crab spawns in high salinity soft-bottom inlet habitat such as that of the Cape Fear River and Beaufort Inlets. According to the 2019 NOAA Report, spawning occurs during the months of April through September. New Crab Spawning Sanctuaries were established in April 2020 in both inlets 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.

Nearshore Habitat:

The Southeast Area Monitoring and Assessment Program-South Atlantic (SEAMAP-SA) has conducted annual nearshore (depths 15-60 feet) trawl surveys for demersal fishes in Long Bay since 1986. Catches have been consistently dominated by sciaenid fish which utilize estuaries during part of their life cycle (SEAMAP-SA 2000). Overall patterns of demersal fish abundance are strongly influenced by the high abundance of spot and Atlantic croaker. These two species have been consistently dominant, accounting for more than 36% of the total catch between 1990 and 1999. Other abundant demersal fishes in this region include the Atlantic bumper (Chloroscombrus chrysurus), scup, pinfish, star drum (Stellifer lanceolatus), banded drum (Larimus fasciatus), gray trout (Cynoscion regalis), silver seatrout (C. nothus), southern kingfish, and inshore lizardfish (SEAMAP-SA 2000). Many of the demersal fishes associated with nearshore soft bottom habitats are ocean-spawning estuarine-dependent species that use the Cape Fear River estuary for juvenile development before moving into the ocean as adults. During the fall and winter, large numbers of these species leave the estuary and enter the nearshore ocean zone (NCDEQ 2016).

Peterson and Wells (2000) documented seasonal variations (November, February, and May) in demersal fish communities at inshore (approximately one mile) and offshore (approximately five miles) soft bottom sites off the southern NC coast. In November, catches at the offshore sites were dominated by spot (>50% of total catch), pinfish, pigfish, and croaker; while the inshore sites were dominated by croaker, silver perch (Bidyanus bidyanus), Atlantic silversides, pinfish, and striped mullet (Mugil cephalus). In

February, total catches at the offshore and inshore sites were reduced by 96% and 59%, respectively. Pinfish, Atlantic menhaden, and silversides collectively accounted for 96.4% of the total combined inshore/offshore catch in February. The combined inshore/offshore totals for spot and croaker were reduced by 98.9% and 99.8%, respectively, and catches of all other taxa decreased sharply, with the exception of silversides and pinfish at the inshore sites. During the May sampling period, large numbers of Atlantic silversides and Atlantic threadfin herring (Opisthonema oglinum) increased the total inshore catch. Peterson and Wells (2000) also analyzed the stomach contents of demersal fishes that were caught during the November sampling period and found that croakers and pinfish were primarily consuming polychaete worms, bivalves, grass shrimp, and pinnotherid crabs. Silver perch, pigfish, and spot consumed polychaetes, grass shrimp, and other small bottom-dwelling crustaceans. Gray trout consumed grass shrimp, penaeid shrimp, and portunid crabs; whereas kingfishes primarily consumed pinnotherid crabs, portunid crabs, and large polychaete worms.

Environmental Impacts

Waters within inlet and nearshore areas are more dynamic and susceptible to higher turbidity, especially during storms. Species that depend on these areas are commonly more tolerant of elevated turbidity levels. The outer entrance channels of both WH and MHC contain higher percentages of fine-grained sediments than the inshore channels. This material can remain in suspension during hopper dredging and overflow, potentially clogging gills of fish present within the water column. Depending on sea conditions, turbidity can be detected as far as 2 miles, possibly due to the elevated concentration of low-density organic matter from fragmented benthos discharged during sorting (Newell et al. 2004).

Studies indicate that the primary organisms subject to entrainment by hopper dredges are bottom-oriented fishes and shellfishes (flounder, crabs, skates and stingrays). Organisms resting, feeding, or inhabiting the channel bottom would be closer to the suction field of the draghead and, therefore, at higher risk. Both demersal and pelagic fish eggs and larvae are susceptible to entrainment, as well as other slow-moving organisms found in inlet and nearshore habitats. However, a dredge operating in an ocean environment would pump a very small amount of water in proportion to the surrounding water volume. For instance, approximately 21 billion cubic feet of water passes through the Cape Fear River Inlet, and approximately 10 billion cubic feet of water passes through the Beaufort Inlet per day. An average medium-sized hopper dredge has two 31-inch suction pipes that have a pump power of 10,000 hp. It has a hopper capacity of 176,580 cubic feet and the hopper is filled approximately 12 times a day (with no interruptions). Since twice the amount of water is needed to pump the material through to fill the hopper (and is dewatered), the dredge averages less than 5 million cubic feet of flow per day. Therefore, entrainment impacts of dredging the inlets and nearshore channels are expected to be insignificant for both WH and MHC. A very small percentage of demersal and pelagic fishes are subject to entrainment, so dredging is not expected to significantly affect the local or regional populations.

No Action: Under the No Action alternative, hopper dredging and bed leveling occur during the winter months (December through April) due to the window restrictions currently in place. During the December through April timeframe, the marine environment within the nearshore areas of WH and MHC contain critical life stages of brown and pink shrimp, summer and southern flounder, gag grouper and blue crab; important ocean-dwelling fishery species as documented in the 2019 NOAA Report. In the inlets, critical life stages of summer and southern flounder, brown shrimp and gag grouper are plentiful. One can conclude that dredging and bed leveling during the winter months would have the same impact on inlet and nearshore habitats as dredging and bed leveling during warmer months of the year. Likewise, no window exists for nearshore placement, indicating that turbidity effects from material released from the hopper falling to the ocean bottom has the same (minimal) effect no matter time of year work is accomplished.

Expanded Window and Bed Leveling: Expanding the window to hopper dredging and bed leveling from July – November would not have any additional impacts to the inlet and nearshore marine habitat beyond those described above. Dredging and placement would disturb that same areas as those disturbed by no action; no additional dredging would occur. Critical life stages of pink and brown shrimp, blue crab, summer flounder may be present within and around the channels during maintenance dredging and bed leveling and at minimal risk of turbidity and entrainment by the dredge (NOAA Report, 2019); however, impacts would not be significant.

Elimination of the Historic Window and Bed Leveling: The inlet and ocean portion of the areas of disturbance are the least sensitive to the effects of hopper dredging and are a lower priority for dredge moratoria according to comments received during the scoping process from NCDEQ, dated May 7, 2020. It is understood that effects to fisheries still exist due to entrainment and turbidity and dredging in the spring and summer months would have the most effect on species that are spawning or in critical early life stages. Blue crabs within designated Crab Spawning Sanctuaries may be entrained by the hopper dredge or crushed by a bed leveler during the months of April through October. Bottom dwellers and feeders within the channels and placement areas would be more abundant during the warmer months of the year, increasing their risks to the effects of dredging and dredged material placement. Overall, these impacts would be minor when considering the vastness of habitat in the ocean as compared to the footprint of the federal channel and areas disturbed by placement, and the fact that the quality of bottom habitat in the channels and placement areas is frequently disturbed by repeated maintenance.

In accordance with the 2020 SARBO, bycatch from the hopper dredge and capture relocation trawler will be monitored and documented by Protected Species Observers to assess the species and quantities of important fisheries that are entrained by the dredge. Water quality sampling (conducted by ERDC) and species sampling (conducted by the State) in both harbors during dredging will contribute valuable information to better understanding the effects of dredging on fisheries.

5.5.3 Anadromous Fishes

Anadromous fish spend most of their lives in saltwater and migrate as adults through inlets upstream to spawn. Anadromous species that undertake annual migrations from coastal waters to spawning grounds in the upper freshwater reaches of the Cape Fear River include Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus), shortnose sturgeon (A. brevirostrum), striped bass (Morone saxatilis), American shad (Alosa sapidissima), hickory shad (A. mediocris), blueback herring (A. aestivalis), and alewife (A. pseudoharengus). Atlantic sturgeon, listed as endangered under the Endangered Species Act, are opportunistic bottom feeders that begin their migration in late winter, moving up the river throughout the spring as water temperatures rise. Additionally, elvers of the catadromous American eel (Anguilla rostrata) migrate upriver to freshwater juvenile nursery areas in the upper Cape Fear River system (USACE 2010).

There are no known anadromous fish spawning areas within the project area. According to the Anadromous Fish Spawning Areas (AFSA) map of the Cape Fear River, listed coastal AFSA waters don't begin until the confluence with Town Creek (11 river miles to the north of Horseshoe Shoals channel). Early life stages of anadromous fish, such as sturgeon, American shad and River Herring are present within the Cape Fear River upstream of the project area between the months of February and November. No AFSAs are listed for the Newport River, so no anadromous fish eggs, larvae or juveniles are expected within the MHC channels. However, adults may travel along the coast and visit the inshore areas of Beaufort Inlet.

Environmental Impacts

As reflected by the moratoria currently in place, dredging is considered to be a major threat to anadromous fish migrating to spawning habitat. It is generally unknown how anadromous fish react to encountering an active dredge. Matthew Balazik of USACE ERDC conducted a study in the James River, VA on migrating Atlantic sturgeon during active pipeline dredging in a confined channel. ERDC found that the dredge did not deter adults from reaching their upstream spawning areas and had no observable effects on swim behavior (Balazik 2020).

February through June are considered periods of highest risk for migrating and early life stages of anadromous fish. Eggs, larvae and young juveniles can be vulnerable to lethal impacts from hopper dredging (turbidity, entrainment); however, they are located farther up the Cape Fear River, outside of the project area. Juveniles making their way to sea may have to pass an active dredge but few are expected to be affected by increased turbidity levels and entrainment. As evident with previous WH hopper dredging contracts, adult Atlantic sturgeon have been lethally entrained on occasion. Since reporting onboard hoppers doesn't account for other anadromous species, a lot remains unknown about their encounters with active dredges.

Bed leveling in the project area is not expected to have any impacts (turbidity or physical encounters) on anadromous fish. The highly mobile fish will quickly swim away from the slow-moving drag bar and turbidity will be minor.

No Action: Under the status quo, hopper maintenance dredging and bed leveling occur during the winter months, which may have a minor effect on early spring migrations in the Cape Fear River. Lethal takes of Atlantic sturgeon by hopper entrainment, though they are rare, have been reported in the WH project area between the months of February – April. With sufficient room within the channel, anadromous fish are expected to pass a dredge unharmed. Therefore, the No Action alternative will not have significant impacts on anadromous fish species.

Expanded Window and Bed Leveling: During the July – November expansion of the dredging window, anadromous fish will have completed their spring migration up the Cape Fear River. Adult fish are expected to pass the dredge unharmed, but as mentioned above, an individual may occasionally become entrained. Expanding the dredge window an additional 4.5 months will not significantly impact anadromous fish.

Elimination of the Historic Window and Bed Leveling: In the Cape Fear River, February through June are considered periods of highest risk for migrating and early life stages of anadromous fish. Hopper dredging during this timeframe may have behavioral effects on adults and juveniles, and entrainment is a possibility. Disruption of migration to and from spawning grounds in the Cape Fear River due to elevated sound or turbidity is not likely to occur.

Dredging during spring and fall migrations can increase the numbers of lethal takes of Atlantic sturgeon; however, this has been assessed by NMFS and considered in the 2020 South Atlantic Regional Biological Opinion (SARBO). Sturgeon entrained in hopper dredges will continue to be monitored and documented by PSOs and non-capture or capture relocation trawling can be exercised to discourage/remove sturgeon from the path of the dredge. As for other anadromous fish (alewife, American shad, blueback herring, striped bass), species entrained in the dredge or captured on a trawler will be documented. Reference Section 7.3 for monitoring information.

Last summer, ERDC monitored the water quality in the Cape Fear River and Beaufort Inlet during active dredging and found no significant changes to dissolved oxygen levels. Water quality sampling during dredging will continue over the next three years to determine any effects on anadromous fish.

To conclude, dredging in the project area during spring and summer may have minor impacts on anadromous fish but these impacts are not expected to be significant.

5.5.4 Essential Fish Habitat (EFH)

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. The EFH assessment included in this EA will be coordinated with NMFS Habitat Conservation Division (HCD) upon the circulation of this EA.

The Cape Fear and Beaufort Inlets are important passageways for the larvae of many species of commercially and ecologically important fishes in North Carolina. The spawning grounds for many important marine fishes are believed to occur on the continental shelf with migration to estuaries during the juvenile stage. The shelter provided by the marsh and creek systems just upstream of the two project areas serve as nursery habitat where young fish undergo rapid growth before returning to the offshore environment, and in order to reach this important habitat they must pass through either the Cape Fear River Inlet or Beaufort Inlet. Table 6 shows the categories of EFH habitat located within the project vicinity of WH and MHC, the Morehead City Harbor Nearshore Placement Areas, and the associated ODMDSs (NMFS provided EFH data, 5 Nov. 2019).

Table 6. Categories of Essential Fish Habitat Listed by Waterbody within the Project Area

Key for Table	Wilmington Harbor	MHC and Nearshore Placement Areas	Wilmington and Morehead City ODMDSs
E-EGGS L-LARVAL J-JUVENILE A-ADULT N/A-NOT FOUND	Cape Fear River to US 421	Beaufort Inlet	Atlantic Ocean South of Cape Hatteras
COASTAL DEMERSALS			
Bluefish	J A	J A	E L J A
Summer Flounder	L J A	L J A	E L J A
Butterfish	J A	J A	E L J A
INVERTEBRATES			
Brown Shrimp	L J A	E L J A	E L J A
Pink Shrimp	L J A	E L J A	E L J A
White Shrimp	L J A	E L J A	E L J A
Calico Scallop	N/A	N/A	E L J A
COASTAL PELAGICS			
Dolphinfish	N/A	J A	E L J A
Wahoo	N/A	J A	E L J A
King Mackerel	J A	J A	E L J A
Spanish Mackerel	J A	L J A	E L J A
HIGHLY MIGRATORY			
Bigeye Tuna	N/A	N/A	E L J A
Bluefin Tuna	N/A	N/A	J A
Skipjack Tuna	N/A	N/A	J A
Yellowfin Tuna	N/A	N/A	E L J A
Swordfish	N/A	N/A	E L J A
Blue Marlin	N/A	N/A	E L J A
White Marlin	N/A	N/A	E L J A
Sailfish	N/A	N/A	E L J A
Little Tunny	N/A	N/A	E L J A
SHARKS			
Spiny Dogfish	N/A	J A	J A
Smooth Dogfish	J	J A	J A
Small Coastal Sharks	J A	J A	J A

Key for Table		Wilmington Harbor		MHC and Nearshore Placement Areas		Wilmington and Morehead City ODMDSs			
E-EGGS L-LARVAL J-JUVENILE A-ADULT N/A-NOT FOUND		Cape Fear River to US 421		Beaufort Inlet		Atlantic Ocean South of Cape Hatteras			
Large Coastal Sharks		J A		J A		J A			
Pelagic Sharks		N/A		N/A		J A			
Prohibited/Research Sharks		N/A		J A		J A			
SNAPPER/GROUPER									
Black Sea Bass		J		L J A		E L J A			
Bank Sea Bass		N/A		N/A		E L J A			
Rock Sea Bass		J		J		E L J A			
Gag		J		J A		E L J A			
Graysby		N/A		N/A		E L J A			
Speckled Hind		N/A		N/A		E L J A			
Yellowedge Grouper		N/A		N/A		E L J A			
Coney		N/A		N/A		E L J A			
Red Hind		N/A		N/A		E L J A			
Goliath Grouper		N/A		N/A		E L J A			
Red Grouper		J		N/A		E L J A			
Misty Grouper		N/A		N/A		E L J A			
Warsaw Grouper		N/A		N/A		E L J A			
Snowy Grouper		N/A		N/A		E L J A			
Yellowmouth Grouper		N/A		N/A		E L J A			
Black Grouper		J		J		E L J A			
Scamp		N/A		N/A		E L J A			
Blackfin Snapper		N/A		N/A		E L J A			
Red Snapper		N/A		N/A		E L J A			
Cubera Snapper		N/A		N/A		E L J A			
Lane Snapper		J		N/A		E L J A			
Silk Snapper		N/A		N/A		E L J A			
Vermillion Snapper		N/A		N/A		E L J A			
Mutton Snapper		J		N/A		E L J A			
Gray Snapper		J		J		E L J A			
Gray Triggerfish		N/A		N/A		E L J A			

Key for Table		Wilmington Harbor		MHC and Nearshore Placement Areas		Wilmington and Morehead City ODMDSs			
E-EGGS L-LARVAL J-JUVENILE A-ADULT N/A-NOT FOUND		Cape Fear River to US 421		Beaufort Inlet		Atlantic Ocean South of Cape Hatteras			
Bar Jack		J		J		E L J A			
Greater Amberjack		N/A		N/A		E L J A			
Almaco Jack		N/A		N/A		E L J A			
Banded Rudderfish		N/A		N/A		E L J A			
Atlantic Spadefish		J		N/A		E L J A			
White Grunt		N/A		N/A		E L J A			
Tomtate		N/A		N/A		E L J A			
Hogfish		N/A		N/A		E L J A			
Puddingwife		N/A		N/A		E L J A			
Red Porgy		J A		N/A		E L J A			
Longspine Porgy		N/A		N/A		E L J A			
Scup		N/A		N/A		E L J A			
Blueline Tilefish		N/A		N/A		E L J A			
Sand Tilefish		N/A		N/A		E L J A			

Additionally, Habitat Areas of Particular Concern (HAPC) were reviewed using the NOAA Habitat Conservation National Marine Fisheries Service's Essential Fish Habitats (EFH) Mapper to identify any HAPCs located within the vicinity of the project areas (NOAA). The HAPC are special habitat areas that are designated by NMFS to further the conservation and enhancement of EFH.

Coastal Migratory Pelagic Species:

Coastal Migratory Pelagic Species located within the project area include: Dolphinfish (*Coryphaena hippurus*), Wahoo (*Acanthocybium solandri)*, King Mackerel (*Scomberomorus cavalla)*, and Spanish Mackerel (*Scomberomorus maculatus)*.

The coastal inlets occurring in the WH and MHC project areas are considered important areas for Coastal Pelagic Migratory Species and have been designated as EFH and HAPC. *EFH Designations as Listed in the Comprehensive Amendment for Coastal Migratory Pelagic Species* (SAFMC 1998b) Essential Fish Habitat (EFH) 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, but from the Gulf Stream shoreward, including Sargassum. Moreover, within the project area EFH-HAPCs for coastal migratory pelagic species include estuarine and marine water columns within the inlet, which includes the navigation channel (this is true for both Beaufort Inlet and the Cape Fear Inlet). 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, EFH occurs in the South Atlantic and Mid-Atlantic Bights, in areas that meet the criteria for EFH-HAPCs. In NC these areas include sandy shoals of Capes Lookout, Cape Fear, and Cape Hatteras from shore to the ends of the respective shoals, but shoreward of the Gulf stream; The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina). Also, EFH can occur in Pelagic Sargassum; and high salinity bays or sounds that contain estuaries with high numbers of Spanish mackerel, which includes Bogue Sound (near MHC project area), North Carolina.

Penaeid Shrimp:

Penaeid Shrimp included in the project area include: Brown Shrimp (*Crangon crangon*), Pink Shrimp (*Pandalus borealis*), and White Shrimp (*Litopenaeus setiferus*).

As stated in *EFH Designations in the Comprehensive Amendment for Penaeid Shrimp* (SAFMC 1998b), EFH includes inshore estuarine nursery areas, offshore marine habitats used for spawning and growth to maturity, and all interconnecting waterbodies. Within the project area, EFH-HAPCs for penaeid shrimp include estuarine and marine water columns within the inlet, which includes the navigation channel (this is true for both Beaufort Inlet and the Cape Fear Inlet). These areas are important for the species since they provide a connection between the inshore estuarine nursery areas and the offshore marine habitats used for spawning and growth to maturity. Additionally, for North Carolina there are no state identified areas for overwintering.

Snapper Grouper Species:

Snapper Grouper species managed by the SAFMC that are present most often within the project area are referenced in Table 6 above. *EFH Designations in the Comprehensive Amendment for Snapper Grouper* (SAFMC 1998b) EFH) 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 (but to at least 2000 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, EFH 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;

oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and live/hard bottom. Areas in and near the project area that meet the criteria for EFH-HAPCs for species in the snapper-grouper management unit include:
- medium to high profile offshore hard bottoms
- nearshore hard bottom areas
- The Point
- The Ten Fathom Ledge
- Big Rock
- seagrass habitat
- oyster/shell habitat
- estuarine and marine water columns within inlet complex, (including the navigation channel for both Beaufort Inlet and the Cape Fear Inlet)
- pelagic and benthic Sargassum

As an additional note, offshore of the project area for the WH and MHC and associated MHC Nearshore Placement Areas and ODMDSs, the South Atlantic Fishery Management Council (SAFMC) manages for several various EFHs and HAPCs including:

- South Atlantic Dolphin Wahoo EFH – Wahoo
- South Atlantic Sargassum EFH – Sargassum
- South Atlantic HAPCs – Coastal Migratory Pelagics, Golden Crab, Sargassum

As part of the SAFMC, there are certain state regulations that present state-designated areas that warrant special protection under state law. These areas are “state-designated areas” which may function as nursery habitats of species managed by the SAFMC and under the EFH or EFH-HAPC designations for penaeid shrimp, snapper grouper species, and coastal migratory pelagic species. Table 7 lists which state regulations apply within North Carolina.

Table 7. North Carolina Regulations as part of the SAFMC

Designation	Regulation	Comment
North Carolina		
Inland Primary Nursery Areas	15A NCAC 10C .0503	
Primary Nursery Areas	15A NCAC 03R .0103	
Permanent Secondary Nursery Areas	15A NCAC 03R .0104	
Secondary Nursery Areas	15A NCAC 03R .0105	
Strategic Habitat Areas and Critical Habitat Areas	15A NCAC 03H .0104 (4)(h)	None as of 30 Nov 2010
Crab Spawning Sanctuaries	15A NCAC 03R .0110	
Oyster Sanctuaries	15A NCAC 03R .0117	
Outstanding Resource Waters	15A NCAC 02B .0225	

A review of the NC DEQ Primary Fishery Area Mapper (http://portal.ncdenr.org/web/mf/primary-nursery-areas) for the project areas of Wilmington Harbor, Morehead City Harbor, associated Morehead City Harbor Nearshore Placement Areas, and ODMDSs show no areas of Primary Nursery, Secondary Nursery, or Special Secondary Nursery.

Environmental Impacts

Maintenance dredging of the outer portions of the WH and MHC with the addition of bed leveling is expected to have some impacts to EFH with regards to known impacts of hopper dredging and bed leveling such as: creating areas of localized increases in water turbidity, and the possibility of fish entrainment in the hopper dredge. These actions may have temporary minimal adverse effects on the marine water column and benthic habitats in the immediate area of dredging in the form of minor and short-term suspended sediment plumes and related turbidity. Overall water quality impacts of dredging within the project areas are expected to be short-term and minor. Identified EFH and HAPCs are unlikely to be negatively affected by the maintenance dredging projects in WH and MHC due to the substantial distance from which they occur. Living marine resources dependent upon good water quality are not expected to experience significant adverse impacts due to the temporary and localized water quality changes.

No Action: The no action alternative would have less adverse effects on the EFH and HAPC located within the project areas as compared to the proposed action due to the continuance of the observed environmental window for hopper dredging (1 December to 15 April). The EFH for the WH and MHC was previously consulted with NMFS and included in previously completed NEPA documents as reference above in Section 3.0. Effects to EFH species located within the project area would occur during maintenance

dredging activity and would be related to the actual dredging activities themselves and would include death or injury to species due to entrainment or impact by the dredge along the bottom. Additionally, there could be some secondary effects to EFH by reduced localized water quality within the area of maintenance dredging. However, this alternative limits the timeframe for hopper dredging, constraining work to the winter season. Bed leveling could result in minimal adverse effects on EFH and HAPC during the process of using the drag bar on the bottom substrate, but it is expected that these impacts will be localized and temporary.

Expanded Window and Bed Leveling: By expanding the hopper dredging window to 1 July to 30 November, the times of highest biological activity within the inlet complexes and nearby ocean area could be avoided, therefore this alternative would have minimal adverse effects on EFH and HAPC within the project areas. General effects to EFH species located within the project area would occur during maintenance dredging activity and would be related to the actual dredging or drag bar activities themselves and would include death or injury to species due to entrainment or impact by the dredge or drag bar along the bottom. Additionally, there could be some secondary effects to EFH by reduced localized water quality within the areas of maintenance dredging.

Elimination of the Historic Window and Bed Leveling: The proposed action may have minimal adverse effects in addition to the temporary minimal adverse effects on area fisheries and EFH and HAPC, by the general effects described above if actions occur during the most biologically active times for fisheries (May-July) within the entrance channels to WH and MHC. For both of the ODMDSs and the Nearshore Placement Areas at Morehead City Harbor, the areas of disturbance during the sediment placement will be localized to well-defined placement areas, species utilizing these areas will be temporary displaced during times of sediment placement; however, once operations have ceased many mobile species may return to use the areas. The EFH and HAPCs of: South Atlantic Dolphin Wahoo EFH – Wahoo, South Atlantic Sargassum EFH – Sargassum, South Atlantic HAPCs – Coastal Migratory Pelagics, Golden Crab, Sargassum, are unlikely to be negatively affected by the maintenance dredging projects in WH and MHC due to the significant distance from which they occur.

EFH consultation was initiated with the draft report and NMFS responded with conservation recommendations in a letter received from NMFS dated 21 January 2021. EFH summary and conservation recommendations can be found in section 7.3. The current EFH conservation recommendation to initiate risk-based management within the WH and MHC has been adopted. This risk-based management process was developed between the Wilmington District USACE in collaboration with the NMFS and state resource agencies, including the North Carolina Division of Coastal Management, Division of Marine Fisheries, Wildlife Resources Commission, and Division of Water Resources. Over the next three dredge cycles the Wilmington District will examine issues important to conserving fish habitat including: hydrodynamics and sediment transport within and near the subject channel reaches and entrainment, impingement, and capture of fishery resources by dredging and related operations. In addition, the

Wilmington District will continue to meet with the NMFS and state agencies to develop and refine further the studies pursued during this evaluation period.

5.6 Benthos

Aquatic organisms that live in close association with the bottom, or substrate, of a body of water, are collectively called benthos. Benthic invertebrate communities of largely sessile and discretely mobile species can be found in the sediments within federal channel limits, especially infaunal polychaetes, arthropods, mollusks, and echinoderms. Benthic communities within the project area exhibit a wide range of organism composition and density, and community structure may vary considerably depending on substrate type and salinity regime. This information has been included in previous USACE NEPA documents listed in Section 3.0, so details on specific species present and abundance will not be covered here.

Benthos are a highly important source of food for many marine species. Benthic prey feed demersal fishes, crabs, and shrimps, which are groups of mobile predators of high importance because they include species that are harvested by commercial and/or recreational fishermen and because they are in turn prey for higher-order consumers such as seabirds, larger fishes, sea turtles, and marine mammals (Hill et al. 2011).

Environmental Impacts

The biggest impact from hopper dredging occurs on the sea floor and results in the removal of upper layers of substrate. One hundred percent (100%) mortality of sessile benthos (and a lower percentage of slow-moving benthos) existing within the dredging and placement footprint can be assumed, and this reduction of food availability for bottom feeding fish and invertebrates can impact fish productivity. However, removal of benthos and benthic habitat by maintenance dredging activities represents a temporary 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).

The ecological significance of temporary benthic losses is not well-understood but is considered minor since the affected area is very small relative to the amount of benthic habitat present on the ocean bottom. For the limits of the WH project (from Horseshoe Shoal channel to Baldhead Range 3), the navigation channel covers approximately 1,100 acres out of a total of approximately 20,000 acres (depending upon the ebb tide delta used). MHC channels (half of Range C through Range A) cover approximately 630 acres, while the total surrounding waters are approximately 9,500 acres.

Benthic invertebrates exhibit strong seasonality in reproduction, meaning that the seasonal timing of dredging can have an effect on recovery rates. 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).

Overall, dredging for maintenance of existing channels has minor impacts as compared to new construction.

Bed leveling is not expected to have the same adverse impacts to benthos as hopper dredging, since there is no removal of material. A moving drag bar across the channel bottom lifts and pushes material, possibly crushing and burying organisms along the way. However, bed leveling is expected to occur in the same footprint as hopper dredging and within the same timeframe, therefore it would be assumed that the worst of the impacts already occurred from the hopper dredge.

No Action: Due to the dredging window, benthic organisms would not be disturbed by hopper dredging or bed leveling during the spring and summer months during highest periods of biological activity. Benthic organisms within the project area in the winter months would be impacted, but the effects would be considered minor and short-term.

Expanded Window and Bed Leveling: Expanding the window to include dredging during July – November will have a temporary impact on benthic species present during those months. Dredging will not occur during periods of high biological activity, and channels are not expected to fully recover between dredge cycles, thus expanded the dredging window will only have minor impacts to benthic invertebrates.

Elimination of the Historic Window and Bed Leveling: The effects of hopper dredging in the spring and summer would be more severe than colder months of the year, when benthos and bottom feeding fish are less abundant. Some degree of benthic resource recovery will occur between dredging events; however, the continual sedimentation and shoaling that results in the need for maintenance dredging is ongoing and therefore the benthic populations in the channels likely will never fully recover, despite the time of year they are dredged. Therefore, dredging any time of year will not have significant impacts on benthic invertebrates.

5.7 Threatened and Endangered 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 plants and animals and the habitats in which they are found. In accordance with section 7 (a)(2) of the ESA, the USACE has been in consultation 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.

Updated lists of threatened and endangered species for the project areas within New Hanover County, Brunswick County, and Carteret County, North Carolina were obtained from the USFWS Information, Planning and Conservation System (IPAC) website (http://ecos.fws.gov/ipac/) (Appendix C). These were combined to develop the composite list shown in Table 6, which includes threatened and endangered species that could be present in the area based on their historical occurrence or potential

geographic range. The list also includes the bald eagle (*Haliaeetus leucocephalus*) which is protected under the Federal Bald and Gold Eagle Protection Act. The actual occurrence of a species in the project area depends upon the availability of suitable habitat, the season of the year relative to a species' temperature tolerance, migratory habits, and other factors.

Routine maintenance dredging within both WH and MHC is covered by the South Atlantic Regional Biological Assessment (SARBO) issued by the NMFS on March 20, 2020 (NMFS 2020). The SARBO covers dredging activities within navigation channels and borrow areas in the Southeastern United States from the North Carolina (NC)/Virginia (VA) border south to the Florida Keys and the islands of Puerto Rico and the US Virgin Islands (USVI). Although previously, the Wilmington District observed a December 1 through April 15 window for hopper dredging at the WH and MHC, the 2020 SARBO contains multiple avoidance measures as part of the North Atlantic Right Whale (NARW) conservation plan. One of these measures is the Dredge Project Scheduling Risk-Based Adaptive Management Process (*2020 SARBO*, Section 2.9.2.2). It states:

> *Hopper dredging and projects requiring survey vessels over 33-ft in length will be scheduled, to the maximum extent practicable, outside of North Atlantic right whale migration and calving season to avoid impacts to North Atlantic right whales, including reproducing females and newborn calves. Other information that will be considered includes where material is to be placed and whether the timing of the placement would be high risk for other listed species (e.g. sea turtles).*

Specifically, hopper dredging outside of the historic window will reduce possible impacts to the NARW during the wintertime when they are most likely to be present within the designated NARW critical habitat area located just east of the Cape Fear River off of the WH project and south towards Cape Canaveral, FL (Figure 6).

