

# WILMINGTON HARBOR AND MOREHEAD CITY HARBOR MAINTENANCE DREDGING AND BED LEVELING

# DRAFT ENVIRONMENTAL ASSESSMENT

August 2020

Wilmington District – U.S. Army Corps of Engineers

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# DRAFT ENVIRONMENTAL ASSESSMENT Wilmington Harbor and Morehead City Harbor Maintenance Dredging and Bed Leveling Brunswick and Carteret Counties, North Carolina August 2020

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## **1.0 INTRODUCTION**

The U.S. Army Corps of Engineers (USACE), Wilmington District is preparing this Environmental Assessment (EA) to address impacts of eliminating the existing hopper dredging window in portions of the Wilmington and Morehead City Harbors to allow for year-round maintenance dredging and bed leveling, with offshore 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, Wilmington Harbor and Morehead City Harbor, 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.

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. Out of the three dredge types, hopper dredging is the only one that currently has an environmental window. Pipeline dredging will continue to occur within the harbors and is not constrained by a dredging window; however placement of beach quality dredged material is constrained by the beach placement window of 16 November – 30 April, established to protect nesting sea turtles. Mechanical dredging, though least likely to occur, is also available year-round due to no dredging window. There is no environmental window for the placement of dredged material within the designated offshore or nearshore areas.

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 the NEPA, 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 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.



Figure 1. Project Location Map

#### Wilmington Harbor

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 Wilmington Harbor 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. 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 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. This effort requires administering material by control-of-effluent onto adjacent South Pelican and Ferry Slip Islands to replenish nesting habitat for colonial waterbirds and shorebirds.



Figure 2. Wilmington Harbor Project Area

The authorized navigation channel dimensions for Wilmington Harbor are described as follows:

- 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;
- 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:

Harbor	Channel	Shoaling	Dredging	Placement	Dredge Type	Sediment	
Section	Reaches	Rate	Frequency	Location		(% Sand)	
		(CY/year)	(years)				
Outer	Baldhead	538,000	1	ODMDS	Hopper	47% to	
Bar	Range 3					90%	
Inner	Baldhead	300,000	2	BHI/OI	Pipeline	≥90%	
Bar	Range 2			beaches			
	Baldhead	200,000	2	BHI/OI	Pipeline	≥90%	
	Range 1			beaches			
	Smith Is	257,800	2	BHI/OI	B&B/Hopper	≥90%	
				beaches			
	Baldhead-	11,000	4	ODMDS	B&B/Hopper	≥90%	
	Caswell						
	Southport	18,000	4	ODMDS	B&B/Hopper	≥90%	
	Battery Is	25,300	4	ODMDS	B&B/Hopper	≥90%	
Mid-	Lower	12,000	2	ODMDS	B&B/Hopper	≥90%	
River	Swash						
Mid-	Snows	21,800	2	ODMDS/Bird	B&B/Hopper/	≥90%	
River	Marsh			Islands/DA	pipeline		
Mid-	Horseshoe	45,900	2	ODMDS/Bird	B&B/Hopper/	≥90%	
River	Shoals			Islands/DA	pipeline		
ODMDS: Ocean Dredged Material Disposal Site; BHI: Bald Head Island; OI: Oak Island; B&B: bucket and barge;							
DA: Disposal Area							

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

#### **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 (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 to Station 110+00 is maintained to -47 feet + 2 feet overdepth. Maintenance of these channels is typically accomplished 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 ODMDS. Beach placement occurs about every 3 years as described in the 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.

Range A:	47 feet deep mllw by 450 to 650 feet wide from deep water in the Atlantic Ocean to Station 110+00; 45 feet deep mllw Station 110+00 inbound.
Cut-Off:	45 feet deep mllw with varying width; 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.

#### Morehead City Harbor, Summary of Authorized Depths and Widths:

Hopper dredges 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 and 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 Morehead City Outer Harbor and Outer Entrance Channels:

Harbor Section	Channel Reaches	Shoaling Rate (CY/year)	Dredging Frequency (years)	Placement Location	Dredge Type	Sediment (% Sand)
	Lower Part of					
Outer Harbor	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	Range A, Sta.					47% to
Channel	110+00 seaward	118,500	1 to 3	ODMDS	Hopper	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						

Table 1b. Summary of Dredging and Placement Practices for Morehead City Harbor (Morehead City Harbor DMMP 2017)

## 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 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.

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 within the project areas covered in this EA limits work to 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) or no bids received at all (see Table 2). Since 2013, seven contracts solicited for maintenance dredging of the two harbors (out of a total of 40 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.

Currently there are thirteen hopper dredges available for operation on the East and Gulf Coasts (Maine to Texas). Based on the most recent hopper dredge schedule, four hopper dredges are scheduled for work through March 2021, and one has been in an "idle" status for the past few years. This leaves only eight available hopper dredges between now and March 2021 to perform all the required dredging for approximately twenty-five to twenty-eight USACE contracts to remove 50-55 million cubic yards (CY) of dredged material in fiscal year 2021. Using a daily production rate of 25,000 CY per day (which typically only occurs under perfect conditions), each of the remaining eight dredges would need 250 days to remove the 50 million CY, which is about eight months of work for each dredge. That doesn't include the time needed for mobilization and demobilization, mechanical issues, repairs, refueling, and weather days; and does not consider any privately awarded work for other cities, counties, or states during that same timeframe.

The dredge industry has recently responded to this growth in demand by committing billions of dollars to the construction of two new large, trailing suction hopper dredges, with capacities of 8,550 CY and 6,500 CY. Both dredges are expected to be constructed by the first quarter of 2023. Although adding two more hopper dredges to the fleet will improve the current hopper dredge shortfall, eliminating the dredging window for Wilmington and Morehead City Harbors will increase the chances of having hopper dredges available when they are needed to maintain North Carolina's two deep draft harbors (before shoaling becomes a hazard).

