

Supplemental Environmental Assessment

The Town of Holden Beach – Beach Restoration

FEMA-DR-4393-NC

FEMA-DR-4412-NC

FEMA-DR-4465-NC

Brunswick County, North Carolina

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FEMA

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ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effect
BO	Biological Opinion
CAMA	Coastal Area Management Act
CBIA	Coastal Barrier Improvement Act
CBRA	Coastal Barrier Resources Act
CBRS	Coastal Barrier Resources System
CEQ	Council on Environmental Quality
CFR	<i>Code of Federal Regulations</i>
CRC	North Carolina Coastal Resources Commission
CWA	Clean Water Act
CY	Cubic Yards
CZMA	Coastal Zone Management Act
DCM	North Carolina Division of Coastal Management
DEQ	North Carolina Department of Environmental Quality
DHS	Department of Homeland Security
DMF	North Carolina Marine Fisheries Commission
DWR	North Carolina Division of Water Resources
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
IPaC	Information for Planning and Consultation
MBTA	Migratory Bird Treaty Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NC	North Carolina
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OBE	Ocean Boulevard East
OBW	Ocean Boulevard West
PA	Public Assistance

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PEA	Programmatic Environmental Assessment
PL	Public Law
SARBO	South Atlantic Regional Biological Opinion
SHPO	State Historic Preservation Office
SPBO	North Carolina Statewide Programmatic Biological Opinion
SPEA	Statewide Programmatic Environmental Assessment
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
SY	Square Yards
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
WRC	North Carolina Wildlife Resources Commission
WSS	Web Soil Survey

1.0 INTRODUCTION

Hurricane Florence, Tropical Storm Michael, and Hurricane Dorian each impacted North Carolina (NC) with strong winds, storm surge, and flooding. On September 14, 2018, and as amended on: September 17, 24, and 27, 2018; October 10, 12, 14, 22, 24, and 25, 2018; November 15, 2018; March 28, 2019, June 27, 2019, and October 13, 2020, President Trump declared a major disaster (FEMA-DR-4393-NC) for the State of NC due to Hurricane Florence. On January 31, 2019, and as amended on: March 28, 2019, June 27, 2019 and October 13, 2020, President Trump declared a major disaster (FEMA-DR-4412-NC) for the State of NC due to Tropical Storm Michael. On October 4, 2019, and as amended on October 13, 2020, President Trump declared a major disaster (FEMA-DR-4465-NC) for the State of NC due to Hurricane Dorian. All three disaster declarations authorized the Department of Homeland Security's Federal Emergency Management Agency (FEMA) to provide federal assistance to designated disaster areas of NC.

This assistance is provided pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), Public Law (PL) 93-288, as amended (42 U.S.C. §§ 5121- 5207). Stafford Act authorizes FEMA through its Public Assistance (PA) Program to fund the repair, restoration, and replacement of state, tribal and local government and certain private nonprofit facilities damaged as a result of the disaster event. Brunswick County, NC was designated as a county eligible to receive federal assistance under FEMA-DR-4465-NC for Hurricane Dorian. The Town of Holden Beach has applied through the PA Program to receive funding to restore the eroded shoreline along the Central Reach portion of Holden Beach. This shoreline segment is an engineered and maintained beach previously authorized for nourishment and maintenance by the U.S. Army Corps of Engineers (USACE).

The USACE prepared an Environmental Assessment for The Town of Holden Beach's Central Reach Beach Renourishment in 2012 and issued a Finding of No Significant Impact (FONSI) on their proposed action in September 17, 2012. Any federal agency may adopt another federal or state agency's EA (40 CFR §1500.4(n), §1500.5(h), and §1506.3) providing the original document satisfies the agency's National Environmental Policy Act (NEPA) requirements. FEMA has adopted USACE's EA and has also provided supplemental information. USACE's EA and FONSI are included as Appendix G of this document.

This Supplemental Environmental Assessment (SEA) has been prepared in accordance with the Stafford Act, National Environmental Policy Act (NEPA) of 1969, the President's Council on Environmental Quality regulations to implement NEPA (40 Code of Federal Regulations Parts 1500-1508), and FEMA's directives and instructions implementing NEPA (*FEMA Directive 108-1 & Instruction 108-1-1*). FEMA is required to consider potential environmental impacts before funding or approving actions and projects.

