

AUGUST 2017

ENVIRONMENTAL ASSESSMENT

**CONTINUED OPERATIONS AND MAINTENANCE
DREDGING PLACEMENT OF DREDGED MATERIAL
ON DADE COUNTY BEACH EROSION CONTROL
PROJECT**

**INTRACOASTAL WATERWAY, CUT DA-9
AT BAKERS HAULOVER INLET
MIAMI-DADE COUNTY, FLORIDA**



U.S. Army Corps
of Engineers
Jacksonville District

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TABLE OF CONTENTS

1	<i>PROJECT PURPOSE AND NEED.....</i>	<i>1</i>
1.1	PROJECT DESCRIPTION	1
1.2	PROJECT NEED OR OPPORTUNITY.....	4
1.3	PROJECT AUTHORITY	4
1.4	RELATED ENVIRONMENTAL DOCUMENTS.....	4
1.5	DECISION TO BE MADE.....	5
1.6	SCOPING AND RELEVANT ISSUES	5
1.6.1	RELEVANT ISSUES.....	6
1.6.2	ISSUES ELIMINATED FROM FURTHER ANALYSIS.....	6
1.7	PERMITS, LICENSES AND ENTITLEMENTS.....	6
2	<i>ALTERNATIVES.....</i>	<i>13</i>
2.1	DESCRIPTION OF ALTERNATIVES	13
2.1.1	NO ACTION ALTERNATIVE.....	13
2.1.2	DREDGING AND PLACEMENT ON THE BEACH NORTH OR SOUTH OF BAKERS HAULOVER INLET.....	13
2.1.3	PREFERRED ALTERNATIVE	13
2.2	COMPARISON OF ALTERNATIVES.....	13
3	<i>AFFECTED ENVIRONMENT.....</i>	<i>18</i>
3.1	SEDIMENT QUALITY	18
3.2	FISH AND WILDLIFE.....	19
3.2.1	MIGRATORY BIRDS.....	19
3.2.2	MARINE MAMMALS	20
3.2.3	CHANNEL BENTHOS.....	22
3.2.4	CHANNEL WALL HABITAT	22
3.2.5	SEAGRASSES	24
3.2.6	BEACH PLACEMENT AREA RESOURCES	25
3.2.7	HARDBOTTOMS.....	25
3.3	THREATENED AND ENDANGERED SPECIES	27
3.3.1	SEA TURTLES.....	28
3.3.2	MARINE MAMMALS	29

3.3.3	SMALLTOOTH SAWFISH	31
3.3.4	LEAST TERN.....	32
3.3.5	RUFA RED KNOT	33
3.3.6	JOHNSON’S SEAGRASS	33
3.4	WILDLIFE REFUGES AND STATE PARKS.....	33
3.5	ESSENTIAL FISH HABITAT	34
3.5.1	CORALS, CORAL REEF AND HARD/LIVE BOTTOMS.....	35
3.5.2	SEAGRASSES	35
3.6	AIR QUALITY	35
3.7	WATER QUALITY	35
3.8	NOISE.....	36
3.9	AESTHETIC RESOURCES.....	36
3.10	RECREATIONAL RESOURCES	36
3.11	COASTAL BARRIER RESOURCES.....	37
3.12	NATIVE AMERICANS	37
3.13	CULTURAL RESOURCES	37
4	<i>ENVIRONMENTAL EFFECTS.....</i>	38
4.1	SEDIMENT QUALITY.....	38
4.2	FISH AND WILDLIFE.....	38
4.2.1	MIGRATORY BIRDS.....	38
4.2.2	MARINE MAMMALS	39
4.2.3	CHANNEL BENTHOS.....	40
4.2.4	CHANNEL WALL HABITAT	40
4.2.5	SEAGRASSES	40
4.2.6	BEACH PLACEMENT AREA RESOURCES	42
4.2.7	HARDBOTTOMS.....	43
4.3	THREATENED AND ENDANGERED SPECIES	43
4.3.1	SEA TURTLES.....	43
4.3.2	MARINE MAMMALS	45
4.3.3	SMALLTOOTH SAWFISH	45
4.3.4	LEAST TERN.....	46
4.3.5	RUFA RED KNOT	46
4.3.6	JOHNSONS SEAGRASS	46

4.4	WILDLIFE REFUGES, SANCTUARIES, AND MANAGEMENT AREAS	47
4.5	ESSENTIAL FISH HABITAT	47
4.6	AIR QUALITY	47
4.7	WATER QUALITY	47
4.8	NOISE	48
4.9	AESTHETIC RESOURCES	48
4.10	RECREATIONAL RESOURCES	49
4.11	SOCIOECONOMICS	49
4.12	NAVIGATION AND PUBLIC SAFETY	49
4.13	NATIVE AMERICANS	50
4.14	CULTURAL RESOURCES	50
4.15	ENERGY REQUIREMENTS AND CONSERVATION	50
4.16	NATURAL OR DEPLETABLE RESOURCES	50
4.17	CUMULATIVE EFFECTS	51
4.18	UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS	51
5	<i>ENVIRONMENTAL COMMITMENTS</i>	53
5.1	PROTECTION OF FISH AND WILDLIFE RESOURCES	53
5.2	ENDANGERED SPECIES PROTECTION	53
5.3	WATER QUALITY	53
5.4	CULTURAL RESOURCES	53
5.5	PROTECTION OF MIGRATORY BIRDS	53
6	<i>COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS</i>	54
6.1	NATIONAL ENVIRONMENTAL POLICY ACT OF 1969	54
6.2	ENDANGERED SPECIES ACT OF 1973	54
6.3	FISH AND WILDLIFE COORDINATION ACT OF 1958	54
6.4	NATIONAL HISTORIC PRESERVATION ACT OF 1966 (INTER ALIA)	54
6.5	CLEAN WATER ACT OF 1972	55
6.6	CLEAN AIR ACT OF 1972	55
6.7	COASTAL ZONE MANAGEMENT ACT OF 1972	55
6.8	FARMLAND PROTECTION POLICY ACT OF 1981	55