Fiscal Year (FY)	Harbor/Project Reason Award Failed		Total Maint Dredging Solicitations
2013	MHC/Outer Harbor	1 bid; over IGE	5
2014	NA	NA	5
2015	MHC/Outer Harbor	No bids	5
2016	016 MHC/Outer Harbor 1 bid; over IGE		8
2016	WH/Outer Ocean Bar	1 bid; over IGE	
2017	WH/Inner Ocean Bar	No bids	6
2018	MHC/Outer Harbor	3 bids; all over IGE	6
2019	MHC/Inner Harbor	2 bids; both over 2x the IGE	5
Total = 8	WH = 2; MHC = 5	No bids = 2 Bids too high = 5	40

 Table 2.
 Wilmington and Morehead City Harbor contract failures since 2013.

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 (not dredging the full channel dimensions). Delays in maintenance dredging of the harbors results in draft restrictions, forcing larger ships to lightload, 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 the Wilmington and Morehead City Harbors has been accomplished using a Regional Harbor Dredge Contract (RHDC). This is an effort implemented by 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 Port in the region. Presently, the Wilmington District is the only District included in the RHDC that is restricted by environmental windows for dredging and this has presented challenges in executing the RHDC.

Increasing flexibility and assurance to the maximum extent possible in performing maintenance of portions of the Wilmington and Morehead City Harbors 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, therefore, the District should have the maximum flexibility and assurance to perform maintenance dredging as needed.

The purpose of this action is to increase flexibility in maintaining the Wilmington and Morehead City entrance channel areas while maintaining compliance with the Federal

<u>Standard</u>. 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 Wilmington Harbor and Morehead City Harbor 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. <u>FEIS, Long-term Maintenance of</u> <u>Wilmington Harbor, North Carolina</u>, dated October 1989.

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

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

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

f. U. S. Army Corps of Engineers, Wilmington District. <u>Dredged Material Management</u> <u>Plan, Phase I Study, Wilmington Harbor, North Carolina, 1997.</u>

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

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

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

#### Morehead City Harbor:

a. U.S. Army Corps of Engineers, Wilmington District. May 1976. <u>Final Environmental</u> <u>Statement, Morehead City Harbor, North Carolina</u>. b. U.S. Army Corps of Engineers, Wilmington District. May 1976. <u>Morehead City</u> <u>Harbor, North Carolina, General Design Memorandum</u>.

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

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

e. U.S. Army Corps of Engineers, Wilmington District. March 1992. <u>Environmental</u> <u>Assessment and Finding of No Significant Impact, Design Memorandum, Morehead City</u> <u>Harbor Improvement, Morehead City, North Carolina, Project Modifications</u>.

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

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

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

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

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

# 4.0 ALTERNATIVES

#### 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 maintain the selected portions of the Harbors in the future abiding by the existing hopper dredge 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. Dredging windows are aimed to protect federally listed threatened and endangered aquatic species, essential fish habitat, important fisheries species, as well as other aquatic resources of significance. These window restrictions significantly limit 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. 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).

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 authorized for the RHDC by request of the USACE in 2019 but was given the same 1 December – 15 April window as the hopper dredge window (Appendix A). 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.

Status quo could result in the continuance of unsuccessful contract awards and/or possible draft restrictions at the State Ports. As mentioned above, the Wilmington District is the only SAD District within the Regional Harbor Dredge Contract that has hopper dredging restrictions on their maintenance projects; if this restriction continues, it is likely the Wilmington and Morehead City Harbors will have to decouple from the regional contract, putting them at greater risk of not being dredged on a regular basis or at a reasonable cost. Therefore, continuing to hopper dredge 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 Wilmington Harbor and Morehead City Harbor 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.

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. Maximum flexibility in scheduling of dredges is needed to reduce risks associated with hopper dredge availability, so the outer portions of the Wilmington and Morehead City Harbors may be maintained when needed. The USACE needs as much flexibility as possible to assure that hopper dredges are available to accomplish maintenance dredging of the harbors. An expanded window, although an improvement to the existing window, does not meet the purpose and need.

# 4.3 Proposed Action: Elimination of Hopper Dredging Window and Addition of Bed Leveling

The ability to dredge any time of year is necessary to maintain the outer 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 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 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 done any time of year. This would allow the USACE to perform maintenance dredging to full authorized project dimensions.

Lack of hopper dredges and associated costs of window restrictions have caused dredging contracts to become increasingly more difficult to award. Routine dredging of federal inlets and channels is required to allow for safe passage of commercial vessels. Timing of harbor maintenance is crucial to accommodate these ships that call on our Port throughout the year.

Year-round hopper dredging within the portions of the Wilmington and Morehead City Harbors will provide the flexibility and assurance needed to achieve successful contract awards under the RHDC and allow our Ports to remain competitive, thus sustaining the regional economy. Eliminating the current hopper dredge window would satisfy the stated purpose and need.

#### 4.4 Cost Summary

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 Wilmington and Morehead City Harbors. The cost analysis does not include the costs of bed leveling, which would be insignificant. Alternative 1 is the baseline (no action), and assumes continuation of the current window of 1 December through 15 April. Alternative 2 assumes expansion of the window to 1 July through 15 April. Alternative 3 assumes removal of the dredge window to allow dredging year-round.

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 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 Wilmington Harbor and Morehead City Harbor and therefore meets the federal standard.