2.0 PURPOSE AND NEED

As a result of Hurricane Florence, Tropical Storm Michael, and Hurricane Dorian, the engineered shoreline along Holden Beach was heavily eroded. The Town of Holden Beach, having legal responsibility to maintain Holden Beach, may be eligible for funding through the Federal Emergency Management Agency's (FEMA) Public Assistance (PA) Grant Program pursuant to Title 44 of the Code of Federal Regulations (C.F.R.) Part 206.223(a)(3). The community has

identified the need to restore the capacity of the shoreline to withstand future storm events, reduce erosion, and decrease risk from future events to human life and improved property. Prior to the construction of the engineered beach and subsequent re-nourishments, The Town of Holden Beach was significantly impacted by storm surge and saltwater inundation from the three disaster events. The proposed action reduces the risk to improved property on the island, provides additional habitat for sea turtles and shorebirds, and increases the recreational value of the area.

Brunswick County tourism produced approximately \$470 million in annual revenue in 2013, which is approximately \$4,265 per capita. Brunswick County ranked 10th out of 100 counties for revenue production. Restoration of Holden Beach is an essential element to maintaining tourism in Brunswick County.

The objective of FEMA's PA Grant Program is to provide assistance to state, tribal and local governments, and certain types of Private Nonprofit (PNP) organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President.

Through the PA Program, FEMA provides supplemental federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain PNP organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.

3.0 ALTERNATIVES

The alternatives considered in addressing the purpose and need stated are the No Action Alternative and the Preferred Action Alternative, which is the re-nourishment of the shoreline on the Central Reach portion of Holden Beach.

3.1 Alternative 1 – No Action Alternative

Under the No Action Alternative, the beach restoration project would not be completed. Thus, the beach and community would not be protected from future storm surge events. Erosion would continue to occur along the beach and negative impacts to species and recreational value of the area could occur.

3.2 Alternative 2 – Beach Restoration (Proposed Action)

The Proposed Action Alternative would restore a total of approximately 4.5 miles along the Central Reach portion of Holden Beach using offshore dredged material. The project will provide storm damage reduction benefits to the existing shoreline, upland habitat, and surrounding infrastructure. The project will also maintain a viable beach environment for nesting habitat for threatened and endangered nesting sea turtles, as well as protect and maintain foraging habitat for shorebird species including the threatened piping plover and red knot. The project will also provide recreation enhancement of the publicly accessible shoreline along Holden Beach.

The Town of Holden Beach has submitted an application to FEMA for funding under the PA Program to repair damages as a result of FEMA-4393-DR-NC, FEMA-4412-DR-NC, and FEMA-4465-DR-NC to pre-disaster condition. The applicant is proposing to concurrently restore losses attributable to the events as a single re-nourishment project to the engineered and designed beach template, including 722,994 CY of sand, 10,000 individual dune plants, and 800 LF of fence for

Hurricane Florence; 389,304 CY of sand for Tropical Storm Michael; and 555,297 CY of sand, 80,000 SY of dune plants, and 200 LF of fencing for Hurricane Dorian. The project includes a total of approximately 1,667,595 cubic yards (CY) of sand, 1,000 FT of fencing, and dune plants. Types of plants will include Sea Oates, American Beach Grass, and Bitter Panicum and fencing will be wire bound wood slat fence with wood stakes. The applicant will obtain sand by hopper dredging from the previously permitted offshore borrow area (Offshore Borrow Area A), located approximately two miles offshore of Oak Island, and a new offshore borrow area located approximately two miles offshore of Holden Beach (Offshore Borrow Area B). The Central Reach segment was last re-nourished by The Town in 2017 using 1.31 million CY of sediment from Offshore Borrow Area A and included constructed berms. The project is located between 240 Ocean Boulevard East (OBE) to 781 Ocean Boulevard West (OBW) (33.914366, -78.255115 to 33.907695, -78.331480).

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Holden Beach is a 9-mile-long barrier island located in Brunswick County on the southeast coast of NC. The project area consists of a nearshore, inlet and offshore coastal saltwater system bordered by Shallotte Inlet to the west, Lockwoods Folly Inlet to the east, the Intracoastal Waterway to the north, and the Atlantic Ocean to the south. The project area includes approximately 4.5 miles of coastline, comprised of sandy beach fronting the Atlantic Ocean, all of which is suitable nesting habitat for threatened and endangered sea turtles and suitable foraging habitat for shorebird species including the threatened piping plover and red knot. The Central Reach portion is located between 240 OBE and 781 OBW (33.914366, -78.255115 to 33.907695, -78.331480).