6.9	WILD AND SCENIC RIVER ACT OF 1968	55
6.10	MARINE MAMMAL PROTECTION ACT OF 1972	56
6.11	ESTUARY PROTECTION ACT OF 1968	56
6.12	FEDERAL WATER PROJECT RECREATION ACT.....	56
6.13	MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976, AS AMENDED	56
6.14	SUBMERGED LANDS ACT OF 1953	56
6.15	COASTAL BARRIER RESOURCES ACT AND COASTAL BARRIER IMPROVEMENT ACT OF 1990	57
6.16	RIVERS AND HARBORS ACT OF 1899	57
6.17	ANADROMOUS FISH CONSERVATION ACT.....	57
6.18	MIGRATORY BIRD TREATY ACT AND MIGRATORY BIRD CONSERVATION ACT.....	57
6.19	MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT.....	57
6.20	UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT OF 1970	57
6.21	E.O. 11990, PROTECTION OF WETLANDS	57
6.22	E.O. 11988, FLOOD PLAIN MANAGEMENT	57
6.23	E.O. 12898, ENVIRONMENTAL JUSTICE	58
6.24	E.O. 13045, DISPARATE RISKS INVOLVING CHILDREN.....	58
6.25	E.O. 13089, CORAL REEF PROTECTION	58
6.26	E.O. 13112, INVASIVE SPECIES	58
6.27	E.O. 13186, MIGRATORY BIRDS	58
7	<i>PUBLIC/AGENCY COORDINATION.....</i>	60
7.1	SCOPING AND DRAFT EA	60
7.2	AGENCY COORDINATION	60
7.3	COMMENTS RECEIVED ON THE DRAFT ENVIRONMENTAL ASSESSMENT.....	60
	ENVIRONMENTAL PROTECTION AGENCY:	61
	FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION:	62
8	<i>LIST OF PREPARERS.....</i>	63
9	<i>LITERATURE CITED</i>	64

APPENDIX A..... 68

APPENDIX B.....

LIST OF FIGURES

Figure 1 - Location Map 2

Figure 2 - Vicinity Map 3

Figure 3- Ebb and Shoal Complex, Bakers Haulover Inlet..... 4

Figure 4 - Location of Historic Core Borings for the Project 19

Figure 5 - Figure 1 from DERM 2006 showing all Mapped Resources in the Project Vicinity..... 23

Figure 6 - Figure 10 of DERM 2006 Zooming into Mapped Resources on the east and west side of Cut DA-9 of the AIWW 23

Figure 7 - West wall of channel showing hardbottom resources on the face of the wall 24

Figure 8 - Figure 1 of DERM 2006 Mapping Resources in the Dredge Vicinity..... 25

Figure 9 - Miami-Dade County Mapped Offshore Habitats..... 27

Figure 10 – Summary Map of Designated Critical Habitat for Loggerhead Sea Turtles 29

Figure 11 - Important Manatee Areas in the Project Area 30

Figure 12 - Manatee Mortalities in the Vicinity of AIWW DA-9 30

Figure 13 - Smalltooth Sawfish Sightings – Miami-Dade County and Offshore Waters..... 32

Figure 14 – Boundaries of Biscayne Bay Aquatic Preserve..... 34

Figure 15 - High Usage of the Flood Shoal by Recreational Boats..... 37

LIST OF TABLES

Table 1 - Summary of Environmental Factors Evaluated in NEPA Documents Prepared in 1997 and 2016. For a summary of the analysis of effects of this current NEPA document, please see Table 2.8

Table 2 - Comparison of Alternatives 14

Table 3 - The Habitat and Conservation Status of Marine Mammals Inhabiting the Proposed Project Area in the Atlantic Ocean off the U.S. Southeast Coast..... 20

Table 4 - Threatened and Endangered Species in the Project Area 28

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**ENVIRONMENTALASSESSMENT
IWW CUT DA-9 AT BAKERS HAULOVER INLET
OPERATIONS AND MAINTENANCE DREDGING**

1 PROJECT PURPOSE AND NEED

1.1 PROJECT DESCRIPTION

The U.S. Army Corps of Engineers (USACE), Jacksonville District proposes the continued periodic dredging of the Atlantic Intracoastal Waterway (AIWW), Cut DA-9 (in the vicinity of the Bakers Haulover Inlet) and settling basin, any time of the year and on an “as-needed” basis in order to maintain safe navigation in the channel (Figure 1). The work would consist of routine operations and maintenance (O&M) dredging of an estimated 50,000 cubic yards of sand from portions of the AIWW and settling basin as needed (Figure 2 and Figure 3). The channel is up to 150 feet wide and 12 feet deep, with 3:1 side slopes on each side of the channel. The approximate length of DA-9 is 7,200 feet. The settling basin is 3,900 feet long by 75 feet wide and 13 feet in depth. Under state permitting, the authorized dredging area is currently 3,700 feet long by 125 feet wide with a settling basin 1,200 feet long by 25 feet wide. This means that the entire cut, as currently permitted, cannot be maintained to its congressionally authorized limits under current state permitting requirements. Shoal material will be placed either in the 5,000 foot long beach placement area to the north of the inlet (Haulover beach placement area) or on the 4,000 foot long beach placement area south of the inlet (Bal Harbour beach placement area) (Figure 2). The project is expected to be dredged every other year or as needed due to weather related shoaling. This portion of the AIWW is the second fastest shoaling area in the entire length of the waterway and it has been dredged at least six times since 1991. Cut DA-9 was dredged in Fiscal Year (FY) (1 October through 30 September) 1991, FY94, FY98, FY05, FY10, and FY13 for at least 466,463 cubic yards (CY) of dredged material, with proposed dredging again in FY17. All of the dredged material since FY05 has been placed on the Bal Harbor beach placement area south of the inlet.