ALTERNATIVE 1: Environmental Window 1 Dec - 15 Apr					
		<u> </u>			
_ 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	CV	¢1 95	\$1 122 500	
Winnington harbor	830,000	CI	Ş4.0J	γ <del>4</del> ,122,300	
Morehead City Harbor	1,200,000	CY	\$4.00	\$4,800,000	
					0
Total				\$9,927,500	0
ALTERNATIVE 2: Environmen	tal Window 1 Ju	I - 15 Apr			
ALTERNATIVE 2. ENVIRONMEN		<u>II - IJ Api</u>			
Project	Quantity	Unit	Unit Cost	Total	
Mobilization/Demobilization	1	Job	\$945,000	\$945,000	
Milusia store Howbox	850.000	CV.	ĊA CE		
	850,000	CY	\$4.65	\$3,952,500	
Morehead City Harbor	1.200.000	СҮ	\$3.90	\$4.680.000	
	,,	-		, , ,	5%
Total				\$9,577,500	\$7,000,000
ALTERNATIVE 3: NO Environm	nental window				
Project	Quantity	Unit	Unit Cost	Total	
Mobilization/Demobilization	1	Job	\$910,000	\$910,000	
Wilmington Harbor	850,000	CY	Ş4.55	\$3,867,500	
Morehead City Harbor	1 200 000	CV	\$2.75	\$4 500 000	
	1,200,000			,JUU,UUU	7%
					170
Total				\$9,277,500	\$13,000,000

Table 3. Dredging Window Alternatives Cost Comparison

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 year-round dredging meets the Federal Standard as identified in Section 2.0.

#### **5.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS**

This section addresses the impacts of the three alternatives considered to significant 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 hopper dredging window and the addition 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 maintenance of the authorized project dimensions, utilizing any type of dredge (hopper, cutter suction pipeline, or mechanical), with no change in the footprint of disturbance between any of the alternatives. All placement of dredged material will be in the approved ODMDSs or the Morehead City Nearshore East and West Placement Areas (no beach nourishment/shoreline placement). Only those resources/topics that have differing impacts associated with the three alternatives considered 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 considered 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, submerged aquatic vegetation, climate change, sea level rise, and terrestrial resources (vegetation and wildlife).

#### 5.1 General Harbor Setting

#### Wilmington Harbor

The Wilmington Harbor 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 1a). 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. Remaining channels in the Inner Ocean Bar (Baldhead-Caswell, Southport and Battery Island Channels) do not require regular maintenance (Table 1a), and therefore would only occasionally be hopper dredged. These channels also contain material that is  $\geq$  90% sand; however, the distance from these reaches to the nearest beach is too far to make them feasible placement locations.

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 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 having the option to hopper dredge these channels year-round would facilitate removal of shoaled material quickly and economically when necessary. These reaches contain sandy material (≥90% sand) and volumes up to 150,000 CYs per project may be transported to the ODMDS.

The USACE is also seeking authorization to utilize a bed leveler (drag bar) year-round throughout the Wilmington Harbor 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 1b). 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 Station 110+00 seaward) is maintained annually 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 650,000 CYs will be placed in 2020.

Similar to Wilmington Harbor's Inner Ocean Bar, Range A to Station 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 done 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. Placement of material in the NPAs or in the ODMDS may occur any time of year. 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 year-round throughout the Morehead City Harbor 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 before dredging 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).

#### 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  $\geq$ 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 Wilmington Harbor and Morehead City Harbor 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 analyses 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, New Wilmington ODMDS and Morehead City ODMDS site management and monitoring plans (SMMP) and the Morehead City Harbor dredged material management plan (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 Wilmington Harbor 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 and hardness.

#### **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 (out to Station 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 latest version of the Morehead City Harbor DMMP, currently 2017.

#### **Environmental Impacts**

#### Hopper Dredging Activity:

Under the three alternatives evaluated, No Action, Expanded Window and Bed Leveling and No 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:

<u>No Action Alternative</u>: 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.

<u>No Windows Alternative</u>: 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 Wilmington and Morehead City Harbors 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. 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. It is believed that the action of dredging reduces DO levels, thus putting greater strain on aquatic organisms that depend on it.

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 WQC #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 Wilmington Harbor and Morehead City Harbor 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 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 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 would be 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 actively swimming organisms will be minimal and temporary since organisms can flee to avoid the disturbed waters.

The USACE will be participating in water quality sampling in Beaufort Inlet during July 2020 as a result of the resource agencies authorizing hopper dredging outside of the 1

December – 15 April window for the RHDC. A member of the USACE Engineer Research and Development Center (ERDC) team will measure turbidity plumes at various depths adjacent to the active hopper dredge for several days. ERDC also recently performed sampling of dissolved oxygen (DO) levels in the Cape Fear River adjacent to an active mechanical dredge. It is expected that summertime dredging will have no major long-term impacts on water quality, whether in Beaufort Inlet or Cape Fear River Inlet.

<u>No Action</u>: With the dredging moratorium 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; 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.

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, and dredging is expected to have an adverse effect on 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 4 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 the 2019 NOAA Report).

	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

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

Reduction in water quality during July – November due to hopper dredging and bed leveling may have an adverse effect 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. Further, 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.

<u>Elimination of Window and Bed Leveling</u>: 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 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:

	April	Мау	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

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

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 an adverse effect on these species in areas where sediments are finegrained and expected to remain in suspension. As mentioned above, further water quality sampling and analysis is needed to determine the long-term effects of maintenance dredging with no window restrictions; 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, noninjurious 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.

All three alternatives 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.

<u>No Action</u>: 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.

<u>Expanded Window and Bed Leveling</u>: 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 may include avoidance and redirection to inshore areas that may result in strandings, or the inability to communicate with others and find food. 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.

<u>Elimination of Window and Bed Leveling</u>: Under the year-round dredging and bed leveling 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 affect species but no longterm adverse effects would be expected. 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 estuarinedependent 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 Morehead City Harbor 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 or SSNA 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.

<u>No Action</u>: 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 minor.