Other conservation measures agreed upon by USACE and NMFS and included in the NARW conservation plan, include the presence of trained Protected Species Observers (PSOs) onboard vessels, speed restrictions (<10 kts), and established right whale early warning system participation that includes aerial survey species tracking.

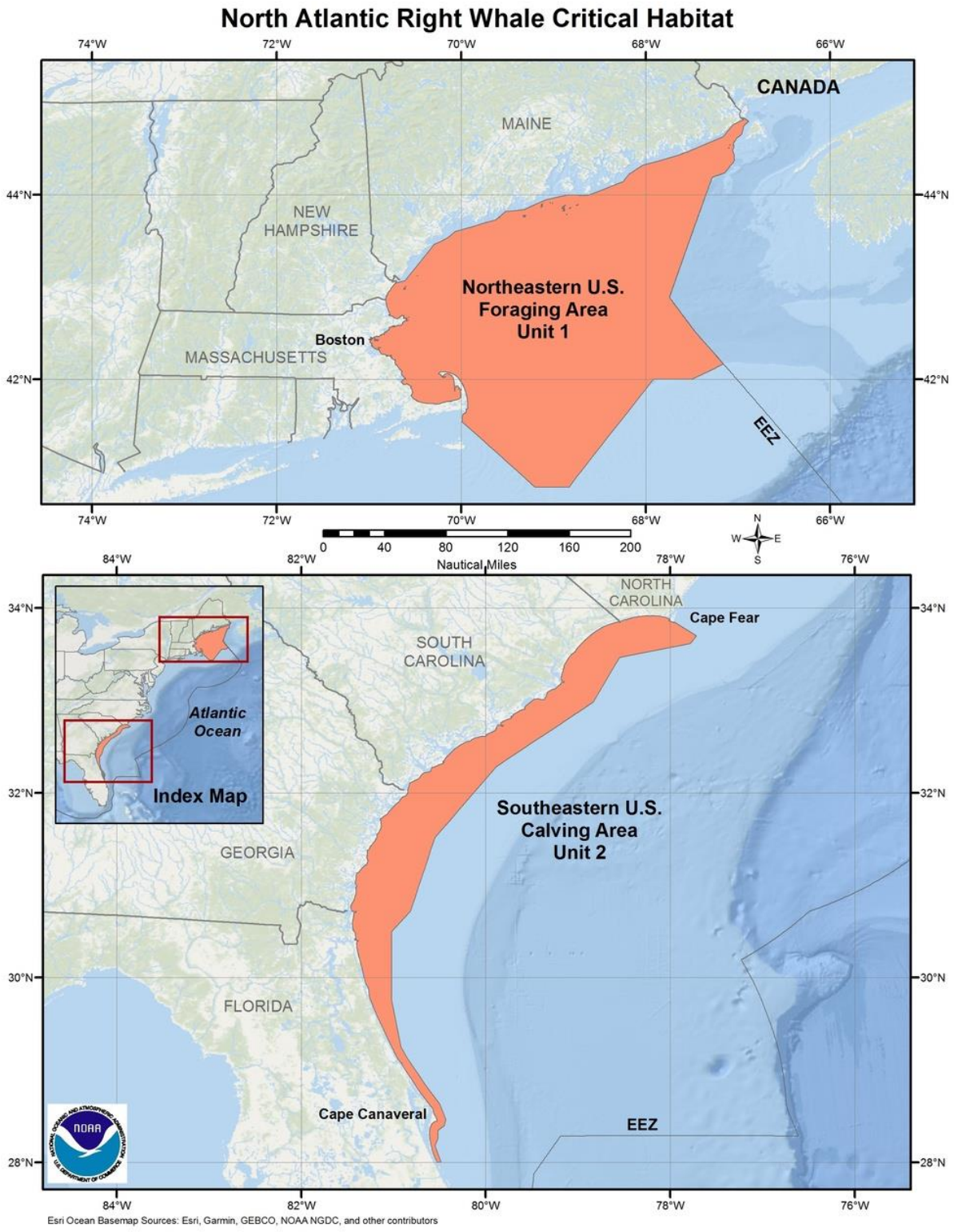

Figure 6. NARW Critical Habitat Calving Area

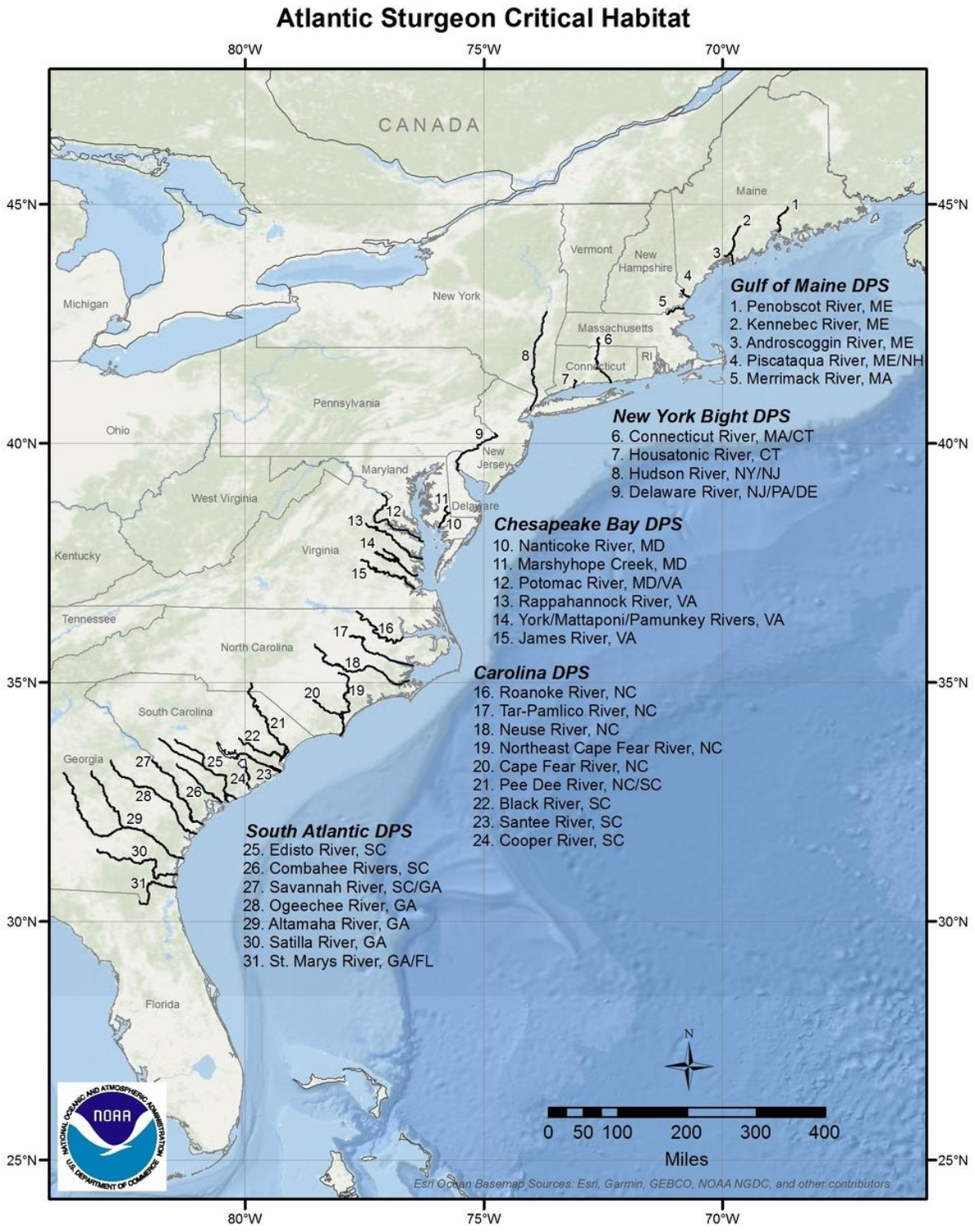

Figure 7. Atlantic Sturgeon Critical Habitat Map (Cape Fear River, NC is part of Carolina DPS #20)

Threatened and endangered species that could be present within the project areas include: sea turtles [green (*Chelonia mydas*), loggerhead (*Caretta caretta*), hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), and Kemp's ridley (*Lepidochelys kempii*)]; red knot (*Calidris canutus rufa*); piping plover (*Charadrius melodus*); roseate tern (*Sterna dougallii dougallii*); North Atlantic right whale (*Eubalaena glacialis*); shortnose sturgeon (*Acipenser brevirostrum*); Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*);Giant manta ray (Manta birostris); Oceanic whitetip shark (*Carcharhinus longimanus*); West Indian manatee (*Trichechus manatus*).

Four designated critical habitats (CH) are also present within the vicinity of the project areas: Atlantic sturgeon (Carolina DPS Unit 4), loggerhead sea turtle, piping plover and North Atlantic right whale.

Environmental Impacts

Hopper dredging and drag bar operations will continue to have known common effects that could potentially impact threatened and endangered species and their designated critical habitats located within dredging project areas; some of the potential effects possible for all three alternatives include entrainment of sea turtles and endangered fish species, localized increases in water turbidity, and possible encounters with larger swimming mammals such as whales or manatees. These impacts are largely avoidable during maintenance dredging projects by adhering to Project Design Criteria (PDCs) applicable for hopper dredging, drag bar operation, and the threatened and endangered species found within the project area as outlined in the 2020 SARBO, and following the 2017 USFWS *Guidelines for Avoiding Impacts to the West Indian Manatee.* PDCs applicable to WH and MHC Harbor projects are available in the SARBO Appendixes A, B, and E-J https://www.fisheries.noaa.gov/content/endangered-species-act-section-7-biological-opinions-southeast.

No Action: The no action alternative might minimize potential impacts to certain threatened and endangered species (e.g. sea turtles) by following the observed environmental window. However, the continued maintenance dredging of the existing authorized channel during the winter months will add continued risk of ship strike injury to the critically endangered NARW. Because the NARW Conservation Plan is part of the SARBO, which the USACE must abide, and it calls for the avoidance of work in the area when NARW are present, there may not be sufficient time to dredge the channels and avoid the NARW.

Expanded Window and Bed Leveling: An additional alternative, the expansion of the hopper dredging window (1 July to 30 November) and bed leveling, would avoid the times of highest biological activity, therefore it would likely have similar impacts to threatened and endangered species and designated critical habitat as the no action alternative. The addition of this time frame would mean dredging could occur during times when the NARW are not present in the area, depending on what the current aerial NARW surveys determine.

The North Atlantic Right Whale (NARW) would potentially benefit from a risk-based approach which would prioritize dredging outside of the times when NARW would be most likely to occur within the critical habitat area. Additionally, the use of aerial NARW surveys has been implemented in North Carolina to better alert ships in the area when NARWs are present.

Elimination of the Historic Window and Bed Leveling: The proposed action provides the greatest flexibility to perform maintenance dredging and bed leveling according to the risk-based analysis performed yearly. Although, maintenance dredging and bed leveling may take place any time of the year, the hopper dredges would follow project design criteria set forth in the 2020 SARBO to protect NMFS-protected threatened and endangered species (sea turtles, Atlantic and shortnose sturgeon, giant manta ray, oceanic whitetip shark, and NARW) and monitor for incidences of take of these species. Additionally, to avoid negative effects to the West Indian manatee, hopper dredges and bed levelers within the project areas(which include the ODMDSs and nearshore placement areas) would be required to follow the 2017 USFWS *Guidelines for Avoiding Impacts to the West Indian Manatee*, which is applicable for construction projects in North Carolina waters.

Sea turtles present within the project area, especially loggerheads and greens, are at risk of impingement and entrainment within the hopper dredge practically year-round. Any incidents or takes of sea turtles (and other federal protected species) are tracked in the USACE ODESS tracking system and are available at https://dqm.usace.army.mil/odess. Cold stunning increases risk of takes in the winter months when turtles cannot quickly escape the dredge. Spring and summer months, when turtles are nesting and most abundant, also increases risk of takes. It is difficult to predict the increase in take due to spring and summertime dredging. An assessment of information between 2016 - 2020 taken from the Operations and Dredging Endangered Species System (ODESS) website shows all turtle takes (16 total) that occurred in the project area under federal hopper dredging projects.

Table 8. Sea turtle takes at Wilmington and Morehead City Harbor project areas, 2016-2020

Year	Month	Species	WH or MHC	Outside of 1 Dec-15 Apr window?
2016	Nov	Green	WH	Y
2016	Nov	Green	WH	Y
2017	Jan	Green	WH	N
2017	Mar	Loggerhead	MHC	N
2017	Apr	Loggerhead	MHC	N
2019	Mar	Green	MHC	N
2019	Mar	Green	MHC	N
2019	Mar	Loggerhead	MHC	N
2019	Mar	Green	MHC	N
2019	Mar	Kemps	WH	N
2019	Mar	Loggerhead	WH	N
2019	April	Kemps	WH	Y
2020	April	Green	WH	Y
2020	May	Leatherback	WH	Y
2020	July	Loggerhead	MHC	Y
2020	July	Loggerhead	MHC	Y

As shown in Table 8, 7 takes occurred outside of the 1 December – 15 April window on 4 separate occasions when window extensions were requested by the USACE and approved by agencies. The majority of takes are shown to occur during the months of March and April (11 total). Summertime dredging in Morehead City Harbor channels (Range A, Range B and Cutoff) for 60 consecutive days during late May, June and July, 2020 (with 2 dredges working simultaneously for the last 30 days) resulted in only two loggerhead sea turtle takes, considered a great success as more sea turtle interactions were expected.

The NARW would potentially benefit from a change from the winter dredging that is now occurring. If hopper dredging were to occur more frequently during the warmer months (May-November) there would be less likelihood of injuries occurring from ship strikes to the NARW during the time that they are more frequently seen within the critical habitat area for calving.

The increase of the dredging events during the warmer summer months could cause a temporary impact in the Cape Fear River Carolina Unit Critical Habitat for the Atlantic Sturgeon by reducing the dissolved oxygen found in the river with the increase in sedimentation and turbidity created by the act of dredging, resulting in a “may affect, not likely to adversely affect” determination for Atlantic Sturgeon. Any effects to Atlantic Sturgeon will be greatly reduced with the adherence to the SARBO PDCs found in the

SARBO Appendices B, E and H https://www.fisheries.noaa.gov/content/endangered-species-act-section-7-biological-opinions-southeast.

Since beneficial use of dredged material will continue as it has in the past and placement of the dredged material within bird habitat will not occur outside of the bird nesting window of 1 September – 31 March, a no effect determination can be made for shorebirds and their critical habitats such as: red knot (*Calidris canutus rufa*); piping plover (*Charadrius melodus*); and roseate tern (*Sterna dougallii dougallii*). Additionally, the proposed action would have no effect on seabeach amaranth (*Amaranthus pumilus*), which may be found on surrounding beaches.

Table 9. Threatened and Endangered Species Effects Determination

Species	Status	No Action Effects Determination	Expanded Window Effects Determination	Proposed Action Effects Determination
Mammals				
West Indian Manatee/ *Trichechus manatus*	Threatened	MANLAA	MANLAA	MANLAA
Blue Whale/ *Balaenoptera musculus*	Endangered	MANLAA	MANLAA	MANLAA
Sei Whale/ *Balaenoptera borealis*	Endangered	MANLAA	MANLAA	MANLAA
Sperm whale/ *Physeter macrocephalus*	Endangered	MANLAA	MANLAA	MANLAA
Finback whale/ *Balaenoptera physalus*	Endangered	MANLAA	MANLAA	MANLAA
North Atlantic Right Whale/ Eubalaena glacialis	Endangered	MANLAA	MANLAA	MANLAA; Potential positive affect by reducing risk to species by implementing dredging outside of the primary calving time of winter along the Carolina coast.
Birds				
Bald Eagle/ *Haliaeetus leucocephalus*	Bald & Golden Eagle Protection Act	No Effect	No Effect	No Effect
Piping Plover/ *Charadrius melodus*	Threatened	No Effect	No Effect	No Effect
Red Knot/ *Calidris canutus rufa*	Threatened	No Effect	No Effect	No Effect
Roseate Tern/ *Sterna dougallii dougallii*	Endangered	No Effect	No Effect	No Effect
Reptiles				
Green Sea Turtle/ *Chelonia mydas*	Threatened	MANLAA	MANLAA	MANLAA
Hawksbill Sea Turtle/ *Eretmochelys imbricata*	Endangered	MANLAA	MANLAA	MANLAA
Kemp's Ridley Sea Turtle/ *Lepidochelys kempii*	Endangered	MANLAA	MANLAA	MANLAA
Leatherback Sea Turtle/ *Dermochelys coriacea*	Endangered	MANLAA	MANLAA	MANLAA
Loggerhead Sea Turtle/ *Caretta caretta*	Threatened	MANLAA	MANLAA	MANLAA
Fish				
Atlantic Sturgeon/ *Acipenser oxyrinchus oxyrinchus*	Endangered	MANLAA	MANLAA	MANLAA
Shortnose Sturgeon/ *Acipenser brevirostrum*	Endangered	MANLAA	MANLAA	MANLAA

Species	**Status**	**No Action Effects Determination**	**Expanded Window Effects Determination**	**Proposed Action Effects Determination**
Fish				
Giant Manta Ray/ *Manta birostris*	Threatened	MANLAA	MANLAA	MANLAA
Oceanic Whitetip Shark/ *Carcharhinus longimanus*	Threatened	MANLAA	MANLAA	MANLAA
Flowering Plants				
Seabeach Amaranth/ *Amaranthus pumilus*	Threatened	No Effect	No Effect	No Effect
Critical Habitats				
Atlantic Sturgeon (Carolina DPS)	Cape Fear River Carolina Unit 4 (C4)	MANLAA	MANLAA; Short term negative affect to Critical Habitat with reduced D.O. due to increased sedimentation and turbidity; limited to areas in the vicinity of dredging activities	MANLAA; Short term negative affect to Critical Habitat with reduced D.O. due to increased sedimentation and turbidity; limited to vicinity of dredging activities
Loggerhead Sea Turtle		No Effect	No Effect	No Effect
Piping Plover		No Effect	No Effect	No Effect
North Atlantic Right Whale		MANLAA	MANLAA	MANLAA; Potential Positive Affect if there are reduced dredging events in critical habitat area during the winter calving season, and dredging events occur in the warmer months

This EA utilizes the 2020 SARBO which takes a broader approach to conservation of a wider array of species and does not focus as much on sea turtles as SARBOs of the past. The 2020 SARBO provides many ways to minimize risk and avoid sea turtle takes; such as trawling (capture and non-capture, depending on the area) and implementing a wider use of bed leveling. Moreover, the 2020 SARBO requires annual reporting for all projects, which will be annually evaluated to ensure no one species is experiencing unacceptable levels of take that could be detrimental to the total population of that species.

5.8 Socioeconomics

Socioeconomics of the region and areas specific to Wilmington and Morehead City have been addressed in detail in past NEPA documents, so this section will focus on socioeconomics related to the Wilmington and Morehead City Ports.

Wilmington Harbor

The Wilmington Harbor navigation channel provides deep draft access to the terminal at the Port of Wilmington. The Port of Wilmington is the largest terminal complex at WH and is ranked 70th in the entire U.S., transporting cargo all over North Carolina and beyond. The Port handles break bulk and bulk commodities and is the only container terminal at WH. Table 10 below shows the most recent waterborne commerce numbers from 2018 as reported by the USACE Navigation and Civil Works Decision Support Center for Wilmington and Morehead City. For more than twenty years, there has been a continuous growth in the size of container ships, including length, beam, draft, deadweight tonnage, and twenty-foot equivalent unit (TEU) capacity. The economic advantage of larger vessels is the major factor in the increase in vessel size. The Port of Wilmington has modernized to handle larger vessels and has completed a feasibility study to increase the harbor channel depth an additional 5 feet to accommodate future growth.

Morehead City Harbor

The Port of Morehead City is a breakbulk and bulk facility that is equipped with nine berths and transports natural products such as phosphate, sulfur and wood chips. The facility also houses high-value commodities such as rubber, paper, steel and lumber. In addition, Morehead City is designated as a Commercial Strategic Port due to the support provided for nearby Marine Corps Base Camp LeJeune.

Table 10. Wilmington and Morehead City Harbor Ports Ranking and Tonnage, Waterborne Commerce Statistics Center, 2019.

Port Name	Rank in U.S.	Imports (tons)	Exports (tons)	Domestic (tons)	Foreign Total Tonnage	Grand Total Tonnage
WH	70	3,628,910	2,238,750	392,619	5,867,660	6,260,279
MHC	105	1,077,390	444,718	997,544	1,522,108	2,519,652

Environmental Impacts

As mentioned previously, there is currently a shortfall in the national supply of hopper dredges as the demand for dredging continues to increase. The result has been several failed contract awards for maintenance dredging. Delays in maintenance dredging of the harbors has, at times, resulted in draft and width restrictions, forced larger ships to light-load, to wait on high tides to sail in and out, or prevent them from calling on a Port altogether.

No Action: Abiding by the current hopper window of 1 December to 15 April will continue to present substantial challenges in adequately maintaining WH and MHC as evidenced by the failed contracts mentioned in Section 2 of this EA. This results in cost increases to maintain the Harbors, which adversely affects the local and regional economy.

Expanded Window and Bed Leveling: Allowing hopper dredging and bed leveling to occur during the months of July to November would provide some flexibility and reduce the risks involved with awarding the maintenance dredging contracts at WH and MHC. However, as long as the risk of a failed contracts exists the USACE may not be able to adequately maintain the Ports, resulting in adverse impacts on the local and regional economy.

Elimination of the Historic Window and Bed Leveling: The proposed action would allow hopper dredging and bed leveling to occur at any time of year, providing the most flexibility and assurance for the USACE to adequately maintain the Harbors, allowing the Ports of Wilmington and Morehead City to remain open and fully functioning with no navigation restrictions. Also, project cost savings would be realized with increased flexibility to perform maintenance dredging and bed leveling any time of year. Economic benefits will be derived through savings in project costs that translates to savings to the State Ports, as well as the local, regional and national economy.

5.9 Environmental and Socioeconomic Impact Comparison of Alternatives

The table below provides a brief summary and comparison of impacts to the physical and natural environment as well as regional socioeconomics for the alternatives considered (Table 11).

Table 11. Comparison of Impacts to Resources

Resource	No Action	Expanded Window w/ Bed Leveling	No Window w/ Bed Leveling & Risk-based Mgmt (Proposed Alt)
Sediments	No effect	Bed leveling may result in less sediment removed from the channel	Bed leveling may result in less sediment removed from the channel.
Water Quality	No increase in turbidity during times of high biological activity. No significant long-term negative effects.	Minor and temporary increase in turbidity during times of high biological activity (July). No significant long-term negative effect.	Minor and temporary increase in turbidity during times of high biological activity (April – July). No significant long-term negative effect.
Noise	No increase in noise during times of high biological activity. Minor effects on NARW during winter calving	Potential behavioral effects on species present during July – November expected to be minor and short-term.	Potential behavioral effects on species present during April – November expected to be minor and short-term.
Fisheries and EFH	Avoidance of turbidity and entrainment effects during times of high biological activity.	Minor effects from turbidity and entrainment during times of high biological activity (July). No significant long-term negative effects.	Minor effects from turbidity and entrainment during high biological activity (April – July). No significant long-term negative effects.
Benthos	Avoidance of dredging effects during times of high biological activity (April – July).	Increased impacts to benthics during month of July. No significant long-term negative effects.	Increased impacts to benthics between April – July. No significant long-term negative effects.
Threatened and Endangered Species	MANLAA determination for all species potentially impacted by existing window; no effect to Loggerhead or Piping Plover CH; MANLAA NARW CH	MANLAA determination for all species potentially impacted by expanded window; no effect to Loggerhead or Piping Plover CH; MANLAA NARW CH	MANLAA determination for all species potentially impacted by expanded window; no effect to Loggerhead or Piping Plover CH; MANLAA NARW CH; potential positive effect to NARW CH if dredging events are reduced during the winter calving season.
Socioeconomic	Potential adverse impacts to the local and regional economy.	Potential adverse impacts on the local and regional economy, but less than under the No Action alternative.	Economic benefits to the local, regional and national economy.

6.0 CUMULATIVE EFFECTS

The CEQ regulations (40 CPR 1508.7) require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions."

This cumulative effects analysis considers the cumulative effects related to direct and indirect effects of altering the current maintenance dredging hopper window for maintenance of the lower portions of WH and MHC. The action does not include an increase in the footprint of areas to be dredged or in the duration of hopper dredging; the WH and MHC will still be maintained annually. Shoaling rates are expected to remain the same; however, occasionally, large storms may move significant quantities of material into the channels in a short period of time.

It has been determined by the above analysis that the action of bed leveling will not have significant direct or indirect effects on the resources analyzed, so it will not be included in this cumulative affects analysis. Bed leveling is expected to occur after hopper dredging; after the accumulated material has been removed from the channel and the majority of direct impacts have already occurred. A hopper dredge often leaves behind “peaks” and “valleys” in the channel bottom that require leveling to achieve the required depth. The channel bottom is redisturbed before species can recolonize; and the slow-moving drag bar is not expected to make contact with free-moving species. When the drag bar is being lowered to the bottom, it is done slowly, to avoid harm to any free-moving species. The drag bar attachments are designed to avoid impingement of creatures, such as sea turtles, and movement across the channel bottom is meant to create a sand wave so that burrowed creatures are pushed up before they are crushed. Changes in water quality from turbidity increases are expected to be minor and short-term. Bed leveling replaces the need for a hopper dredge to pass over a dredged area again to remove high spots, therefore it decreases the risk of entrainment. Considering the past, present and foreseeable future uses of bed leveling, this will not contribute to cumulative effects to resources that may be impacted, such as water quality, benthic resources, and free-swimming aquatic species, including federally listed threatened and endangered species.

Direct effects (occurring at the same time and place) of hopper dredging occur within the federal navigation channel limits, and resources present within these limits are impacted by entrainment, direct contact with vessels, changes in water quality and increased noise levels. Resources impacted include benthic invertebrates (sessile and mobile), nektonic species that feed and dwell on the seafloor, and marine reptiles and mammals such as sea turtles, manatee and whales.

Indirect impacts (occur later in time or are farther removed in distance) of hopper dredging occur outside of the channel limits and, depending on currents, tides and

weather, can have a varying impact on resources within a 1-2 mile distance from the dredge. Resources include species and habitat in the adjacent ocean, inlet and estuary environments that can be impacted by changes in water quality and increases in noise levels produced by the hopper dredge. Overall, increases in indirect impacts are not expected to result in significant cumulative effects on habitat and species present.

The cumulative effects analysis below addresses the cumulative effects of no action as compared to the other alternatives, which are an expanded window and elimination of the historic window with implementation of monitoring for 3 years and risk-based management. In general, the cumulative effects of hopper dredging will slightly increase as more dredging occurs during warmer months of the year, outside the existing hopper dredging window of 1 December – 15 April. Focus is on the impacts that may occur during periods of high biological activity, and the possible effects that may occur from hopper dredging during any time of the year (noting that not every dredge event will occur in the spring/summertime).

No Action: Since the 1980s, hopper dredging in the WH and MHC, as well as all other maintenance of federal channels along the North Carolina coast, has been restricted to the winter months. Beach nourishment projects, which borrow material from federal channels or offshore borrow sites, can be performed by hopper or pipeline dredge and have also been restricted to the winter months. The Wilmington District's coastal storm risk management (CSRM) program has nourished Ocean Isle Beach, Carolina Beach, Kure Beach and Wrightsville Beach for the past 50 years. All of these projects have similar impacts to water quality, noise levels, benthic organisms, important fisheries and federally protected marine reptiles and mammals.

Since this time, dredges have grown in demand and become more highly efficient, innovative and cost-effective while also responding to concerns regarding environmental impacts. In 2006, USACE implemented the Silent Inspector (SI) program on a national basis to monitor hopper dredging by collecting digital data from the dredge and compiling it into a central database. SI evolved into the Dredging Quality Management Program (DQM) that provides near real-time data for all USACE dredging projects. Today, DQM allows for better understanding and oversight of hopper dredge operations, thus reducing risks to protected resources.

Unavoidable impacts from hopper dredging occur due to increased turbidity, noise levels and entrainment. Benthic organisms in the path of the dredge will be entrained and die; however, communities are expected to recover rapidly and therefore these localized effects of removing sediment within the dredge footprint or minor sedimentation in surrounding areas will only have short-term impacts on the ecosystem and benthic resources will recover quickly. Under the no action alternative, critical life stages of important fisheries most at risk of dredging are summer and southern flounder and brown shrimp that occur in the inlets and ocean; and Atlantic and shortnose sturgeon, American shad and river herring that occur in the Cape Fear River (NOAA Report, 2019). Populations of these species have been damaged over time mainly due

to fishing practices, and hopper dredging is not known to have a decline on the populations of these species. The effects to Atlantic and shortnose sturgeon are analyzed in the 2020 SARBO.

Historically, hopper dredging had a window put in place primarily to protect sea turtles. Although effective at reducing takes, hopper dredging during the 1 December – 15 April window may occasionally entrain sea turtles resting on the bottom or affected by cold stunning, despite the protection measures in place. The 2020 SARBO shifts from historic winter dredging as the primary method to reduce take to a risk-based assessment approach that considers timing and equipment choices to reduce effects to all species in these areas. The 2020 SARBO also includes the use of relocation trawling and bed-leveling as options to minimize take, which were not available under the 1997 SARBO. Bed-leveling is an option used during the cleanup phase of hopper dredging when the risk of take to sea turtles is highest. Relocation trawling is an option to relocate sea turtles (except leatherback sea turtles) and sturgeon out of the project area. Using the risk-assessment approach with these available options allows USACE to work in times outside the historic dredging window and still minimize the risk of sea turtle takes. NMFS increased the numbers of allowable takes for sea turtle species in the 2020 SARBO to cover the larger area covered under the Opinion from North Carolina to the U.S. Caribbean and to account for changes in sea turtle populations..

The critically endangered North Atlantic Right Whale (NARW) is also under protection by NMFS and the 2020 SARBO and may be present in the harbors during the 1 December – 15 April window. NARW and their calves are at great risk of vessel strikes. USACE developed a conservation plan included in the 2020 SARBO as Appendix F to minimize this risk. This conservation plan includes USACE funding additional aerial survey teams to monitor for the presence of NARW in North Carolina, South Carolina, and Georgia. It also states that USACE hopper dredging and projects requiring survey vessels over 33-ft in length will be scheduled, to the maximum extent practicable, outside of NARW migration and calving season to avoid impacts, especially to reproducing females and newborn calves. Protected Species Observers on hopper dredges and relocation trawling vessels monitor for the presence of marine mammals and vessels slow when NARW are in the area according the conservation plan. To date, there are no recorded NARW takes (ship strikes) from hopper dredging in the project area.