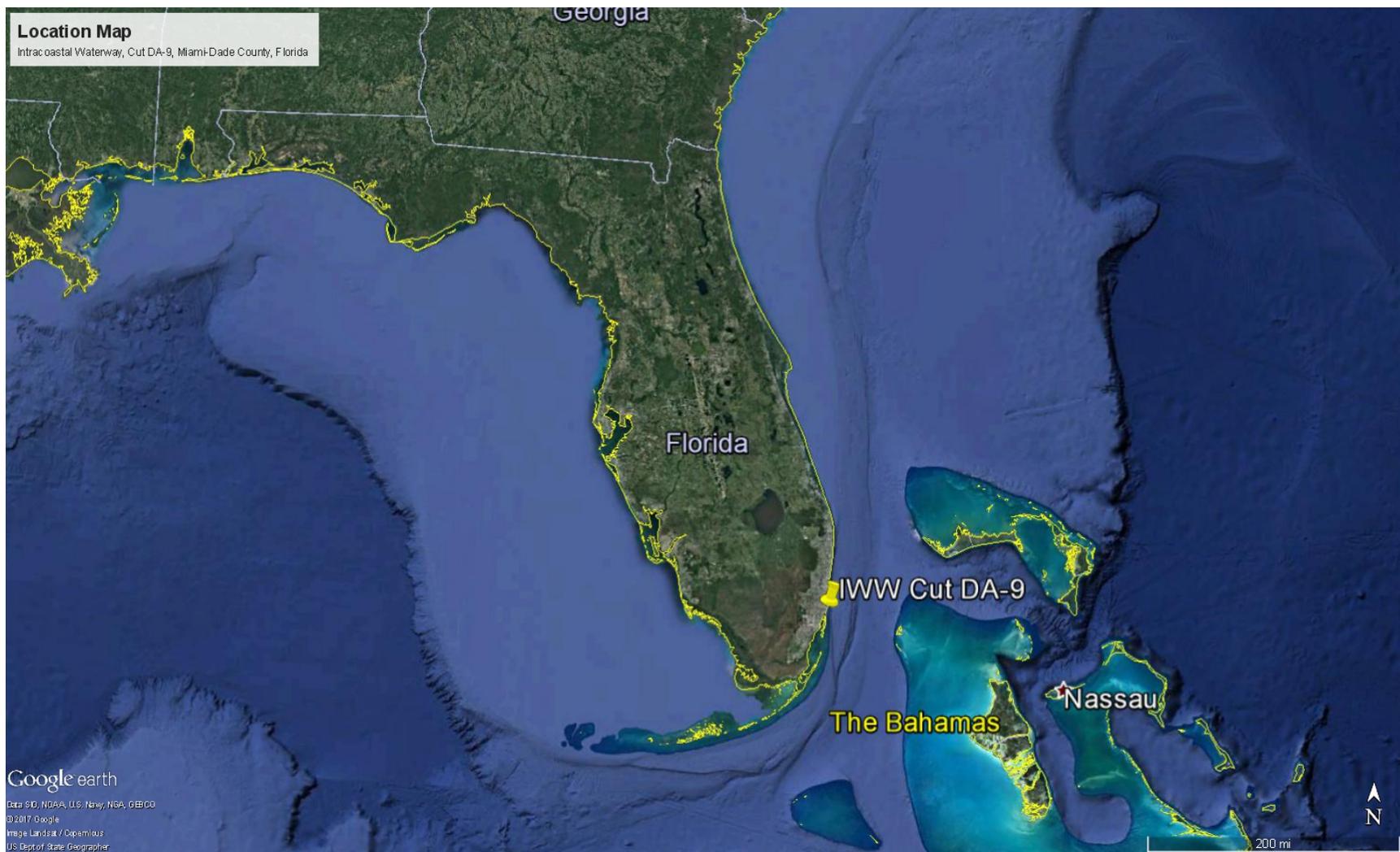


Figure 1 - Location Map

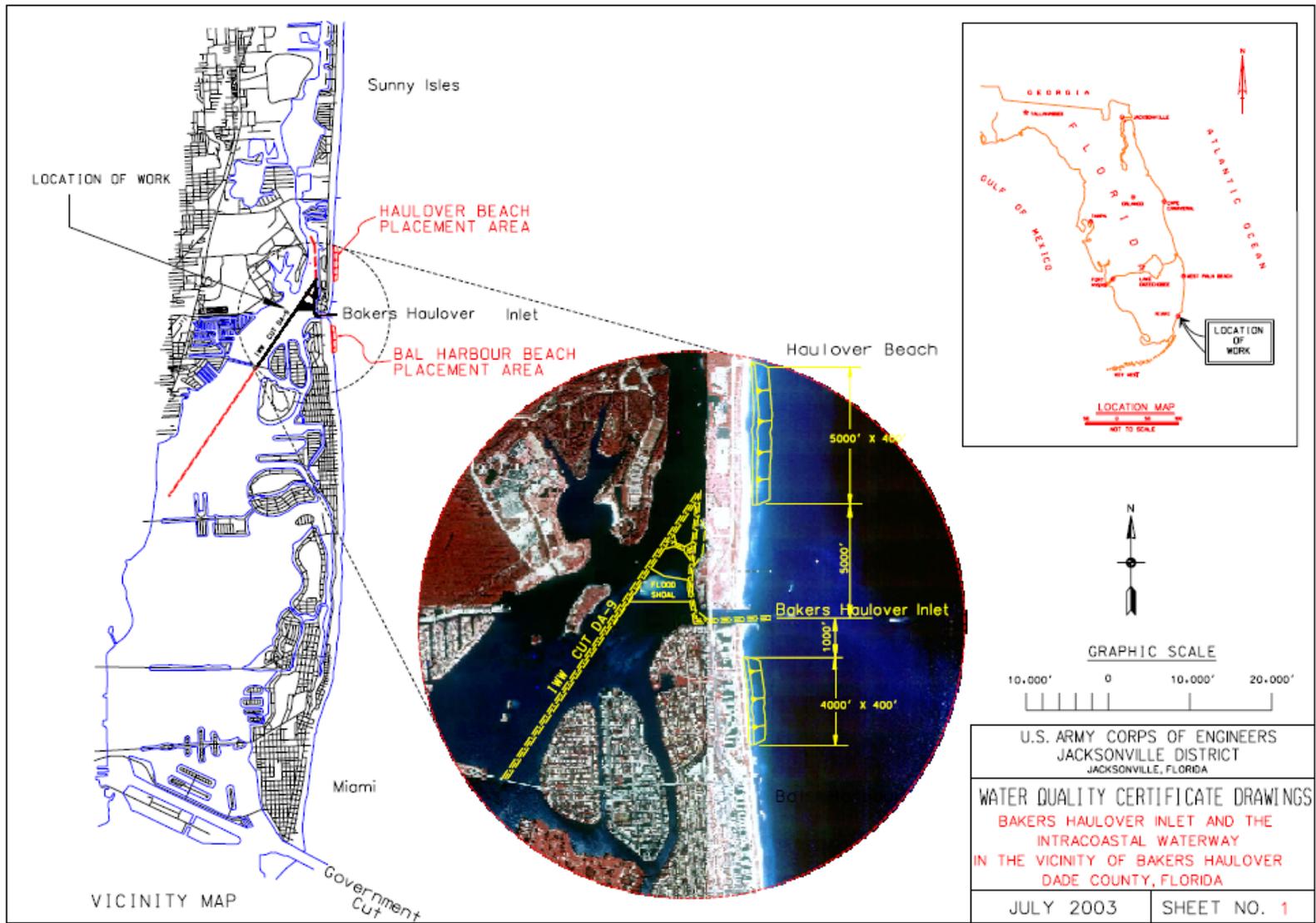


Figure 2 - Vicinity Map



Figure 3- Ebb and Shoal Complex, Bakers Haulover Inlet

1.2 PROJECT NEED OR OPPORTUNITY

The accumulation of sediment, commonly referred to as shoaling, has restricted the width of the project channel and reduced its depths, hindering safe and efficient vessel navigation. Periodic dredging is required to remove accumulated sediments and, thus, maintain the channel at its federally authorized depth. This Supplemental Environmental Assessment (EA) will evaluate the continued periodic O&M dredging of the Bakers Haulover Inlet with placement of the dredged material on a 5,000 foot long stretch of the updrift or a 4,000 foot long stretch of the downdrift beach as part of the USACE Regional Sediment Management Program, within the footprint of the Dade County Beach Erosion Control Project (BEC). The Supplemental EA will provide an update to previous analyses conducted under the National Environmental Policy Act (NEPA).

1.3 PROJECT AUTHORITY

The project was authorized by the River and Harbors Act of 14 July 1960, Section 101 (P.L. 86-645). The authority to dredge outside the channel is in accordance with 33 CFR §§335-338; authority for advanced maintenance outside the dredging prism was granted by the Division Engineer by memorandum, dated 21 June 1997.