<u>Expanded Window and Bed Leveling:</u> Hopper dredging and bed leveling during the months of July through November may create turbidity plumes that could have short-term minor adverse 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. Less negative impacts would occur from hopper dredging and bed leveling during the late summer months as compared to the spring due to lower biological activity. 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.

<u>Elimination of Window and Bed Leveling:</u> Spring and summertime hopper dredging and bed leveling in areas adjacent to estuarine habitats would have the most potential impact to critical life stages of 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 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).

Turbidity sampling within the Range A and B channels of Beaufort Inlet during active dredging in July 2020 will provide much needed information regarding dredging-related turbidity associated with the dredging of fine-grained sediments in the vicinity of Beaufort Inlet. This new information will be used to better inform dredging effects analyses; however, based on existing information, turbidity from hopper dredging is expected to be minimal and short-term since channels adjacent to estuarine areas are predominantly beach quality sand. The estuarine habitat adjacent to the federal channels is not designated as PNA, SNA, SSNA, or SAV habitat, so there would be no impacts to these sensitive habitat types.

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 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.

Annual maintenance of inlets puts stress on inlet habitats, and for this reason the CZMA has placed a standard moratorium on inlets from April 1 – July 31. This timing has been developed 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).

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, 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 Wilmington and Morehead City Harbors 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 Wilmington and Morehead City Harbors. 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.

<u>No Action</u>: 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 Wilmington and Morehead City Harbors 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 hopper falling to the ocean bottom has the same (minimal) effect no matter time of year work is accomplished.

<u>Expanded Window and Bed Leveling</u>: 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 risk of turbidity and entrainment by the dredge (NOAA 2019); however, impacts would not be significant.

<u>Elimination of Window and Bed Leveling</u>: 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.

## 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 Morehead City Harbor 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. Balazik 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 and some are expected to be affected by increased turbidity levels and entrainment. As evident with previous Wilmington Harbor hopper dredge contracts, adult 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 entrainment) on anadromous fish. The highly mobile fish will quickly swim away from the slow-moving drag bar and turbidity will be minor.

<u>No Action</u>: 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 Wilmington Harbor project area between the months of February – April. With sufficient room within the channel anadromous fish are expected to pass a dredged unharmed. Therefore, the No Action alternative will not have significant impacts on anadromous fish species.

<u>Expanded Window and Bed Leveling</u>: 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.

<u>Elimination of Window and Bed Leveling</u>: 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 may occur due to elevated sound or turbidity Dredging during spring and fall migrations can increase the numbers of lethal takes of sturgeon, however, this has been assessed by NMFS and was considered in the 2020 South Atlantic Regional Biological Opinion (SARBO).

Effects of lowered DO levels in the river due to summertime dredging may have an adverse effect on anadromous fish as well. For this reason, ERDC is currently monitoring the water quality in the Cape Fear River during active mechanical dredging to determine effects on DO levels. Information gained from this monitoring may result in changes to the 2020 SARBO. All work will be done in accordance with the latest SARBO.

To conclude, year-round dredging in the project area may have minor impacts on anadromous fish migrations 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 entrance channel to Wilmington Harbor and Beaufort Inlet 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 Wilmington Harbor, Morehead City Harbor, the Morehead City Harbor Nearshore Placement Areas, and the associated ODMDSs (NMFS provided EFH data, 5 Nov. 2019).

Key for Table	<u>Wilmington</u> <u>Harbor</u>	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
<u>COASTAL</u> <u>DEMERSALS</u>			
Bluefish	JA	JA	ELJA
Summer Flounder	LJA	LJA	ELJA
Butterfish	JA	JA	ELJA
<u>INVERTEBRATES</u>			
Brown Shrimp	LJA	ELJA	ELJA
Pink Shrimp	LJA	ELJA	ELJA
White Shrimp	LJA	ELJA	ELJA
Calico Scallop	N/A	N/A	ELJA
COASTAL PELAGICS			
Dolphinfish	N/A	JA	ELJA
Wahoo	N/A	JA	ELJA
Cobia	JA	LJA	ELJA
King Mackerel	JA	JA	ELJA
Spanish Mackerel	JA	LJA	ELJA

HIGHLY MIGRATORY			
Bigeye Tuna	N/A	N/A	ELJA
Bluefin Tuna	N/A	N/A	JA
Skipjack Tuna	N/A	N/A	JA
Yellowfin Tuna	N/A	N/A	ELJA
Swordfish	N/A	N/A	ELJA
Blue Marlin	N/A	N/A	ELJA
White Marlin	N/A	N/A	ELJA
Sailfish	N/A	N/A	ELJA
Little Tunny	N/A	N/A	ELJA
<u>SHARKS</u>			
Spiny Dogfish	N/A	JA	JA
Smooth Dogfish	J	JA	JA
Small Coastal Sharks	JA	JA	JA
Large Coastal Sharks	JA	JA	JA
Pelagic Sharks	N/A	N/A	JA
Prohibited/Research	N/A	JA	JA
Sharks			
SNAPPER/GROUPER			
Black Sea Bass	J	LJA	ELJA
Bank Sea Bass	N/A	N/A	ELJA
Rock Sea Bass	J	J	ELJA
Gag	J	JA	ELJA
Graysby	N/A	N/A	ELJA
Speckled Hind	N/A	N/A	ELJA
Yellowedge Grouper	N/A	N/A	ELJA
Coney	N/A	N/A	ELJA
Red Hind	N/A	N/A	ELJA
Goliath Grouper	N/A	N/A	ELJA
Red Grouper	J	N/A	ELJA
Misty Grouper	N/A	N/A	ELJA
Warsaw Grouper	N/A	N/A	ELJA
Snowy Grouper	N/A	N/A	ELJA
Yellowmouth Grouper	N/A	N/A	ELJA
Black Grouper	J	J	ELJA
Scamp	N/A	N/A	ELJA
Blackfin Snapper	N/A	N/A	ELJA
Red Snapper	N/A	N/A	ELJA
Cubera Snapper	N/A	N/A	ELJA
Lane Snapper	J	N/A	ELJA
Silk Snapper	N/A	N/A	ELJA
Vermillion Snapper	N/A	N/A	ELJA
Mutton Snapper	J	N/A	ELJA