In the past 5 years, more non-federal hopper dredging projects have occurred along the NC coast. From 2017-2019, Dare County utilized hopper dredges to nourish beaches in the Towns of Duck, Kitty Hawk, Southern Shores, Kill Devil Hills, Nags Head and Buxton. Dredging and placement for all of these projects occurred during the summer months, since offshore conditions are unsafe for the dredge and crew to work in the wintertime. Other shoreline protection projects that utilize hopper dredges include Topsail Beach and Bogue Banks. These projects operate under their own USFWS and NMFS Biological Opinions. Work is expected to reoccur approximately every five years

under the USFWS Opinion and the 2020 SARBO since it replaced the previous individual NMFS consultations.

The future may see an increase in demand for hopper dredging, as more and more federal and non-federal beach projects get underway, not considered as part of this EA. Continuing to hopper dredge during the 1 December – 15 April window would have minor effects on the benthos, fish and threatened and endangered species present during this time period. Turbidity rates and noise levels would not increase, and the footprint of disturbance will continue to occur in the same previously disturbed areas. In combination with past, present and foreseeable future hopper dredging of federal and non-federal projects along the entire North Carolina coast, impacts to benthic organisms, fisheries and marine reptiles and mammals will be minimal. Therefore, cumulative effects from of the no action alternative on marine species are expected to be negligible.

Expanded Window and Bed Leveling: Expanding the current hopper dredge window to include the months of July – November would have an effect on marine species present within the project area during this time period. Changes in water quality, increased noise and entrainment would have similar effects as the no action alternative, except the density of species in the area increases when water is warmer with species migrating into the area. Therefore, the number of species that may be affected increases. The effects to species under NMFS purview were considered in the 2020 SARBO. Effects from changes in water quality to other species were evaluated in this EA and are expected due to the short duration of projects (2-3 months annually) and localized effects (within the dredging footprint and immediate area) leaving the surrounding areas unaffected. As described, mobile species can avoid adverse interactions with changes in water quality.

Similar to as mentioned above, benthic invertebrate populations impacted during the expanded timeframe are expected to recover quickly and have a minimal effect on predators that depend on hem. Critical life stages present from July – November include white shrimp and red drum in the estuaries; pink shrimp and Atlantic blue crab in the inlets; sturgeon and herring in the river; and brown and pink shrimp, blue crab, and summer and southern flounder in the ocean (NOAA Report, 2019). Hopper dredging is not expected to have an impact on the populations of these important species as entrainment occurs only within the federal channel and mostly on the channel bottom and is therefore a small area of impact when considering the size of the surrounding habitat. Turbidity effects will be short-term and minor where the material is mostly sand, and slightly higher in open ocean areas where fine grained material exists; however, free-moving creatures are expected to avoid these areas of disturbance.

Assuming that sea turtles are present in higher numbers during the July – November months, a hopper dredge may encounter them in the project area more frequently as compared to December – April, so additional takes may be expected. Sea turtles are not affected by cold stunning during this time so their chances of avoiding the dredge

may be better than during winter months. With NMFS-required protective measures in place, continued hopper dredging from July – November is not anticipated to have an effect on sea turtle populations in the future, as analyzed in the 2020 SARBO. USACE will continue to comply with the SARBO and take limits therein. USACE will also implement additional minimization measures covered under the 2020 SARBO including the use of relocation trawling and bed-leveling when deemed the appropriate minimization measure through the risk-assessment process.

Considering the NARW is most active in the project area during the late fall and winter months, dredging outside of the current window may benefit the NARW by reducing risks of a potential ship strike. The focus of the 2020 SARBO is to aid the continuous existence of the NARW, and the expanded window would support this effort.

The expanded window alternative does not change the volume of dredging expected; however, hopper dredging in North Carolina may increase over time if used on projects not covered under this EA. This new work could also occur outside of the historic dredging window. When considering cumulative effects of dredging projects in the past, present and future, increasing the number of months available to hopper dredge may reduce cumulative effects on species in the winter months, while also possibly affecting species that are more abundant during the warmer months from July-November. Regardless, when comparing the size of the project areas to the greater surrounding habitat, impacts to benthic organisms, important fisheries and protected marine reptiles and mammals are not expected to increase significantly, therefore, cumulative effects of the expanded window are expected to be minimal.

Elimination of the Historic Hopper Window and Bed Leveling: The removal of the historic hopper dredge window will allow hopper dredging to occur any time of year; however, it should not be assumed that hopper dredging will necessarily occur within the spring and summer months. Under this alternative, hopper dredging would occur when a hopper contract dredge is available and not confine dredging impacts to any particular time of year.

Presently, the Wilmington District is conducting separate 50-year studies for the continued nourishment of Carolina Beach and Wrightsville Beach. These projects have typically been completed by pipeline dredge but may use hopper dredges as well, especially if dredging from offshore borrow areas. Additionally, construction of the Surf City North Topsail Beach (SCNTB) CSRM project is expected to begin in late 2021. The proposed plan for the SCNTB project is to expand the environmental window to allow initial construction (only) any time of year and renourishments would be limited to the timeframe of November 16 to April 30 to coincide with the current beach placement window. Initial construction is projected to take approximately three years so work in the summers on that project would be limited to the first three years. For the Carolina Beach and Wrightsville Beach 50-year studies it's anticipated that expanded windows will be pursued for those projects as well, with a plan for all projects to be adaptively managed over the 50-year project life based on available scientific information and

experience. The detailed effects of these projects being conducted during any time of year will be analyzed in their respective forthcoming NEPA documents.

It is not known how many future private or federal projects may be performed during warmer months of the year and it's beyond the scope of this EA to attempt to predict what time of year future projects may be accomplished and any attempt to do so would be speculative, at best. If other projects consider expanded dredging windows, compliance with NEPA, the Coastal Zone Management Act and all other applicable environmental regulations would be required.

Eliminating the historic window for the portions of WH and MHC covered in this EA would have a minimal effect on marine species present within the project area during the warmer months. Changes in water quality, increased noise and entrainment would have similar effects as the no action alternative, except their impacts would be slightly greater due to the increased biological activity in the water. As with the expanded window alternative, increased encounters with the dredge and more individuals affected by dredging is expected, however minimal.

In addition to the species common during the July – November months, affects may occur to previously unimpacted species present during April – June, therefore dredging during this time will result in more impacts than the no action or expanded window alternatives. Critical life stages of important fisheries most at risk are sturgeon, American shad and river herring in the river; brown and white shrimp and gag grouper in the estuaries; pink shrimp and blue crab in the inlets; and pink shrimp, blue crab and gag grouper in the ocean (NOAA Report 2019). However, hopper dredging is not expected to have an impact on the populations of these species, since dredging can occur at any time.

The effects of dredging on protected species such as sturgeon, sea turtles and the NARW are accounted for under NMFS and the 2020 SARBO. All reoccurring dredging, to include federal and non-federal projects, is covered under the 2020 SARBO, and it is assumed that with PDCs in place these species will not be significantly impacted. Furthermore, the 2020 SARBO follows adaptive management practices so adjustments may be made in the future.

The demand for hopper dredges may continue to increase in the future, as they have in the recent past. This increase in dredging, which is occurring mostly in the private sector, would have similar impacts as discussed above. It is also possible that future hopper dredging will occur in the warmer months more frequently, therefore, increased effects on marine species is expected to occur. Due to the widespread distribution of dredging and beach placement projects along the NC coast and the asynchronous timing of these projects, cumulative impacts would be minimal. Overall, cumulative effects from past, present and foreseeable future hopper dredging as a result of hopper dredging during any time of year in the WH and MHC are expected to minimal.

7.0 STATUS OF ENVIRONMENTAL COMPLIANCE

7.1 National Environmental Policy Act (NEPA)

This EA has been prepared in accordance with the NEPA (under the 1978 regulations and their existing NEPA procedures), the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations (CFR) parts 1500- 1508), 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 April 8, 2020, to state and federal resource agencies for a 30-day comment period. A formal scoping meeting was conducted virtually on April 23, 2020. 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 public review and comment on August 17, 2020. All comments received and responses developed by the USACE are included in Appendix E. All identified agency and stakeholder concerns were considered during the development of the Final EA.

Pursuant to NEPA, a new EA will be prepared if there are significant new circumstances or information relevant to the environmental impacts of the proposed action.

7.2 Section 103 of the Marine Protection Research and Sanctuaries Act (MPRSA)

In accordance with Section 103 of the Marine Protection, Research, and Sanctuaries Act (MPRSA), materials disposed of in the New Wilmington ODMDS and/or Morehead City ODMDS will meet applicable ocean dumping criteria (ODC) and be approved for ocean disposal by EPA Region 4 via concurrence letters. EPA-provided concurrence letters are typically valid for a period of three years following the date of signature, and include EPA Region 4's agreement that all Wilmington Harbor and Morehead City Harbor Federal Navigation Project dredged materials comply with the ODC and therefore may be placed in appropriate ODMDSs. Sediments from within all project reaches shown on Figures 2 and 3 currently meet, and have consistently met, ODC and have been granted EPA Region 4 approval for placement within the appropriate ODMDS. Wilmington Harbor's existing Section 103 concurrence will expire on October 14, 2023 and was based upon a Tier I evaluation developed in accordance with the MPRSA. Morehead City Harbor's existing concurrence will expire on August 14, 2023. Similar to Wilmington Harbor, Morehead City Harbor's concurrence was based on a Tier I evaluation. Section 103 concurrences for WH and MHC are renewals and assume that only sediments resulting from maintenance dredging of existing channels will be dumped in the Wilmington ODMDS and Morehead City ODMDS, respectively.

7.3 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 August 17, 2020, the USACE submitted a copy of the draft EA and consistency determination to the N.C. Division of Coastal Management in accordance with Section 307 (c) (l) of the Federal Coastal Zone Management Act of 1972, as amended. NCDCM requested additional time for review while the USACE and agencies discussed ways to resolve issues. The USACE submitted an addendum to the consistency on

December 23, 2020 outlining commitments to monitor for three years during dredging at both harbors. DCM provided their final federal consistency decision on December 31, 2020.

The December 31, 2020 consistency concurrence is valid while USACE performs monitoring for three years and it expires December 31, 2023. The Consistency determination, addendum, and concurrence are included in Appendix F. The consistency conditions are described below as well as monitoring efforts planned by the State and other entities.

- Hydrodynamic modeling to improve understanding of seasonal transport, plume dynamics, tidal dynamics and flushing rates;
- Monitoring, recording and reporting to NCDMF the direct entrainment/impingement/ capture of non-ESA species on both hopper dredges and capture relocation trawlers;
- Monitoring sediment plumes and their implications for water quality and marine ecology through independent water quality sampling (including range of water quality parameters across spatial and vertical profiles). Conducting water quality sampling before, during and after hopper dredging and bed leveling operations and during extreme weather and king tide events; and
- Addressing potential impacts to sea turtles in North Carolina through the collection of tissue samples for genetic analysis and the provision of the turtle tissue or body to the NC WRC so they may monitor takes to determine if North Carolina green sea turtles (which are genetically distinct in the North Atlantic) are disproportionately impacted by hopper dredging outside of the environmental window.

Monitoring items identified by the State to be carried out by non-USACE partners include:

a) Synthesize existing and recent studies of inlet utilization by various species and regional studies of marine dredging impacts;

b) Continue, and expand, the BridgeNet larval fish survey program at Beaufort and Cape Fear Inlets;
c) Relate seasonal patterns in larval abundance to current and past modeled circulation patterns, coastal storms, and/or rain events to better understand natural variability;
d) Evaluate nearby habitats for increased sedimentation;
e) Evaluate any impacts on benthic community; and
f) Assess and monitor disproportionate impacts on any unique populations or behaviors in North Carolina.

The goal of monitoring is to learn more about the potential impacts of dredging during warmer months of the year. Data obtained by the USACE will contribute to the overall monitoring efforts and combined with others will be used to inform future decisions about dredging timing and equipment. The Wilmington District will continue to share this information with resource agencies (including the North Carolina Division of Coastal Management, Division of Marine Fisheries, Wildlife Resources Commission, and Division of Water Resources) to develop and refine further the studies pursued during this evaluation period. A new or modified consistency will likely be required at the end of the 3-year period and all future work will be done in accordance with the future consistencies received for these projects.

The NEPA process for eliminating the hopper dredging window is complete with this signed Final EA/FONSI. As mentioned in Section 7.1, if after three years the data collected by the USACE and/or State is determined to have unanticipated adverse effects on species or habitat of concern not considered in this NEPA document, then NEPA will be revisited as appropriate.

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, NC Division of Coastal Management (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% or greater sand) being placed in approved nearshore placement areas or within the designated sand zone of the Morehead City ODMDS.

7.3.1 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 all dredging will take place within the authorized federal navigation channels and placement of dredged material will be in pre-approved locations.

Ocean Hazard: The Ocean Hazard System is made up of oceanfront lands and the inlets that connect the ocean to the sounds. Cape Fear River and Beaufort Inlets are 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.

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 Morehead City nearshore placement areas are located off Bogue and Shackleford Banks within these Public Trust Areas. The ODMDSs are located past the 3-mile limit of State jurisdiction. 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.

7.3.2 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 disposed of on the ocean beach or shallow active nearshore area where environmentally acceptable and compatible with other uses of the beach."

7.4 Clean Water Act

The proposed action has been evaluated under the Section 404(b)(1) (P.L. 95-2017) and is included in Appendix B. The three alternatives evaluated will not require a NCDWR 401WQC for the dredging portion of the project since there is no regulated discharge, pursuant to the Clean Water Act. However, dredged material placed in the authorized nearshore placement area is covered under WQC #4146. A copy of the WQC can be found in Appendix B.

All three alternatives are in compliance with Sections 404 and 401 of the Clean Water Act.

7.5 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, the USACE has been in consultation 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.

All work done for the proposed project will be in compliance with the 2020 SARBO https://www.fisheries.noaa.gov/content/endangered-species-act-section-7-biological-opinions-southeast. Since there is no beach or bird island placement included as part of proposed plan, coordination with USFWS under Section 7 is not required.

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. The adaptable framework of the risk analysis includes regular coordination with various federal and state resource agencies and considers dredging risk to all species, including threatened and endangered. The risk analysis also allows for planning to consider threatened and endangered species that are considered critically endangered and how to avoid any negative impacts to these species that could occur within the project area, such as the NARW.

7.6 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 this Final EA/FONSI. Based on a letter received from NMFS dated January 21, 2021 (Appendix G), the current EFH conservation recommendation to initiate adaptive/risk management process within the WH and MHC has been adopted. The USACE will be leading an interagency work group to reevaluate windows, which will be key to the risk-based adaptive management process going forward. As mentioned in Section 7.3, the Wilmington District will examine issues important to conserving fish habitat over the next three dredge cycles and will continue to meet with the NMFS and state agencies to develop and refine the monitoring to be done over the next 3 years.

Beyond the scope of this EA, NMFS HCD recommends that USACE undergo a comprehensive review of all state-wide issued windows in the future. The Wilmington District agrees and will be pursuing this with the same risk-based, collaborative approach. USACE SAD is currently working on a regional approach to adaptively manage marine resources in the Gulf and South Atlantic and started on a pathways to

impacts spreadsheet for multiple species (federally and non-federally protected). The spreadsheet and adaptive management “plan” are only in early development and will not be included with the Final EA/FONSI.

Table 12. 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 a 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	16 USC 470	Full Compliance
National Historic Preservation Act Amendments of 1980	16 USC 469a	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.

7.7 Coordination of this Document

The proposed action and the environmental impacts of the proposed action are addressed in this EA. On July 27, 2020 the EA was made available to an extensive list of local, State and federal regulatory agencies and the public for a 30-day review and comment period. At the State agencies' request, the comment period was extended an additional 15 days. A list of recipients has been included as Appendix D of this document. Since the release of the Draft, several meetings have taken place with state and federal resource agencies to resolve comments and concerns. The final EA/FONSI has been distributed to the list of recipients for the draft EA plus all other entities that provided comments on the draft. The Final EA/FONSI may also be accessed on the Wilmington District Website at:

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

8.0 CONCLUSION

Based on findings described in this EA, it is in the federal interest to implement the proposed alternative to allow hopper dredging and bed leveling to occur without the historic window restriction. Maintenance dredging of existing channels may result in minor and short-term impacts to water quality, noise, benthic organisms, important fisheries and protected marine reptiles and mammals and critical habitat. The overall benefit of the proposed action is that it will allow for flexibility and assurance in maintaining the WH and MHC navigation channels balanced with species protection, reduced maintenance dredging costs, and provision of a safer, more navigable channel for ships calling on the Ports. Additionally, with bed leveling the duration of each dredging event may be reduced, thereby lessening temporary impacts to benthos, water quality, and noise levels.

Monitoring, assessing and evaluating data during and after each dredge cycle over the next three years will be important to reducing impacts to the environment. USACE will use the risk-based assessment framework to evaluate risk to all species and habitat in the area by considering the possible routes of effects based on project location, timing, equipment, and minimization measures available. The assessment will consider the risks and benefits at a local, regional, and national level and prioritize protection of the most vulnerable species based on population status and the best-available information.

Hopper dredge contracts will continue to require monitoring with the Dredging Quality Management (DQM) software to verify dredge position, dredging depth, vessel speed and slurry float rate and density. On-board 24-hour PSO monitoring is required year-round by the 2020 SARBO, and endangered species are tracked and recorded through the Operations and Dredging Endangered Species System (ODESS) so accurate incidents can be reported. USACE and the dredge industry continue to develop and use technologies and methodologies to reduce risks to species. As more information of dredging effects is collected and understood, solutions to combat the negative effects will result, therefore allowing the important maintenance of our federal channels to continue as needed and the economy that depends on them to thrive.

9.0 POINT OF CONTACT

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Appendix A: Wilmington District Consistency Determination and DCM Consistency Concurrence

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

May 30, 2019

Environmental Resources Section

Mr. Daniel Govoni
North Carolina Department of Environment
and Natural Resources
Division of Coastal Management
400 Commerce Avenue
Morehead City, North Carolina 28557

Dear Mr. Govoni:

The U.S. Army Corps of Engineers Wilmington District (Corps) is requesting a consistency review under the North Carolina Coastal Area Management Program for the proposed bed leveling activity to occur during the annual Regional Harbor Dredge Contract project. The request involves using bed leveling, as needed, during maintenance dredging within the Wilmington Harbor and Morehead City Harbor federal navigation channels. Bed leveling reduces project costs and risks of harming listed threatened and endangered species. This letter serves as a formal consistency determination in which we request your concurrence.

As you are aware, the maintenance of safe navigation in federal channels is essential to ensure our Nation's maritime safety and security. Maintenance activities will be undertaken in compliance with all conditions of applicable state and federal authorizations.

This determination is based on the review of the proposed project against enforceable policies of the State's coastal management program, which are principally found in Chapter 7 of Title 15A of the NC Administrative Code.

Thank you for your attention to this matter. Should you have any questions or require additional information, please contact Ms. Emily Hughes by telephone: (910) 251-4635 or by email: emily.b.hughes@usace.army.mil.

Sincerely,

Jennifer L. Owens
Chief, Environmental Resources Section

Project Name: Bed Leveling within Wilmington Harbor and Morehead City Harbor Federal Navigation Channels

CAMA Consistency Determination

The United States Army Corps of Engineers (Corps) is seeking authorization to perform bed leveling activities within federal navigation channels included in the South Atlantic Division Regional Harbor Dredge Contract (RHDC), which includes Wilmington and Morehead City Harbors. Use of bed leveling may occur in the deep draft entrance channels of the Wilmington Harbor and Morehead City Harbor during any maintenance dredging contract performance period. This means that bed leveling may occur before, during and/or after dredging with the contracted dredge plant, or may be used as a stand-alone means of maintaining a navigation channel.

There is no existing Federal Consistency Concurrence for this activity. The Corps is requesting a consistency concurrence to allow bed leveling for a ten-year period through 2029.

Project Purpose

The Corps proposes to bed level within existing federal navigation channels of the RHDC for the purpose of a conservation practice to reduce risk to federally listed species. The act of bed leveling is considered a form of maintenance dredging that involves using an I-beam or an angled "plow" to move a shallow layer (<24 inches) of material from the channel surface. The intent is to achieve a desired depth by pushing material from a shallower site to a deeper site, while allowing the material to stay in the system.

1. Scenario #1: Pre-dredging activity – moving material within the channel to create more ideal dredging conditions
2. Scenario #2: Stand-alone dredging – achieving project depth by suspending sediments for current/tide to move the material into a deeper part of the channel
3. Scenario #3: After dredging "clean up" phase -- knocking down "high points" from mechanical or hopper dredging to achieve project depth

During a maintenance dredging contract, a contractor will request an after-dredge survey to determine if all designated areas have been dredged to the required depth. Often, "high points" remain from hopper dredging or mechanical dredging that require the contractor to go back to areas already dredged or to continue dredging to obtain required depths. Historically, this is a risky time for taking federally protected sea turtles and/or sturgeon during hopper dredging; species resting on the seafloor may become entrained within a hopper dredge's drag arms and badly injured. Having the alternative option of bed leveling would eliminate this risk. Bed leveling is typically much slower than dredging and allows time for the species to move out of the way.

Another significant purpose for bed leveling is to reduce project costs. The cost to operate a small vessel or barge with a beam or plow in tow is much less expensive than a dredge "chasing after" high points that may be scattered across a project area. Also, allowing the contractor the flexibility to maneuver material prior to dredging would reduce costs as well.

Existing Conditions

As funding allows, the Wilmington Harbor and Morehead City Harbor entrance channels are routinely dredged to maintain project depth, allowing cargo freight vessels to call on the ports as frequently as possible. Maintenance dredging is required about every year due to the high shoaling rates within the entrance channels and seaward.

Wilmington Harbor includes the Baldhead Shoal Channel Range 3, Smith Island Channel, Baldhead-Caswell Channel, Southport Channel, and Battery Island Channel that all have an authorized depth of 44 feet plus 2 feet overdepth (Figure 1). Material that is considered incompatible with beach material is placed offshore in the Ocean Dredged Material Disposal Site (ODMDS).

Morehead City Harbor consists of Ranges A and B and the Cutoff Channels, allowing ships to navigate Beaufort Inlet (Figure 2). These channels have an authorized depth of 43 feet plus 2 feet overdepth. The Morehead City ODMDS contains a "sand cell" that holds material >90% sand, and incompatible material is placed in remaining cells. An alternate placement area for beach compatible dredged material for this project is the Nearshore East and West placement areas.

Proposed Action

It is being requested that bed leveling activity be an available option starting with the FY20 Regional Harbor Dredge Contract (RHDC) for both Wilmington and Morehead City Harbors. The RHDC is a routine (annual) maintenance dredging contract that also includes Savannah and Brunswick Harbors (GA) locations where bed leveling is already approved. With the forthcoming release of the new South Atlantic Regional Biological Opinion (SARBO), bed leveling will be approved by the National Marine Fisheries Service (NMFS) and may occur annually as needed under the RHDC and other projects covered by the SARBO. During the 2019 RHDC and after several sea turtle takes, the contractor made a request to the Wilmington District to utilize bed leveling to replace the need for cleanup dredging, however lack of state authorizations prohibited us from doing so.

The limits of bed leveling will take place in previously disturbed areas of Wilmington Harbor and Morehead City Harbor deep-draft channels. Many different bed leveler designs exist and most are considered acceptable and not harmful to sea turtles. Designs may include a straight I-beam or angled plow, and may be boxed-shaped or include a blade, but all should create a sand wave effect so as not to crush bottom dwellers. The beam or plow would be set from a rigged vessel or barge maneuvered by a tugboat, and lowered to the desired elevation for leveling. The velocity will be limited to 2-5 knots per hour to operate safely.

The Savannah District released an evaluation report on bed leveling in January 2015. The purpose of this evaluation was to (1) assess bed leveler impacts to sea turtles during hopper dredging activities and (2) demonstrate the effectiveness of a bed leveler at improving the channel bottom for deep-draft navigation projects. A capture-relocate trawler was utilized behind the bed leveler to assess impacts, and all captured sea turtles (38) and Atlantic sturgeon (2) over two weeks of dredging were released alive and unharmed, demonstrating that bed leveling had no adverse impacts on listed species.

The 2015 report also addressed the concern regarding “pinch points” resulting from the design of the leveling equipment. On the design used in the Savannah study, there were secondary attachment points extending 2 feet on either side of the blade that served as “pinch points” and were deemed a threat to sea turtles. These were fixed accordingly and consequently, the new SARBO will include a requirement that all future proposed bed leveler designs be photographed and documented with NMFS.

Minimization Measures

It is anticipated that the efficacy of a bed leveler will reduce overall sea turtle and Atlantic sturgeon and shortnose sturgeon mortality during routine Operations and Management (O&M) hopper dredging of deep draft navigation channels in North Carolina. Bed leveling is expected to reduce the need to hopper dredge, thereby minimizing the number of listed species entrained in the dredge. Bottom disturbance to benthic marine life and turbidity levels are not anticipated to be any worse than those resulting from a hopper dredge.

Based on the temporary nature of the work and short-term duration of the project, environmental impacts are expected to be minimal (increased turbidity and benthic disturbance). It is believed that the proposed project will not likely adversely affect the following federally listed species or their critical habitat: Sea turtles (Loggerhead, Green, Kemp’s Ridley, Leatherback, Hawksbill) Atlantic sturgeon, shortnose sturgeon, West Indian Manatee, North Atlantic Right Whale.

Consistency Determination

The proposed project conforms to the management objectives of 15A NCAC 07H .0206 (Estuarine Waters) and 15A NCAC 07H .0207 (Public Trust Areas) since it consists of dredging of existing navigation channels, while minimizing adverse impacts to Estuarine Waters and Public Trust Areas. The proposed project will not affect any wildlife recognized by the State as species of concern, will not adversely impact water quality, and will result in minimal, temporary and short-lived impacts to fisheries and the aquatic habitat.

In accordance with Section 307 (c)(1) of the Federal Coastal Zone Management Act of 1972, as amended, the Corps has determined that the proposed project is consistent, to the maximum extent practicable, with North Carolina’s Coastal Management Program. This determination is based on the review of the proposed project against the enforceable policies of the State’s coastal management program, which are principally found in Chapter 7 of Title 15A of North Carolina’s Administrative Code. We request that the North Carolina Division of Coastal Management concur with this Corps’ consistency determination.

Conclusion

Bed leveling is considered a form of maintenance dredging without the need for suction pumping. The moving and displacement of material on the channel bottom is expected to have less of an adverse effect than would be expected of hopper dredging. Hopper dredging would still occur during the RHDC

but will be minimized by reducing the need to pass over the same areas of the channel. Reducing time needed to dredge would also potentially lower the cost of the project as hopper dredging is a very expensive activity. Bed leveling has demonstrated to be an effective tool for both navigation and minimizing impacts to threatened and endangered species.

Figure 1. Wilmington Harbor (RHDC)
Proposed Areas for Bed Leveling

RHDC Channels
Placement Areas
Non-RHDC Placement Areas
Non-RHDC Channels

Map #: sawnavgis-2019-13
Map Date: 28 May 2019
Imagery Date: 29 March 2019

US Army Corps of Engineers
Wilmington District

0 2,500 5,000 7,500 10,000 Feet

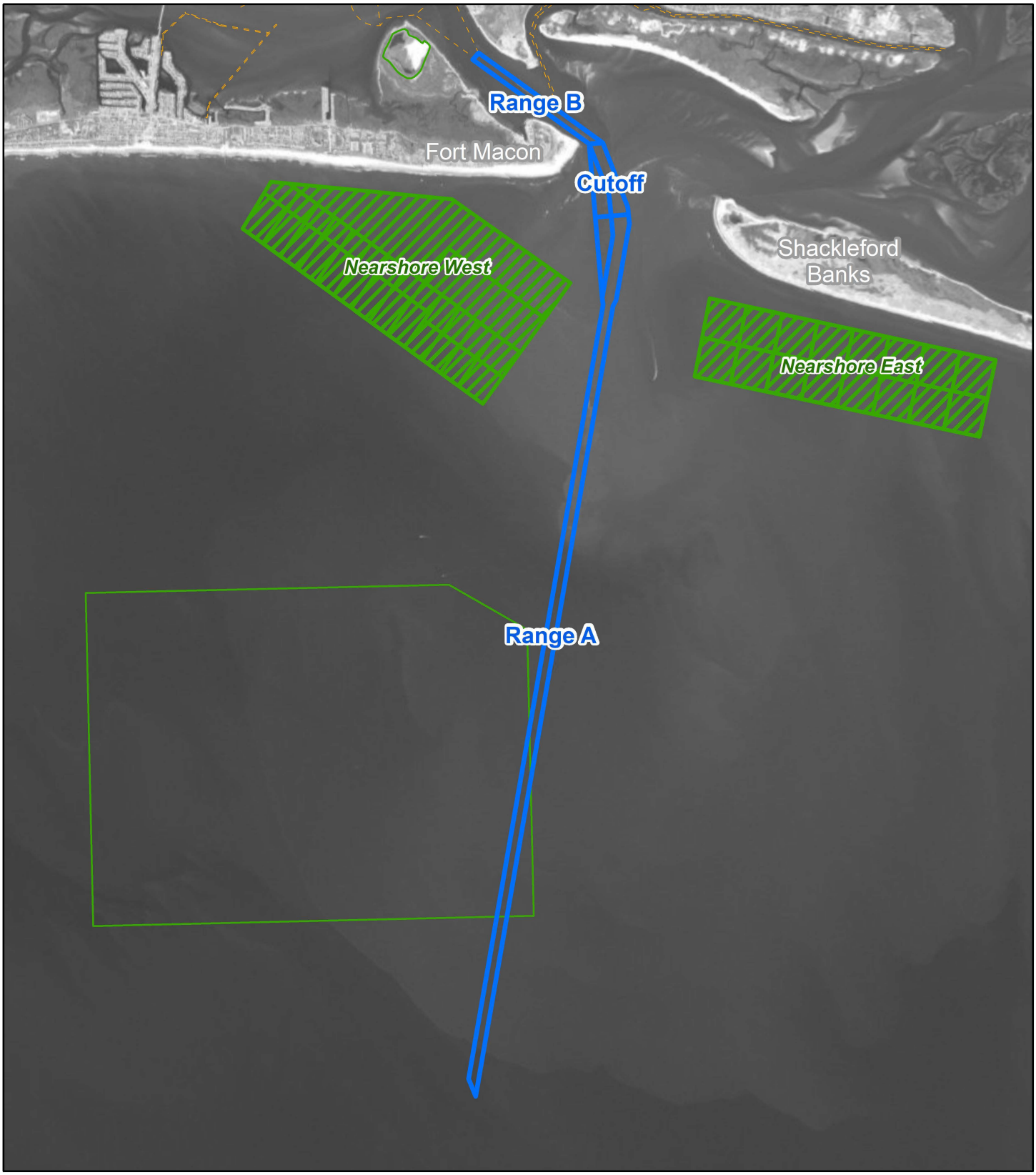

Figure 2. Morehead City Harbor RHDC
Proposed Areas for Bed Leveling

RHDC Channels
Placement Areas
Non-RHDC Placement Areas
Non-RHDC Channels

Map #: sawnavgis-2019-13
Map Date: 28 May 2019
Imagery Date: 23 March 2019

US Army Corps of Engineers
Wilmington District

0 2,500 5,000 7,500 10,000 Feet

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
BRAXTON C. DAVIS
Director

NORTH CAROLINA
Environmental Quality

July 29, 2019

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

SUBJECT: **CD19-028** Consistency Concurrence Concerning the U.S. Army Corps of Engineers (Corps) Proposed Bed Leveling During the Annual Regional Harbor Dredge Contract Project, New Hanover and Carteret Counties, North Carolina (DCM#20190028)

Dear Ms. Owens:

We received your consistency determination on May 30, 2019, concerning the Corps proposal to conduct bed leveling during the annual Regional Harbor Dredge Contract project. The proposal includes bed leveling as needed, during maintenance dredging within the Wilmington Harbor and Morehead City Harbor federal navigation channels.