The island is heavily developed, primarily residential, and the beach is open to the public for relaxation, fishing, and water recreation. Personal vehicles are not allowed on the beach strand. The Town of Holden Beach has a comprehensive beach management and maintenance program to protect the beach from episodic storm erosion. The first documented nourishment occurred in 1971, though management efforts were sporadic and small-scale until the 2001/2002 U.S. Army Corps of Engineers (USACE) Wilmington Harbor Deepening nourishment project. Between USACE and the Town, beach maintenance has since been performed annually on different portions of the beach. The most recent nourishment activity took place in 2017 where approximately 1.31 million CY of material from the offshore borrow area was placed along approximately 4.1 miles of shoreline. The entire nourishment project lasted 74 days, ending on March 17, 2017. A Static Vegetation Line (SVL) was delineated prior to Hurricane Matthew in 2016, as required by the Division of Coastal Management (DCM). Hurricane Matthew subsequently removed approximately 41 acres of dune system, which was successfully stabilized and restored during the 2017 nourishment project. Following the 2017 nourishment project, the “starter dune” was fenced and vegetated along the entire Central Reach shoreline, including 4.6 miles of new fencing and approximately 381,000 plants (primarily sea oat sprigs). Holden Beach sees a varying number of sea turtle nests each year, primarily the loggerhead sea turtle. The Town has its own Holden Beach Turtle Watch Program which patrols and marks nests, protects them during incubation, and provides safe passage to the ocean for hatchlings.

Seabeach amaranth has not been documented for years on Holden Beach however natural resource

agencies believe there is potential for establishment. A monitoring plan for endangered vegetation is currently in place. Offshore Borrow Area A is previously surveyed and has been used in previous renourishment projects. A remote-sensing submerged cultural resource survey, including a hard bottom perimeter buffer, was performed for Offshore Borrow Area B in August 2020. This survey found no sonar targets, hard-bottom, or sub-bottom features within or adjacent to the offshore borrow areas. Regular sediment monitoring throughout the duration of the project and immediately following completion ensures sediment compatibility.

4.1 Potential Environmental Consequences

The potential environmental consequences and required measures and permits required as a result of Alternative 1 and 2 are summarized in Table 4.1.

Table 4.1 Environmental Consequences by Alternative

Resource	Environmental Consequences	Environmental Protection Measures and Required Permits
Floodplains	<p>Updated from USACE EA (2012) – see Section 4.2 for details</p> <p>Alternative 1 – Future storm events would result in increased floodplain risk due to lack of buffer between ocean and infrastructure.</p> <p>Alternative 2 – Reduction of flood risk to adjacent communities and preserve the floodplain for open space, recreational use and habitat benefits.</p>	Not applicable.
Coastal Zone Management	<p>No change from USACE EA (2012)</p> <p>Alternative 1 – No impact.</p> <p>Alternative 2 – Minor beneficial impact due to restoration of the sandy beach along the shoreline.</p>	<p>Alternative 2 requires a permit. As part of the USACE EA, a CAMA permit was obtained from the NC Department of Environmental and Natural Resources (DENR) and Coastal Resources Commission (CRC) permit [#14-02, dated July 17, 2012] which constitutes consistency review under the state’s coastal zone management program.</p> <p>Any future project(s) would require updated permitting and/or coordination</p>

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		with resource agencies.
Wetlands (Executive Order 11990)	<p>Updated from USACE EA (2012) – see Section 4.4 for details</p> <p>Alternative 1 – No impact.</p> <p>Alternative 2 – Short term minor impacts from construction. No long-term impacts.</p>	<p>Alternative 2 requires implementation of USACE permit (SAW-2012-00286).</p> <p>Any future project(s) would require updated permitting and/or coordination with resource agencies.</p>
Environmental Justice (Executive Order 12898)	<p>Alternative 1 – No impact.</p> <p>Alternative 2 – No impact.</p>	Not applicable.
Climate Change	<p>Alternative 1 – No impact.</p> <p>Alternative 2 – Minor impact from construction equipment used.</p>	Not applicable.
Transportation	<p>Alternative 1 – No impact.</p> <p>Alternative 2 – Minor short-term impacts.</p>	Not applicable.
Threatened and Endangered Species	<p>Updated from USACE EA (2012) – See Section 4.6 for details</p> <p>Alternative 1 – Minor impact. Continuing erosion could lead to ongoing habitat loss.</p> <p>Alternative 2 – Minor beneficial effects due to increased habitat for sea turtles and shorebirds. Potential for incidental take during construction minimized by application of measures set forth in U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS)</p>	<p>Under Alternative 2, the following measures would be implemented from the applicable permits, PBOs, etc:</p> <ol style="list-style-type: none"> 1. All construction, including placement of sand fencing and dune vegetation, and beach fill placement activities shall adhere to a November 16 to April 30 environmental window; thereby avoiding the sea turtle nesting season, the majority of the shorebird breeding season, the majority of the seabeach amaranth growing season, and peak benthic invertebrate recruitment periods. 2. Dredging activities shall adhere to a November 16 to March 31 environmental window; thereby avoiding peak estuarine-