Gray Snapper	J	J	ELJA	
Gray Triggerfish	N/A	N/A	ELJA	
Bar Jack	J	J	ELJA	
Greater Amberjack	N/A	N/A	ELJA	
Almaco Jack	N/A	N/A	ELJA	
Banded Rudderfish	N/A	N/A	ELJA	
Atlantic Spadefish	J	N/A	ELJA	
White Grunt	N/A	N/A	ELJA	
Tomtate	N/A	N/A	ELJA	
Hogfish	N/A	N/A	ELJA	
Puddingwife	N/A	N/A	ELJA	
Red Porgy	JA	N/A	ELJA	
Longspine Porgy	N/A	N/A	ELJA	
Scup	N/A	N/A	ELJA	
Blueline Tilefish	N/A	N/A	ELJA	
Sand Tilefish	N/A	N/A	ELJA	

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

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. The NMFS Mapper showed no HAPC present within the outer portions of Wilmington Harbor and Morehead City Harbor, or the Morehead City Harbor Nearshore Placement Areas and associated ODMDSs for each (EFH Mapper 2020).

## **Environmental Impacts**

Year-round maintenance dredging of the outer portions of the Wilmington Harbor and the Morehead City Harbor 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, decreases in dissolved oxygen (especially during times when water temperatures are warmer), 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. 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 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 - 15 April). The EFH for the Wilmington and Morehead City Harbors 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 timelines for hopper dredging, constraining work to the winter season. Bed leveling could result in minimal adverse effects on EFH 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 - 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 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 Window and Bed Leveling:

The proposed action may have temporary minimal adverse effects on area fisheries and EFH by the general effects described above, within the project areas due to the timing of dredging, dredged material placement and bed leveling during the most biologically active times for fisheries (May-November) within the entrance channels to Wilmington Harbor and Morehead City Harbor. 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 disposal, however once operations have ceased many mobile species may return to use the areas. Although, EFH consultations for dredging of Wilmington Harbor and Morehead City Harbor and both ODMDSs have been previously completed; those EFH concurrences included environmental windows which are now being proposed to be removed and replaced with a year-round maintenance dredging with bed leveling option. A new EFH consultation is required and EFH concurrence is requested.

#### 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 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 Wilmington Harbor 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). Morehead City Harbor 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.

<u>No Action</u>: 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.

<u>Expanded Window and Bed Leveling</u>: 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 dredging windows will only have minor impacts to benthic invertebrates.

<u>Elimination of Window and Bed Leveling</u>: 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, year-round dredging 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 (T&E) 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 T&E 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 (<u>http://ecos.fws.gov/ipac/</u>) (Appendix C). These were combined to develop the composite list shown in Table 7, which includes T&E 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 48 | P a g e 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 Wilmington Harbor and Morehead City Harbor 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 Morehead City Harbor and Wilmington Harbor projects, 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, removing the window for hopper dredging will reduce possible future 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 Wilmington Harbor 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*); Smalltooth sawfish (*Pristis pectinate*); 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, decreases in dissolved oxygen (especially during times when water temperatures are warmer), 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*.

<u>No Action</u>: The no action alternative would continue to minimize potential impacts to certain threatened and endangered species by following established operational protocols for maintenance dredging and existing CZMA environmental window restrictions. 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.

The no action may affect but is not likely to adversely affect sea turtles [green (*Chelonia mydas*), loggerhead (*Caretta caretta*), hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), and Kemp's ridley (*Lepidochelys kempii*)]; shortnose sturgeon (*Acipenser brevirostrum*); Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*); Smalltooth sawfish (Pristis pectinate); North Atlantic right whale (Eubalaena glacialis); and West Indian manatee (*Trichechus manatus*).

<u>Expanded Window and Bed Leveling</u>: An additional alternative, the expansion of the hopper dredging window (1 July - 30 November) and bed leveling, would avoid the times of highest biological activity, therefore it would likely have similar impacts to T&E

species and designated critical habitat as the no action alternative. This alternative may result in risk of ship strike injury to the endangered NARW, since dredging may occur during the winter calving season months in the designated critical habitat area near the mouth of the Cape Fear River.

The NARW would potentially have some benefit from a change with the extended window allowing less winter dredging than is now occurring. If hopper dredging were to occur more frequently during the summer months (July-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.

This alternative may affect, not likely to adversely affect the Atlantic sturgeon, shortnose sturgeon and Atlantic sturgeon critical habitat, since it would extend the dredging window into the fall of when the sturgeon are most likely to be entering the inlets to head upriver for spawning. Also, during the dredging event, the dissolved oxygen towards the lower water column could be temporarily lowered due to increased sedimentation and turbidity localized to the area surrounding the dredge. Additionally, the effects of bed leveling on the Atlantic and shortnose sturgeon and Atlantic sturgeon critical habitat could create a minor temporary increase in benthic sedimentation.

Elimination of Window and Bed Leveling: The proposed action would include the ability to perform maintenance dredging and bed leveling any time of year. This alternative may affect but is not likely to adversely affect: sea turtles [green (*Chelonia mydas*), loggerhead (*Caretta caretta*), hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), and Kemp's ridley (*Lepidochelys kempii*)]; shortnose sturgeon (*Acipenser brevirostrum*); Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*); Smalltooth sawfish (*Pristis pectinate*); and the West Indian manatee (*Trichechus manatus*). 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 T&E species (sea turtles, Atlantic and shortnose sturgeon, smalltooth sawfish, 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 and the ODMDSs 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.