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, 7M and 7O of Chapter 7 in Title 15A of the North Carolina Administrative Code and concurs that the proposed Federal activity is consistent, to the maximum extent practicable, with the relevant enforceable polices of North Carolina's certified coastal management program as long as all previous conditions and requirements are followed. DCM requests that all minimization and avoidance efforts be made in order minimize impacts to aquatic and wildlife resources.

Prior to the initiation of the activities described, the applicant should obtain any required State approvals or authorizations, including any authorizations required by the N.C. Division of Water Resources. Should the proposed action be further modified, a consistency determination could be necessary. Likewise, if further

project assessments reveal environmental effects not previously considered, a 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
Federal Consistency Coordinator
Policy Analyst

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

Appendix B: NCDEQ-DWQ Approval Use of General Certificate #4146

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.

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:
Consultation Code: 04EN2000-2020-SLI-0831
Event Code: 04EN2000-2020-E-03253
Project Name: WH SARBO EA DEEP DRAFT

June 29, 2020

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/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.

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: 04EN2000-2020-SLI-0831

Event Code: 04EN2000-2020-E-03253

Project Name: WH SARBO EA DEEP DRAFT

Project Type: DREDGE / EXCAVATION

Project Description: Wilmington Harbor Deep Draft Shoreline Placement BA for SARBO EA Deep Draft Navigation 2020; impacts associated with shoreline placement associated with deep draft navigation projects covered under new SARBO 2020. Will include WH and MHC for NC.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/33.84115501614264N78.04070018281946W

Counties: Brunswick, NC | New Hanover, NC

Endangered Species Act Species

There is a total of 17 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
West Indian Manatee *Trichechus manatus* There is **final** critical habitat for this species. Your location is outside the critical habitat. ***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* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Proposed Threatened
Piping Plover *Charadrius melodus* 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 is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot *Calidris canutus rufa* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Red-cockaded Woodpecker *Picoides borealis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7614	Endangered
Wood Stork *Mycteria americana* Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8477	Threatened

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. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
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. Your location is outside the critical habitat. 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. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1110	Threatened

Snails

NAME	STATUS
Magnificent Ramshorn *Planorbella magnifica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6216	Candidate

Flowering Plants

NAME	STATUS
Cooley's Meadowrue *Thalictrum cooleyi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3281	Endangered
Golden Sedge *Carex lutea* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6025	Endangered
Rough-leaved Loosestrife *Lysimachia asperulaefolia* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2747	Endangered
Seabeach Amaranth *Amaranthus pumilus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8549	Threatened

Critical habitats

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

NAME	STATUS
Loggerhead Sea Turtle *Caretta caretta* https://ecos.fws.gov/ecp/species/1110#crithab	Final

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: June 29, 2020
Consultation Code: 04EN2000-2020-SLI-0832
Event Code: 04EN2000-2020-E-03255
Project Name: MHC SARBO EA DEEP DRAFT NAVIGATION

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/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.

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: 04EN2000-2020-SLI-0832

Event Code: 04EN2000-2020-E-03255

Project Name: MHC SARBO EA DEEP DRAFT NAVIGATION

Project Type: DREDGE / EXCAVATION

Project Description: Morehead City Harbor Deep Draft Navigation Shoreline Placement BA for SARBO EA 2020; impacts associated with shoreline placement related to deep draft navigation projects covered under the new SARBO 2020. Will include Wilmington Harbor and Morehead City Harbor for NC.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/34.680365713893615N76.68255938609897W

Counties: Carteret, NC

Endangered Species Act Species

There is a total of 14 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.

---

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
West Indian Manatee *Trichechus manatus* There is **final** critical habitat for this species. Your location is outside the critical habitat. ***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* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Proposed Threatened
Piping Plover *Charadrius melodus* 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	Threatened
Red Knot *Calidris canutus rufa* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Red-cockaded Woodpecker *Picoides borealis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7614	Endangered
Roseate Tern *Sterna dougallii dougallii* Population: Northeast U.S. nesting population No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Endangered

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. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
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. Your location is outside the critical habitat. 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. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1110	Threatened

Flowering Plants

NAME	STATUS
Rough-leaved Loosestrife *Lysimachia asperulaefolia* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2747	Endangered
Seabeach Amaranth *Amaranthus pumilus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8549	Threatened

Critical habitats

There are 2 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Loggerhead Sea Turtle *Caretta caretta* https://ecos.fws.gov/ecp/species/1110#crithab	Final
Piping Plover *Charadrius melodus* https://ecos.fws.gov/ecp/species/6039#crithab	Final

Appendix D: List of Final EA/FONSI Recipients

WILMINGTON & MOREHEAD CITY HARBOR EMAIL LISTING			
Line No.	**Organization / Title**	**POC Name**	**POC Email**
ELECTED OFFICIALS			
01	Honorable	Frank Iler, Jr.	Frank.Iler@ncleg.net
02	Honorable	Bill Rabon	Bill.Rabon@ncleg.net
03	Mayor	Bill Saffo (Wilmington)	bill.saffo@wilmingtonnc.gov
04	Mayor	Robert Howard (Southport)	robertdhoward@bizec.rr.com
05	Mayor	Andy Sayre (Bald Head Island)	jsayre@villagebhi.org
06	Mayor	Craig Bloszinsky (Kure Beach)	c.bloszinsky@tokb.org
07	Mayor	LeAnn Pierce (Carolina Beach)	leann.pierce@carolinabeach.org
08	Mayor	Gerald A. Jones (Morehead City)	mayorjones@moreheadcitync.org
09	Mayor	Rett Newton (Beaufort)	e.newton@beaufortnc.org
10	Representative	Deb Butler	Deb.Butler@ncleg.net
11	Representative	Holly Grange	Holly.Grange@ncleg.net
12	Representative	Ted Davis Jr.	Ted.Davis@ncleg.net
13	Representative	Pat McElraft	Pat.McElraft@ncleg.net
14	Representative	Gregory Murphy	Gregory.Murphy@ncleg.net
15	Representative	David Rouzer	David.Rouzer@ncleg.net
16	Senator	Norman Sanderson	Norman.Sanderson@ncleg.net
17	Senator	Richard Burr	Richard.Burr@ncleg.net
18	Senator	Thom Tillis	Thom.Tillis@ncleg.net
NON-PROFIT ORGANIZATIONS			
19	Audubon, North Carolina	Andrew Hutson	Andrew.Hutson@audubon.org
20	Audubon, North Carolina	Lindsay Addison	laddison@audubon.org
21	Bald Head Island Conservancy	Chris Shank	shank@bhic.org
22	Cape Fear River Watch	Dana Sergent	dana@cfrw.us
23	Defenders of Wildlife	Heather Clarkson	hclarkson@defenders.org
24	N.C. Coastal Federation	Kerri Allen	kerria@nccoast.org
25	NC Coastal Federation	Ana Zivanovic-Nenadovic	anaz@nccoast.org
26	NC Wildlife Federation	Manley Fuller	manley@ncwf.org
27	South Carolina Wildlife Federation	Sara Green	sara@scwf.org
28	Southern Environmental Law Center	Melissa Whaling	mwhaling@selcnc.org
RESOURCE AGENCIES			
29	Atlantic States Marine Fisheries Commission	Toni Kerns	Tkerns@asmfc.org
30	Environmental Protection Agency (EPA)	Dan Holliman	holliman.daniel@epa.gov
31	Environmental Protection Agency (EPA)	Todd Bowers	bowers.todd@epa.gov
32	N.C. Division of Coastal Management (NCDCM)	Dan Govoni	daniel.govoni@ncdenr.gov
33	N.C. Division of Coastal Management (NCDCM)	Mike Lopazanski	mike.lopazanski@ncdenr.gov
34	N.C. Division of Coastal Management (NCDCM)	Braxton Davis	Braxton.Davis@NCDENR.Gov
35	N.C. Division of Coastal Management (NCDCM)	Tancred Miller	tancred.miller@ncdenr.gov
36	N.C. Division of Marine Fisheries (NCDMF)	Steve Murphey	steve.murphey@ncdenr.gov
37	N.C. Division of Marine Fisheries (NCDMF)	Anne Deaton	anne.deaton@ncdenr.gov
38	N.C. Division of Marine Fisheries (NCDMF)	Jimmy Harrison	James.Harrison@ncdenr.gov
39	N.C. Division of Marine Fisheries (NCDMF)	Jacob Boyd	jacob.boyd@ncdenr.gov
40	N.C. Division of Marine Fisheries (NCDMF)	Kim Harding	Kimberlee.Harding@ncdenr.gov

WILMINGTON & MOREHEAD CITY HARBOR EMAIL LISTING			
Line No.	**Organization / Title**	**POC Name**	**POC Email**
41	N.C. Division of Water Resources (NCDWR)	Paul Wojoski	paul.wojoski@ncdenr.gov
42	N.C. Wildlife Resources Commission (NCWRC)	Maria Dunn	Maria.Dunn@ncwildlife.org
43	National Marine Fisheries Service (NMFS)	Ken Riley	ken.riley@noaa.gov
44	National Marine Fisheries Service (NMFS)	Andy Herndon	andrew.herndon@noaa.gov
45	National Marine Fisheries Service (NMFS)	Pace Wilber	pace.wilber@noaa.gov
46	National Marine Fisheries Service (NMFS)	Fritz Rohde	fritz.rohde@noaa.gov
47	South Atlantic Fisheries Managemnt Council (SAFMC)	Melvin Bell	bellm@dnr.sc.gov
48	U.S. Fish and Wildlife Service (USFWS)	Kathy Matthews	kathryn_matthews@fws.gov
49	USACE, Wilmington Regulatory	Mickey Sugg	Mickey.T.Sugg@usace.army.mil
50	USACE, Wilmington Regulatory	Scott McLendon	Scott.C.McLendon@usace.army.mil
OTHER			
51	Fort Caswell	Brian Hemphill	bhemphill@fortcaswell.com
52	Fort Macon State Park	Randy Newman	Randy.Newman@ncparks.gov
53	Military Ocean Terminal Sunny Point (MOTSU)	Malcolm Charles	malcolm.e.charles.civ@mail.mil
54	NC State Ports Authority	Brian Clark	brian.clark@ncports.com
55	NC State Ports Authority	Todd Walton	todd.walton@ncports.com
56	New Hanover County	Layton Bedsole	lbedsole@nhcgov.com
57	Town of Oak Island	David Kelly	dkelly@ci.oak-island.nc.us
58	Town of Southport	Bruce Oakley, City Manager	boakley@cityofsouthport.com
59	Village of Bald Head Island (VBHI)	Chris McCall	cmccall@villagebhi.org

Appendix E: Draft EA Public Comments and Responses

Appendix E: Draft EA Public Comments and Responses

Comment #	Comment Source	Comment	Response
1	NCDEQ, September 28, 2020	Not enough data to support the proposed change. All comments and concerns in May 7, 2020 scoping comment letter remain the same. Synthesis and analysis of data collected at Beaufort Inlet will require additional time. Premature to say that action will result in only minor and short-term impacts.	After several discussions with the state and federal resource agencies, the Corps has agreed to a limited timeframe of hopper dredging and bed leveling without window restrictions for an initial period of three (3) years. The Corps will work with agencies to develop a monitoring plan that addresses impacts of concern. Similarly to the Beaufort Inlet study that was done during hopper dredging of summer 2020, the Corps will employ the Engineer Research and Development Center (ERDC) to assist with water quality sampling in both harbors. Matt Balazik, ERDC Research Ecologist, monitored turbidity levels adjacent to the dredge using sondes set at different water depths along the dredge path and found there to be low levels of increased turbidity and decreased dissolved oxygen for short durations. This information, as well as the proposed plan to monitor for 3-years, will be included into the Final EA. Data collected during monitoring will be used to make informed decisions in the future using a risk-based management approach.
2	NMFS, October 2, 2020	EFH and HAPC descriptions missing from the EA (supported by the SAFMC).	Noted. Additional EFH and HAPC descriptions have been added to the Final EA.
3	NMFS	EA missing the historically successful application of windows in NC. NMFS and other agencies work with USACE to adjust windows to needs.	Environmental windows have been used for decades to avoid dredging during peak periods of biological activity and are still used in some Districts depending on resources and dredging needs. However, it is unknown how effective these windows are and whether they are a necessary tool for avoiding impacts. The Corps has committed to work with agencies to develop a monitoring plan that addresses impacts of concern related to an expanded window. Risks to federally protected species have been assessed in the 2020 SARBO, which requires an annual risk-based assessment that will include review of data collected on all federally protected species impacted by dredging. Data will be used to inform decisions regarding timing of dredging and/or dredging equipment. Additional information regarding historic application of windows has been added as sectio 4.5 of the EA. Additionally, the Corps has agreed to lead an interagency effort to reevaluate existing windows within North Carolina and to work with agencies in shifting to a risk-based management process for future projects.
4	NMFS	EA does not review or acknowledge successful application of windows outside of SAD (i.e. federal projects in the Mid-Atlantic and New England).	Noted. It's beyond the scope of this EA to attempt to summarize or discuss windows applied in other States; however, the Corps has committed to work with agencies to reevaluate windows in NC. See response to Comment #3.
5	NMFS	EA does not review or acknowledge the National Resource Council's 2001 finding that windows are effective adaptive management tools (i.e. New York Harbor deepening and flounder protection). This report was funded and developed by USACE offices.	Noted. Since 2001, a lot has changed in the shipping industry creating an increase in demand for dredges in the U.S. Increased shoaling resulting from intensified storms and flooding has resulted in the need for constant year-round dredging in the Lower Mississippi River, lowering the availability of dredges during the winter months. Dredging windows have become increasingly more difficult and expensive to implement and resources have changed quite a bit since 2001, therefore,going forward, the Corps proposes to use a risk-based approach to evaluate dredging operations that may lead to changes in times of year or equipment types used for dredging. Additional information has been added to the Final EA to adequately address this.
6	NMFS	EA does not review efforts by the NMFS and NC agencies to continue developing new information for efficiently tailoring windows to navigation projects (i.e. NCDEQ updates the Coastal Habitat Protection Plan regularly to ensure that windows reflect best available information.	Noted. The Corps proposes shifting to a risk-based management approach, rather than static windows. The Corps has committed to lead or co-lead an interagency effort that programmatically evaluates windows throughout NC. Additionally, after several discussions with the state and federal resource agencies, the Corps has agreed to hopper dredging and bed leveling without window restrictions while applying adaptive/risked-based management and monitoring for a period of three (3) years. The Corps will work with agencies to develop a monitoring plan that addresses impacts of concern. Monitoring information will be used to make informed risk-based decisions in the future that may result in the adjustment of timing of dredging or type of dredging equipment used. Also the NMFS 2020 SARBO includes an annual risk-based assessment that will include review of data collected on all federally protected species impacted by dredging.
7	NMFS	EA is incomplete. Conclusions are incorrect. Response is required by 2 November, 2020 to include a description of measures proposed to avoid, mitigate or offset adverse impacts of this activity.	The Corps provided NMFS HCD with an interim response on 20 October 2020 requesting additional time to prepare a detailed written response. This was followed by a 6 November call with SAD to discuss dredging predicaments and NMFS concerns and EFH conservation measures; an additional meeting with NMFS 14 December to discuss a 3-year monitoring plan (as proposed by NCDCM); and a all-agency meeting 16 December to Corps' commitments and agree on path forward. A final written response was submitted to NMFS on 11 January, 2021 responding to comments and outlining Corps' commitments. NMFS responded back with letter dated 21 January identifying recommendations that have been addressed in the Final EA/FONSI. The Corps has been and will continue to coordinate with NMFS to discuss measures to avoid or offset impacts that may be brought to light as a result of monitoring.
8	NMFS	Conservation Recommendation: Adaptive risk/management process (similar to NRC's) should be used to update windows in WH and MHC.	The Corps, NMFS HCD and NCDEQ have agreed on using a risk-based approach to evaluate dredging operations over the next three years. Monitoring of ESA and non-ESA species and water quality in Wilmington and Morehead City Harbor project areas will evaluate possible impacts to species and habitat. Results may lead to changes in times of year dredging occurs or equipment types used for dredging. Additional information has been added to the Final EA to adequately address this.
9	SAFMC, October 1, 2020	Draft EA appears to be incomplete in its analysis of the effects of the proposed action and alternatives on EFH and HAPC for Council-managed species. Specifically, section 5.5.4 incorrectly concluded that EFH-HAPC does not occur within outer portions… (see Tables 1&2 for WH and MHC)	Noted. Additional EFH and HAPC descriptions have been added to the Final EA.
10	SAFMC	Large-scale coastal engineering projects (including inlet maintenance projects) could potentially threaten EFH and EFH-HAPCs for Council-managed species through mechanisms noted in the Council's "Policies for the Protection and Restoration of Essential Fish Habitats from Beach Dredging and Filling, Beach Renourishment and Large-scale Coastal Engineering" (2015) .	There are no changes proposed to the maintenance dredging and disposal/placement practices for Wilmington and Morehead City harbors beyond expansion of the hopper dredging window. All maintenance activities will continue as they have in the past and as identified in the 2011 Wilmington Harbor Sand Management Plan (SMP) and Morehead City Harbor Dredged Material Management Plan (DMMP). Maintenance dredging will not occur more frequently nor will it remove more material from the system annually; the Corps is only proposing to accomplish the normal annual maintenance dredging during any time of the year. The Corps will not deviate from past maintenance practices, beyond expansion of the time of year when annual maintenance dredging and disposal/placement may occur. As coordinated with resource agencies following release of the draft EA, dredging any time of year will be initially limited to a 3-year period during which time monitoring of impacts will be accomplished by the Corps. Also, EFH consultation with NMFS HCD has been satisfactorily completed with the Corps' commitment to implement the EFH recommendations.
11	SAFMC	Elimination of hopper windows is inconsistent with established Council policy developed to aid in effective management of economically significant fisheries closely tied to these habitats	After several discussions with the state and federal resource agencies, the Corps has agreed to a limited timeframe of hopper dredging and bed leveling without window restrictions for a period of three (3) years. The Corps will work with agencies to develop a monitoring plan that addresses impacts of concern. Information gained from monitoring will be used to evaluate dredging impacts in the absence of a window. Also, reference response to comment #5, dredging windows have become increasingly more difficult and expensive to implemnt. Following completion of the NEPA process for this Deep Draft EA, the Corps has committed to lead or co-lead an interagency effort that programmatically evaluates windows throughout NC.
12	SAFMC	Most estuarine-dependent fishery species using these ecosystems spawn offshore in the winter with recruitment into the estuary peaking in April-May. Removing the dredging windows as proposed could negatively affect estuarine recruitment of larval and juvenile life stages of the aforementioned economically valuable species.	Noted. As mentioned above, monitoring during recruitment peak periods will occur over the next three years to obtain more information regarding the effects of dredging. However, as explained in the EA, the Corps has concluded that with the suction field limited to the bottom surface and when properly operated, the hopper dredge will not have a significant effect on larval and juvenile stages of species that are otherwise present in the water column.

Comment #	Comment Source	Comment	Response
13	SAFMC	Action will likely effect larvae and early juvenile gag grouper, gray snapper, pink shrimp, brown shrimp and white shrimp.	Noted. The Corps recognizes that concerns remain about the impacts of hopper dredging during warmer months on commercially important species. For this reason, the Corps has agreed to a limited timeframe of hopper dredging and bed leveling without window restrictions for a period of three (3) years. The Corps will work with agencies to develop a monitoring plan that addresses impacts of concern. Information gained from monitoring will be used to evaluate dredging impacts in the absence of a window.
14	SAFMC	Requests District to explore additional alternatives for modifying hopper dredging windows that will better mitigate potential effects.	Viable alternatives that reduce the risks associated with the hopper dredge shortage are very limited. Additional information has been added to the EA to describe other alternatives considered. Entrance channel dredging has primarily been performed with a hopper dredge, however, the contract specifications allow a contractor to perform work with any type of dredge. One alternative is to specify in contracts that work shall be done with a pipeline dredge. However, this type of dredge presents risks that are cost prohibitive. Most of the dredged material for the channel areas covered in the EA is placed in the ODMDSs and dredging using a pipeline would expose several thousand feet of pipe resulting in a high risk of losing pipe caused by sea conditions which are exacerbated when dredging is performed during winter months. Contractors attempt to offset this risk by substantially increasing bid prices. Another option considered was to solicit contracts earlier in the year in an attempt to award contracts ahead of other Corps' regions; however, contract awards are driven by funding and contracts are awarded as soon as is reasonable following receipt of funds, which results in many Districts competing for the same dredging contractors at the same time. In 2019, Wilmington District solicited the RHDC in October, and the first dredge arrived in Wilmington in late April and didn't complete MHC until July 30th. In 2020, the RHDC was solicited in August, and the first dredge isn't expected to arrive in Savannah District until the May/June timeframe of 2021, so the earlier solicitation didn't encourage the dredge to arrive any sooner. Also considered was decoupling the dredging of WH and MHC from the Regional Harbor Dredging Contract (RHDC), but that would result in an increased costs (potentially substantial) in maintaining those harbors.
15	Town of Oak Island, September 18, 2020	The Town requests that you add Town Manager, David Kelly (dkelly@ci.oak-island.nc.us) to all correspondence associated with projects that are related with the management of Wilmington Harbor. The Town was not included on the list of draft EA recipients as recorded in Appendix D - List of Draft EA Recipients. The Town is a stakeholder in the Wilmington Harbor Sand Management Plan and therefore should be informed of all activities that relate to Wilmington Harbor and management of its sediment resources.	Noted. Town Manager, David Kelly (dkelly@ci.oak-island.nc.us) has been added to the distribution list for Wilmington Harbor
16	Town of Oak Island	The Town requests that the USACE evaluate additional alternatives that include the feasibility of developing a Nearshore Placement Area offshore of Caswell Beach/Oak Island for the placement of beach quality material, as exists for the Morehead City Harbor. The Town acknowledges that for hopper dredges, nearshore placement is limited to either those dredges that can navigate fairly shallow nearshore areas and open their haul doors to release material safely or deeper areas that may be outside of the littoral zone but still would allow for beneficial reuse. A potential option for a Nearshore Placement Area could be adjacent to the Jaybird Shoals complex that is currently being utilized as a sand source for multiple pro jects. This option should reduce sail distances for disposal (as compared to the ODMDS) which should result in more cost-effective projects for the USACE .	Evaluating the alternatives suggested is beyond the scope of this EA; however, the alternatives suggested will be considered during development of the Wilmington Harbor Dredged Material Management Plan (DMMP), pending provision of funds to complete the DMMP. The scope of this EA only considered alternatives related to normal maintenance dredging and disposal/placement practices, with the exception of expansion of the hopper dredging window.
17	Town of Oak Island	The Town requests that the USACE evaluate the feasibility of establishing zone(s) within the Wilmington Harbor ODMDS for containing beach quality material (i.e., 90% sand). The Town has already made this same recommendation as part of the Focus Area Action Strategies (FAAS) with the USACE. Beach quality zones were established for the Morehead City Harbor ODMDS and now serve as a beneficial sand source for shoreline management efforts within Bogue Banks. As indicated in the EA, during years where there is no beach placement on Bald Head Island or Caswell Beach/ Oak Island, accumulated beach quality material is removed from the Inner Bar Channels by hopper dredge and taken to the ODMDS. As the USACE is aware, offshore sediment resources are limited for this area . By establishing beach compatible zones within the ODMDS, this would serve as a significant resource for adjacent communities' shoreline management efforts.	Evaluating the ODMDS alternative suggested is beyond the scope of this EA; however, the alternatives suggested will be considered during development of the Wilmington Harbor Dredged Material Management Plan (DMMP), pending provision of funds to complete the DMMP. The scope of this EA only considered alternatives related to normal maintenance dredging and disposal/placement practices with the exception of expansion of the hopper dredging window.
18	Town of Kure Beach, September 4, 2020	As CSDR stakeholders, we request SAW to consider an alternative hopper dredge pump-out to Disposal Area 4 inclusive of beach quality maintenance material in the Horseshoe Shoal and Snows Marsh navigational reaches. As described in the EA, these two reaches would generate approximately 200,000 cubic yards of beach compatible sand over the course of our CSDR maintenance cycles. Such a volume would constitute ~30% of either projects maintenance volume and if considered over two maintenance cycles, those beach quality volumes become more significant in terms of supplementing our historical inlet and offshore borrow sites.	The scope of this EA only considered alternatives related to normal maintenance dredging and disposal/placement practices, with the exception of expansion of the hopper dredging window.Evaluating this sand recycling alternative is beyond the scope of this EA; however, the alternative suggested will be considered during development of the Wilmington Harbor Dredged Material Management Plan (DMMP), pending provision of funds to complete the DMMP.
19	NC Ports, August 20, 2020	Eliminating hopper windows will complement the RHDC effort by further reducing dredging costs and greatly improving the chances of securing dredges	Noted.
20	SELC, October 2, 2020	The Corps greatly underestimates harm to a variety of species—including sea turtles, birds, and fish—many of which are protected under the Endangered Species Act (ESA) and all of which have benefitted greatly from seasonal dredging windows for decades.	Noted. The Corps will be working with NMFS HCD and NC resource agencies over the next three years to monitor and address concerns to marine species to include non-ESA fisheries. The action is not anticipated to impact bird species since beneficial use of sand material on beaches and bird islands will continue to occur as normal. The Corps will be operating under the 2020 SARBO which considers impacts to multiple marine species and recommends avoiding wintertime dredging to reduce impacts to the North Atlantic Right Whale.
21	SELC	Year-round dredging could lead to more frequent year-round beach fill projects, as using dredged material for beach fill is encouraged by State law, which would have significant environmental impacts that have been ignored in the Draft EA.	The USACE has proposed, and NC Division of Coastal Management has concurred with a limited 3-year CZMA consistency determination for the project while enhanced monitoring occurs. This enhanced monitoring will allow us to jointly determine whether continued dredging outside of traditional seasonal windows is acceptable through the examination of the site-specific effects of the action. If other projects consider expanded dredging windows, we expect them to require their own NEPA and CZMA examination.