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	<p>Programmatic Biological Opinions (PBOs) with the USACE.</p>	<p>dependent fish and invertebrate larval ingress periods, peak benthic invertebrate recruitment periods, and periods when sea turtles and manatees are most likely to occur in project area waters.</p> <ol style="list-style-type: none"> 3. Per the North Carolina Coastal Beach Sand Placement - Statewide Programmatic Biological Opinion (Corps Action ID Number SAW-2016-02262), dated 8/28/2017, the proposed project must adhere to all conditions listed, including those listed in Section 7.3 - Reasonable and Prudent Measures and Terms and Conditions (Pages 187-204) and Section 7.4 - Reporting Requirements (Page 205). 4. The proposed project must adhere to all eligible Project Design Criteria (PDCs), Terms and Conditions, Reasonable and Prudent Measures, and otherwise guidance listed within the 2020 South Atlantic Regional Biological Opinion for Dredging and Material Placement Activities in the Southeast United States (2020 SARBO), dated 3/27/2020. 5. The proposed project must adhere to the attached 2017 Manatee Guidelines. 6. The proposed project must adhere to the attached Technical Standards for Beach Fill Projects (15A NCAC 07H .0312). <p>Detailed terms and conditions can be found in Appendix K.</p> <p>Any future project(s) would require updated permitting and/or coordination with resource agencies.</p>
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<p>Cultural Resources</p>	<p>Updated from USACE EA (2012) – See Section 4.7 for details</p> <p>Alternative 1 – No impact.</p> <p>Alternative 2 – No impact. FEMA consulted with the NC State Historic Preservation Office (SHPO) on September 9, 2020. Response was received on November 10, 2020, concurring with a finding of No Historic Properties Affected for this project. No conditions were required.</p>	<p>Not applicable.</p>
<p>Geology and Geomorphology</p>	<p>No change from USACE EA (2012)</p> <p>Alternative 1 – No impact.</p> <p>Alternative 2 – No long-term impacts. Beach compatible sand will be used during construction.</p>	<p>Alternative 2 requires implementation of CAMA Permit (#14-02) and USACE permit (SAW-2012-00286) conditions regarding beach compatible sand and placement.</p> <p>Any future project(s) would require updated permitting and/or coordination with resource agencies.</p>
<p>Vegetation</p>	<p>No change from USACE EA (2012)</p> <p>Alternative 1 – Minor impact. Continuing erosion could lead to ongoing dune vegetation loss due to escarpment.</p> <p>Alternative 2 – Shoreline impacts reduced due to buffer from storm surge.</p>	<p>Alternative 2 requires implementation of CAMA Permit (#14-02) and USACE permit (SAW-2012-00286) conditions regarding vegetation protection during construction, and dune planting.</p> <p>Any future project(s) would require updated permitting and/or coordination with resource agencies.</p>
<p>Fish and Wildlife Resources</p>	<p>No change from USACE EA (2012)</p> <p>Alternative 1 – Minor impact. Continuing erosion could lead to ongoing</p>	<p>Alternative 2 requires implementation of CAMA Permit (#14-02) and USACE permit (SAW-2012-00286) conditions regarding nearshore hardbottom and species, including provisions in applicable PBOs</p>