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.

Since placement of the dredged material will not occur on the beach, 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 7: T&E Effects Determination

Species	<u>Status</u>	No Action Effects Determination	Expanded Window Effects	Proposed Action Effects
			<b>Determination</b>	<b>Determination</b>
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
Humpback whale/	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	MANLAA	MANLAA	No Effect
Roseate Tern/ Sterna dougallii dougallii	Endangered	No Effect	No Effect	No Effect
Reptiles	-			
Green Sea Turtie/ Chelonia mydas	Inreatened	MANLAA	MANLAA	MANLAA
Hawksbill Sea Turtle/ Eretmochelys imbricata	Endangered	MANLAA	MANLAA	MANLAA
Kemp's Ridley Sea Turtle/ <i>Lepidochelys</i> <i>kempii</i>	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

Smalltooth sawfish/	Endangered	MANLAA	MANLAA	MANLAA
Pristis pectinata				
Flowering Plants				
Seabeach Amaranth/	Threatened	No Effect	No Effect	No Effect
Amaranthus pumilus				
Critical Habitats				
Atlantic Sturgeon	Cape Fear	MANLAA	MANLAA; Short term	MANLAA; Short term
(Carolina DPS)	River Carolina		negative affect to	negative affect to
	Unit 4		Critical Habitat with	Critical Habitat with
	(C4)		reduced D.O. due to	reduced D.O. due to
			increased	increased
			sedimentation and	sedimentation and
			turbidity; limited to	turbidity; limited to
			areas in the vicinity of	vicinity of dredging
			dredging activities	activities
Loggerhead Sea Turtle		No Effect	No Effect	No Effect
Piping Plover		No Effect	No Effect	No Effect
North Atlantic Right		MANLAA	MANLAA	MANLAA; Potential
Whale				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

## 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 Wilmington Harbor and is ranked 70<sup>th</sup> 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 Wilmington Harbor. Table 8 below shows the most recent waterborne commerce numbers from 2018 as reported by the Corps 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. Compared to other Ports in the U.S., Morehead City does not move nearly as much tonnage and therefore is ranked low (98) on the list of productive harbors, despite it being an important facility for nearby Marine Corps Base Camp LeJeune.

Port Name	Rank in U.S.	Imports (tons)	Exports (tons)	Domestic (tons)	Foreign Total Tonnage	Grand Total Tonnage
WH	70	3,377,654	2,282,577	379,696	5,660,231	6,039,927
MHC	98	900,009	702,847	1,137,792	1,602,856	2,740,648

Table 8. Wilmington and Morehead City Harbor Ports Ranking and Tonnage, Waterborne Commerce Statistics Center, 2018.

#### **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.

<u>No Action</u>: Abiding by the current hopper window of 1 December - 15 April will continue to present significant challenges in adequately maintaining Wilmington and Morehead City Harbors 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 Wilmington and Morehead City Harbors. 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.

<u>Elimination of Window and Bed Leveling</u>: 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 9).

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

Table 9. Comparison of Impacts to Resources

## 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 Wilmington and Morehead City Harbors. The action does not include an increase in the footprint of areas to be dredged or in the duration of hopper dredging; the Wilmington and Morehead City Harbors 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 shortterm. 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 window. 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 year-round hopper dredging (noting that not every dredge event will occur in the spring/summertime).

<u>No Action</u>: Since the 1980s, hopper dredging in the Wilmington and Morehead City Harbors, 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 Corps 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 decimated, however communities are expected to recover rapidly and therefore only have shortterm impacts on the ecosystem. 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). However, 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. Historically, hopper dredging had a window put in place primarily to protect sea turtles. Although very 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. By means of the 2020 SARBO, NMFS has increased the numbers of allowable takes for sea turtle species and all dredging in the future will comply with the requirements of the 2020 SARBO.

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. To date, there are no recorded NARW takes (ship strikes) from hopper dredging in the project area (or in the Southeast Atlantic region), and noise from hopper dredging does not appear to affect their behavior significantly. Today, Protected Species Observers work in tandem with the NARW Early Warning System (EWS) to continuously monitor the whereabouts of the NARW so that dredge vessels can slow to 5-10 knots when within 500 yards. Assuming these practices will continue, hopper dredging in the future is not expected to have any impacts on the NARW.

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 and are expected to reoccur every five years approximately.

Presently, the Wilmington District is conducting separate 50-year studies for the continued nourishment of Carolina Beach and Wrightsville Beach. Additionally, two new 50-year CSRM project studies include Bogue Banks and Surf City North Topsail Beach. These projects have typically been completed by pipeline dredge but are expected to use hopper dredges as well, especially when dredging from offshore borrow areas. Similarly to this assessment, the effects of these projects are also being analyzed for year-round dredging and placement.

The future may see an increase in demand for hopper dredging, as more and more federal and non-federal beach projects get underway. Continuing to hopper dredge during the 1 December – 15 April window would have minor effects on the benthos, fish and T&E 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.

<u>Expanded Window</u>: 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 their impacts would be slightly greater due to the increased biological activity in the water. Increases in benthic, fishery and marine reptile and mammal populations would likely increase species' encounters with the dredge with more individuals affected by the dredging. Increases, however, are expected to be minimal especially considering the size of the impact area in relation to the surrounding waters and the duration of dredging being only 2-3 months out of the year.

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. USACE will continue to comply with the SARBO and take limits therein.

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.

With the expanded window alternative, past and present dredging activities (federal and non-federal) along the coast of North Carolina remain the same, whereas future impacts would increase slightly resulting from the increased number of hopper dredge projects and the heightened biological activity when dredging occurs. 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.