1.4 RELATED ENVIRONMENTAL DOCUMENTS

Related NEPA, design, and planning reports for the AIWW in the Vicinity of Bakers Haulover Inlet, Miami-Dade County, FL includes the following documents:

- Maintenance Dredging, IWW – Vicinity Bakers Haulover, Dade County, Florida,

Environmental Assessment. USACE, July 1997.

- Memorandum for Record, Department of the Army Environmental Assessment and Statement of Finding for Regional General Permit SAJ-93 issued 26 April 2016.
- Identification of Alternative Sand Sources for the Remaining Period of Federal Participation. Dade County Beach Erosion Control Project. Miami-Dade County, Florida. March 2016.

All of the previously listed NEPA documents are available for review and download from the USACE Environmental Documents website: <http://www.saj.usace.army.mil/About/Divisions-Offices/Planning/Environmental-Branch/Environmental-Documents/>. Click on the “+” sign next to Dade County and scroll down to the row labeled “IWW DA-9/Bakers Haulover.” Each of the documents is listed there and available for review and download.

1.5 DECISION TO BE MADE

This Supplemental EA updates the assessment completed in July 1997 *Maintenance Dredging, IWW-Vicinity Bakers Haulover, Dade County, Florida, Environmental Assessment*. Updates include revised resource analyses, importing data and information from the 2016 Dade Beach Erosion and Control (BEC) EA and 2016 Regional General Permit SAJ-93 MFR/SOF.

1.6 SCOPING AND RELEVANT ISSUES

- 1997 EA – USACE initially issued a public notice (PN-IWB-150), dated 23 April 1987, for the project. A new area of advanced maintenance is now proposed for inclusion in the project. USACE issued a public notice (PN-BH-212), dated 5 December 1996, and an addendum public notice (PN-BH-213) of unknown date (between 5 December 1996 and 7 August 1997) and circulated to applicable Federal, state, and local agencies, and interested non-governmental organizations (NGOs). Comments were accepted for 30 days after the notice. USACE incorporated the comments received during the public notice into the EA prior to the signature of the Finding of No Significant Impact (FONSI). The date of the signature of the FONSI is not known, as a signed copy of the document has not survived in the record.
- 2016 Dade BEC EA – USACE and BOEM held five public scoping meetings between 12 August and 16 August 2013 in Miami-Dade, Broward, Palm Beach, Martin, and St. Lucie Counties to notify the public of the proposed project and the proposed alternatives and ask for input from the public into the process. A copy of all comments and questions received during the public scoping period are included in Appendix C of the EA.
- 2016 Memorandum for the Record/Statement of Findings for Regional General Permit SAJ-93. USACE published a public notice on 31 March 2015. USACE received comments from NMFS-HCD and the State Historic Preservation Officer (SHPO). USACE responded to both sets of comments, and the comments were incorporated into the permit, where applicable. The permit was issued on 26 April 2016.

1.6.1 RELEVANT ISSUES.

USACE identified the following issues as relevant to the proposed action and appropriate for further evaluation: sediment characteristics; fish and wildlife resources; threatened and endangered species; essential fish habitat; water quality; noise; aesthetics; recreation; socioeconomics; navigation and public safety; cultural resources; and cumulative effects. USACE previously reviewed many of these issues in NEPA analyses conducted between 1997 and 2016. A summary of these reviews are included in Table 1.

1.6.2 ISSUES ELIMINATED FROM FURTHER ANALYSIS.

No issues were specifically identified for elimination.

1.7 PERMITS, LICENSES AND ENTITLEMENTS

The proposed O&M dredging is subject to the Coastal Zone Management Act (CZMA) (16 U.S.C. §1451 *et. seq.*). Consultation with the SHPO is also required under Section 106 of the National Historic Preservation Act (54 U.S.C. §300101 *et. seq.*). Since there will be a discharge of dredged or fill material into waters of the United States, the proposed Action is subject to Section 404 of the Clean Water Act (CWA) (33 U.S.C. §1344). In addition, the proposed action is subject to Section 401 of the CWA (33 U.S.C. §13141) for certification of water quality by the state. USACE has already obtained, and currently possesses, a Section 401 Water Quality Certificate (WQC) from the Florida Department of Environmental Protection (FDEP). USACE has held a permit for this particular project since at least 1989, which was the inception of the state WQC program.

- On 4 August 1989, the FDEP issued a 10-year permit (No. 13-135734-9) to USACE for maintenance dredging of the AIWW in the vicinity of Bakers Haulover Inlet.
- On 21 October 2005, FDEP issued Permit No. 0173188-002-JC, which authorized maintenance dredging of a portion of the AIWW in the vicinity of Bakers Haulover Inlet (Cut DA-9, Stations 21 to 60), and placement of the beach-quality dredged material south of the jetty, along Bal Harbor beach (FDEP reference monuments R-28 to R-32). FDEP has modified this permit four times:

Date Issued	Modification Number
20 March 2010	0173188-003
29 June 2013	0173188-004
11 January 2014	0173188-005
27 September 2016	0173188-006

- Previous modifications have authorized multiple maintenance dredging and placement events for the remaining life of the permit and changed the authorized project from a one-time event to an ongoing event. The permit also revised the sediment quality assurance/quality control (QA/QC) plan, manatee-related conditions, and provided new specific conditions regarding monitoring and protection of sea turtles, shorebirds, and benthic resources. This permit expires 21 October 2020.

USACE also issued Regional General Permit SAJ-93 to the Florida Inland Navigation District (FIND) on 26 April 2016 for the O&M dredging of the entire length of the AIWW from the Florida/Georgia state line south through the Miami-Dade/Monroe County line. USACE can also utilize this permit to determine that USACE conducted the necessary consultations and evaluations required under NEPA for the proposed work. Per the White House's Presidential Memorandum, dated 31 August 2011, "Speeding Infrastructure Development through More Efficient and Effective Permitting and Environmental Review", which directed the heads of executive departments and agencies that conduct NEPA reviews to take appropriate advantage of existing documents and studies, including through adoption and incorporation by reference, this Supplemental EA adopts the previously listed EAs and permits and incorporates their analysis by reference.

If USACE conducts work during the sea turtle nesting and hatching season, the proposed action will require daily sea turtle nest surveys and nest relocations by the Miami-Dade County Department of Parks and Recreation, which already possess the appropriate permit from Florida Fish and Wildlife Conservation Commission (FWC) as required by the Statewide Programmatic Biological Opinion issued by the U.S. Fish and Wildlife Service (USFWS).

As this project is O&M and 100% Federal dollars, there is not a non-federal sponsor; however, the local government that would benefit from the placement of the sand, Miami-Dade County, is responsible for obtaining any real estate easements and rights-of-way required for beach placement of dredged material associated with this project. USACE coordinates with Miami-Dade County to ensure the necessary easements and rights-of-way are in place for each project.

Section 5.0 provides a detailed list of environmental compliance regulations, policies, and permits applicable to this project.