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	<p>habitat loss.</p> <p>Alternative 2 – Long term beneficial impact, allowing shorebirds to utilize the restored dune and beach profile. Fill will not be placed on top of nearshore hardbottom. A mixing zone is expected but no long-term adverse effects are anticipated. Short term impacts to migratory birds and surf-zone fishes is likely to occur during construction. After construction, fish and wildlife resources are expected to recover and benefit from the beach.</p>	<p>regarding shorebirds.</p> <p>Any future project(s) would require updated permitting and/or coordination with resource agencies.</p>
Socioeconomic	<p>No change from USACE EA (2012)</p> <p>Alternative 1 – Impacts could result from future storm damages along the shoreline.</p> <p>Alternative 2 – Reduction of impact from storm damage along the shoreline, increase in the local economy from tourism, recreational value and short-term employment from the undertaking.</p>	Not applicable.
Coastal Barrier Resources	Alternative 1 and 2 – No impact, not located within Coastal Barrier Resource System unit.	Not applicable.
Hazardous, Toxic, and Radioactive Waste	<p>No change from USACE EA (2012)</p> <p>Alternative 1 – No impact.</p>	Potential for spills from construction equipment will be minimized and handled in accordance with applicable

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	Alternative 2 – Minor short-term impact due to potential for spills during construction.	regulations.
Air Quality	No change from USACE EA (2012) Alternative 1 – No impact. Alternative 2 – Minor short-term impacts to air quality due to exhaust from construction equipment.	Not applicable.
Noise	No change from USACE EA (2012) Alternative 1 – No impact. Alternative 2 – Minor short-term impacts from construction equipment.	Not applicable.
Solid Waste	No change from USACE EA (2012) Alternative 1 – No impact. Alternative 2 – No impact.	Not applicable.
Drinking Water	Alternative 1 – No impact. Alternative 2 – No impact.	Not applicable.
Cumulative Impacts	Updated from USACE EA (2012) – See Section 5.0 for details Alternative 1 – Future storms could result in impacts to the shoreline, reducing buffer between ocean and infrastructure. Alternative 2 – Not expected to have significant adverse cumulative impacts on any resource.	Not applicable.

4.2 Floodplain Management (Executive Order 11988)

Executive Order (EO) 11988 requires federal agencies to take action to minimize occupancy and modification of the floodplain. Specifically, EO 11988 prohibits federal agencies from funding construction in the 100-year floodplain unless there are no practicable alternatives. FEMA's regulations for complying with EO 11988 are promulgated in 44 CFR Part 9.

Based on the current FEMA Flood Insurance Rate Map (FIRM) panels 3720201600K, 3720202600K, and 3720201500K, each dated 8/28/2018, (Appendix H), the project area is located within the coastal high hazard area (VE Zone).

4.2.1 Alternative 1 – No Action Alternative

Under the no action alternative, no construction would occur and there would be no effect to the floodplain. Improved property adjacent to the project area would remain at risk from future flooding events.

4.2.2 Alternative 2 – Beach Restoration Project

Under the proposed alternative, construction to restore the facility would occur within the floodplain. The restored beach would serve to reduce the flood risk to adjacent improved property. The facility is functionally dependent upon its location within the floodplain and facilitates open space use of the floodplain for recreational value. An 8-step checklist, as required by 44 CFR Part 9 (Appendix I), has been completed for this alternative.

4.3 Coastal Zone Management (CZMA)

The NC Division of Coastal Management (DCM) works to protect, conserve and manage NC's coastal resources through an integrated program of planning, permitting, education and research. The DCM is part of the NC Department of Environmental Quality (DEQ) and carries out the state's Coastal Area Management Act (CAMA), the Dredge and Fill Law and the federal Coastal Zone Management Act of 1972 (CZMA) in the 20 coastal counties, using rules and policies of the NC Coastal Resources Commission (CRC). The DCM implements federal consistency reviews and issues CAMA permits.

A CAMA permit will be required for activities located in, or on the shore of, navigable waters within the 20 CAMA counties, on a marsh or wetland, within 75 feet of the normal high-water line along an estuarine shoreline, near the ocean beach, near an inlet, within 30 feet of the normal high-water level of areas designated as inland fishing waters by the NC Marine Fisheries Commission (DMF) and the NC Wildlife Resources Commission (WRC), near a public water supply, and/or within 575 feet of Outstanding Resource Waters defined by the Environmental Management Commission.

4.3.1 Alternative 1 – No Action Alternative

Alternative 1 does not include any FEMA undertaking and no construction, therefore FEMA has no responsibility under the CZMA for this alternative. The coastal zone may continue to be impacted in the project area due to coastal erosion.

4.3.2 Alternative 2 – Beach Restoration Project

Under the proposed alternative, activity and construction would occur in the coastal zone and within a CAMA county. The project would restore eroded areas of the shore by replacing beach

compatible sand to mimic the engineered beach profile. As part of the USACE EA, a CAMA permit was obtained from the NC Department of Environmental and Natural Resources (DENR) and Coastal Resources Commission (CRC) permit [#14-02], dated July 17, 2012, which lists construction conditions and monitoring requirements. Issuance of this permit constitutes consistency review. Any future project(s) would require updated permitting and/or coordination with resource agencies.