<u>Elimination of Window</u>: The removal of the 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 year-round alternative, hopper dredging would occur when a hopper contract dredge is available and not confine dredging impacts to any particular time of year. Eliminating the window 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 year-round 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 language may adjust to changes 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. Overall, cumulative effects from past, present and foreseeable future hopper dredging as a result of year-round hopper dredging in the Wilmington and Morehead City Harbors are expected to minimal.

## 7.0 STATUS OF ENVIRONMENTAL COMPLIANCE

## 7.1 National Environmental Policy Act (NEPA)

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 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. All identified agency and stakeholder concerns were considered during the development of this EA.

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. EPA Region 4 concurrences regarding placement of Wilmington Harbor and Morehead City Harbor shoaled sediments in ODMDSs were most recently received via letters dated May 8, 2020 and September 1, 2017, respectively. Wilmington Harbor's existing concurrence will expire on October 16, 2020 and was provided as a 90-day extension of Wilmington Harbor's previously granted three-year concurrence dated July 18, 2017. Morehead City Harbor's existing concurrence will expire on August 31, 2020. The USACE is currently coordinating with EPA Region 4 regarding renewed three-year concurrences for Wilmington Harbor and Morehead City Harbor.

## 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.

Along with a copy of the draft EA the USACE will submit a separate 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.

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:

<u>Estuarine Waters</u>: 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.

<u>Ocean Hazard</u>: 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.

<u>Public Trust Areas</u>: 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.

<u>Shoreline Erosion Response Policies</u>: 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.

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

National Historic Preservation Act of 1966, As Amended National Historic Preservation Act Amendments of 1980 Native American Religious Freedom Act of 1978	16 USC 470 16 USC 469a 42 USC 1996	Full Compliance Full Compliance 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

Table 10: The Relationship of the Proposed Action to Federal Laws and Policies\*Full compliance once the NEPA process is complete.

## 7.5 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. A list of recipients has been included as Appendix D of this document. The final EA will be distributed again and also be placed 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 year-round.

Maintenance dredging of existing channels will 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 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. Hopper dredge contracts will continue to require monitoring with the Dredging Quality Management 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

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

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# Appendix A:

Bed Leveling 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,

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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 © 2019 DigitalGlobe NextView License







### 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 © 2019 DigitalGlobe NextView License



Feet

2,500 5,000 7,500 10,000



NORTH CAROLINA Environmental Quality

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

#### 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



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

Daniel Govoni Federal Consistency Coordinator Policy Analyst



North Carolina Department of Environmental Quality | Divísion 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



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 <u>http://www.ncoah.com/</u> 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:* 

Office of Administrative Hearings 6714 Mail Service Center Raleigh, NC 27699-6714 *If sending via delivery service (UPS, FedEx, etc):* 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 <u>chad.coburn@ncdenr.gov</u> if you have any questions or concerns.

Sincerely,

— Docusigned by: Morella Sancher 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 <u>written</u> <u>approval</u> 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:

 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



# 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 <a href="http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/comtow.html.</a>

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

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

### Attachment(s):

Official Species List

# **Official Species List**

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

This species list is provided by:

#### **Raleigh Ecological Services Field Office**

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

# **Project Summary**

Consultation Code:	04EN2000-2020-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: <u>https://www.google.com/maps/place/33.84115501614264N78.04070018281946W</u>



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<sup>1</sup>, 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. <u>NOAA Fisheries</u>, 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	Threatened
No critical habitat has been designated for this species.	
Species profile: <u>https://ecos.fws.gov/ecp/species/9045</u>	
West Indian Manatee Trichechus manatus	Threatened
There is <b>final</b> 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: <u>https://ecos.fws.gov/ecp/species/4469</u>	

### Birds

NAME	STATUS
Eastern Black Rail <i>Laterallus jamaicensis ssp. jamaicensis</i> No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/10477</u>	Proposed Threatened
<ul> <li>Piping Plover Charadrius melodus</li> <li>Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.</li> <li>There is final critical habitat for this species. Your location is outside the critical habitat.</li> <li>Species profile: <u>https://ecos.fws.gov/ecp/species/6039</u></li> </ul>	Threatened
Red Knot <i>Calidris canutus rufa</i> No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/1864</u>	Threatened
Red-cockaded Woodpecker <i>Picoides borealis</i> No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/7614</u>	Endangered
Wood Stork <i>Mycteria americana</i> Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/8477</u>	Threatened

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

## Snails

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

### **Flowering Plants**

NAME	STATUS
Cooley's Meadowrue <i>Thalictrum cooleyi</i> No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/3281</u>	Endangered
Golden Sedge <i>Carex lutea</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <u>https://ecos.fws.gov/ecp/species/6025</u>	Endangered
Rough-leaved Loosestrife Lysimachia asperulaefolia No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/2747</u>	Endangered
Seabeach Amaranth Amaranthus pumilus No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/8549</u>	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 <i>Caretta caretta</i>	Final
https://ecos.fws.gov/ecp/species/1110#crithab	



# 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-0832 Event Code: 04EN2000-2020-E-03255 Project Name: MHC SARBO EA DEEP DRAFT NAVIGATION 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 <a href="http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/currentBirdIssues/Hazards/towers/comtow.html.</a>

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

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

Official Species List

# **Official Species List**

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

This species list is provided by:

#### **Raleigh Ecological Services Field Office**

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

## **Project Summary**

Consultation Code:	04EN2000-2020-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: <u>https://www.google.com/maps/place/34.680365713893615N76.68255938609897W</u>



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<sup>1</sup>, 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. <u>NOAA Fisheries</u>, 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	Threatened
No critical habitat has been designated for this species.	
Species profile: <u>https://ecos.fws.gov/ecp/species/9045</u>	
West Indian Manatee Trichechus manatus	Threatened
There is <b>final</b> 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: <u>https://ecos.fws.gov/ecp/species/4469</u>	