Table 1 - Summary of Environmental Factors Evaluated in NEPA Documents Prepared in 1997 and 2016. For a summary of the analysis of effects of this current NEPA document, please see Table 2.

NEPA DOCUMENT	1997 EA IWW DA-9	2016 Dade BEC EA	2016 Regional General Permit SAJ-93
ENVIRONMENTAL FACTOR			
SEDIMENT CHARACTERISTICS	Not evaluated	Evaluated for areas other than the sediments in IWW DA-9 in the vicinity of Bakers Haulover including the quality of the material on the placement areas.	Sediment placed on beaches will meet the criteria of Section 62B-41.007(2)(k), Florida Administrative Code for O&M material including no more than 10% fines.
ARCHAEOLOGY/ CULTURAL RESOURCES	This alternative would have no effect on resources included in or eligible for inclusion in the National Register of Historic Places.	This alternative would have no effect on resources included in or eligible for inclusion in the National Register of Historic Places.	Only analyzes the effects for St Augustine Inlet, the remaining beaches are incorporated by reference from each specific NEPA analysis and the analysis and SHPO consultations for those projects, to include Bakers Haulover.
AIR QUALITY	Not evaluated	Direct adverse effects would be small, localized, temporary increases in concentrations of nitrogen dioxide (NO ₂), sulfur dioxide (SO ₂), carbon monoxide (CO), volatile organic compounds (VOCs), and particulate matter (PM) mostly associated with the dredge plant and dump trucks used to transport sand.	Not evaluated

NEPA DOCUMENT	1997 EA IWW DA-9	2016 Dade BEC EA	2016 Regional General Permit SAJ-93
ENVIRONMENTAL FACTOR			
<p>THREATENED AND ENDANGERED SPECIES: manatees; sea turtles, corals, sawfish, least terns</p>	<p>No effect on manatees and swimming turtles with implementation of standard protection conditions. Nesting sea turtles may be effected if work done during nesting season. These effects could be avoided by monitoring nesting activities and relocating nests outside of the placement area. No evaluation of least terns, corals and smalltooth sawfish; corals and smalltooth sawfish were not yet listed.</p>	<p>Nesting sea turtles can be adversely effected by efforts are not taken including: scarping, alternation of moisture levels, compaction, cementation, hatchling disorientation, noise associated with dredging and destruction of nests via excavation or burial. Effects to manatees were limited to work associated with dredging the ebb shoal. No effects on listed corals or designated critical habitat associated with this effort. No effects to smalltooth sawfish. Effects to least tern limited to placement activities.</p>	<p>Effects of dredging and beach placement evaluated through consultations with NMFS and USFWS. Potential effects include beach placement effects to nesting sea turtles, least terns and potential effects to manatees associated with dredging (vessel collision). Protection measures included observers for manatees during clamshell dredging operations, placement windows for sea turtles to avoid potential effects to nesting/hatching sea turtles. Effects to swimming sea turtles covered under South Atlantic Regional Biological Opinions (SARBO). Effects to smalltooth sawfish included as part of the reinitiation package on the SARBO from 2008, also includes potential effects on designated critical habitat for loggerhead sea turtles.</p>
<p>ESSENTIAL FISH HABITAT (EFH)</p>	<p>Not evaluated (pre-dates consultation on EFH).</p>	<p>Minor, temporary adverse effects to water column during dredging and beach placement. Minor, temporary effects to benthic species due to displacement during dredging. Temporary effects to hardbottom from pipeline deployment/retrieval. Temporary effects due to entrainment of benthic fauna in the sand source areas. No long-term adverse effects anticipated.</p>	<p>EFH consultation did not find significant adverse effects to EFH associated with the total maintenance of the AIWW from the Florida/Georgia state line through the Dade/Monroe county line. A detailed analysis of the O&M dredging of DA-9 at Bakers Haulover was performed.</p>

NEPA DOCUMENT	1997 EA IWW DA-9	2016 Dade BEC EA	2016 Regional General Permit SAJ-93
ENVIRONMENTAL FACTOR			
BENTHIC RESOURCES: benthos; seagrasses and hardbottom communities	Infauna in dredging area will be eliminated. Area will rapidly be recolonized by organisms that can be moved from other areas by tidal flows. Seagrasses would be avoided and no anchoring or physical disturbance of grass beds allowed. Minor short-term effects to seagrasses associated with turbidity could occur, but turbidity would dissipate by tidal velocities in the inlet. Placement of dredged material in the beach placement areas would “cover and smother” benthic organisms. Recolonization of these areas would also occur.	No adverse effects to seagrasses or hardbottom communities associated with the placement areas.	Effects on species with either type of dredge equipment is similar and includes risk of injury. Motile species may be affected by being temporarily unable to use the area where dredging is taking place due to avoidance of construction activities and related noise and physical exclusion from areas contained by turbidity curtains. Effects from the loss of access to the dredging area will be minimal due to the projects’ small footprints and the availability of nearby, alternate and similar habitat. Effects of dredging on benthic organisms is similar for all activities including removal or burial of substrate with potential for mortality and/or injury of individuals. This effect would be short term and localized.
TURBIDITY AND WATER QUALITY	Short-term localized increase in turbidity at dredge and beach placement sites.	No discussion of turbidity or water quality associated with dredged material placement on Dade Beaches.	Disposal of dredged material on beaches would not result in unacceptable effects to waters of the United States through suspended particulates and/or turbidity. Small portions of the placement areas are anticipated to be used during individual dredging events resulting in short-term turbidity effects. Beach placement has occurred on multiple occasions at the same locations.
RECREATION AND TOURISM	Short-term impact to recreational boat traffic and beach activities in project vicinity. Long-term benefits by maintaining recreational opportunities. Failure to maintain inlet would have negative effects on recreational use of inlet.	Minor, temporary adverse impact during beach placement of sand. Temporary impact to recreation at Lummus Park during excavation activities. Long term benefit from increased size of recreational beach.	Maintenance of the IWW maintains the economic value associated with recreational vessels transiting the entire IWW, including DA-9 in the vicinity of Bakers Haulover.
WILDLIFE REFUGES & SANCTUARIES: <i>Biscayne Bay Aquatic Preserve</i>	There would be no adverse effects on the integrity of the resources contained within the aquatic preserve.	<i>There are no wildlife refuges or sanctuaries in the areas associated with this EA.</i>	<i>There are no wildlife refuges or sanctuaries in the areas associated with this EA.</i>