Comment #	Comment Source	Comment	Response
22	SELC	The Corps' instant proposal and Draft EA completely ignore the significant cumulative impacts on the Wilmington Harbor in particular in light of the proposed Wilmington Harbor expansion project.	The effects of dredging and placement of material for the channel areas covered in the EA have been thoroughly addressed in previous NEPA documents referenced in Section 3.0 of the Final EA. The sole action being examined in this EA is the change in effect that may occur should these regularly disturbed channel sections be dredged in different seasons. The study for the Wilmington Harbor Navigation Improvements Plan (WHNIP), conducted by the NC State Ports Authority and referred to the Assistant Secretary of the Army (Civil Works) (ASA(CW)) under the authority commonly known as Section 203. This study was included in the most recent Water Resources Development Act (WRDA), with the mandate that USACE address the many comments and concerns identified by ASA(CW) and complete the NEPA process for the study before construction of any improvements could be authorized by Congress. While WRDA 2020 authorized the continuation of the study, USACE has not received any appropriations to allow resumption of the NEPA and feasibility process for the study, and therefore no action is currently underway to resume the study. As construction of any proposed WHNIP could not occur without completion of that study (which is likely to take well over 1 year from the date funds are appropriated for its resumption) and specific Congressional authorization and appropriation for the construction, inclusion of those potential effects in this EA would be speculative at best. The dredging effects associated with any improvements to Wilmington Harbor will be thoroughly addressed in the NEPA document for that study, should it move forward.
23	SELC	The Corps fails to analyze a reasonable range of alternatives, including those that do not involve removing dredging windows	See response to comment #14. Additional information regarding the alternatives considered has been added to the EA.
24	SELC	The Corps appears to already be implementing its proposed action prior to completing the National Environmental Policy Act (NEPA) process, by soliciting bids and entering a dredging contract that omits any requirements about dredging windows.	The Wilmington District has obligated no funds toward dredging at Wilmington or Morehead City Harbors because the NEPA process is not complete. Dredging in the 2020-21 winter season was not going to be possible given current fleet obligations, and therefore dredging outside traditional environmental windows was added to the contract solicitation as optional bid items to be exercised only if the NEPA process (and concurrent CZMA and EFH review) resulted in a FONSI and consistency determination/concurrence that allowed dredging in expanded windows (or no windows). No funds will be obligated unless and until this process is complete; if the result is that dredging within seasonal windows should continue, the optional bid items will not be exercised and the channels will likely not be dredged until at least winter 2021-22.
25	SELC	We do not suggest hopper dredging should be banned year-round, instead, we urge the continued use of the existing, longstanding, and effective dredging windows to minimize such effects	Noted. Environmental windows have been used for decades to avoid dredging during peak periods of biological activity however, it is unknown how effective these windows are and whether they are a necessary tool for avoiding impacts. The Corps has committed to work with agencies to develop a monitoring plan that addresses impacts of concern related to an expanded window. Risks to federally protected species have been assessed in the 2020 SARBO, which requires an annual risk-based assessment that will include review of data collected on all federally protected species impacted by dredging. Data will be used to inform decisions regarding timing of dredging and/or dredging equipment. Additional information has been added to the Final EA to adequately address this.
26	SELC	Adverse impacts on surrounding habitat: Increased sedimentation can temporarily degrade water quality by: suspending contaminants; altering the natural temperature, pH, or salinity; reducing dissolved oxygen levels; impeding light penetration; and disrupting the tidal dynamics.	The Corps has agreed to a limited timeframe of hopper dredging and bed leveling without window restrictions for a period of three (3) years while working with agencies to develop a monitoring plan that addresses impacts of concern. Similarly to the Beaufort Inlet study that was done during hopper dredging of summer 2020, the Corps will employ the Engineer Research and Development Center (ERDC) to assist with water quality sampling in both harbors. ERDC monitored water quality adjacent to the dredge using sondes set at different water depths along the dredge path. The Corps wil also participate in hydrodynamic modeling to assess the behavior and movement of suspended particles. Data collected during monitoring will be used to make informed decisions in the future.
27	SELC	Compromise habitat quality for plankton, invertebrates, and fish, sometimes leading to cascading effects up the food chain	There is no change proposed to the footprint, quantity and frequency of dredging; habitat within the federal navigation channels will be temporarily impacted/disturbed during dredging, however it does recover between dredging events. The dredging footprint is relatively small compared to the surrounding, undisturbed habitat that will sufficiently support the food chain.
28	SELC	Changes can interrupt spawning and larval recruitment of many fish species which rely on particular water quality criteria for success	Noted. As mentioned, monitoring during recruitment peak periods will occur over the next three years to obtain more information regarding the effects of dredging. However, as explained in the EA, the Corps has concluded that with the suction field limited to the bottom surface and when properly operated, the hopper dredge will not have a significant effect on larval and juvenile stages of species that are otherwise present in the water column.
29	SELC	Disturbs the stability of the benthic environment and can smother submerged aquatic vegetation ("SAV") and kill organisms that live on the bottom like demersal fish and crustaceans	SAV have been identified outside of the area of effect for this project; dredging is not expected to cause sedimentation/smothering of SAVs. Organisms on the seafloor within the path of the draghead that cannot flee the suction field will become entrained as expected. The three-year monitoring period is intended to capture the magnitude of impacts to important fisheries through reporting of bycatch and species sampling.If particular species are affected unproportionally this information will be considered through changes in timing and equipment prior to the next dredge event.
30	SELC	set of adverse impacts at the dump site and in adjacent areas	Placement areas such the ODMDSs and nearshore areas have already been assessed for effects related to placement of dredged material in previous NEPA documents.
31	SELC/VBHI	Eliminating dredging windows will not only allow hopper dredging to occur during times of the year most sensitive to vulnerable coastal resources, it will also allow for more dredging than is currently occurring.	Disagree. There are no changes proposed to the maintenance dredging and disposal/placement practices for Wilmington and Morehead City harbors beyond expansion of the hopper dredging window. All maintenance activities will continue as they have in the past and as identified in the 2011 Wilmington Harbor Sand Management Plan (SMP) and Morehead City Harbor Dredged Material Management Plan (DMMP). Maintenance dredging will not occur more frequently nor will it remove more material from the system annually. The Corps proposes to accomplish the normal annual maintenance dredging during any time of year while performing hydrodynamic modeling, monitoring and reporting of data for the first 3 years as coordinated with resource agencies.
32	SELC	The impacts from this proposal to North Carolina's precious coastal resources would be significant and widespread, and they are sorely underestimated in the Draft EA. The Corps must instead adequately address these impacts through a full EIS under NEPA	Disagree. The effects of dredging and placement of material for all of these channels have been thoroughly addressed in previous NEPA documents referenced in Section 3.0 of the Final EA. The sole action being examined in this EA is the change in effect that may occur should these regularly disturbed channels be dredged in different seasons. Reference the response to comment #54 that addresses the four factors from the 1978 regulations that SELC believes warrant preparation of an EIS.
33	SELC	The Draft EA contains numerous inadequacies that render it insufficient under NEPA. These shortcomings underscore the need for a more detailed NEPA analysis in the form of a full EIS.The Corps must assess through a full EIS the feasibility and cost projections of implementing any necessary mitigation and monitoring measures to minimize the impacts of its proposal.	Disagree. The NEPA analysis is adequate. See response to comment #54.
34	SELC	The decision by the Corps to put total faith in the 2020 SARBO as being sufficiently protective of sea turtles is flawed for two reasons. First, the recent changes in the 2020 SARBO are based in large part on the observation that sea turtle nesting populations are growing, and therefore total populations can withstand higher take levels. Climate change is expected to significantly hinder recovery, particularly along the NC coast. Second, mitigation and monitoring requirements in the SARBO have not yet been tested or proven to reduce takes. EA lacks description of these requirements or their effectiveness. Consecutive seasons of minimization measures (in place of moratoria) may not be manageable.	The EA utilizes the new SARBO which takes an ecosystem-based approach for conservation of a wider array of species and does not focus as much on sea turtles as SARBOs of the past. The 2020 SARBO also provides many ways to minimize risk and avoid sea turtle takes; such as trawling (capture and non-capture depending on the area) and implementing a wider use of bed leveling. Moreover, the 2020 SARBO requires annual reporting for all projects, which will be annually evaluated to ensure no one species is experiencing unacceptable levels of take that could be detrimental to the total population of that species.

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35	SELC	the Corps cannot prematurely conclude that they are sufficient to avoid and minimize the impacts of year-round dredging on sea turtles. The Corps must assess through a full EIS the feasibility and cost projections of implementing any necessary mitigation and monitoring measures to minimize the impacts of its proposal.	The 2020 SARBO provides many ways to minimize risk and avoid sea turtle takes such as trawling (capture and non-capture depending on the area) and implementing a wider use of bed leveling. Moreover, the 2020 SARBO requires annual reporting for all projects, which will be annually evaluated to ensure no one species is experiencing unacceptable levels of take that could be detrimental to the total population of that species. Cost projections for these measures are not anticipated to be significant.
36	SELC	Draft EA lacks any scientific evidence to prove that sea turtles are unlikely to be adversely impacted by this proposal.	NOAA, the federal agency charged with the protection of the species, has specifically concurred with no seasonal dredging windows in the region, concluding that seasonal flexibility for hopper dredging is preferred in order to assure protections for other critically endangered species in the region, and to balance the effects felt by species with different seasonal susceptibility to effects of dredging (e.g., whales, sturgeon, corals, and turtles). As per the SARBO, an annual risk-based assessment will be completed for each project and the best available information will be used to make informed decisions going forward. This assessment will be going on during the initial 3-year period. If information or experience indicate that impacts are more significant than thought, then proper minimization measures can be implemented where needed.
37	SELC	Year-round dredging could impact the diamondback terrapin, a state-listed species of Special Concern in North Carolina that is known to be threatened by harbor dredging; Corps must provide a thorough analysis of impacts to all marine turtles	Through further evaluation and analysis of the State-listed Diamondback terrapin, it's habitat does is not commonly located in the same location as the project area outlined in the Final EA. It is unlikely there will be an negative impact to this species with the implemention of the proposed action. Per email communication with NCWRC (Maria Dunn dated 11 Jan 2020) if there's by-catch of any state-listed Dimondback terrapin then the NCWRC will be notified in the daily dredging by-catch reports that are publicly available on the ODESS (Operations and Dredging Endangered Species System) website.
38	SELC	Evidence from decades of dredging windows in North Carolina shows that seasonal environmental moratoria are most effective at minimizing these adverse impacts. According to the State's 2016 Coastal Habitat Protection Plan ("CHPP"), "[s]easonal restrictions on navigational dredging are an effective means of protecting fish during critical times of their lives, such as during spawning periods or when early juvenile fish are growing in nursery areas."	Noted, however the window is not species specific and wintertime dredging is a threat to the critically endangered NARW. The Corps, NMFS HCD and NCDEQ have agreed on using a risk-based approach to evaluate dredging operations over the next three years. Monitoring of ESA and non-ESA species and water quality in Wilmington and Morehead City Harbor project areas will evaluate possible impacts to species and habitat. Results may lead to changes in times of year dredging occurs or equipment types used for dredging.
39	SELC	Impacts to fisheries during hopper dredging events can be significant, and can include entrainment or degraded water quality from sedimentation. The Draft EA does not adequately demonstrate that these impacts would not occur as a result of the proposed changes. The Corps must conduct and disclose a thorough analysis of the expected impacts to fish and fish habitat, in the form of a full EIS under NEPA	The Corps will be working with NMFS HCD and NC resource agencies over the next three years to monitor and address concerns to non-ESA fisheries. This information, as well as the proposed plan to monitor has been included in the Final EA. Data collected will be used to make informed decisions in the future. Regarding the need for an EIS, please see response to comment #54.
40	SELC	Draft EA finds that eliminating dredging windows would have zero impact on shorebirds, including the federally threatened piping plover and red knot, "[s]ince placement of the dredged material will not occur on the beach. Notably, if maintenance dredging were allowed to occur year-round, opportunities for beneficial use of dredged material for the purposes of restoring important bird islands would likely decrease because of the bird nesting season.	There are no changes proposed to the maintenance dredging and disposal/placement practices for Wilmington and Morehead City harbors beyond expansion of the hopper dredging window. Current beneficial use practices for WH and MHC Harbor will continue. When funded, the Wilmington Harbor DMMP will address beneficial use of material from channels that contain beach quality material. The Corps acknowledges that placement onto CFR bird islands is important and regular placement will be considered in the DMMP, when it's funded.
41	SELC	More frequent dredging and offshore disposal activities throughout the year would naturally remove much-needed sediment from the natural systems within and surrounding the project areas. It is well established that repeated dredging can alter wave patterns and sea floor topography, interrupt long-shore sediment transport, and starve the long-term sediment budget for the entire barrier island system, leading to increased erosion rates far beyond the target system	There are no changes proposed to the maintenance dredging and disposal/placement practices for Wilmington and Morehead City harbors beyond expansion of the hopper dredging window. All maintenance activities will continue as they have in the past and as identified in the 2011 Wilmington Harbor Sand Management Plan (SMP) and Morehead City Harbor Dredged Material Management Plan (DMMP). Maintenance dredging will not occur more frequently nor will it remove more material from the system annually; the Corps is only proposing to accomplish the normal annual maintenance dredging during any time of the year. Clarifying text will be added to the final EA to better explain the Corps' intent to not deviate from past maintenance practices.
42	SELC	The Corps' proposal would inevitably lead to more municipalities taking advantage of these changes and seeking dredged sand to place on their beaches during the spring and summer months.	If other projects consider expanded dredging windows, we expect them to require their own NEPA and CZMA examination. The USACE has proposed, and NC Division of Coastal Management has concurred with a limited 3-year CZMA consistency determination for the project while enhanced monitoring occurs. This enhanced monitoring will allow us to jointly determine whether continued dredging outside of traditional seasonal windows is acceptable through the examination of the site-specific effects of the action.
43	SELC	EA fails to consider impacts from the WH Deepening; If the Wilmington Harbor channel is expanded to be deeper, wider, and longer, associated maintenance dredging will have correspondingly larger, more devastating impacts.the impacts of the proposed Wilmington Harbor expansion could significantly alter the analysis of the Draft EA. Likewise, the Corps' proposed removal of dredging windows could significantly influence the forthcoming environmental reviews for the proposed Wilmington Harbor expansion.	See response to comment #22.
44	SELC	The Corps Fails to Analyze a Reasonable Range of Alternatives. each of the three alternatives evaluated are solely focused on dredging windows (too narrow) and ignore other means of "increasing flexibility and assurance"	See responses to comment #14. Additional information regarding the alternatives considered has been added to the EA.
45	SELC	The Corps cites seven out of 40 contracts district-wide over the past seven years that have not been successful—leaving more than 80% of contracts which *have* been successful, despite the alleged shortfall in hopper dredges.	This table was removed from the Final EA; the total number of contracts did not include hopper dredges, therefore, the 80% successful contracts were not hopper contracts.
46	SELC	Draft EA acknowledges that two new hopper dredges are scheduled to be constructed by the first quarter of 2023, but fails to evaluate how these new vessels would help meet demand in the future under the No Action alternative or otherwise	Although two new hoppers are expected to come online in the future, the Corps has not been able to confirm the schedule, so the final EA has been revised to reflect this uncertainty. Although adding two new hoppers will eventually provide some relief to the shortfall, that shortfall is not expected to change any time soon. That said, the Corps is developing a strategic plan to work with dredging companies to meet Corps hopper demand.
47	SELC	The purpose provides no threshold level of flexibility to be attained and does not explain what "flexibility and assurance" means.	Section 2.0, Purpose and Need, has been revised to better clarify the intent.
48	SELC	The Corps dismisses the second alternative—expansion of dredging windows—without justification, claiming that all risk must be eliminated, and that the Corps "needs as much flexibility as possible"—a standard not incorporated into its purpose and need statement	Section 2.0 (Purpose and Need) and Section 4.0 (Alternatives), have been revised to better explain the purpose and need and to justify exclusion of the second alternative. Although an expanded window (Alternative 2) is an improvement to the existing window, work would be constrained to 8.5 months of the year. Based on past experience soliciting contracts for hopper dredging, the more time available during the year to accomplish the work, the better the chances of assuring hopper dredges are available to maintain Wilmington and Morehead City Harbors when dredging is needed.
49	SELC	Stating that the Wilmington District is the only one constrained by environmental windows is inaccurate—hopper dredging in the Savannah River Harbor is currently restricted to the window of December 1 through March 31—but easing a perceived administrative burden is not a sensible justification for removing long-standing protective measures. there is no reason why other channels could not be dredged during other times of the year. In essence, there should be little competition to secure hopper dredges during the current windows if that is a constraint that exists only for these two harbors.	The purpose and need has been revised to clarify the intent. The most significant constraint, nationwide, is a hopper dredge shortage. Wilmington Harbor (WH) and Morehead City Harbor (MHC) are relatively small ports that do not rank favorably when compared to larger ports in the US (MHC is ranked #105 nationwide) For that reason, contractors are not going to prioritize WH or MHC over other ports and adjust their schedules to dredge NC's ports in the winter at a reasonable cost. If the Corps does not provide contractors with more flexibility (longer timeframe to work) to maintain WH and MHC then those ports will not be adequately maintained .
50	SELC	The Corps provides no analysis of whether dredges would likely be available during those expanded dredging windows, and indeed, elsewhere the Draft EA claims that dredges would not likely be used during those most sensitive seasons that would still be protected under the second alternative, thus begging the question why complete elimination is needed	Based on input from dredging contractors, expanded windows will reduce risks associated with dredge availability. The more time contractors have available to accomplish the work, the less the risk (dredge availability) and the lower the cost. The final EA has been revised to more clearly address the need for an expanded window.
51	SELC	Miniscule cost savings overall for a proposal largely premised on a supposed lack of supply and attendant expenses, but an especially incremental difference between Alternative 2 and the preferred alternative.	Although cost savings between alternatives may not be siginificant, the proposed action provides the least cost, engineeringly sound, environmentally acceptable alternative for maintenance dredging of the outer portions of Wilmington Harbor and Morehead City Harbor and therefore meets the federal standard.

Comment #	Comment Source	Comment	Response
52	SELC	Despite NEPA's clear admonitions against predetermined decisionmaking, the Corps appears to have been soliciting and awarding bids on maintenance dredging contracts for Wilmington and Morehead City Harbors on the assumption that dredging windows will be removed. On August 5, 2020—two weeks before the Corps' publicly proposed removing dredging windows—the Corps began soliciting bids for a maintenance dredging contract that states: "there are no environmental windows" for the project.By soliciting and awarding bids with explicit language denouncing the presence of environmental windows, the Corps has engaged in predetermined decisionmaking that undermines the entire purpose of the NEPA process. Rather than utilizing the preparation of this EA as a good faith analysis of reasonable alternatives to fit the agency's need, the Corps appears to be merely going through the motions to "justify[] decisions already made."	Disagree. The Wilmington District has obligated no funds toward dredging at Wilmington or Morehead City Harbors because the NEPA process is not complete. Dredging in the 2020-21 winter season was not going to be possible given current fleet obligations, and therefore dredging outside traditional environmental windows was added to the contract solicitation as optional bid items to be exercised only if the NEPA process (and concurrent CZMA and EFH review) resulted in a FONSI and consistency determination/concurrence that allowed dredging in expanded windows (or no windows). No funds will be obligated unless and until this process is complete; if the result is that dredging within seasonal windows should continue, the optional bid items will not be exercised and the channels will likely not be dredged until at least winter 2021-22.
53	SELC	The Corps fails to explain why it has chosen to develop an EA rather than an EIS for its proposal (which would have far-reaching implication for NC's coastal resources and communities)	See response to comment #54.
54	SELC	Going forward, the Corps should continue to apply the prior, long-standing NEPA regulations that were in effect when it initiated this project, rather than the new, illegal, NEPA regulations which are already being challenged in court. An action may be significant if it meets one of 10 considered factors (p18). At least 4 of the factors are implicated by the Corps' proposal.	This action was begun under the 1978 NEPA regulations. Pursuant to the preamble to the new regulations at 85 FR 43304, *43339, "[f]or NEPA reviews in process that agencies began before the final rule's effective date, agencies may choose whether to apply the revised regulations or proceed under the 1978 regulations and their existing NEPA procedures." We are proceeding under the 1978 regulations. As to the need for an EIS for this action, please be advised that the effects of dredging and placement of material for all of these channels have been thoroughly addressed in previous NEPA documents referenced in Section 3.0. The sole action being examined in this EA is the change in effect that may occur should these regularly disturbed channels be dredged in different seasons. SELC identifies four factors from the 1978 regulations that it believes warrant preparation of an EIS. We will address each in turn.
			1) "The Corps' Proposal Would Harm Endangered Species": Disagree. The proposed action concerns dredging specific reaches of regularly dredged channels and the nearshore or offshore placement of material from those channels. NOAA, the federal agency charged with the protection of the species, has recently issued a regional biological opinion (the SARBO) for potentially effected species. NOAA has specifically concurred with no seasonal dredging windows in the region, concluding that seasonal flexibility for hopper dredging is preferred in order to assure protections for other critically endangered species in the region, and to balance the effects felt by species with different seasonal susceptibility to effects of dredging (e.g., whales, sturgeon, corals, and turtles).
			2) "The Corps' Proposal Would have Precedential Effects on Dredging and Beach Placement along the Atlantic Coast": Disagree. The substance of SELC's comment is derived from the comments of the NC Division of Environmental Quality (NCDEQ). After the receipt of this comment, USACE engaged in further discussions with NCDEQ to understand the species of concern and specific effects that this proposed action might affect. As a result, USACE has proposed, and NC Division of Coastal Management has concurred with, a limited 3-year CZMA consistency determination for the project while enhanced monitoring occurs. This enhanced monitoring will allow us to jointly determine whether continued dredging outside of traditional seasonal windows is acceptable through the examination of the site-specific effects of the action. If other projects consider expanded dredging windows, we expect them to require their own NEPA and CZMA examination.
			3) "The Impacted Geographic Areas Support Numerous Ecologically and Culturally Significant Resources": Partially Agree. SELC appears to describe ecological resources beyond the scope of the likely effect of channel dredging and nearshore or offshore placement. The species and ecosystems likely to be affected by this proposed action have been adequately described in this and other NEPA documents, and the likely effects have been considered as demonstrated in this EA. Cultural resources have been identified and will be avoided as described in the other NEPA documents addressing these channels.
			4) "The Corps Proposal Would Have Significant Cumulative Impacts": Disagree. SELC's comment may partly be influenced by the misconception that USACE plans to dredge more frequently as a result of expanded or eliminated seasonal restrictions. That is not the case. Mobilizing a dredge is an expensive undertaking, and channels are dredged as infrequently as navigation requirements allow to reduce cost. We do not anticipate any reach of either of these channels being dredged more frequently than once a year. The USACE navigation dredging trends for North Carolina have been consistent (or slightly decreased) for several decades. Cumulative effects for dredging associated with beach placement (not a part of this proposal) have been addressed in the NEPA documents for those projects. This EA, which does not propose more frequent dredging, more quantity of dredging, or beach placement, is not the right vehicle for an extensive assessment of "dredging and beach placement and fill trends."
55	NCWRC, October 2, 2020	The Expansion Alternative does not include the beginning of nesting season, but still includes the months of July and August when gravid females are approaching beaches to nest. The NCWRC is very concerned a lethal take of a gravid female may occur, removing her and her eggs from the population	Noted. Although there is potential for sea turtle take to occur with every dredging event, the Corps will be implementing measures such as trawling (relocation and non-capture) as needed, and bed leveling to reduce risk on an as-needed basis.
56	NCWRC	Any operations proposed to be conducted during important biological seasons should implement measures to minimize impacts to natural resources. Minimization measures should include methodology and management tool variations for each harbor, reach, and range.	After several discussions with the state and federal resource agencies, the Corps has agreed to a limited timeframe of hopper dredging and bed leveling without window restrictions for a period of three (3) years. The Corps will work with agencies to develop a monitoring plan that addresses impacts of concern. Also, in accordance with the 2020 SARBO, each project will require an annual risk assessment to be completed prior to the project beginning in order to best implement the dredging operation at least cost and least impact to the surrounding natural enviroment; each risk assement includes consideration of ESA and its associated critical habitat. Lastly, the Corps has committed to lead or co-lead an interagency effort that programmatically evaluates windows throughout NC. This effort will begin following completion of the Final Deep Draft EA.
57	NCWRC	Dissolved oxygen levels in the Cape Fear River were recently sampled by the ERDC during mechanical dredge activities for similar reasons as the turbidity sampling in Beaufort Inlet. While the collection of information is important, it is difficult to assess impacts to water quality conditions and fishery resources during important seasons with two small sampling events focused on a single parameter conducted in separate project areas	Concur. More sampling is planned. Reference response to comment #1.
58	NCWRC	A more rigorous study that looks at turbidity, dissolved oxygen, and resource presence and response during operations for each harbor would be necessary and results reviewed prior to consideration of summertime dredging and its long-term impacts on water quality or fishery resources. Considerations should be given to the impact on year classes depending on operation timing and resource presence	Noted. See response to comment #1. Studies will begin simultaneously with dredging events over the next 3 years. Efforts will be made to document time of year on level of impacts.
59	NCWRC	A minimization effort often used to reduce the likelihood of lethal takes includes trawling ahead of the dredge plant to relocate individual sea turtles and Atlantic sturgeon. What is USACE's trawling plan to minimize impacts to marine species?	In accordance with the 2020 SARBO, trawling will occur on an as-needed basis, determined by the South Atlantic Division (SAD). Capture relocation trawling will be avoided during times when it could be harmful to the species.
60	NCWRC	It's difficult to tell from the provided cost analysis if any of these measures were taken into consideration. The focus of the section was cost savings with regard to mobilization and demobilization efforts between the three alternatives. The USACE stated they would follow project design criteria (PDCs) within the SARBO, but a breakdown of those efforts and cost differences between alternatives was not provided and therefore assumed not included.	SARBO PDCs would be implemented or all dredging alternatives. Monitoring costs, which would be limited to a 3-year period, are expected to be minor as compared to the costs for maintenance dredging, so the rough order magnitude costs provided in the EA and the relative cost differences would not be affected by including costs for monitoring.

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61	NCWRC	If operations are conducted outside of important biological periods, certain minimization measure needs would be lessened. Overall project impacts also may need to include mitigation opportunities for impacts to critical habitat areas, once again affecting costs. These considerations should be presented in the cost analysis for each harbor, reach and range. After all considerations are included, cost reductions may not be significant enough when compared to resource impacts.	See response to Comment #60.
62	NCWRC	Need to address cumulative impacts with similar requests for CSRM projects	Cumulative effects for dredging associated with beach placement (not a part of this proposal) will be addressed in the NEPA documents for those projects. Also, the only CSRM project at this time pursuing expanded windows is the Surf City North Topsail Beach project and the request to allow work any time of year is for initial construction only and monitoring of impacts (turbidity and benthic) is required. The cumulative effects discussion in the final EA has been updated to specifically address the SCNTB CSRM and other beach projects. The Federal Bogue Banks CSRM project is not going forward.
63	Audubon NC, October 2, 2020	Given the significant negative impacts to biological resources and ecosystem components that Alternatives 2 and 3 would have, and the lack of acknowledgement those impacts are given in the draft EA, the only alternative that we can support is Alternative 1.	Noted. The Corps disagrees that impacts of the proposed action will be significant on any resource. Based on the analysis in the EA, the measures that will be taken to avoid and minimize impacts, the monitoring that will be accomplished to obtain information to address specific resource concerns, the annual risk-based analysis that will be conducted under the SARBO, and the change to dredge any time of year for a 3-year period while monitoring is being done, the proposed plan is not anticipated to result in significant impacts.
64	Audubon NC	The impacts of the Corps' preferred alternative and Alternative 2 would fall into two main categories: 1. Impacts during in-water work and 2. Impacts to the availability, timing, and deposition of dredged material. Although these changes would have far-reaching direct, indirect, and cumulative impacts, the draft EA does not address them completely, leaving out impacts to timing and availability of sand entirely and glossing over others. These impacts must be included in the final EA because without them the impacts of the proposed alternatives are not described accurately and no full evaluation of them can be made.	1. Impacts during in-water work will be assessed over the next three years as per the Corps monitoring agreement. 2. Dredged material will not differ in quantity nor will its deposition location be changed; no additional dredging will occur as a result of the project and all dredged material will continue to be deposited into the ODMDS or Nearshore areas. Additional information has been added to EA to clarify this.
65	Audubon NC	the draft EA leaves out important information about Alternatives 2 and 3, pertaining to the projected frequency of new out-of-window hopper dredge events and the amount of material that would be removed to off-shore disposal sites, relative to the quantities removed and disposal destinations that would be used under the no-action alternative.	The Corps cannot predict the frequency of dredging outside of the existing windows. This will vary depending on dredging needs in other parts of the country that could affect dredge availability. For WH and MHC, the quantities of material dredged and placed in the ODMDS should not vary significantly year to year as compared to current quantities.
66	Audubon NC	greatest concern that the draft EA completely omits to consider how changes in availability, timing, and placement resulting from expanded or year-round hopper dredging will impact bird habitats around the Wilmington Harbor navigation channel. (i.e. volumes up to 150K CYs per project may be transported to the ODMDS). Increased hopper dredging here will affect the islands and needs to be addressed in the EA.	There are no changes proposed to the maintenance dredging and disposal/placement practices for Wilmington and Morehead City harbors beyond expansion of the hopper dredging window. All maintenance activities will continue as they have in the past and as identified in the 2011 Wilmington Harbor Sand Management Plan (SMP) and Morehead City Harbor Dredged Material Management Plan (DMMP). Maintenance dredging will not occur more frequently nor will it remove more material from the system annually. The Corps proposes to accomplish the normal annual maintenance dredging and beneficial placement of sand as it has in the past.
67	Audubon NC	Need for a WH DMMP or other instrument. Extremely concerning and out of step with NC Administrative Code 7M, Section .1101, which calls for "material resulting from the excavation or maintenance of navigation channels [to] be used in a beneficial way wherever practicable."	Concur. The Corps strives to beneficially use dredged material when practicable. Beneficial use will be a key component of the Wilmington Harbor DMMP, when it's funded.
68	Audubon NC	The EA should project how much sediment will be lost from the affected systems and address these impacts, as this such changes would have cumulative impacts over the next 20 years, especially in light of sea level rise.	Again, there are no changes proposed to the maintenance dredging and disposal/placement practices for Wilmington and Morehead City harbors beyond expansion of the hopper dredging window. All maintenance activities will continue as they have in the past and as identified in the 2011 Wilmington Harbor Sand Management Plan (SMP) and Morehead City Harbor Dredged Material Management Plan (DMMP). Maintenance dredging will not occur more frequently nor will it remove more material from the system annually. The Corps proposes to accomplish the normal annual maintenance dredging.
69	Audubon NC	the EA should evaluate potential impacts to nesting sea turtles and costs associated in monitoring active construction sites during sea turtle nesting season. Broadly speaking, beach nourishment affects their nesting…	Disagree. This EA only covers hopper dredging with placement in the ODMDS or nearshore (Morehead City). It does not propose beach or bird island placement outside of the current sea turtle and bird nesting window. No additional hopper dredging will occur; annual hopper dredging quantities will remain the same.
70	Audubon NC	the EA should also address any county- or municipality-level agreements or requirements for beach placement of dredged material. These entities may want the sand, and may be able to prevent hopper-dredged sand from going to off-shore disposal areas	There are no changes proposed to the maintenance dredging and disposal/placement practices for Wilmington and Morehead City harbors beyond expansion of the hopper dredging window. Maintenance dredging will not occur more frequently nor will it remove more material from the system annually; the Corps is only proposing to accomplish the normal annual maintenance dredging during any time of the year. Clarifying text will be added to the final EA to better explain the Corps' intent to not deviate from past maintenance practices, beyond expansion of the time of year when annual maintenance dredging and disposal/placement may occur. As coordinated with resource agencies following release of the draft EA, monitoring of impacts over a 3-year period and adaptive management will be accomplished by the Corps.
71	Audubon NC	The EA should use the data in ODESS to report the number of out-of-window hopper dredge projects that resulted in sea turtle take and provide some estimate of the magnitude of the impact of future out-of-season work.	Concur, a review of ODESS has been conducted and a chart/table with the requested information that is available is provided in the final EA.
72	Audubon NC	Missing Info:• The additional quantity projected to be dredged by hopper dredge versus pipeline dredge or bucket and barge dredge. All three dredge types have performed work in the project areas in the recent past and may be expected to continue to do so, depending on dredge availability, logistics, and other considerations. • The additional number of hopper dredge projects anticipated to take place annually, and the number of those events projected to occur outside of the existing environmental window for hopper dredging. • The quantity, timing, and disposal location of sediment to be removed during the additional hopper dredge events.	See response to comment #64. There are no changes proposed to the maintenance dredging and disposal/placement practices for Wilmington and Morehead City harbors beyond expansion of the hopper dredging window.
73	Audubon NC	The EA does not include an alternative in which the root cause of the problem is addressed by increasing the number of dredges available or allowed to work in U.S. territorial waters. The NEPA process should include an alternative that would evaluate cost and availability of dredges if a greater number of dredging companies and their dredges were permitted to work in U.S. territorial waters through changes to existing laws that restrict access and competition, or if additional U.S. fleet capacity were developed beyond what the EA says is already happening.	Addressing the root cause of the nationwide hopper dredge shortage is beyond the scope of this EA; however, Corps' headquarters (HQ) is developing a strategic plan to evaluate the availability of various types of dredges to meet annual national dredging demands. Wilmington District is included in this plan but it is not finalized at this time. Development of a national strategy is expected to keep dredging costs in line with budgets and to provide physical resources to meet the demands at the District level.
74	Audubon NC	Cumulative impacts of the Bogue Banks and Surf City/North Topsail Beach projects on sea turtles, as well as other projects the Corps is aware of, should be included in the context of the impacts this draft EA is contemplating.	Cumulative effects for dredging associated with beach placement (not a part of this proposal) will be addressed in the NEPA documents for those projects. Also, the only CSRM project at this time pursuing expanded windows is the Surf City North Topsail Beach project and the request to allow work any time of year is for initial construction only and monitoring of impacts (turbidity and benthic) is required. This information has been added to the cumulative effects discusion in the Final EA. The Federal Bogue Banks CSRM project is not going forward.
75	Audubon NC	the SARBO's process for identifying risks, avoiding them, and responding has not been tested and appears, as written, to be to some degree discretionary. While the draft EA promises to apply adaptive management following SARBO, but provides no framework or triggers for doing so.	While the 2020 SARBO is new, it includes requirements for yearly reporting to NMFS for agency review and evaluation of all projects to make sure no ESAs are being negatively impacted. Also, monthy calls between agencies (USACE SAD/ BOEM/ NMFS) are ongoing to discuss the progress of existing projects, completed projects, new work, and risk to ESA and the environment associated with all known dredging work covered by the 2020 SARBO. The adaptable framework of the risk analysis includes regular coodination with various federal and state resource agencies and considers dredging risk to all species, including ESA. The risk analysis also allows for planning to consider ESA that are considered critically endangered and how to avoid any negative impacts to these species that could occur within the project area, such as the NARW.