4.4 Protection of Wetlands (Executive Order 11990)

EO 11990, Protection of Wetlands, requires federal agencies to take action to minimize the loss of wetlands. The NEPA compliance process requires federal agencies to consider direct and indirect impacts to wetlands, which may result from federally funded actions.

4.4.1 Alternative 1 – No Action Alternative

Alternative 1 does not include any FEMA undertaking and no construction, therefore FEMA has no responsibility under EO 11990 for this alternative. Wetland habitats may continue to be impacted in the project area due to coastal erosion.

4.4.2 Alternative 2 – Beach Restoration Project

Under the proposed alternative, short-term impacts are anticipated. The action may involve placing sand in the near and foreshore environment. Temporary increases to turbidity could be expected due to sand placement; however, no long-term impacts are expected due to the lack of estuarine or marshy wetlands in the project vicinity. Short-term negative impacts would also be expected to commercial and recreational fisheries near the shoreline, but impacts are expected to be limited to the construction timeframe. Impact would include the higher turbidity in the habitat causing species to move from the area and reducing the number of catch available for a short period of time. The long-term impacts to the marine wetlands would be beneficial for preserving habitat and recreational value as well as reducing rates of sand loss and erosion from future storms.

Per the National Wetlands Inventory, accessed August 18, 2020, the beach is located in estuarine and marine wetland habitat. Permits were previously obtained by USACE as part of an EA (SAW-2012-00286). Applicant will follow all permit conditions to minimize impacts from construction. Any future project(s) would require updated permitting and/or coordination with resource agencies.

4.5 Environmental Justice (Executive Order 12898)

On February 11, 1994, President Clinton signed EO 12898, entitled, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”. The EO directs federal agencies, “to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.”

Holden Beach is open to the public and access to the beach is free. According to the U.S. Census Bureau (2018), The Town of Holden Beach has a population of approximately 1,012, consisting of: 99% White/Caucasian, 0.5% Black, and 0.5% Native American; 1.5% Hispanic/Latino; 50.2% female; and a median age of 59 years old.

4.5.1 Alternative 1 – No Action Alternative

Under the no action alternative, no disproportionate impacts on minority or low-income populations are anticipated.

4.5.2 Alternative 2 – Beach Restoration Project

Under the proposed alternative, no disproportionate impacts or adverse impacts to minority or low-income populations are anticipated. The beach will be restored to its engineered beach profile with no changes to the existing design and footprint. The project benefits would be to all population members as these areas are accessible to the public.

4.6 Climate Change

Greenhouse gases (GHGs) are emitted by both natural processes and human activities, and their accumulation in the atmosphere regulates temperature. GHGs include water vapor, carbon dioxide, methane, nitrous oxides, and other compounds. There are no established thresholds or standards for GHGs.

4.6.1 Alternative 1 – No Action Alternative

Alternative 1, the no-action alternative, would result in the emergency coastal dune system not being built and no construction activities taking place, and thus would not cause the emission of GHG.

4.6.2 Alternative 2 – Beach Restoration Project

Alternative 2, restoration of an engineered beach, would result in minor short-term impacts from construction equipment resulting in temporary air emissions due to fuel usage. These temporary emissions would be below regulatory standards and would have a minor impact, below regulatory standards.

4.7 Transportation

The scope of work provided by the applicant doesn't include the construction of any transportation features, as the work will be done using the existing roads.

4.7.1 Alternative 1 – No Action Alternative

Alternative 1, the no-action alternative, would not involve any construction activities and thus would have no impact on existing infrastructure.

4.7.2 Alternative 2 – Beach Restoration Project

Alternative 2, because it involves beach restoration, would have minor short-term impacts from construction equipment entering/leaving the project areas transporting sand and construction equipment to the project locations.

4.8 Threatened and Endangered Species

In accordance with Section 7 of the Endangered Species Act (ESA) of 1973, the project was evaluated for the potential occurrences of federally listed threatened and endangered species. The ESA requires any federal agency that funds, authorizes or carries out an action to ensure that their action is not likely to jeopardize the continued existence of any endangered or threatened species

or result in the destruction or adverse modification of designated critical habitats.