NEPA DOCUMENT	1997 EA IWW DA-9	2016 Dade BEC EA	2016 Regional General Permit SAJ-93
ENVIRONMENTAL FACTOR			
NAVIGATION AND PUBLIC SAFETY	Short-term effect from presence and operation of dredging equipment. There would be a long-term major benefit from the continued maintenance on the navigable capacity.	No effect to navigation associated with 2016 project.	The purpose of RGP-93 is to maintain navigation throughout the footprint of the AIWW. If the dredging is not done, then there will be adverse effects to recreation as well as a reduction in safety throughout the length of the AIWW.
NOISE	Not evaluated	Noise generated on the beaches by equipment placing the dredged material will be relatively low level and will be of a short duration. Construction equipment such as booster pumps will be properly maintained to minimize effects of noise. Once dredging and beach placement have concluded, noise levels will return to normal for the beach area. Since the increases to the current level of noise as a result of this project will be localized and minor, there will only be a temporary effect associated with the project and no expectation of adverse effects to the environment as a result of construction-related noise.	Disturbance from construction activities and related noise will be intermittent and will not appreciably interfere with use of the area by motile species as they are likely to leave the area during construction.
HAZARDOUS, TOXIC & RADIOACTIVE WASTE	Not evaluated	No adverse effect anticipated.	Not evaluated
ENERGY & CONSERVATION	Not evaluated	The energy requirements for these construction activities would be confined to fuel for the dredges, labor and sand transportation, and other construction equipment.	Not evaluated
AESTHETICS	There would be a short-term degradation of the aesthetics of the navigation channel and a more substantial effect on aesthetics from the noise from the presence and the noise from the operation of heavy equipment and a disruption of the seascape.	Minor, temporary adverse effects during beach placement of sand.	RPG SAJ-93 will have no change on aesthetics as maintenance dredging is an ongoing activity since the navigation channels were first authorized by Congress, including many of the beach placement areas.

NEPA DOCUMENT	1997 EA IWW DA-9	2016 Dade BEC EA	2016 Regional General Permit SAJ-93
ENVIRONMENTAL FACTOR			
SOCIOECONOMICS	Not evaluated	<p>The temporary closure of beach with active construction may result in potential loss of tourism during construction' increased traffic; road wear and tear; increases in property value; increased storm protection; and a boost to the local economy through job creation and preservation that increases the tax base; playing a role in sustaining Florida and Miami's tourist industry.</p>	<p>FIND's assistance in maintaining the Federal navigation channel is critical and is expected to increase with declines in Federal funding. RGP SAJ-93 streamlines the permit process to allow FIND to move forward with dredging projects more expeditiously than through a series of standard permit decisions, and in a manner consistent with USACE dredging projects, thereby, saving costs to FIND and tax payers. Allowing placement of dredged material on beaches will result in long-term efficiency and cost savings for shore protection projects without additional costs associated with permitting and double handling of material.</p>
CUMULATIVE EFFECTS	<p>If this action was considered in conjunction with other similar projects and similar No Actions, there would be a substantial adverse effect on recreation and economics of the State of Florida.</p>	<p>The proposed action would result in long-term benefits, which should outweigh any short-term environmental losses. The cumulative impact of shore protection projects along the Florida coast has been to restore and maintain many beaches which otherwise would have experienced severe erosion or would have totally disappeared. In addition, these activities have reduced property damage and helped maintain property value. Cumulative effects to EFH for this project would be minimal. The re-utilization of pipeline corridors will minimize hardbottom effects. Turbidity and disturbance associated with beach placement will be temporary and no long term effects to EFH are anticipated.</p>	<p>The USACE believes infrequent maintenance dredging events are far apart in both space and time so that any adverse effects are fully dissipated before the next impact. Terms and conditions of RGP SAJ-93 including notification and reporting requirements ensure no more than minimal direct, secondary, and cumulative effects.</p>

2 ALTERNATIVES

The alternatives section is perhaps the most important component of this Supplemental EA. It describes the No Action Alternative, the proposed action, and other reasonable alternatives that were evaluated. The beneficial and adverse environmental effects of the alternatives are presented in comparative form, providing a clear basis for choice to the decision maker and the public. A preferred alternative was selected based on the information and analysis presented in the sections on the Affected Environment and Environmental Effects.

2.1 DESCRIPTION OF ALTERNATIVES

2.1.1 NO ACTION ALTERNATIVE

The No Action Alternative consists of a cessation in the continued, periodic O&M dredging of the AIWW in reach DA-9 in the vicinity of Bakers Haulover Inlet with placement of dredged material on the northern or southern stretches of the beach on either side of the inlet. USACE previously analyzed this alternative in the *Maintenance Dredging, Intracoastal Waterway Vicinity Bakers Haulover, Dade County, Florida, Environmental Assessment, USACE, August 1997* (1997 EA), *Identification of Alternative Sand Sources for the Remaining Period of Federal Participation. Dade County Beach Erosion Control Project. Miami-Dade County, Florida. March 2016* (2016 EA), and the *Memorandum for the Record, Department of the Army Environmental Assessment and Statement of Finding for Re-Authorization of Regional General Permit SAJ-93* (2016 MFR) and will not be discussed in this Supplemental EA, unless a new evaluation is required due to a change in legal status, e.g. listing of a new species or designation of critical habitat. A summary of those items are included in Table 1.

2.1.2 DREDGING AND PLACEMENT ON THE BEACH NORTH OR SOUTH OF BAKERS HAULOVER INLET

Periodic maintenance dredging of the AIWW in cut DA-9 in the vicinity of Bakers Haulover Inlet would occur as needed, every two years or in response to weather events. Shoal material will be placed either in the 5,000 foot long beach placement area to the north of the inlet (Haulover beach placement area) or on the 4,000 foot long beach placement area south of the inlet (Bal Harbour beach placement area) (Figure 2) meeting USACE's continued commitment to regional sediment management.

2.1.3 PREFERRED ALTERNATIVE

The preferred alternative (proposed action) is to continue periodic maintenance dredging of the AIWW in cut DA-9 in the vicinity of Bakers Haulover Inlet with placement on the beach as previously described authorized beach template. The location of placement, per maintenance event, may be constrained by fiscal and/or environmental factors.

2.2 COMPARISON OF ALTERNATIVES

Table 2 lists alternatives considered and summarizes the major features and consequences of the preferred alternative, the No Action Alternative, and placement of dredged material on the beach placement areas. Refer to Section 4 Environmental Effects for a more detailed discussion of effects of alternatives.