Comment #	Comment Source	Comment	Response
76	Audubon NC	The draft EA does not provide insight into what the preferred alternative's Risk Assessment Plan would include or what the PDCs it would use would be. The draft EA does not indicate which PDCs it proposes to implement, what will be considered practicable or reasonable, what level of impacts would trigger adaptive management, or whether it considered the cost associated with PDCs in its analysis of the alternatives.	The PDCs are intentionally not included in the Final EA since a risk assessment and use of proper PDCs would be individually tailored to the specific maintenance dredging event each year, so it would be expected to be evaluated every year and could implement different PDCs depending on different factors including the type of dredge to be used, the area to be dredged, the time of year, etc. Moreover, the previous year's dredging events will also be evaluated and lessons learned will be included in the yearly risk assessment. Additionally, including, costs was also above the level of detail to be included in an EA analysis.
77	SELC, January 27, 2021/SCWF, February 5, 2021 (supporting SELC)	The Corps has not explained why the new three-year time period was chosen or how it satisfies the agency's original purpose and need statement	The 3-year time period was a result of coordination with NCDEQ. The Corps and NC Division of Coastal Management have concurred with a limited 3-year CZMA consistency determination for the project while enhanced monitoring occurs. This enhanced monitoring will allow us to jointly determine whether continued dredging outside of traditional seasonal windows is acceptable through the examination of the site-specific effects of the action. The NMFS Habitat Conservation Division is also supportive of the 3-year time limit and monitoring. During the 3 years, using a risk-based approach, the Corps will have the option to dredge any time of year, meeting the stated purpose and need in the Final EA.
78	SELC/SCWF	The new project description does not explain or acknowledge how the shortened scope would alleviate any of the legitimate concerns raised in response to the Corps' original proposal	Disagree. The updated project description addresses the plan to implement a risk-based approach to adaptively manage windows and implment other minimization measures going forward and includes the initial 3-year period. The intent is to use the most up-to-date science and experience to choose when to dredge so that decisions can be made that balance the financial costs, availability of equipment, and navigational needs with opportunities to protect species. The current seasonal restrictions are species specific and do not consider a larger eco-system wide approach. These restrictions are also static and often buffered to be protective of a wide range of seasonal scenarios. As per the SARBO, an annual risk-based assessment will be completed for each project.
79	SELC/SCWF	We are concerned the Corps intends to simply continue operating without dredging windows come December 2023. Moreover, we are concerned that the Corps will do so with an environmental analysis that downplays its environmental consequences because the agency will be evaluating impacts against an inaccurate baseline	The Corps plans to use a risk-based management approach going forward, instead of continuing to implement static windows. This approach will provide the option to choose when to dredge based on all the information available at the time. The "baseline" is based on existing data and will be adjusted, as needed, based on any new information obtained through monitoring by the Corps or other entities within the State. The Final EA includes a description of monitoring to be done by the Corps as well as other entities.
80	SELC/SCWF	The Corps must explicitly explain to the public what happens at the end of the three-year term, including whether agency practice will automatically revert back to the implementation of the longstanding dredging moratoria without further agency action, or whether a new action will be required to re-impose the windows or to extend their removal. Such explanation must be accompanied by an opportunity for the public to provide comment on the Corps' new proposal.	At the end of the 3-year period, a new or modified consistency pursuant to CZMA will be required and input from the public will be solicited through the CZMA process. The Corps does not plan to revert back to the implementation of long-standing windows, but rather to implement risk-based management going forward. The intent is to provide the option to choose when to dredge based on all the information available at the time. Updates to NEPA will only be warranted if there is substantial new information or changed circumstances. This information has been added to Section 7 of the EA.
81	SELC/SCWF	the Corps' new commitment to some monitoring, modeling, and reporting, standing alone, does not mitigate the harmful impacts of the original proposal	The Corps disgrees that the proposed action will result in harmful impacts to any species. The Corps is currently working and partnering with other federal and state agencies to develop a monitoring plan that will fill in data gaps and lead to better understanding of routes of effects to species and habitats during specific times of year.
82	SELC/SCWF	the planned monitoring is insufficient and without a clear purpose	Disagree. See response to Comment #79. The monitoring the Corps will be doing is a small portion of a Statewide monitoring framework that is ongoing and planned by others. More details regarding monitoring have been added to the Final EA.
83	SELC/SCWF	NMFS states that the Corps has committed to incorporating adaptive management strategies into the Final EA. This appears to be an implicit acknowledgement that there will be impacts requiring further management action in the future, yet this information is lacking from the Corps' updated project description.	The Corps does not plan to revert back to the implementation of long-standing windows, but rather to implement risk-based management going forward. The intent is to provide the option to choose when to dredge based on all the information available at the time. The revised project description addresses this and information regarding more specific mgmt strategies have been added to the Final EA.
84	SELC/SCWF	precise mechanisms of the adaptive management strategies—including triggers for certain management strategies to occur—must be spelled out for the public to review.	The projects under this EA will work under the 2020 SARBO which requires a risk-based assessment approach to consider the best timing and equipment to be protective of species under NMFS purview with an emphasis on shifting work completed when North Atlantic right whales are present to be protective of this most critically endangered species .
85	SELC/SCWF	this three-year removal of protective dredging moratoria could pave the way for a more permanent removal—or for the elimination of other environmental windows—thus resulting in precedential and cumulative effects. Similarly, three years' worth of impacts to imperiled species, fisheries, and their habitats could have severe and lasting consequences for sensitive species, as well as the numerous other ecologically and culturally significant resources in the project area.	The Corps plans to implement a risk-based approach going forward, as opposed to abiding by static windows. The intent is to provide the option to choose when to dredge based on all the information available at the time so that decisions can be made that balance the financial costs, availability of equipment, and navigational needs with opportunities to protect species by timing projects and choosing equipment types that avoid adverse effects and minimize take of ESA-listed species to the maximum extent possible. The current seasonal restrictions are species specific and do not consider a larger eco-system wide approach. These restrictions are also static and often buffered to be protective of a wide range of seasonal scenarios. As per the SARBO, an annual risk-based assessment will be completed for each project and the best available information will be used to make informed decisions going forward. This assessment will be going on during the initial 3-year period. If information or experience indicates that impacts are more significant than thought, then proper minimization measures can be implemented. See response to comment #54 regarding precedential effects.
86	SELC/SCWF	Inadequacies should be fixed in a full EIS	See response to Comment #54
87	SELC/SCWF	The Corps must do more to address the concerns raised about sea turtle impacts in an EIS, beyond merely collecting data about which turtles are being captured, wounded, or killed.	Non-concur. All impacts to sea turtles have been addressed in the 2020 SARBO and the Corps does not plan to complete an EIS. The project will work under the incidental take statement provided in Section 10 the 2020 SARBO. Monitoring and tracking for sea turtle incidents and takes will be conducted in accordance with the PDCs included in 2020 SARBO and for public transparancy all associated take for dredging projects will be published on the ODESS website at: https://dqm.usace.army.mil/odess/#/home
88	SELC/SCWF	new scientific research that has been published since the Draft EA was published. Harms et al. (2020)	Noted. This will not change the current EA, but similar types of effects to sea turtles caused stress enduced by relocation trawling were considered in the 2020 SARBO in Section 6.1.4.1.1 Effects of Forced Submergence. Additionally, the observed take and unobserved take of ESA are conserded in the incidental take statement for sea turtles included in Section 10 the SARBO .
89	SELC/SCWF	Corps must fully assess and disclose the cost projections and funding sources for the increase in wildlife medical costs that will inevitably result from increasing hopper dredging during summer months	Disagree. This is not a cost the Corps considers in project planning.
90	SELC/SCWF	Corps does not explain how it will ensure that summertime beach fill activities will not increase. The Corps cannot expect the public to take it at its word, especially given that the use of dredged material for beach fill is *encouraged* by State law. Since the Corps has failed to explain how the agency plans to restrict summertime beach fill activities, it is imperative that the agency adequately review these indirect impacts associated with year-round dredging	There are no changes proposed to the maintenance dredging and disposal/placement practices for Wilmington and Morehead City harbors beyond expansion of the hopper dredging window. All maintenance activities will continue as they have in the past and as identified in the 2011 Wilmington Harbor Sand Management Plan (SMP) and Morehead City Harbor Dredged Material Management Plan (DMMP). Maintenance dredging will not occur more frequently nor will it remove more material from the system annually. This EA , which does not propose more frequent dredging, more quantity of dredging, or beach placement, is not the right vehicle for an extensive assessment of dredging and beach placement and fill trends.
91	SELC/SCWF	Corps continues to ignore the interrelated and cumulative impacts of removing dredging windows in conjunction with the planned deepening and widening of Wilmington Harbor	See response to Comment #22.

Comment #	Comment Source	Comment	Response
92	SELC/SCWF	concerned about how these intertwined projects (WHNIP 203) will not receive a comprehensive hard look and that the agency's environmental reviews will be biased—especially with regard to how the Corps will appropriately review and account for maintenance dredging impacts in its EIS for the Wilmington Harbor expansion	As noted above, the Corps is required to address the numerous comments and concerns identified by ASA(CW) and complete the Feasibility Study and NEPA process before construction of any improvements could be authorized by Congress. To date, no appropriation has been provided for this work. If/when funding is provided, the Corps will complete an unbiased feasiblity study and NEPA process.
93	SELC/SCWF	The Corps must review and disclose the impacts from maintenance dredging under scenarios with and without dredging windows, or else commit to restoring the longstanding dredging windows after this initial three-year period	Disagree. Long-standing dredging windows have remained static and are outdated. The Corps plans to implement a risk-based approach going forward, as opposed to abiding by static windows. The intent is to provide the option to choose when to dredge based on all the information available at the time so that decisions can be made that balance the financial costs, availability of equipment, and navigational needs with opportunities to protect species by timing projects and choosing equipment types that avoid adverse effects and minimize take of ESA-listed species to the maximum extent possible. The current seasonal restrictions are species specific and do not consider a larger eco-system wide approach. As per the SARBO, an annual risk-based assessment will be completed for each project and the best available information will be used to make informed decisions going forward. This assessment will be going on during the initial 3-year period. If information or experience indicates that impacts are more significant than thought, then proper minimization measures can be implemented.
94	SELC/SCWF	The only analysis that has occurred to date for WHNIP 203 (prepared by the N.C. SPA) relied heavily on the presence of the established hopper dredging window in limiting its disclosed environmental impacts	There is no NEPA document for the WHNIP. The dredging effects associated with any improvements to Wilmington Harbor will be thoroughly addressed in the NEPA document for that study, should it move forward.
95	SELC/SCWF	As the bid solicitation materials were posted and the contract was awarded *before* a final decision on the Corps' proposal, we are concerned that the Corps is rushing to approve a proposal that has already been promised to outside parties	Nothing has been promised to outside parties. See response to comment #24 for a full discussion of the solicitation.
96	SCWF	SCWF concerns reflect SELC's. Concerned that proposal will establish the precedent to carry to other states including South Carolina.	The USACE has proposed, and NCDCM has concurred with a limited 3-year consistency determination for the project while enhanced monitoring occurs. This will allow us to jointly determine whether continued dredging with no windows (using a risk-based mgmt approach) is acceptable through the examination of the site-specific effects of the action. If other projects consider expanded dredging windows, we expect them to require their own NEPA and CZMA examination
97	USFWS, August 28, 2020 email	The Service does not have any trust resources in the project area, other than West Indian manatee. We recommend that any contract include a requirement to follow the Service's 2017 Manatee Guidelines. We do not have any other significant comments. Please let us know if the scope of this study changes, particularly if beach sand placement is added as a proposed project activity.	Noted. Future hopper dredge contracts will continue to include the 2017 Manatee Guidelines and added language to emphasize the need to be vigilant between 1 June - 31 October.
98	USEPA, September 9, 2020 email	USEPA received a copy of the Draft EA and responded by email stating they had no comments.	Noted.
99	ASMFC, February 12, 2021	The Commission is concerned with the USACE decision to move ahead with the proposed action, as modified, and recommends the Wilmington District instead prepare an Environmental Impact Statement (EIS) which will fully address the potential impacts of the proposal.	Disagree. The NEPA analysis is adequate. See response to comment #54.
100	ASMFC	While designated Fish Habitats of Concern (FHOCs) designations carry no legal obligations, they are ecologically functionally equivalent to and are defined using the same definition as the Habitat Areas of Particular Concern (HAPCs) under the NOAA Fisheries and federal FMC guidelines. It is probable that both North Carolina inlets and associated navigation channels which are the subject of the USACE's proposal will be designated as FHOC for one or more species under Commission management, along with additional inlets within the jurisdiction of Commission member states.	Noted.
101	ASMFC	The Commission contends the USACE EA effectively ignored this conclusion , and the elimination of dredging windows would cause a significant environmental impact. Therefore, the Commission requests the USACE develop an EIS which fully analyzes a suite of alternatives, including the status quo (i.e., maintaining existing environmental dredging windows). The bottom line is that seasonal windows effectively mitigate the negative impacts of dredging on Commission-managed species during important phases in their life history.	Disagree. The NEPA analysis is adequate. See response to comment #54.
102	ASMFC	Species most likely to be impacted by the USACE proposal include: alewife, American eel, American shad, Atlantic croaker, Atlantic menhaden, Atlantic striped bass, Atlantic sturgeon (protected under the Endangered Species Act), black drum, blueback herring, hickory shad, red drum, spot, spotted seatrout, and weakfish. The Commission is fully engaged in the management of alewife, American shad, Atlantic sturgeon, blueback herring, red drum, and summer flounder) with four of those (alewife, American shad, blueback herring and red drum) managed solely by the Commission.	Noted. Impact anaysis to Federal and state managed fishery species have been included in the EA. Addtionally, by-catch information on these species will be tracked and recorded in the ODESS system by PSO's during each dredging and trawling event.
103	ASMFC	Our understanding is that the details of the proposed studies have yet to be finalized, and some of the organizations which have expressed concerns regarding the proposal believe that not all of their concerns were addressed by the modifications and will likely continue to pursue preparation of an EIS.	Disagree. The NEPA analysis is adequate. See response to comment #54.
104	ASMFC	Should the Wilmington District implement the proposed measures within the EA, even as modified, other USACE Districts to both the north and south within the Commission and member states' jurisdictions may attempt to do the same. This, in turn, could potentially result in more widespread impacts to Commission-managed resources which could lead to population-level impacts.	The Corps plans to implement a risk-based approach going forward for all Districts, as opposed to abiding by static windows. The intent is to provide the option to choose when to dredge based on all the information available at the time so that decisions can be made that balance the financial costs, availability of equipment, and navigational needs with opportunities to protect species by timing projects and choosing equipment types that avoid adverse effects and minimize take of ESA-listed species to the maximum extent possible. The current seasonal restrictions are species specific and do not consider a larger eco-system wide approach. As per the SARBO, an annual risk-based assessment will be completed for each project and the best available information will be used to make informed decisions going forward. This assessment will be going on during the initial 3-year period. If information or experience indicates that impacts are more significant than thought, then proper minimization measures can be implemented where needed.
105	SELC, February 17, 2021	Here, as in *Standing Rock Sioux Tribe* , there remains significant unresolved criticism of the Corps' analysis raised by both resource agencies and other entities that demonstrates the proposal is "likely to be highly controversial." For example, the N.C. Wildlife Resources Commission questioned the Corps' superficial analysis of the increased risk of harm to endangered species and their habitats associated with summertime dredging. The N.C. Department of Marine Fisheries ("DMF") critiqued the Corps for failing to adequately address potential significant impacts to fish and their habitats from water quality degradation and increased sedimentation. DMF also indicated that the removal of dredging windows is in violation of policies within the Marine Fisheries Commission's Policies for Protection and Restoration of Marine and Estuarine Resources from Beach Dredging and Filling and Large-scale Coastal Engineering. The South Atlantic Fishery Management Council critiqued the Corps for incorrectly stating that there was not Essential Fish Habitat and Habitat Areas of Particular Concern within the harbors and for failing to analyze the increased risk of injury, mortality, and poor recruitment to fisheries in the area. The Atlantic States Marine Fisheries Commission submitted comments reiterating concerns raised by others about impacts to fisheries and habitat, expressing that the Corps ignored research indicating that moratoria are effective, and urging the Corps to prepare an EIS.	USACE has more thoroughly described effects to species and affected habitat in its Final EA. We would like to note that through meaningful dialogue with State and Federal resource agencies, we have materially addressed and resolved the primary serious objections to our analysis, as evidenced by the successful completion of the CZMA Consistency and Essential Fish Habitat consultations that resulted in concurrence from the respective lead agencies. The case referenced by the commenter involved the construction of a new 1,200-mile-long oil pipeline. This EA covers no new work at all, and analyzes the effect of seasonal changes to dredging schedules at limited reaches of two navigation channels.

Comment #	Comment Source	Comment	Response
106	SELC	Additionally, during the February 11 meeting, Corps staff reiterated the Draft EA's claim that North Carolina is unique in imposing dredging moratoria. We questioned that assumption—providing evidence of moratoria in place at Savannah Harbor—in our original comments on the Draft EA.	Partially concur. The moratoria referenced for Savannah Harbor Expansion Project (SHEP) were similar to those that existed in Georgia in the 1997 SARBO in place at the time. It is our understanding that, once construction is complete, Savannah Harbor will be dredged as described in the 2020 SARBO. Portions of Savannah Harbor that have been deepened are now maintained pursuant to the 2020 SARBO (without environmental windows, utilizing the risk-based assessment framework). Please note as well that the project referenced was a harbor expansion project, and not maintenance dredging of an existing channel. While the immediate effects of new work dredging and maintenance dredging are not always dissimilar, new work dredging NEPA must also examine the effects associated with a larger navigation channel, which is not the case here.
107	SELC	There, we raised concerns about how this proposal could set a precedent of removing other environmental windows elsewhere.	USACE understands that the 2020 SARBO and its removal of fixed environmental windows may lead to consideration of removal or alteration of windows on other projects across the South Atlantic region. Across the region, USACE will use the risk-based assessment framework to evaluate risk to all species and habitat in the area. USACE will consider the possible routes of effects based on project location, timing, equipment, and minimization measures available. The assessment considers the risks and benefits at a local, regional, and national level and prioritizes protection of the most vulnerable species based on population status and the best-available information. Risk-assessment as part of the 2020 SARBO is not a static decision but, instead, is an on-going process that takes into account historic information, project detail decisions made pre-construction, adjustments made during construction, and a post-construction assessment of lessons learned to document an evolving understanding of the project area, species and habitat, and risk associated with project activities. This particular proposal will bring the Wilmington and Morehead City projects in line with the other navigation harbors in the region, where timing of maintenance dredging is already done in accordance with the terms of the 2020 SARBO.
108	SELC	As particularly relevant examples, the Corps' official protocol in Georgia sets a December 15–March 31 dredging window, and the state of South Carolina specifies dredging windows that the Corps must abide by that often fall within the window of October 15–January 31. The Corps' mistaken belief that North Carolina stands alone in imposing dredging windows underscores the concerns we previously raised about the potential widespread, precedential impacts of the Corps' proposal on other dredging and sediment management activities throughout the Southeast.	The Wilmington District has contacted relevant resource specialists at both the Charleston and Savannah Districts. Aside from the hopper window referenced for Savannah Harbor deepening and a beach placement window at Bird Stono Key in South Carolina, and project-specific limitations that the Charleston District may choose to adopt consistent with navigation mission requirements in light of resource agency requests, neither District reports enforceable windows, conditions, or protocols that would limit the timing of federal navigation dredging. Generally, with the 2020 SARBO in place, other Districts such as Savannah District and Charleston District no longer have conditions or protocols that would limit the timing of dredging associated with O & M.

Appendix F: Coastal Zone Management Act (CZMA) Documents

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

August 19, 2020

Environmental Resources Section

Mr. Daniel Govoni
North Carolina Department of Environment and Natural Resources
Division of Coastal Management
400 Commerce Avenue
Morehead City, North Carolina 28557

Dear Mr. Govoni:

The U.S. Army Corps of Engineers Wilmington District (Corps) has prepared the Wilmington and Morehead City Harbor Maintenance Dredging and Bed Leveling Draft Environmental Assessment (EA), dated August 2020. The EA is available on the USACE website at:

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

The Corps is requesting a consistency review under the North Carolina Coastal Area Management Program for the proposed year-round maintenance dredging in the outer portions of Wilmington and Morehead City Harbors. The request involves maintenance dredging and bed leveling of several reaches of both deep draft projects and placement of material either into the designated Offshore Dredged Material Disposal Sites (ODMDS) or nearshore placement areas (Morehead City only). Dredging events will occur annually as in the past; the only alteration requested is the removal of the 1 December – 15 April dredging window. This letter serves as a formal consistency determination in which we request your concurrence.

In accordance with Section 307 (c)(1) of the Federal Coastal Zone Management Act of 1972, as amended, the Corps has determined that continued maintenance dredging of the project channels is consistent, to the maximum extent practicable, with North Carolina's coastal management program. The proposed activities comply with the enforceable policies of North Carolina's approved coastal management program and will be conducted to the maximum extent practicable in a manner consistent with the program and any received authorizations.

As you are aware, the maintenance of safe navigation in federal channels is essential to ensure our Nation's maritime safety and security. The Corps has determined that year-round dredging and bed leveling will help accomplish our mission of providing safe access to our ports and harbors while meeting the Federal Standard of being the least cost, engineeringly sound, environmentally acceptable alternative.

Maintenance activities will be undertaken in compliance with all conditions of applicable state and federal authorizations. This determination is based on the review of the proposed project against enforceable policies of the State's Coastal Management Program, which are principally found in Chapter 7 of Title 15A of the NC Administrative Code.

Thank you for your attention to this matter. Should you have any questions or require additional information, please contact Ms. Emily Hughes by telephone at (910) 251-4635 or by email at Emily.b.hughes@usace.army.mil.

Sincerely,

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Elden Gatwood
Chief, Planning and
Environmental Branch

cc:
Braxton Davis

Project Name: Wilmington Harbor and Morehead City Harbor Year-Round Maintenance Dredging and Bed Leveling

The United States Army Corps of Engineers (Corps) is seeking authorization to eliminate the existing hopper dredging window for the outer portions of the Wilmington and Morehead City Harbors (Figure 1) to allow for year-round hopper dredging and bed leveling with offshore and/or nearshore placement of dredged material. Hopper dredge availability is limited, making it very challenging to adequately maintain the District's two deep draft navigation projects within the existing environmental window (1 December – 15 April). Eliminating the window will allow more flexibility and increase efficiency in maintaining the harbors while improving navigability and safety.

Project Purpose

The purpose of this request is to increase flexibility and assurance in maintaining the Wilmington and Morehead City Harbor entrance channels (Figures 2 and 3). There is currently a shortfall in the national supply of hopper dredges as the demand for dredging continues to increase. The current environmental window for hopper dredging limits work to the period of 1 December - 15 April (approximately 135 days). The result has been several failed contract awards in the Wilmington District, with either bids exceeding the independent government estimate (IGE) or no bids received at all.

The ability to dredge any time of year is necessary for maintaining the proposed reaches of the Wilmington and Morehead City Harbors to full project depth and width at reasonable cost. Eliminating the dredging window would provide maximum flexibility to obtain contract dredges when maintenance dredging is most needed. Removing the window restriction would also allow dredges to continue working until project completion, rather than having to stop and return at a later date to complete the work. Additionally, elimination of the hopper dredging window would alleviate the need to limit the scope of dredging to the bare minimum needed to keep channels open, thus allowing the Corps to perform maintenance dredging to full authorized project dimensions.

Bed leveling is a dredging practice that is performed using a tugboat to pull a drag bar or I-beam across the channel bottom. After the hopper dredge passes through an area, it often leaves behind peaks and valleys that require smoothing or leveling. Bed leveling simply moves material from high spots to low spots and avoids the need for additional hopper dredging. Bed leveling year-round is a necessary accompaniment to hopper dredging.

Existing Conditions

Wilmington Harbor: The navigation channels within the Wilmington Harbor include the Outer Bar Channel (Baldhead Shoal Range 3), the Inner Bar Channels (Baldhead Shoal Ranges 1&2, Smith Island, Baldhead-Caswell, Southport and Battery Island Channels), and the Mid-River channels (Lower Swash, Snows Marsh and Horseshoe Shoal) (Figure 2). Material dredged from the Outer Bar is made of up of mostly silt that is not suitable for beach placement, therefore it is placed offshore in the Wilmington Harbor Ocean Dredged Material Disposal Site (ODMDS). Material in the Outer Bar channel accumulates rapidly and requires removal annually to maintain navigability for ships to safely enter the harbor.

The Inner Bar Channels are composed of mostly beach quality sand (material ≥90% sand) and dredged material from these channels is typically removed by cutter-suction/pipeline dredge and beneficially placed on the adjacent shorelines of Oak Island or Bald Head Island, approximately every 2-3 years. However, during years when there is no beach placement, accumulated material is removed by hopper dredge and taken to the ODMDS.

The lower channels of the Mid-River section of Wilmington Harbor contain beach quality sand as well, however these reaches are out of range for economical beach placement. In the past, this dredged material was pumped by pipeline dredge to an upland disposal area (DA 4) or onto adjacent bird islands managed by the State of North Carolina or taken offshore to the ODMDS by means of bucket and barge or hopper dredge. When sediments accumulate within Horseshoe Shoal and Snows Marsh channels, the District strives to use this beach quality dredged material beneficially when possible.

Morehead City Harbor: The Morehead City Harbor sections of the project maintained by hopper dredge include the Outer Entrance Channel and the Outer Harbor. The Outer Entrance Channel (Range A Station 110+00 outbound) is authorized to a project depth of -47 feet + 2 feet overdepth. This portion of the channel requires annual maintenance by hopper dredge and contains material that is not beach quality, and therefore is placed into the Morehead City ODMDS (Figure 3).

Most of the Outer Harbor channels (lower half of South Range C, Range B, and the Cutoff) are maintained to -45 feet + 2 feet overdepth, by a hopper or pipeline dredge. Dredged material is beach quality sand that is placed either in the approved nearshore placement areas to the east and west of Beaufort Inlet, on the shoreline at Fort Macon State Park and Atlantic Beach, or in the designated sand placement zone (northern half) of the Morehead City ODMDS. Beach placement occurs about every 3 years as described in the Morehead City Harbor Dredged Material Management Plan (DMMP). Hopper or pipeline placement in the nearshore placement areas is also an option, as covered in the DMMP. For hopper dredges, nearshore placement is limited to those

dredges that can navigate the relatively shallow nearshore areas and open the hopper doors to release material safely.

Alternatives Analysis

Feasible alternatives to the proposed project are discussed below.

The No Action Alternative: The No Action Alternative would mean continuing with maintenance dredging in the future while abiding by the existing hopper dredging window of 1 December – 15 April. The Wilmington District currently abides by self-imposed windows and/or windows coordinated with National Marine Fisheries Service Habitat Conservation Division (NMFS HCD) or imposed through the Federal Coastal Zone Management Act (CZMA), which is enforced by State resource agencies. These window restrictions significantly limit the period when dredging may be accomplished, resulting in dredging price increases by either cost per cubic yard of material dredged, per dredge/equipment mobilization, or both. Often, the Wilmington District does not receive adequate funds to cover these cost increases, so maintenance dredging is often reduced to the bare minimum to keep channels open to navigation. This routinely leads to the need for draft restrictions and in some cases, impedes safe navigation.

In the last ten years, hopper dredges have been in high demand across the country, and widespread increased shoaling due to storm events has made it difficult and expensive to secure hopper dredges to perform maintenance when needed.

Currently, at Wilmington and Morehead City Harbors, hopper dredging and bed leveling are restricted to 1 December - 15 April by the federal consistency concurrences, dated June 15, 2017.

The Expanded Window and Bed Leveling Alternative: A proposed alternative assessed in this document is the expansion of environmental windows for hopper dredging and bed leveling in the Wilmington Harbor and Morehead City Harbor identified reaches. An expanded window of 1 July to 15 April would offer more flexibility for dredges. Based on existing research and scoping comments received from resource agencies, the months prior to the existing window (July – November) are a less sensitive time period to dredge than the months following (April – June).

Expanding the hopper dredging window to 1 July to 15 April reduces window restrictions, however it does not eliminate restrictions, which are needed to adequately maintain the Wilmington and Morehead City Harbors. The Corps needs as much flexibility as possible to accomplish maintenance dredging of the harbors and an expanded window does not meet the purpose and need.

Elimination of Window and Bed Leveling Alternative (Proposed Action): The Corps is proposing to eliminate the 1 December – 15 April hopper dredging window within the Wilmington and Morehead City Harbors. Removing the window restriction is necessary for maintaining the proposed reaches to full project depth and width at reasonable cost. A cost analysis of the alternatives resulted in the proposed action being the least cost alternative, saving a minimum of $13million in tax payer dollars over the next 20 years. The removal of the hopper dredging window will allow hopper dredging to occur any time of year; however, it should not be assumed that hopper dredging will occur every year within the spring and summer months when biological activity is highest. Year-round hopper dredging and bed leveling will provide the flexibility and assurance needed to achieve successful contract awards and allow our Ports to remain competitive, thus sustaining the regional economy.

Minimization Measures

All work will be completed within existing navigation channels that have been previously disturbed. No deepening or widening of the channels is proposed. There are no identified Primary Nursery Areas (PNAs), Secondary Nursery Areas (SNAs), Special Secondary Nursery Areas (SSNAs) or Submerged Aquatic Vegetation (SAV) habitat within the project areas and effects of hopper dredging (increased turbidity, sedimentation and noise; entrainment) are not expected to have a significant impact on these resources.

It is understood that by eliminating the 1 December – 15 April window, dredging may occur during the warmer months when biological activity is much higher. Benthic invertebrates and bottom-feeding fish would be most at risk, as well as critical life stages (egg, larvae, juveniles) of important fisheries. An Essential Fish Habitat (EFH) analysis has been conducted and provided to the National Marine Fisheries Service (NMFS) Habitat Conservation Unit for review and response.