4.8.1 Existing Conditions

Potential threatened and endangered species that may be present in the project area were identified in the previous USACE EA. The species were verified and updated by accessing the USFWS Information for Planning and Consultation (IPaC) database and the NC Natural Heritage Program mapper in September 2020 to identify species that may occur in Brunswick County. The species likely to occur in the project area are the West Indian manatee (*Trichechus manatus latirostris*), piping plover (*Charadrius melodus*), Seabeach Amaranth, red knot (*Calidris canutus*), swimming and nesting sea turtles – green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), Kemp's ridley (*Lepidochelys kempii*), hawksbill (*Eretmochelys imbricata*) and loggerhead (*Caretta caretta*). The shoreline of the project area is a suitable sea turtle nesting habitat for listed sea turtles as well as foraging habitat for the piping plover and red knot. There is designated critical habitat for the loggerhead (*Caretta caretta*) within the project area.

4.8.2 Alternative 1 – No Action Alternative

Alternative 1 does not include any FEMA undertaking and no construction, therefore FEMA has no responsibility under the ESA for this alternative. Suitable sea turtle nesting habitat may continue to be reduced in the project area due to coastal erosion.

4.8.3 Alternative 2 – Beach Restoration Project

Under the proposed alternative, beneficial impacts to species along the shoreline and in the nearshore environment are anticipated due to sand placement and dredging activities. If sand placement and restoration of the engineered beach occurs during sea turtle nesting season, the action may adversely affect nesting sea turtles and hatchlings. Short-term adverse impacts may be expected to the red knot and piping plover due to disruption in foraging habitat during construction. Conditions placed on the project should mitigate any potential impacts to species.

The project will be required to meet the terms and conditions of the following: USACE EA (SAW-2012-00286), dated 9/2/2012; FEMA-USFWS consultation letter, dated June 2, 2020; North Carolina Coastal Beach Sand Placement Statewide Programmatic Biological Opinion, SAW-2016-02262, dated August 28, 2017 (Section 7.3, p. 187-204 and Section 7.4, p. 205); 2020 South Atlantic Regional Biological Opinion (SARBO) for Dredging and Material Placement Activities in the Southeast United States, dated March 27, 2020; 2017 Manatee Guidelines; and Technical Standards for Beach Fill Projects [15A NCAC 07H.0312]. The terms and conditions of these documents can be found in Table 4.1 and Appendix K.

4.9 Cultural Resources

Consideration of impacts to cultural resources is mandated by Section 106 of the National Historic Preservation Act (NHPA) as implemented by 36 CFR Part 800. Requirements include identifying historic properties that may be impacted by the proposed action or alternatives within the area of potential affect (APE). Historic properties may be archeological sites, structures, historic districts, or other historic resources listed in or determined eligible for listing in the National Register of Historic Places (NRHP). If adverse effects on historic, archeological, or cultural properties are identified, federal agencies must attempt to avoid, minimize, or mitigate the impacts to these resources.

4.9.1 Existing Conditions

Side-scan sonar, magnetometer, sub-bottom, and multi-beam bathymetry data collection was completed for Offshore Borrow Area A in July 2011. A remote-sensing survey and a hard bottom perimeter buffer for Offshore Borrow Area B was completed by Tidewater Atlantic Research, Inc. between May and July 2020. Analysis of the remote-sensing data generated during the 2020 survey identified one small magnetic anomaly. That anomaly appears to have been generated by modern debris such as a fish or crab trap, pipe, a small diameter rod, cable, wire rope, chain, or a small boat anchor. No sonar targets or sub-bottom features were identified in either survey data set. No evidence of hard bottom was identified within either proposed borrow area or hard bottom perimeter buffer.

4.9.2 Alternative 1 – No Action Alternative

Under the no action alternative, no undertaking by FEMA and no construction would occur, therefore there would be no potential for effects and no further responsibility under Section 106.

4.9.3 Alternative 2 – Beach Restoration Project

Under the proposed alternative, the beach would be re-nourished utilizing an offshore sand source. The project is not anticipated to have an impact on any known sites along the shoreline, as the previously recorded sites are all located outside of the APE and re-nourishment activities have occurred previously in this area. The proposed sand placement activities will not disturb sand along the shoreline below the depth where sand has been placed previously. Consultation with the State Historic Preservation Office (SHPO) was initiated on September 29, 2020 (Appendix C). Response was received on November 10, 2020, concurring with a finding of No Historic Properties Affected for this project (Appendix C).