Table 2 - Comparison of Alternatives

Environmental Factor	No Action Alternative No O&M Dredging Occurs	Dredging and Placement on the Beach (Proposed Action)
Sediment Characteristics Section 4.1	No effect to native sediment characteristics within the navigation channels. The channel will continue to fill with sediments brought in on the flood tide each day and in association with weather events.	No effect to native sediment characteristics within the navigation channels. Minor change to sediment characteristics on the beach placement areas. Placement would occur in accordance with the State permit (0173188-004-JN issued 27 June 2013) and State of Florida Administrative Code state sand specifications.
Fish and Wildlife (migratory birds, hardbottom, seagrasses, benthic habitats) Section 4.2	As the channel fills with sand, any organisms that have colonized the rock walls of the channel (where the channel walls are exposed rock) would be buried in sand and this burial would be lethal to these organisms. The sand fill of the channel may also result in the colonization of the channel by seagrasses as the channel shallows and more light reaches the bottom of the channel.	Minor and temporary effects to marine life that may be in the AIWW at the time of the dredging, as well burial of infauna on the beach during beach placement. Both of these are expected to be short-term and localized in nature, with recolonization occurring quickly from adjacent habitats.
Threatened and Endangered Species Section 4.3	No direct impact. However, lack of the O&M dredged sand may increase the loss of beach between nourishment events conducted as part of the Dade County Beach Erosion Control project and may result in loss of nesting beach habitat. Not likely to adversely modify loggerhead sea turtle critical habitat (Unit LOGG-N-18 and LOGG-N-19).	Hopper dredging may adversely affect sea turtles via entrainment. All other dredging and drag bar use may affect, but is not likely to adversely affect sea turtles, manatees, whales, and smalltooth sawfish. Placement on the beaches north or south of the inlet may impact nesting and hatching sea turtles as well as nesting or foraging least terns. All terms and conditions of applicable USFWS and NMFS biological opinions shall be implemented. Placement of sand on the beaches north or south of the inlet would maintain the benefits of beach renourishment to listed species including sea turtles and least terns. Not likely to adversely modify loggerhead sea turtle critical habitat (Unit LOGG-N-18 and LOGG-N-19).
Wildlife Refuges, Sanctuaries, and Management Areas Section 4.4	Cut DA-9 of the AIWW is within the boundaries of Biscayne Bay Aquatic Preserve. As the channel fills in and seagrass begins to colonize the channel, the grass may be impacted or destroyed if vessels attempt to navigate the channel.	No effect

Environmental Factor	No Action Alternative No O&M Dredging Occurs	Dredging and Placement on the Beach (Proposed Action)
Essential Fish Habitat (EFH) Section 4.5	As the channel fills with sand, any organisms that have colonized the rock walls of the channel (where the channel walls are exposed rock) would be buried in sand and this burial would be lethal to these organisms. The sand fill of the channel may also result in the colonization of the channel by seagrasses as the channel shallows and more light reaches the bottom of the channel. This would be a negative effect to these colonizing resources and a beneficial effect to seagrasses.	Effects to EFH include temporary effects to the estuarine water column through turbidity. The Programmatic Essential Fish Habitat Assessment (PEFHA) prepared by USACE for the issuance of RGP-93. And the assessment determined that no significant effects through the dredging of seagrasses that have colonized the AIWW will occur, because the monitoring of grasses before and after dredging have shown either no effect to the grasses of the dredging or the grass recolonized the channel after dredging. Seagrass monitoring conducted by DERM under contract to FIND is conducted for each dredging event and will continue for the foreseeable future.
Air Quality Section 4.6	No effect anticipated.	Minor, temporary reduction of air quality due to emissions from dredging and beach placement operations.
Water Quality Section 4.7	No effect anticipated.	There will be a temporary increase in turbidity levels at the dredge areas during work and in the nearshore habitats adjacent to the beach placement areas during the discharge of material. This elevated turbidity level will be temporary and is not expected to be significant, as state standards for turbidity will not be exceeded. No long-term adverse effects to water quality.
Noise Section 4.8	No effect anticipated.	A temporary increase in the noise level during construction in the vicinity of the project would occur.
Aesthetic Resources Section 4.9	No direct effect. However, lack of the O&M dredged sand placement may increase the loss of beach between nourishment events conducted as part of the Dade County Beach Erosion Control project and may result in loss of beach, an increase in scarping which may be a negative effect on aesthetics.	During construction, equipment used for dredging and beach placement would be visible, resulting in a temporary reduction in the aesthetic value in the construction area. Placement on the beaches allows for continued aesthetic benefits associated with the beaches where sand placement had occurred.

Environmental Factor	No Action Alternative No O&M Dredging Occurs	Dredging and Placement on the Beach (Proposed Action)
Recreation Resources Section 4.10	No direct effect. However, lack of the O&M dredged sand placement may increase the loss of beach between nourishment events conducted as part of the Dade County Beach Erosion Control project and may result in loss of beach, an increase in scarping which may be a negative effect on recreation.	Dredging and placement operations may cause minor, temporary restrictions in recreation during operations. Boat traffic and beach use will be temporarily interrupted due to dredging and placement activities. Supplemental beach sand will be added to the sand budget in the littoral drift zone.
Socioeconomics Section 4.11	Adverse effects to recreational and commercial vessels would be limited on their ability to navigate the AIWW. This could result in a loss of navigation to more than 500,000 recreational vessels that provide \$12 billion in economic output including \$3 billion in personal wages and 66,843 jobs, generate \$540 million in tax revenues and increase property values by \$19.4 billion. Studies have shown that these economic benefits generated by the waterways would be reduced by 45% to 50% if the Federal navigation channels are not properly maintained (USACE PEFHA 2015).	Social and economic benefits that are based on navigation associated with the Federal project would continue. The extent of dredging may be limited by the appropriation of funds, approvals by Federal and state agencies and appropriate access to dredging and placement areas.
Navigation and Public Safety Section 4.12	If O&M dredging is not conducted at Cut DA-9 of the AIWW, the channel will not be maintained and will cease to provide safe navigation for commercial and recreational vessels, which would also decrease public safety for vessels transiting the area.	Dredging operations during construction may impede or restrict commercial or recreational access or ingress/egress to the area. Continuing to maintain the AIWW assures safe navigation for the public.
Cultural Resources 4.14	No effect anticipated.	Continued O&M of IWW DA-9 with placement on the beach was consulted on as part of the 1997 EA on 30 September 1996 and SHPO concurred with a no effect determination to archeological or historic resources are within the project area. The channel has been maintained at least five times since that determination with no effects to cultural resources. All permitting specifications include cultural resource inadvertent discoveries language that requires the contractor to shut down if discoveries are made. USACE sent a letter conveying a continuing no adverse effect to cultural resources to the SHPO at the end of July 2017 to update the consultation.
Energy Requirements and Conservation Section 4.15	No effect anticipated.	Fuel would be required to operate dredges, pumps, and land moving equipment.

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3 AFFECTED ENVIRONMENT

The Affected Environment section describes the existing environmental resources of the areas that would be affected if either alternative were implemented. This section describes only those environmental resources that are relevant to the decision to be made. It does not describe the entire existing environment, but only those environmental resources that would affect or that would be affected by the alternatives if they were implemented. This section, in conjunction with the description of the “No Action Alternative,” forms the baseline conditions for determining the environmental effects of the reasonable alternatives.

3.1 SEDIMENT QUALITY

The encountered sediments within the dredging depth consist of poorly graded, mostly sand-sized quartz and shell fragments with various amounts of gravel-sized shell and shell fragments. Only occasional layers of sand with silt and silty sand are present.

Bakers Haulover has been dredged historically multiple times to 10 feet plus two feet overdepth. The last dredging event was in 2014. The materials to be excavated consist of shoaling that has occurred since the channel was last dredged. Any in situ rock, if encountered, is not required to be dredged. Gravel- and cobble-sized rock may be encountered in the overdepth from previous dredging.