In March 2020, the NMFS Protected Resources Division finalized the 2020 SARBO to protect federally protected marine species, such as sturgeon, sea turtles and North Atlantic right whales from the harmful effects of dredging. All dredging conducted by the Corps will adhere to the terms and requirements of the 2020 SARBO. Protective measures include: shutting off draghead pumps when not embedded six inches within the sediment; rigidly attached turtle deflectors on the dragheads to reduce species entrainment; two 24-hour Protective Species Observers conducting on-board monitoring year-round; tracking and recording protected species through the Operations and Dredging Endangered Species System (ODESS); and daily monitoring with the Dredging Quality Management (DQM) software to verify dredge position, dredging depth, vessel speed and slurry float rate and density. Bed leveling requires specific attachments and design to avoid impingement and is operated at a slow rate, so as not to harm underwater species.

The Corps, Wilmington District, is currently partnering with the state of North Carolina to collect water samples adjacent to the hopper dredge in Beaufort Inlet, and is open to participating in future studies in the Cape Fear River Inlet if needed. The Corps and the dredging industry continue to develop and use technologies and methodologies to reduce risks to species. As more information of dredging effects is collected and understood, solutions to combat the negative effects will result.

Areas of Environmental Concern

Both the Wilmington and Morehead City Harbor project areas are located in an area of environmental concern (AEC) as defined by Section 113A-113 of the North Carolina Coastal Area Management Act (CAMA). Specifically, the proposed actions will be occurring in the Estuarine and Ocean System, the Ocean Hazard System (Inlet) and Public Trust AECs.

The NC Division of Water Resources (NCDWR) classifies waters within harbor inlets and estuaries as SA, and waters of the Atlantic Ocean as SC. None of the project areas (dredging and disposal sites) are located in Outstanding Resource Waters (ORW), as defined by NCDWR.

The North Carolina Division of Marine Fisheries does not classify the project areas (dredging and disposal sites) as a Primary Nursery Area (PNA) (15A NCAC 07H .0208(a)(4)).

Submerged aquatic vegetation (SAV) has not been identified in waters adjacent to the Wilmington and Morehead City Harbor navigation channels (15A NCAC 07H .0208(a)(6)). It is unlikely that any SAV are present within the areas to be dredged, since they are too deep for light to penetrate, routinely navigated and located in dynamic areas having a lot of tidal and current action, in addition to frequent sand movement.

There are no shellfish beds in the project areas (15A NCAC .0208(a)(2).

The project areas are not designated as a “Natural and Cultural Resources Area” (15A NCAC 07H .0501) and the proposed action impacts only the existing channel footprint, therefore no impact to cultural resources will occur.

Analysis of the Project in Relation to North Carolina’s Coastal Management Program

15A NCAC 07H .0206 establishes management objectives for estuarine waters in order to conserve and manage the important features of estuarine waters in a manner that

safeguards and perpetuates their ecological and economical values and to coordinate and establish a management system capable of conserving and using estuarine waters that maximize their benefits to humans and the estuarine and marine systems.

15A NCAC 07H .0207 establishes management objectives to protect public rights for navigation and recreation and to conserve and manage the public trust areas to safeguard and perpetuate their biological, economic and aesthetic value.

The proposed action will not result in the loss of coastal uses nor impact coastal resources or prohibit access to coastal resources by the public. Elimination of windows for hopper dredges will provide for safe navigation in channels of the Wilmington and Morehead City Harbor project areas for the public. The project will not result in adverse effects on biological, economic or aesthetic values of public trust areas.

15A NCAC 07H .0208(b)(1) requires that impacts to various resources, such as primary nursery areas, outstanding resource waters, shellfish, and submerged vegetation be avoided or minimized.

Dredging (hopper dredging and bed leveling) will occur within existing navigation channels. Placement of dredged material will be in the previously approved nearshore placement areas off Bogue and Shackleford Banks, and the Wilmington and Morehead City ODMDSs using previously employed methodology. No adverse impacts will occur to any PNAs, ORWs, shellfish, and SAVs.

15A NCAC 07H .0208 (b)(2) addresses the case-by-case review of publicly funded hydraulic dredging projects with respect to dredging methods and dredged material placement. The general use standards are listed below. Following each standard is a brief description explaining how the proposed project meets each standard.
(a.) The need for and implementation of the proposed action shall be consistent with the stated management objective.

The proposed action involves year-round dredging of existing publicly funded (federally authorized) navigation channels and placement within existing nearshore placement areas off Bogue and Shackleford Banks, and the Wilmington and Morehead City ODMDSs. Because any environmental impact would be minimal and short-lived, it is the Corps' opinion that no mitigation is required for the proposed action.

(b.) The proposed action shall not violate water and air quality standards.

On September 30, 2019, the North Carolina Division of Water Quality (NCDWQ) reissued general 401 certifications to cover multiple maintenance dredging and placement activities. The placement of dredged material into approved nearshore placement areas off Bogue and Shackleford Banks is covered under NCDWQ Certificate #4146. A copy of this general water quality certificate is found in Appendix B

of the EA. All conditions and requirements of the water quality certification will be adhered to during implementation of the proposed action (see paragraph 15A NCAC 07M .0800 below). There will be no unregulated discharge into waters or wetlands subject to the Clean Water Act. The project will comply with all North Carolina air quality standards; therefore, no authorization is required.

(c.) The proposed action shall not cause major or irreversible damage to valuable documented archaeological or historic resources.

There are known archaeological or historical resources within the Wilmington and Morehead City project areas. Known resources will not be affected by maintenance dredging in previously maintained channels and use of established placement areas.

(d.) The proposed action shall not measurably increase siltation.

The proposed action will entail placement of dredged material in the nearshore and/or ODMDS and will temporarily increase suspended sediments in the immediate vicinity of dredging and placement operations. Past experience has shown the suspension to be short-lived and localized. Impacts are expected to be minimal to negligible.

(e.) The proposed action shall not create stagnant water bodies.

There will be no stagnant water bodies created as a result of the proposed project.

(f.) The proposed action shall not impede navigation or create undue interference with access to, or use of, public trust areas or estuarine waters.

Implementation of the proposed action will provide for safe navigation in the reaches of the Wilmington and Morehead City Harbor projects covered in this consistency determination and in the EA.

15A NCAC 07M .0800 establishes that the quality of coastal waters is to be protected. The proposed year-round dredging will create *de minimis* suspended sediments within the vicinity of the work. These coarse-grained sediments are anticipated to settle quickly and result in localized, short-lived, and minimal to negligible impacts. The dredged material will be placed in the nearshore placement areas off Bogue and Shackleford Banks and the Wilmington and Morehead City Ocean Dredged Material Disposal Sites (ODMDS). Discussions of siltation effects are described above. Because regulated discharge into waters of the U.S. will occur in the nearshore areas, pursuant to the Clean Water Act, appropriate authorization from the North Carolina Division of Water Resources is required. The proposed action is covered by General Water Quality Certification #4146.

15A NCAC 07M .0700 requires that there is no reasonable or prudent alternative for the project that would avoid potential impacts. The proposed project involves year-round maintenance dredging of existing navigation channels. There are no other reasonable locations for these features. In addition, the proposed methods of dredged material placement have been previously approved and determined to have minimal environmental impacts. No new dredged material placement locations are proposed. Eliminating dredging windows will improve safe navigation to the Wilmington and Morehead City Ports.

It is the understanding of the Wilmington District that North Carolina's Dredge and Fill Law, NCGS 113-229, applies to those entities seeking permits from NCDCM, and not to federal agencies making determinations of consistency with the enforceable policies of the CAMA. Specifically, federal agencies are not identified in section (m) of the law as entities which are subject to these provisions; the law specifically identifies "State government or local governments," but not the federal government, as entities which must comply. It is our understanding that the intent of the dredge and fill law is expressed adequately in the enforceable policy found at 15A NCAC 07M.1102, which does apply to federal agencies, and with which the draft EA is consistent, as described below.

15A NCAC 07M.1102 states in section (a) 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, 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."

As stated in the Draft EA, large volumes of beach quality material from the Wilmington Harbor reaches are placed onto adjacent beaches by pipeline dredge every three years, approximately. On alternating years, when small volumes of material require removal, that material will be removed by a hopper dredge and placed in the Wilmington ODMDS. This allows the majority of the beach quality material to stay within the littoral system.

A component of the Morehead City Harbor project is the beneficial use of dredged material by placement in the Nearshore Placement Areas to the east and west of Beaufort Inlet with the expected benefit of reducing erosion of the ebb tide delta, also referred to as ebb tide delta deflation. For this reason, in years 2 and 3 of the 3-year maintenance cycle, the Morehead City Harbor DMMP recommends placement of coarse-grained material (≥90% sand) in the Nearshore Placement Areas.

The placement of dredged material on the ebb tide delta, which is part of the littoral system, is expected to contribute to the stability of the ebb tide delta thus positively

affecting the littoral system and the associated features. However, anytime dredged material is not placed in the ebb tide delta, it may adversely affect (deflating) the ebb tide delta. An understanding of coastal inlet processes suggests that continued erosion of the ebb tide delta complex is likely to eventually impact the adjacent beaches. Every practical and sound effort, including reasonable use of light-loaded vessels, will be made to retain littoral material dredged from the navigation channels within the inlet complex to minimize this ebb tide delta deflation. A comprehensive physical monitoring program, (as outlined in the final Morehead City Harbor DMMP), will provide data to potentially modify and assess ongoing operations and its impacts.

It is also important to note that the logistics involved with the dredging of material from the Outer Harbor channel to a great degree define the ideal location of the nearshore placement area. Specifically, in order to maintain this section of the Morehead City Harbor project, a dredge vessel must be able to remove material to a depth of 47 feet, dredge shoals that are long, shallow, and roughly linear, and work in the rough sea conditions mandated by the District's voluntarily-imposed dredging window in the winter months. Ocean-going hopper dredges have so far been the only vessels able to accomplish such tasks. These dredges generally must operate in at least 20-22 feet of water to avoid colliding with the bottom. When working in seas of several feet, or at lower tides, deeper operating depths are necessary. Therefore, it is not practicable to place material in a nearshore area at depths much less than 25 feet. The average depth of the existing nearshore area is roughly 26 feet, and it has been placed across the 25- and 30-foot contours, allowing for enough space to contain sufficient material and provide vessels with an adequately large target for material placement.

From time to time, wave and wind conditions make it unsafe for hopper dredges to place material in the nearshore areas. To date, the Corps has allowed dredge captains the discretion to place dredged material in the Morehead City ODMDS when those captains believe that weather conditions prohibit safe operation within the nearshore area. Placement of some beach quality material in the ODMDS when safety factors require has been the only circumstance where beach-quality material from the Morehead City Harbor project has been placed outside the active nearshore or beach system. The District notes, however, that much of the beach-quality material placed in the ODMDS is not being removed from the system permanently. The District takes care to place beach-quality material in certain designated areas within the Morehead City ODMDS, so that it may be retrieved at a later date for beach placement. On at least three occasions, and as recently as 2019, local governments have used the Morehead City ODMDS as a borrow source for placement of beach-quality material onto the beaches of Bogue Banks. Even so, the District works to minimize placement of beach-quality material into the ODMDS.

Other Required Approvals

No other permits, authorizations, or approvals are necessary at this time for the proposed action. The Corps is soliciting comments via Public Notice on the draft EA to implement year-round maintenance dredging of portions of Wilmington and Morehead City Harbors. Comments from federal and state resource agencies have been requested to ensure that the proposed action will not have more than minimal adverse environmental impacts. All comments received will be addressed and all agency coordination will be satisfactorily concluded prior to the beginning of work associated with this project.

Consistency Determination

Pursuant to North Carolina CAMA Regulations for hydraulic dredging, 15A NCAC 07H .0208(b)(2)(g), “development shall be timed to have minimum adverse significant effects on life cycles of estuarine and ocean resources.” Based on the summary of impacts described above, conducting hopper dredging and bed leveling at Wilmington and Morehead City Harbors any time of the year are not expected to have significant adverse effects on water quality, noise levels, shellfish, submerged aquatic plants, and/or primary fishery nursery areas. Placement of material will be in the approved Wilmington ODMDS, the Morehead City ODMDS or in the nearshore placement areas east and west of Beaufort Inlet. There are no environmental windows associated with the placement areas.

In accordance with Section 307 (c)(1) of the Federal Coastal Zone Management Act of 1972, as amended, the Corps has determined that the proposed elimination of the 1 December – 15 April environmental window for the Wilmington and Morehead City Harbor project areas is consistent, to the maximum extent practicable, with North Carolina’s Coastal Management Program. This determination is based on the review of the proposed project against the enforceable policies of the State’s coastal management program, which are principally found in Chapter 7 of Title 15A of North Carolina’s Administrative Code. We request that the NCDCM concur with this consistency determination.

Conclusion

Based on the findings described in this consistency determination and the Draft EA, it is in the federal interest to implement year-round hopper dredging and bed leveling. Maintenance dredging of existing channels will result in minor and short-term impacts to water quality, benthic organisms, important fisheries and protected marine reptiles and mammals. The overall benefit of the proposed action is to allow flexibility in maintaining the Wilmington and Morehead City Harbor navigation channels, reduce maintenance dredging costs, and provide a safer, more navigable channel for ships calling on the Ports. Additionally, with bed leveling, the duration of each dredging event may be

reduced, thereby lessening temporary impacts to benthos, water quality, and noise levels.

Monitoring and mitigation are important and effective tools for reducing impacts to the environment. The Corps and the dredging industry continue to develop and use technologies and methodologies to reduce risks to species. As more information regarding dredging effects is collected and understood, solutions to combat the negative effects will result.

The proposed action conforms to the management objectives of all enforceable policies of the North Carolina Coastal Management Program, since it will result in maintenance of existing navigation features while minimizing adverse impacts to Estuarine Waters, Ocean Hazard and Public Trust Areas.

The proposed action will not adversely affect any biota recognized by the State as species of concern, will not adversely impact water quality, and will result in minimal, temporary and short-lived impacts to fisheries and the aquatic habitat. Placement of dredged material will be in the existing Nearshore Placement Areas at Beaufort Inlet and the Wilmington and Morehead City ODMDSs and will be conducted using previously employed and approved methodologies.

Implementation of the proposed action will result in the continued provision of safe navigation through Cape Fear River and Beaufort Inlets for the existing Wilmington and Morehead City Harbors.

In accordance with Section 307 (c)(1) of the Federal Coastal Zone Management Act of 1972, as amended, the Corps, Wilmington District has determined that the proposed action and continued maintenance dredging of the project channels are consistent, to the maximum extent practicable, with North Carolina’s coastal management program. The proposed activities comply with the enforceable policies of North Carolina’s approved coastal management program and will be conducted to the maximum extent practicable in a manner consistent with the program and any received authorizations.

Figures (1, 2 & 3)

Figure 1. Wilmington Harbor Project Area

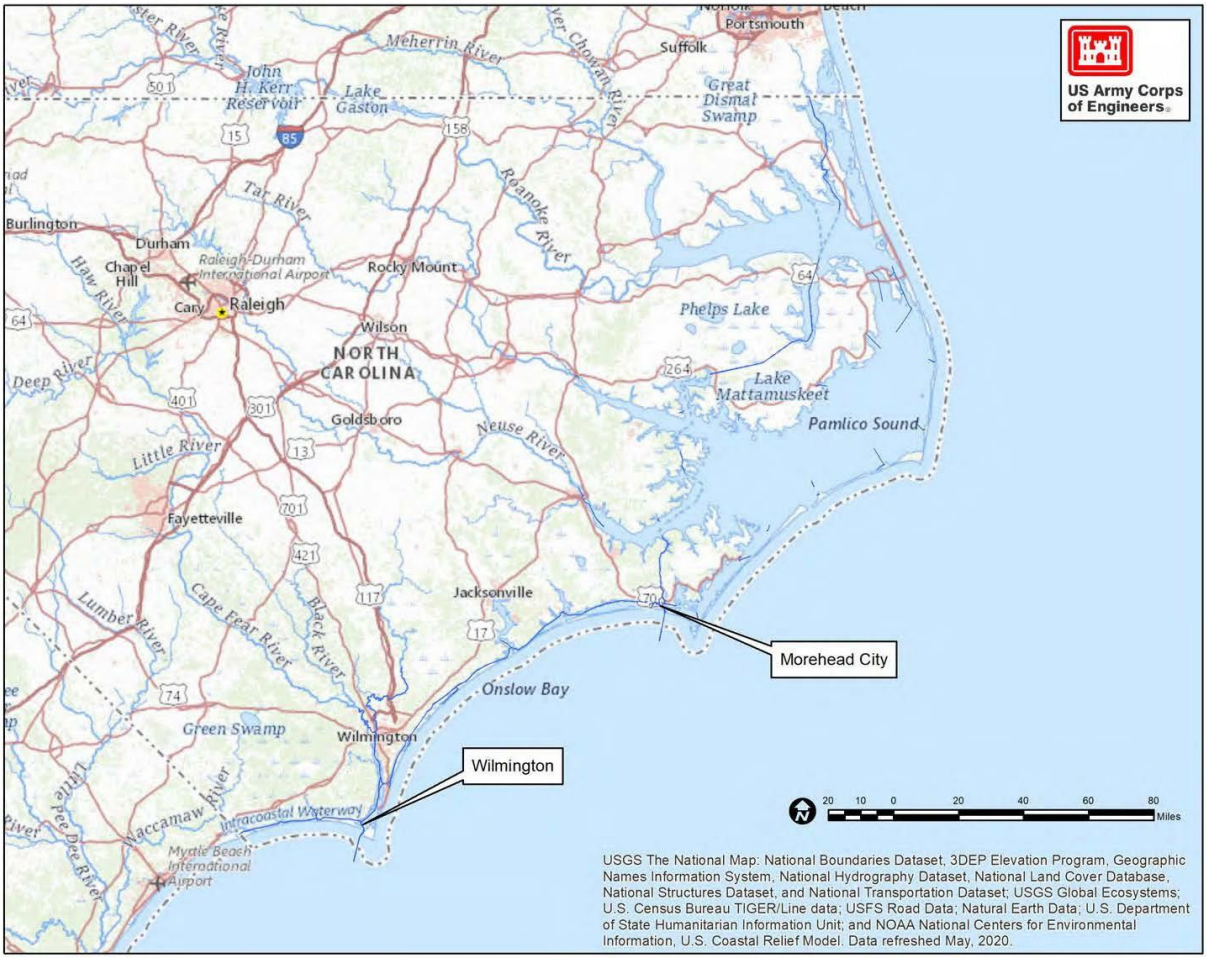


Figure 2. Wilmington Harbor Project Area

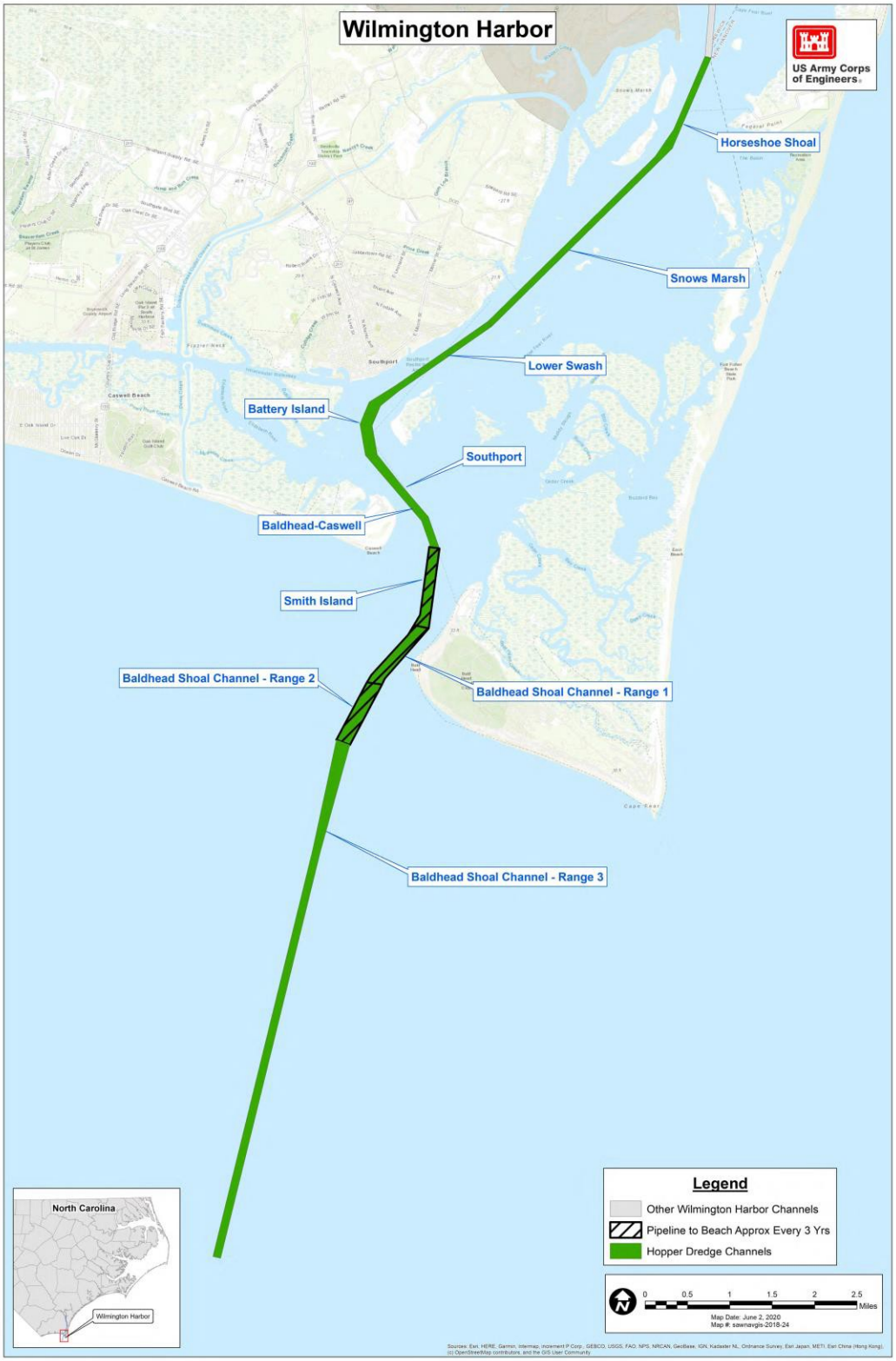
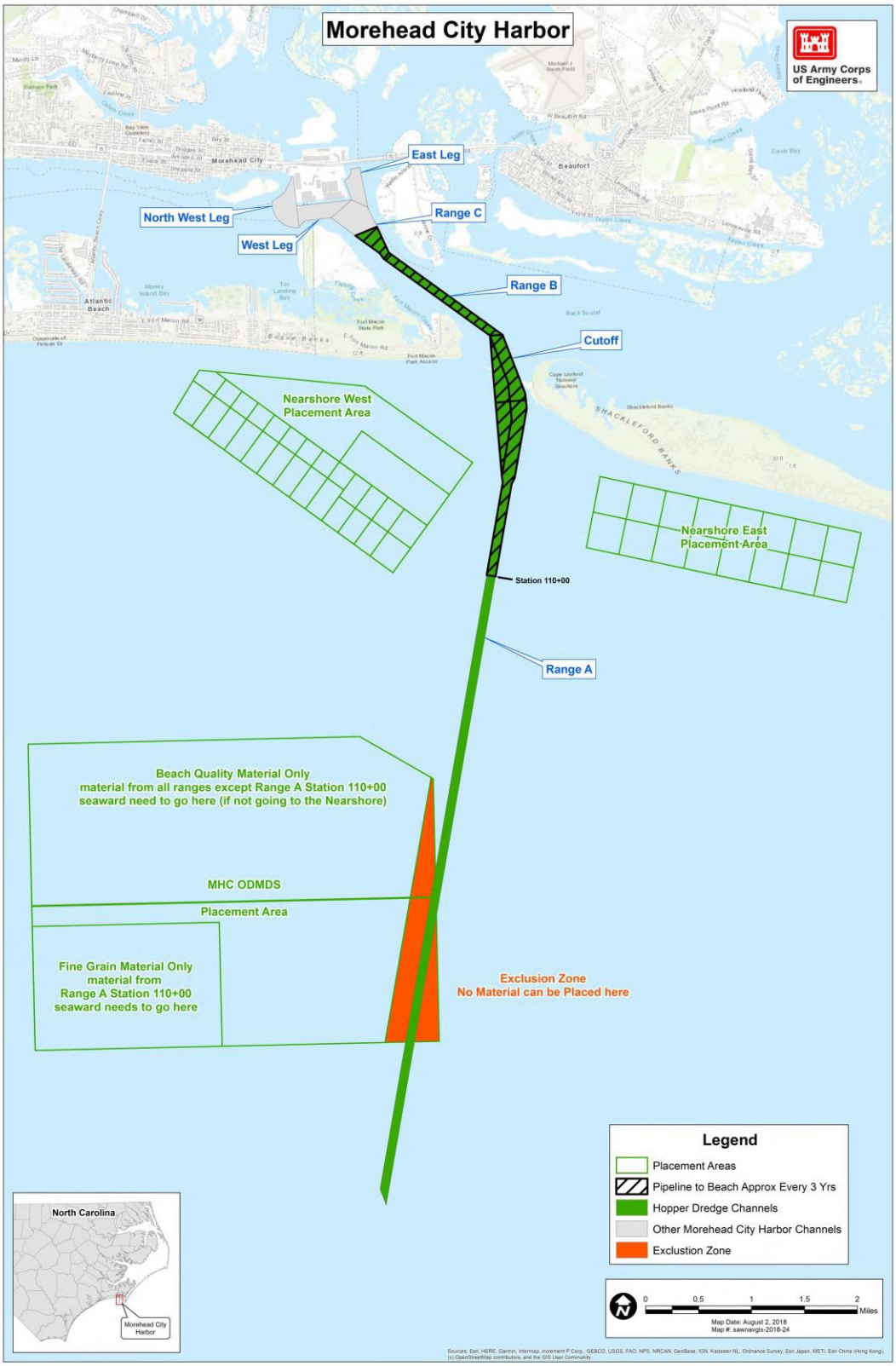


Figure 3. Morehead City Harbor Project Area



DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

December 23, 2020

Environmental Resources Section

Mr. Daniel Govoni
North Carolina Department of Environment and Natural Resources
Division of Coastal Management
400 Commerce Avenue
Morehead City, North Carolina 28557

Dear Mr. Govoni:

The U.S. Army Corps of Engineers Wilmington District (Corps) has prepared the enclosed **updated consistency determination** for the Wilmington and Morehead City Harbor Maintenance Dredging and Bed Leveling project for three years of hopper dredging and bed leveling with no environmental windows, as described below. This updated consistency determination adjusts the previous determination, dated August 19, 2020. Based on discussions between the Corps and NCDEQ-DCM on December 16 and 18, 2020, the updated information is provided as an Addendum to the original consistency (attached) and includes the Corps' commitment to accomplish the following at Morehead City Harbor and Wilmington Harbor over the next three years:

1) hydrodynamic modeling to improve understanding of seasonal transport, plume dynamics, tidal dynamics and flushing rates;
2) monitoring, recording and reporting to NCDMF the direct entrainment/impingement/capture of non-ESA species on both hopper dredges and capture relocation trawlers;
3) monitoring sediment plumes and their implications for water quality and marine ecology by conducting water quality sampling before, during and after hopper dredging operations and during extreme weather and king tide events; and
4) addressing potential impacts to green sea turtles in North Carolina through the collection of tissue samples for genetic analysis and provision of the turtle tissue or body to the NC Wildlife Resources Commission (WRC) so they may determine if gravid North Carolina green sea turtles (which are genetically distinct in the North Atlantic) are disproportionately impacted by hopper dredging outside of the environmental window.

The Corps is requesting a consistency review under the North Carolina Coastal Area Management Program for the proposed maintenance dredging of the outer portions of Wilmington and Morehead City Harbors to occur over the next three dredging cycles (or until December 31, 2023) without environmental windows. The request involves hopper dredging and bed leveling of several reaches of

both deep draft projects and placement of material either into the designated Offshore Dredged Material Disposal Sites (ODMDS) or nearshore placement areas (Morehead City only). Dredging events will occur annually as in the past; the only alteration requested is the removal of the 1 December – 15 April hopper dredging window. This letter serves as a formal consistency determination in which we request your concurrence.

In accordance with Section 307 (c)(1) of the Federal Coastal Zone Management Act of 1972, as amended, the Corps has determined that the proposed maintenance dredging of the project channels, **along with the Corps' commitment to modeling, monitoring and reporting data as outlined in the Addendum,** is consistent, to the maximum extent practicable, with North Carolina's coastal management program. The proposed activities comply with the enforceable policies of North Carolina's approved coastal management program and will be conducted to the maximum extent practicable in a manner consistent with the program and any received authorizations.

As you are aware, the maintenance of safe navigation in federal channels is essential to ensure our Nation's maritime safety and security. The Corps has determined that removal of the environmental window for dredging and bed leveling for three years will help accomplish our mission of providing safe access to our ports and harbors while meeting the Federal Standard of being the least cost, engineeringly sound, environmentally acceptable alternative.

Maintenance activities will be undertaken in compliance with all conditions of applicable state and federal authorizations. This determination is based on the review of the proposed project against enforceable policies of the State's Coastal Management Program, which are principally found in Chapter 7 of Title 15A of the NC Administrative Code.

Thank you for your attention to this matter. Should you have any questions or require additional information, please contact Ms. Emily Hughes by telephone at (910) 251-4635 or by email at Emily.b.hughes@usace.army.mil.

Sincerely,

Christine M. Brayman
Chief, Programs and
Project Management Division

cc:
Braxton Davis, Director, DCM

ADDENDUM to the Federal Consistency Determination
Wilmington Harbor and Morehead City Harbor Hopper Maintenance Dredging and Bed Leveling

December 23, 2020

The United States Army Corps of Engineers (Corps) is seeking authorization to maintenance dredge the outer portions of the Wilmington and Morehead City Harbors without environmental windows over the next three dredging cycles (or until December 31, 2023). This will allow for hopper dredging and bed leveling with offshore and/or nearshore placement of dredged material to occur outside of the existing environmental window (1 December – 15 April) for a limited time while the Corps, in partnership with the State and other stakeholders, performs modeling, monitoring and data collection within both inlets.

There are no changes proposed to the maintenance dredging and disposal/placement practices for Wilmington and Morehead City harbors beyond expansion of the hopper dredging window. All maintenance activities will continue as they have in the past and as identified in the 2011 Wilmington Harbor Sand Management Plan (SMP) and Morehead City Harbor Dredged Material Management Plan (DMMP). Maintenance dredging will not occur more frequently nor will it remove more material from the system annually. The Corps proposes to accomplish the normal annual maintenance dredging during any time of year for a period of three years. During this time the Corps will perform hydrodynamic modeling, monitoring and reporting of data as discussed between the Corps and NCDEQ-DCM on December 16 and 18, 2020 and as described below.

1) **Hydrodynamic modeling to improve understanding of seasonal transport, plume dynamics, tidal dynamics and flushing rates**

The Corps will use hydrodynamic modeling to develop inlet morphology at the Beaufort and Cape Fear Inlets. The models will be useful in addressing questions related to future changes within the inlets and inlet complexes by providing information on current sediment pathways, sediment pathways of material places within the ebb shoal, wave direction and wave direction changes, as well as current velocities and changes that may result from inlet modifications. Plume dynamics are not a capability of these models, although the model output may be useful to inform plume monitoring as discussed in item 3, below.