5.0 CUMULATIVE IMPACTS

Per the Council on Environmental Quality (CEQ) regulations, cumulative impacts are 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7). In accordance with NEPA, this SEA considered the combined effect of the preferred alternative and other actions occurring or proposed in the vicinity of the proposed project site.

The shoreline of Holden Beach is vulnerable to coastal erosion and expected to be subject to damages from future tropical storms and hurricanes, which may result in presidential declarations. As an engineered and maintained facility, future restorations due to storm or background erosion are expected. The previous USACE EA issued in 2012 identified cumulative impacts from ongoing beach re-nourishment efforts. The re-nourishment efforts identified in the EA were expected to occur at that time as an ongoing maintenance requirement upon constructing the engineered and maintained beaches.

The applicant is proposing to concurrently restore losses attributable to the events to pre-disaster condition as a single re-nourishment project to the engineered and designed beach template, including the replacement of 722,994 CY of sand, 10,000 dune plants, and 800 LF of fence for Hurricane Florence; the replacement of 389,304 CY of sand for Tropical Storm Michael; and the replacement of 555,297 CY of sand, 80,000 SY of dune plants, and 200 LF of fencing for Hurricane Dorian. The project includes a total of approximately 1,667,595 cubic yards (CY) of

sand, 1,000 FT of fencing, and dune plants. Continued dredging from the existing borrow areas is expected in future maintenance nourishments of the engineered shoreline.

The areas north and south of Holden Beach are largely developed with single family and multi-family residences and hotels. It is not anticipated that the proposed project or future maintenance actions will have an impact on development due to the nature of the existing area. The continued existence of improved property and redevelopment of that property may be associated with the continued maintenance and renourishment of the Holden Beach engineered beaches.

The project and anticipated future actions in the area will have short-term impacts to commercial and recreational usage of the shoreline and associated borrow area due to construction efforts. However, it is anticipated there will be no long-term impact to commercial fisheries and beneficial long-term impacts to commercial and recreational usage of the shoreline as a result of the continued existence of the engineered beach. The shoreline in this area is a large tourism component of the local economy, and continued maintenance of the engineered beach will continue its benefit for tourism and recreational value. Based on the review conducted, when added to past, present, and reasonably foreseeable actions, the proposed action is not expected to have significant adverse cumulative impacts on any resource.

6.0 PUBLIC INVOLVEMENT

USACE is the lead federal agency that conducted the NEPA analysis and issued a public notice in 2012 and received comments from the USFWS, the United States Coast Guard (USCG), the National Marine Fisheries Service (NMFS), the NC Division of Marine Fisheries (DMF), and the NC Wildlife Resources Commission (WRC). FEMA issued a disaster-wide initial public notice for Hurricane Florence on October 25, 2018, Tropical Storm Michael on February 6, 2019, and Hurricane Dorian on October 18, 2019, to notify the public of projects under the PA Program that may be occurring within floodplains. The disaster-wide initial public notice for Hurricane Florence can be accessed at <https://www.ncdps.gov/Florence>. The disaster-wide initial public notice for Tropical Storm Michael can be accessed at <https://www.ncdps.gov/Michael>. The disaster-wide initial public notice for Hurricane Dorian can be accessed at <https://www.ncdps.gov/dorian2019>. FEMA completed project specific EO 11988 Checklists for Hurricane Florence and Tropical Storm Michael. A public notice was issued for each and no public comments were received.

The SEA was posted on FEMA's website <https://www.fema.gov/emergency-managers/practitioners/environmental-historic/region/4>. Appendices are available for review upon request to FEMA-R4EHP@fema.dhs.gov.

7.0 AGENCY COORDINATION

The following agencies and organizations were contacted during the preparation of this EA:

- U.S. Army Corps of Engineers (USACE), Wilmington District
- U.S. Fish and Wildlife Service (USFWS)
- NC State Historic Preservation Office (SHPO)
- Office of State Archaeology (OSA)
- NC Division of Coastal Management (DCM)

8.0 LIST OF PREPARERS

Stephanie Everfield – Regional Environmental Officer (REO)

Chelsea Klein – Environmental and Historic Preservation Advisor (EHAD)

Emmalee Hancock – Preparer, Environmental Protection Specialist

Kristin Morris – Reviewer, Environmental Protection Specialist

Jennifer Bright – Reviewer, Environmental and Historic Preservation Manager

Appendices are available for review upon request to FEMA-R4EHP@fema.dhs.gov.