### Birds

NAME	STATUS
Eastern Black Rail <i>Laterallus jamaicensis ssp. jamaicensis</i> No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/10477</u>	Proposed Threatened
<ul> <li>Piping Plover Charadrius melodus</li> <li>Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.</li> <li>There is final critical habitat for this species. Your location overlaps the critical habitat.</li> <li>Species profile: <u>https://ecos.fws.gov/ecp/species/6039</u></li> </ul>	Threatened
Red Knot <i>Calidris canutus rufa</i> No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/1864</u>	Threatened
Red-cockaded Woodpecker <i>Picoides borealis</i> No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/7614</u>	Endangered
Roseate Tern Sterna dougallii dougallii Population: Northeast U.S. nesting population No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/2083</u>	Endangered

## Reptiles

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

#### **Flowering Plants**

NAME	STATUS
Rough-leaved Loosestrife Lysimachia asperulaefolia	Endangered
No critical habitat has been designated for this species.	0
Species profile: <u>https://ecos.fws.gov/ecp/species/2747</u>	
Seabeach Amaranth Amaranthus pumilus	Threatened
No critical habitat has been designated for this species.	
Species profile: <u>https://ecos.fws.gov/ecp/species/8549</u>	

### **Critical habitats**

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

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

# Appendix D:

Scoping Comments

WILMINGTON & MOREHEAD CITY HARBOR EA DISTRIBUTION		
Line No.	Organization / Title	POC Name
	ELECTED OFFICIALS	
01	Honorable	Frank Iler, Jr.
02	Honorable	Bill Rabon
03	Mayor	Bill Saffo (Wilmington)
04	Mayor	Robert Howard (Southport)
05	Mayor	Andy Sayre (Bald Head Island)
06	Mayor	Craig Bloszinsky (Kure Beach)
07	Mayor	LeAnn Pierce (Carolina Beach)
08	Mayor	Gerald A. Jones (Morehead City)
09	Mayor	Rett Newton (Beaufort)
10	Representative	Deb Butler
11	Representative	Holly Grange
12	Representative	Ted Davis Jr.
13	Representative	Pat McElraft
14	Representative	Gregory Murphy
15	Representative	David Rouzer
16	Senator	Harper Peterson
17	Senator	Norman Sanderson
18	Senator	Richard Burr
19	Senator	Thom Tillis
	NON-PROFIT ORGANIZATIONS	
20	Bald Head Island Conservancy	Chris Shank
21	Cape Fear River Watch	Dana Sergent
22	Cape Fear River Watch	Frank Yelverton
23	N.C. Coastal Federation	Kerri Allen
24	Southern Environmental Law Center	Melissa Whaling
25	Cape Fear Audubon Society	Lindsay Addison
	RESOURCE AGENCIES	
26	Environmental Protection Agency (EPA)	Dan Holliman
27	Environmental Protection Agency (EPA)	Todd Bowers
28	Environmental Protection Agency (EPA)	Gary Collins
29	Military Ocean Terminal Sunny Point (MOTSU)	Malcolm Charles
30	N.C. Division of Coastal Management (NCDCM)	Dan Govoni
31	N.C. Division of Coastal Management (NCDCM)	Mike Lopazanski
32	N.C. Division of Coastal Management (NCDCM)	Braxton Davis
33	N.C. Division of Coastal Management (NCDCM)	Tancred Miller
34	N.C. Division of Marine Fisheries (NCDMF)	Curt Weychert
35	N.C. Division of Marine Fisheries (NCDMF)	Anne Deaton
36	N.C. Division of Marine Fisheries (NCDMF)	Jimmy Harrison
37	N.C. Division of Marine Fisheries (NCDMF)	Jacob Boyd
38	N.C. Division of Marine Fisheries (NCDMF)	Steve Murphy
39	N.C. Division of Water Resources (NCDWR)	Paul Wojoski
40	N.C. Division of Water Resources (NCDWR)	Robb Mairs
41	N.C. Division of Water Resources (NCDWR)	Holley Snider
42	N.C. Wildlife Resources Commission (NCWRC)	Maria Dunn

WILMINGTON & MOREHEAD CITY HARBOR EA DISTRIBUTION		
Line No.	Organization / Title	POC Name
43	N.C. Wildlife Resources Commission (NCWRC)	Matthew Godfrey
44	N.C. Wildlife Resources Commission (NCWRC)	Sarah Finn
45	National Marine Fisheries Service (NMFS)	Andy Herndon
46	National Marine Fisheries Service (NMFS)	Twyla Cheatwood
47	National Marine Fisheries Service (NMFS)	Fritz Rohde
48	NC State Clearinghouse	Crystal Best
49	NOAA Fisheries	Pace Wilber
50	NOAA Fisheries	Ken Riley
51	USFWS	Kathy Matthews
52	USACE	Mickey Sugg
53	USACE	Tyler Crumbly
54	USACE, South Atlantic Division	Dylan Davis
55	USACE, South Atlantic Division	Debby Scerno
56	U.S. Army Engineer Research & Development Center	Matt Balazik
57	U.S. Coast Guard (USCG)	Brittany Akers
58	U.S. Coast Guard (USCG)	Michael Fitzgerald
59	NC State Ports Authority	Brian Clark
60	NC State Ports Authority	Todd Walton
	OTHER	
61	Village of Bald Head Island (VBHI)	Chris McCall
62	Fort Caswell	Brian Hemphill
63	Fort Macon State Park	Randy Newman
64	NC Rep Staffer for David Rouzer	Chance Lambeth
65	NC Senate Staffer for Richard Burr	Rosalie Calarco
66	NC Senate Staffer for Thom Tillis	Adam Caldwell
67	New Hanover County	Layton Bedsole
68	Town of Southport	Bruce Oakley, City Manager
69	UNCW	Fred Scharf