During development of the Morehead City Harbor DMMP, the Wilmington District (Corps) developed a model that provided information on sediment pathways and sediment dynamics related to dredged material placed within the Beaufort Inlet ebb shoal complex (nearshore west of Beaufort Inlet). This model needs updating and will serve as the basis for updated modeling of Beaufort Inlet. This work likely would be accomplished by Wilmington District coastal engineers.

The Corps does not have an existing model for the Cape Fear Inlet; however, models have been developed by others for the Cape Fear Inlet. Hydrodynamic modeling at Cape Fear Inlet likely would be done under contract to the Corps.

2) **Monitoring, recording and reporting to NCDMF the direct entrainment/impingement/capture of non-ESA species on both hopper dredges and capture relocation trawlers**

A requirement of the National Oceanographic and Atmospheric Administration (NOAA) 2020 South

Atlantic Regional Biological Opinion (SARBO) for all projects is to track effects covered by the Opinion by annually reporting specific data to NMFS. This data includes:

1. Project type/s

2. Pre-project proposed dredge and placement total volume in cubic yards.

3. Post-project actual dredge and placement total volume in cubic yards.

4. Confirmation (yes/no) that dredging does not exceed the previously federally approved or federally authorized dredge template including previously considered overdepth and/or advanced maintenance. If it does exceed (yes), an explanation will be provided (e.g., approved through supersede, unintentional/unusual event and lesson learned).

5. Vessels and specific equipment used on project. A single project may include more than one category of equipment for a portion or all of a project. A determination on whether bed-leveling is used—either as the sole form of material movement or just during the hopper clean-up phase—is part of the risk analysis report for each dredging project. Only approved bed-leveling equipment can be used (in accordance with SARBO section 2.9.3.5.1). When a hopper dredge or relocation trawling is used, the following information would also be provided:

a) Hopper dredge

(1) Used Munitions of Explosive Concern (MEC)/ unexploded ordinance (UXO) screening. Note that projects that the use of UXO/MEC screening is only allowed if reviewed through the Alternative review/ Supersede process outlined in Section 2.9.5 of the SARBO. (Not expected to be used in North Carolina in Wilmington Harbor or Morehead City Harbor).

(2) Screening size used for the project. If the project required an increase or removal of inflow screen size (according to SARBO Project Design Criteria (PDC) HOPPER.1, Appendix B), the sizes used and volume dredged with screens larger than 4-inch x 4-inch must be recorded and reported.

(3) If inflow screening is removed, the USACE will track the start and end date of dredging that occurred without inflow screening and the number of loads, which will be reported in the annual report.

(4) Bycatch captured

b) Relocation trawling

(1) Total number of tows for the project.

(2) Total number of days.

(3) Relocation trawling start date.

(4) Relocation trawling end date.

(5) Bycatch captured (i.e., other species captured during trawling by species and estimated number of captures).

The 2020 SARBO Project Design Criteria (PDCs) for hopper dredges (Appendix B), require inflow and overflow screens to start at 4-inch x 4-inch, but they may be gradually adjusted to a larger screen size if clogging reduces the ability for the Protected Species Observer (PSO) to monitor the inflow for the presence of ESA-listed species or if clogging reduces dredging production and thereby expands the time dredging is required. As part of the hopper dredge screening requirements, PSOs will review the contents of the 4-inch x 4-inch hopper dredge inflow box screens and overflow screen after each dredging load. The PSOs will record on the post load reports ESA species and bycatch, describe general weather and sea conditions, and screening and overall site conditions. These post load reports would then be automatically uploaded to the Operations and Dredging Endangered Species System (ODESS) website and posted in close to real time (based on internet access) and available for public and agency review. Bycatch species applicable to North Carolina that will be included in the PSO checklist will include:

State-managed species occurring in Wilmington and Morehead City Harbors

Blue crab	Blueback herring
Red drum	Striped bass
Spotted sea trout	Hickory shad
Silver perch	Sea mullet/kingfish (Menticirrus spp)
Weakfish	Sheepshead
Flounder (summer & southern)	Black drum
Atlantic croaker	Florida pompano
Atlantic menhaden	Bluefish
Spot	Coastal sharks
Alewife	Hard clam
American shad	Eastern oyster

Federally managed spp. occurring in Wilmington and Morehead City Harbors

- Penaeid shrimp (brown, white, pink)
- Grouper spp (eg. gag, red, black)
- Snapper spp.
- Black sea bass
- Sharks (unspecified)
- Triggerfish
- Dolphin
- Porgy spp.

3) Monitoring sediment plumes and their implications for water quality and marine ecology through independent water quality sampling (including range of water quality parameters across spatial and vertical profiles). Conducting water quality sampling before, during and after hopper dredging and bed leveling operations and during extreme weather and king tide events.

Comments received on the Draft EA focused on potential impacts to marine species present during dredging operations that result from increased levels of turbidity produced by hopper dredging or bed leveling. Important state and federal-managed fisheries species (identified above) are expected to be present at varying life stages (egg, larvae, juveniles, and adults) within the path of the hopper dredge/bed leveler on the sea floor and in the water column. For both Morehead City and Wilmington Harbors, North Carolina resource agencies will be performing sampling and data collection to determine what species are present, the life stages of those species, their location within both harbors and the time of year when the species are present.

During the summer of 2020, the Corps, Wilmington District, partnered with the North Carolina Department of Environmental Quality (NCDEQ) to collect water samples adjacent to the hopper dredge in Beaufort Inlet, and is committed to continuing such monitoring and data collection there and in the Cape Fear Inlet area. The Corps' Engineer Research Development Center (ERDC) assisted with water quality sampling before and during dredging operations, processed data and provided a summary of the water quality findings. Equipment rental and labor costs were funded by the Wilmington District.

During the 2020 sampling, ERDC conducted water quality sampling within Range B of the Morehead City harbor navigation project on July 7-8, (reference sampling), 13-15 and 28-30. Due to dredge delays and mechanical failures, only seven water quality samples were taken during dredging: two on July 14th, one on July 28th, one on July 29th, and three on July 30th. The sediment dredged was beach quality sand (≥90% sand).

Two types of water quality equipment were used by ERDC during the project. A handheld YSI ProDSS was used to take complete water quality profiles during a brief (about a minute) period of time. The handheld unit was set to rapid assessment for profiling and measured probe depth (0.1m) and turbidity (0.1NTU).

Six YSI EXO sondes were set at low, medium and high depths to take continuous water quality measurements during dredge operations. Like the handheld ProDSS, the EXO sondes measured sonde depth (0.1m) and turbidity (0.1NTU). The difference is that the continuous sondes were anchored in place and took measurements at 1-minute intervals for an extended period of time. The data provided from this aspect of the study show that turbidity plumes caused by dredging typically last less than 10 minutes unless dredging occurs during a tide change, which results in longer periods of increased turbidity. It is open to interpretation whether these levels have a deleterious effect on the local biota or how often the biota experience these levels due to storms or other turbidity causing stimuli.

Bed leveling occurred during sampling July 30 and showed negligible changes in turbidity. Additional sampling during bed leveling operations would be beneficial.

Monitoring the distance plumes travel requires a different setup that ERDC and NCDEQ were not able to conduct last summer. Duke University deployed drones to monitor turbidity plumes, however drone sensors are only able to capture surface data (1-2 meter). Study areas outside of the harbor inlets become more difficult to capture this information due to increased mixing from ocean and weather conditions.

Future monitoring in Wilmington and Morehead City harbors will be accomplished by the Corps and will most likely be done by ERDC if they are available during the timeframe needed to begin the monitoring. Wilmington District's coordination with ERDC on this effort has already begun. Specifically, Matt Balazik, Research Ecologist, who worked on the Beaufort Inlet study also collected water quality samples in the Cape Fear River adjacent to an operating mechanical dredge. He is also experienced at monitoring fish behavior during active dredging operations. Dr. Don Hayes, ERDC Environmental Engineer, has spent most of his career assessing the impacts of dredging on the marine environment and is available to assist as well.

Brandon Puckett, NC Division of Coastal Management, who worked with Matt Balazik in 2020, indicated that long-term data (10 years' worth) has been collected at Shackleford Banks dock (approximately 1 mile for the project area) and is available for analyzing turbidity effects during/after storms and extreme high tide events. This data can be compared/contrasted with water quality data sampled during dredging to possibly determine effects on local marine species.

It has been suggested that the Corps/ERDC partner with UNC-Wilmington to collect water quality samples and obtain existing data on the Cape Fear River. Fred Scarf, Mike Mallin and Byron Toothman have been performing studies for several years and may be available to contribute to the Corps' efforts.

4) **Addressing potential impacts to green sea turtles in North Carolina through the collection of tissue samples for genetic analysis and the provision of the turtle tissue or body to the WRC so they may monitor takes to determine if gravid North Carolina green sea turtles (which are genetically distinct in the North Atlantic) are disproportionately impacted by hopper dredging outside of the environmental window.**

The Corps will continue ongoing coordination with NC Wildlife Resources Commission (WRC) to ensure any injured or deceased sea turtles (including green sea turtles) are promptly transferred from the dredge operation to the state WRC scientists for their evaluation and analysis.

Per the 2020 SARBO, PSOs have guidelines regarding how to handle and collect tissue from sea turtles taken by the hopper dredge (specifically in Appendix H: Handling and Reporting Protocol for ESA-listed Species Observed or Encountered and Protected Species Observer (PSO) Roles and Responsibilities). As part of Appendix H, dead ESA-listed species and species parts that need further examination by a specialist to determine the cause of death will be refrigerated, iced, or frozen as soon as possible, (must be iced or frozen no more than 2 hours from discovery). The timeline from discovery to transfer for examination, including ambient temperature, must be thoroughly documented. Whether the carcass/part is refrigerated or frozen will depend on predetermined logistical parameters for a given project. In general, a carcass/part may be kept refrigerated or iced, but not frozen if it will be examined within 48 hours. Remains may be frozen if examination will be delayed or maintaining refrigeration is not possible for any reason.

• Dead turtles: PSOs will follow the protocol outlined on the Protocol for Collecting Tissue From Dead Turtles for Genetic Analysis (https://dqm.usace.army.mil/odess/documents/geneticsampleprotocol.pdf). If a revised document is released, the PSO is required to follow the revised protocols. This document and any revisions will also be available on the NMFS dredging webpage (https://www.fisheries.noaa.gov/content/southeast-dredging).

Additionally, Corps' maintenance dredging specifications state that (NMFS) approved PSOs are required to be aboard hopper dredges 24 hrs/day to monitor the dredged material, overflow and inflow screening, and dragheads for sea turtles, shortnose or Atlantic sturgeon and their remains. The PSOs shall report their observations in the ODESS system. Sea turtle takes are then reported immediately to the appropriate District's Endangered Species Coordinator (ie. Teresa Young). After an ESA take, the PSO follows the procedure in Appendix H of the SARBO.

PSOs will be collecting tissue samples from any dead ESA-listed species taken. If multiple dead animal parts are found, a sample will be collected from all parts that are not connected to one another regardless of whether the tissues are believed to be from the same turtle. For example, if part of a sea turtle flipper and a detached head are found at the same time, a sample from each part will be collected for genetic analysis.

Genetic samples will be mailed to the addresses listed below with information provided in the container stating the sample was collected under the 2020 SARBO and the project name. The samples of genetic material will be packaged with an absorbent material within a double-sealed

container (e.g., zip lock bag). If more than 1 sample is being sent to an address, package all of the samples together. The cost associated with taking the sample and delivering it to the appropriate entity listed below is the responsibility of the federal action agency overseeing the project (i.e., USACE). This genetic sampling will not be testing to a DPS level for sea turtles.

For sea turtles, tissue samples will be mailed to: Sea Turtle Program NOAA Southeast Fisheries Science Center Attn: Lisa Belskis, 75 Virginia Beach Drive, Miami, Florida 33149. Contact number: 305-361-4212 Lisa.Belskis@noaa.gov

Additionally, the 2020 SARBO includes specific directions for taking photos of ESA species listed in the SARBO for identification purposes and to classify sex where applicable (e.g., sea turtles). In addition, the photographs should show all injuries to ESA-listed species. PSO's are required to include these high-resolution digital images with the take reporting forms as part of the reporting requirements for projects covered by the 2020 SARBO. These reporting forms will be included in the ODESS forms and available online. PSO reports are available on the ODESS website at: https://dqm.usace.army.mil/odess/#/home. This ODESS site keeps track of all endangered species takes under the SARBO and is searchable by state or local project area.

Within 24 hours of a take occurring, the District ESA Coordinator contacts the WRC for the turtle or sturgeon body to be picked up by the appropriate coordinating state partner contact. In the event of a turtle take in North Carolina, Mr. Matthew Godfrey and his team at WRC are contacted to pick up the turtle.

The Wilmington District, Corps commits to work closely with NCDEQ and others in the accomplishment of the work described above. Besides NCDEQ (DCM, DMF, DWR), potential partner organizations include but are not limited to NOAA NCCOS and NMFS, East Carolina University, UNC Institute of Marine Science, Duke Marine Lab, and UNC-Wilmington. Additionally, the U.S. Army Corps of Engineers, Engineer Research and Development Center (EDRC), which is made up of engineers, scientists, physicists, mathematicians, technicians and support personnel, is available to assist the Wilmington District on the commitments described above.

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
BRAXTON C. DAVIS
Director

NORTH CAROLINA
Environmental Quality

December 31, 2020

Via Email

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

SUBJECT: Consistency Concurrence Concerning the U.S. Army Corps of Engineers (Corps) Proposed Wilmington and Morehead City Harbor Year-Round Dredging and Bed Leveling, New Hanover and Carteret Counties, North Carolina (DCM#2020045)

Dear Mr. Gatwood:

On August 19, 2020, the N.C. Division of Coastal Management (DCM) received your federal consistency determination regarding the proposed elimination of seasonal restrictions for hopper dredging and bed leveling for the Morehead City and Wilmington Harbors. On October 7, 2020, DCM requested an extension to afford additional time to conduct a public notice to solicit comments from the public, local governments, and other stakeholders. DCM's request for this extension was granted, with a new deadline of December 11, 2020. Based on continuing discussions between DCM, state and federal resource agencies, and the Corps, DCM requested an additional extension through December 31, 2020 and this request was also granted. On December 17, 2020, your office submitted a response to public comments regarding implications for the future management of sand resources at each inlet. On December 23, 2020, your office submitted an Addendum reducing the scope of work to three years with your commitment to modeling, monitoring and reporting data during this time. On December 30, your office submitted a response to additional comments received from the North Carolina Wildlife Resources Commission (NC WRC), which clarified several commitments and further amended your consistency Addendum. DCM has concluded review of the August 19, 2020 federal consistency determination, the December 17 responses to public comments, the December 23, 2020 consistency Addendum, and your December 30 response to NC WRC comments. Based on our review of the proposed federal actions and the commitments made by the Corps, this letter serves as DCM's federal consistency concurrence.

Over the past three years the Corps has submitted several requests for seasonal dredging moratorium relief and explained that the demand for hopper dredging has increased across the Atlantic and Gulf coasts. This demand has caused difficulties fielding competitive solicitations for hopper dredging, and the Corps' ability to reliably award hopper dredging contracts has decreased, leading to uncertainty in maintaining adequate operating depths for North Carolina's Ports. The standard NC dredging moratorium period extends from April 1 - September 30 each year based on recommendations from the NC Division of Marine Fisheries (NC DMF) and NC WRC. NC DMF has historically maintained that moratoria are necessary for maintaining healthy fish stocks and sensitive fish habitats. NC WRC's recommended seasonal dredging moratorium is primarily intended to minimize and avoid impacts on sea turtles and sturgeon.

In response to the Corps' originally proposed (permanent) elimination of seasonal dredging moratoria, NC DMF and NC WRC submitted comments raising significant concerns (attached). DMF is especially concerned with the complete removal of the environmentally-based timing restrictions and finds this to be inconsistent with NC Marine Fisheries Commission policies and NC Coastal Habitat Protection Plan recommendations, with primary concerns focused on the sections of both harbors that are located in estuarine waters. NC WRC also raised a number of concerns, including that resource impacts were not adequately addressed in the Environmental Assessment. In addition to the above concerns, DCM is aware that the National Marine Fisheries Service (NMFS) has also expressed concerns that the Corps has not reviewed the historically successful application of environmental windows to provide safe, efficient navigation while also protecting fisheries vital to North Carolina's economy.

DCM also conducted a public notice and received numerous comments expressing both support and concerns regarding the proposed federal action. Comments in support were received from the North Carolina State Ports Authority, the Business Alliance for a Sound Economy, the Town of Nags Head, and the public (attached). These comments generally note the importance of the State Ports to North Carolina's economy and that year-round hopper dredging will provide an increase in the availability of hopper dredges to ensure safe navigation channels.

Other comments received by DCM raised significant concerns with the proposed action. In addition to concerns regarding potential impacts to threatened and endangered species, marine fisheries, sensitive habitats, and cumulative impacts of Corps activities in these areas, the Southern Environmental Law Center (SELC, on behalf of the NC Coastal Federation, NC Wildlife Federation, Defenders of Wildlife, and Audubon), the Village of Bald Head, New Hanover County, Carteret County, and the NC WRC each submitted concerns and/or questions regarding the beneficial use of dredged materials for beach sand placement, and possible implications of increased summertime dredging (using hopper dredges) on existing Dredged Material Management Plans for both State Ports (comments attached). The Corps' December 17, 2020 response (attached) to these concerns and/or questions indicated that there are no changes proposed to the maintenance dredging and disposal/placement practices for Wilmington and Morehead City harbors beyond expansion of the hopper dredging window, that the Corps is not proposing additional dredging and/or removal of material beyond typical annual maintenance, and that all dredging and disposal/placement practices will continue to be in accordance with the

Wilmington Harbor Sand Management Plan and the Morehead City Harbor Dredged Material Management Plan.

As you are aware from past letters and consistency decisions, DCM acknowledges that an absolute seasonal moratorium is a conservative approach given the dynamic nature of our inlets, fish spawning and migration, and diverse utilization of habitats by different species at different times. We also recognize that there are certain data gaps related to the magnitude, duration, and behavior of turbidity plumes that may vary with the type of dredge operations employed, sediment characteristics, and spatial footprint of the proposed dredged area. In order to address these data gaps, DCM, in coordination with East Carolina University, Duke Marine Lab, NC DMF and the USACE Engineer Research and Development Center, conducted limited monitoring in conjunction with the dredging of Beaufort Inlet during the summer of 2020 to allow State agencies to gain a better understanding of water quality and the distribution of fish eggs, larvae and juveniles in and around Beaufort Inlet during the seasonal moratorium period. At this time, the study has not concluded – in particular, DCM has not yet received data from the 2020 ichthyoplankton surveys and no synthesis of the various data collection efforts has yet been completed. Based on the Addendum to the original federal consistency determination, DCM appreciates the Corps' commitment to work with State and federal partners to expand on these initial data collection efforts, to include modeling and monitoring of Cape Fear Inlet in addition to Beaufort Inlet, over the requested three-year period. The findings will be important in further evaluating future seasonal moratoria for hopper dredging and bed leveling in these areas.

DCM has completed our review of your Addendum, dated December 23, 2020 and amended on December 30, 2020, which updated your previous consistency determination dated August 19, 2020. This Addendum adjusts the previous determination and only requests maintenance and bed leveling for Wilmington and Morehead City Harbor for **three years** with no environmental windows. Additionally, this Addendum includes the Corps' commitment to accomplish monitoring and reporting data that includes:

- Hydrodynamic modeling to improve understanding of seasonal transport, plume dynamics, tidal dynamics and flushing rates;

- Monitoring, recording and reporting to NCDMF the direct entrainment/impingement/ capture of non-ESA species on both hopper dredges and capture relocation trawlers;

- Monitoring sediment plumes and their implications for water quality and marine ecology through independent water quality sampling (including range of water quality parameters across spatial and vertical profiles). Conducting water quality sampling before, during and after hopper dredging and bed leveling operations and during extreme weather and king tide events; and

- Addressing potential impacts to sea turtles in North Carolina through the collection of tissue samples for genetic analysis and the provision of the turtle tissue or body to the NC WRC so they may monitor takes to determine if North Carolina green sea turtles (which are genetically distinct in the North Atlantic) are disproportionately impacted by hopper dredging outside of the environmental 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 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 activity is consistent with North Carolina's approved coastal management program to the maximum extent practicable. DCM acknowledges the Corps' willingness to reduce the scope of work to three years, and commitment to collaborate with the State to continue monitoring and data collection efforts in the Wilmington and Morehead City Harbors during summer months of 2021-2023. This collaboration will allow all interested parties to further evaluate the potential impacts of hopper dredging and bed leveling during summertime dredging moratorium periods.

Prior to the initiation of the activities described, the Corps should obtain any additional required State approvals or authorizations. Should the proposed action be further modified, or annual monitoring not be conducted, a new consistency determination may be required. Likewise, if annual data reporting reveal environmental effects not previously considered, a consistency determination 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
DCM Federal Consistency Coordinator

Cc: Braxton Davis, DCM Director
Sheila Holman, NC DEQ Assistant Secretary for the Environment
Emily Hughes, USACE Biologist, Environmental Resources
Jenny Owens, USACE Chief, Environmental Resources Section

NORTH CAROLINA
Department of Environmental Quality

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

Appendix G: NMFS Letter dated January 21, 2021

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

January 11, 2021

Environmental Resources Section

Dr. Pace Wilber
SERO, Branch Chief
National Marine Fisheries Service
Habitat Conservation Division
Post Office Box 12559
Charleston, South Carolina 29422-2559

Dear Dr. Wilber:

The Corps has reviewed the NMFS-HCD response, dated October 2, 2020, to the Corps' *Wilmington and Morehead City Harbors Maintenance Dredging and Bed Leveling Environmental Assessment (*EA). The proposed action in the Draft EA is elimination of the existing hopper dredging window in portions of Wilmington Harbor and Morehead City Harbor for maintenance dredging and bed leveling with offshore or nearshore placement (Morehead City only) of dredged material.

NMFS-HCD made the following comments to the Draft EA:

1. The EA does not review the historically successful application of environmental windows in North Carolina to provide safe, efficient navigation while also protecting fisheries vital to North Carolina's economy;
2. The EA does not review or acknowledge the successful use of environmental windows by USACE district offices outside the USACE South Atlantic Division to provide safe, efficient navigation while also protecting vital fisheries resources;
3. The EA does not review or acknowledge the USACE-funded review by the National Research Council Marine Board and Ocean Studies Board (NRC) of the effectiveness of environmental windows for providing safe, efficient navigation while also protecting public-trust resources;
4. The EA does not review the efforts by the NMFS and North Carolina resource agencies to continue developing new information for efficiently tailoring environmental windows to navigation projects in North Carolina.

In response to items 1 through 3, the Corps acknowledges that environmental windows have been used for decades to avoid dredging during peak periods of biological activity and are still used in some Districts depending on resources and dredging needs. Changes in the shipping industry over the past several years have resulted in an increase in demand for dredges in the United States. Also, increased shoaling resulting from intensified storms and flooding has resulted in the need for

constant year-round dredging in the Lower Mississippi River, reducing the number dredges available for work on the east coast during the winter months. Dredging windows have become increasingly more difficult and expensive to implement, therefore, the Corps is proposing to use a risk-based approach to evaluate dredging operations that may lead to changes in times of year or equipment types used for dredging. Based on coordination with resource agencies following release of the draft EA, as described below, the Corps has agreed to limit the timeframe to dredge any time of year to three (3) years with added monitoring at both Wilmington and Morehead City Harbors. In response to item 4, the Corps agrees to lead an interagency effort to reevaluate environmental windows for all navigation projects in North Carolina. The Final EA will be revised to include the information in this letter.

NMFS-HCD also stated their agreement with SAFMC's comments (dated October 1, 2020) regarding EFH and HAPC descriptions missing from the EA. The identified EFH and HAPC areas (namely, the newly designated Blue Crab Spawning Sanctuary) will be emphasized more in the Final EA.

In the letter dated October 2, 2020, NMFS-HCD made the following recommendation "to ensure the conservation of EFH and associated fishery resources":
The USACE Wilmington District should use the adaptive management process described by the National Research Council, or a similar adaptive/risk management process, to update the existing hopper dredging windows for maintenance dredging in Wilmington Harbor and Morehead City Harbor.

During coordination meetings with NMFS, NCDCM, NCDMF, NCWRC, and NCDWR held in December 2020, the Corps agreed to amend the proposal of eliminating the hopper dredge window permanently by limiting the timeframe to three (3) years with added monitoring at both Wilmington and Morehead City Harbors. The Corps has committed to the following terms for the next 3 dredge cycles:

1) hydrodynamic modeling to improve understanding of seasonal transport, plume dynamics, tidal dynamics and flushing rates;

2) monitoring, recording and reporting to the North Carolina Division of Marine Fisheries (NCDMF) the direct entrainment/ impingement/capture of non-ESA species on both hopper dredges and capture relocation trawlers;

3) monitoring sediment plumes and their implications for water quality and marine ecology by conducting water quality sampling before, during and after hopper dredging operations and during extreme weather and king tide events; and

4) addressing potential impacts to sea turtles in North Carolina through the collection of tissue samples for genetic analysis and provision of the turtle tissue or body to the NC Wildlife Resources Commission (WRC) so they may determine if North Carolina green sea turtles

(which are genetically distinct in the North Atlantic) are disproportionately impacted by hopper dredging outside of the environmental window.

As identified in item #2, data collection will be expanded to include commercially important non-ESA fisheries species, specifically those listed by NMFS and NCDMF (federally and non-federally important):

State-managed species occurring in Wilmington and Morehead City Harbors

Blue crab	Blueback herring
Red drum	Striped bass
Spotted sea trout	Hickory shad
Silver perch	Sea mullet/kingfish (Menticirrus spp)
Weakfish	Sheepshead
Flounder (summer & southern)	Black drum
Atlantic croaker	Florida pompano
Atlantic menhaden	Bluefish
Spot	Coastal sharks
Alewife	Hard clam
American shad	Eastern oyster

Federally managed spp. occurring in Wilmington and Morehead City Harbors

Penaeid shrimp (brown, white, pink)	Sharks (unspecified)
Grouper spp (eg. gag, red, black)	Triggerfish
Snapper spp.	Dolphin
Black sea bass	Porgy spp.

The Corps has agreed to develop a monitoring plan that is acceptable to the resource agencies and will follow-through with submitting the monitoring results with all interested agencies over the next three years. Additionally, in accordance with NMFS PRD's 2020 South Atlantic Regional Biological Opinion (SARBO) the Corps will implement a risk-based assessment process that consists of an annual review of information obtained from dredging operations and its effects on ESA species. Data collection from Protected Species Observers (PSOs), including information related to item 2, above, and information from the Operations and Dredging Endangered Species System (ODESS), will be assessed and information utilized to make informed decisions on equipment and timing in the future. This information will be shared with NMFS-HCD, as well as the NCDMF, and the Corps commits to include NMFS-HCD and NCDMF in future discussions regarding maintenance dredging operations. The Corps commits to updating the EFH Assessment should the information result in unanticipated or unaddressed effects to EFH.

The current Regional Harbor Dredging Contract (RHDC) is top priority for the Wilmington District. It is critical that the Wilmington Harbor Outer Ocean Bar be dredged this fiscal year (FY 21) to maintain a safe and navigable channel and it is important that Morehead City Harbor also be dredged this year. To accomplish this, the Corps must utilize the existing RHDC contract to dredge Wilmington Harbor and Morehead City Harbor as soon the EFH consultation and National Environmental Policy Act (NEPA) processes are completed. For this reason, the Corps is focusing on the elimination of the hopper dredge window only (1 Dec – 15 April). In recent discussions with NMFS-HCD, the Corps agreed to lead an interagency effort to reevaluate environmental windows for all navigation projects in North Carolina and the Corps plans to meet this commitment. However, due to the immediate need for dredging of Wilmington and Morehead City Harbors, our focus is on the portions of Wilmington and Morehead City Harbors that were covered in the EA, referenced above. Once this immediate need is met, the Corps will re-engage with NMFS-HCD and State resource agencies to assess the issues associated with the potential removal or adjustment of environmental windows throughout the state.

By copy of this letter, we request your concurrence with this assessment. Should you have any questions, please contact Ms. Emily Hughes of my Environmental Resources Section staff at telephone (910) 251-4635 or by email at: Emily.b.hughes@usace.army.mil.

Sincerely,

Elden J. Gatwood
Chief, Planning and
Environmental Branch

Copy Furnished:

Fritz Rhode
SERO, Habitat Conservation Division
NOAA, National Marine Fisheries Service
101 Pivers Island
Beaufort, North Carolina 28516-9722

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

January 21, 2021 F/SER47:FR/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 January 11, 2021, from the Wilmington District regarding the essential fish habitat (EFH) conservation recommendation the NMFS provided for the work examined in *Wilmington and Morehead City Harbors Maintenance Dredging and Bed Leveling Environmental Assessment* (EA), dated August 2020. The NMFS recommended, by letter dated October 2, 2020, the Wilmington District use the adaptive management process described by the National Research Council, or a similar adaptive/risk management process, to update the existing environmental windows (moratoria) for using hopper dredges to maintain Wilmington Harbor and Morehead City Harbor.

In response to the EFH conservation recommendation, the Wilmington District has worked with the NMFS and state resource agencies, including the North Carolina Division of Coastal Management, Division of Marine Fisheries, Wildlife Resources Commission, and Division of Water Resources, to initiate an adaptive/risk management process for maintaining these harbors. In exchange for suspending for three years the seasonal moratoria on hopper dredging within these harbors, the Wilmington District will examine during the next three dredging cycles several issues important to conserving fish habitat. These issues include hydrodynamics and sediment transport within and near the subject channel reaches and entrainment, impingement, and capture of fishery resources by dredging and related operations. In addition, the Wilmington District will continue to meet with the NMFS and state agencies to develop and refine further the studies pursued during this evaluation period.

The Wilmington District's letter also discusses omissions the NMFS noted within the Draft EA. The Final EA will discuss past and current uses of environmental windows in North Carolina and other areas along the U.S. Atlantic Coast and the efforts by resource agencies to enhance the information available for efficiently applying environmental windows to dredging projects. The Final EA will also include as part of the proposed action the adaptive/risk management process the District, NMFS, and state agencies have initiated.

The NMFS thanks the Wilmington District for addressing the concerns expressed, and we look forward to working with the District to oversee implementing the studies for evaluating the moratoria for Wilmington Harbor and Morehead City Harbor. The NMFS also looks forward to working with the Wilmington District and state agencies to ensure the environmental windows used in North Carolina reflect the best available information and meet the needs of all parties.

Thank you for the opportunity to provide these comments. Please direct related questions or comments to the attention of Mr. Fritz Rohde at our Beaufort Field Office. He can be reached at (252) 838-0828 and at Fritz.Rohde@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
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