Historic vibrocore borings VB-IWW06M-DA9-6 through VB-IWW06M-DA9-9, and VB-IWW08MDA9-1 through VB-IWW08M-DA9-3 are located in cut DA-9 of the AIWW Channel in the vicinity of Bakers Haulover Inlet. Most of the materials within the project template presented on the boring logs have been removed by previous dredging events with subsequent shoaling of similar materials (Figure 4).



Figure 4 - Location of Historic Core Borings for the Project

3.2 FISH AND WILDLIFE

3.2.1 MIGRATORY BIRDS

A number of seabirds and shorebirds may occur along the beach and offshore the project area, including a number of species considered birds of conservation concern by the Migratory Bird Treaty Act of 1918 (MBTA) (16 U.S.C. §§703-712). Species reported to the Florida Shorebird Database since 2011 include Wilson’s plover, least terns, black skimmers, and killdeer. Additionally brown pelicans, white herons, great blue herons, and piping plovers have been documented on the

beaches in Miami-Dade County (Florida Shorebird Database - www.flshorebirddatabase.org/). These species all use sandy beaches for foraging and/or nesting and, therefore, could occur along the project area both onshore and offshore.

3.2.2 MARINE MAMMALS

The Marine Mammal Protection Act of 1972 (16 U.S.C. §1361 *et. seq.*) protects all marine mammals from harvesting within the borders of the United States, regardless of status. Several cetacean (whales/dolphins) species and a single species of sirenian (manatees/dugongs) are known to or could occur in the AIWW or offshore of the Bakers Haulover Inlet action area and off the Southeast Atlantic coastline (see Table 3 below). Species listed as endangered under the U.S. Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §1531 *et. seq.*), includes the sei (*Balaenoptera borealis*), fin (*Balaenoptera physalus*), blue (*Balaenoptera musculus*), and sperm (*Physeter macrocephalus*) whale, and West Indian (Florida) manatee (*Trichechus manatus latirostris*). The marine mammals that occur in the Atlantic Ocean off the U.S. southeast coast belong to three taxonomic groups: mysticetes (baleen whales), odontocetes (toothed whales), and sirenians (the manatee). The West Indian manatee in Florida and U.S. waters is managed under the jurisdiction of the USFWS and is discussed in more detail in Section 3.3.2. Specific information on the life history of each of these species is available in NMFS' "Annual Reports to Congress under the MMPA" located at <http://www.nmfs.noaa.gov/pr/sars/region.htm>.

Table 3 - The Habitat and Conservation Status of Marine Mammals Inhabiting the Proposed Project Area in the Atlantic Ocean off the U.S. Southeast Coast.

Species	Habitat	ESA ¹	MMPA ²
<i>Mysticetes</i>			
<i>Bryde's whale</i> (<i>Balaenoptera brydei</i>)	<i>Pelagic and coastal</i>	NL	NC
<i>Minke whale</i> (<i>Balaenoptera acutorostrata</i>)	<i>Shelf, coastal, and pelagic</i>	NL	NC
<i>Blue whale</i> (<i>Balaenoptera musculus</i>)	<i>Pelagic and coastal</i>	EN	D
<i>Sei whale</i> (<i>Balaenoptera borealis</i>)	<i>Primarily offshore, pelagic</i>	EN	D
<i>Humpback whale</i> (<i>Megaptera novaeangliae</i>)	<i>Pelagic and coastal</i>	NL	D
<i>Fin whale</i> (<i>Balaenoptera physalus</i>)	<i>Slope, mostly pelagic</i>	EN	D
<i>Odontocetes</i>			
<i>Sperm whale</i> (<i>Physeter macrocephalus</i>)	<i>Pelagic, deep seas</i>	EN	D

<i>Cuvier's beaked whale</i> (<i>Ziphius cavirostris</i>)	<i>Pelagic</i>	NL	NC
<i>Gervais' beaked whale</i> (<i>Mesoplodon europaeus</i>)	<i>Pelagic</i>	NL	NC
<i>True's beaked whale</i> (<i>Mesoplodon mirus</i>)	<i>Pelagic</i>	NL	NC
<i>Blainville's beaked whale</i> (<i>Mesoplodon densirostris</i>)	<i>Pelagic</i>	NL	NC
<i>Dwarf sperm whale</i> (<i>Kogia sima</i>)	<i>Offshore, pelagic</i>	NL	NC
<i>Pygmy sperm whale</i> (<i>Kogia breviceps</i>)	<i>Offshore, pelagic</i>	NL	NC
<i>Killer whale</i> (<i>Orcinus orca</i>)	<i>Widely distributed</i>	NL EN (<i>Southern Resident</i>)	NC D (<i>Southern Resident, AT1 Transient</i>)
<i>Short-finned pilot whale</i> (<i>Globicephala macrorhynchus</i>)	<i>Inshore and offshore</i>	NL	NC
<i>False killer whale</i> (<i>Pseudorca crassidens</i>)	<i>Pelagic</i>	NL	NC
<i>Mellon-headed whale</i> (<i>Peponocephala electra</i>)	<i>Pelagic</i>	NL	NC
<i>Pygmy killer whale</i> (<i>Feresa attenuata</i>)	<i>Pelagic</i>	NL	NC
<i>Risso's dolphin</i> (<i>Grampus griseus</i>)	<i>Pelagic, shelf</i>	NL	NC
<i>Bottlenose dolphin</i> (<i>Tursiops truncatus</i>)	<i>Offshore, inshore, coastal, estuaries</i>	NL	NC S(<i>Biscayne Bay</i>) D (<i>Western North Atlantic Central Florida Coastal</i>)
<i>Rough toothed dolphin</i> (<i>Steno bredanensis</i>)	<i>Pelagic</i>	NL	NC
<i>Fraser's dolphin</i> (<i>Lagenodelphis hosei</i>)	<i>Pelagic</i>	NL	NC
<i>Striped dolphin</i> (<i>Stenella coeruleoalba</i>)	<i>Pelagic</i>	NL	NC
<i>Pantropical spotted dolphin</i> (<i>Stenella</i>	<i>Pelagic</i>	NL	NC D (<i>Northeastern Offshore</i>)

attenuata)			
<i>Atlantic spotted dolphin</i> (<i>Stenella frontalis</i>)	<i>Coastal to pelagic</i>	NL	NC
<i>Spinner dolphin</i> (<i>Stenella longirostris</i>)	<i>Mostly pelagic</i>	NL	NC <i>D (Eastern)</i>
<i>Clymene dolphin</i> (<i>Stenella clymene</i>)	<i>Pelagic</i>	NL	NC
<i>Sirenians</i>			
<i>West Indian (Florida) manatee</i> (<i>Trichechus manatus latirostris</i>)	<i>Coastal, rivers and estuaries</i>	TH	D

EN – Endangered; TH – Threatened; NL – Not Listed; D – Depleted; NC – No Concern; S – Strategic;

Of all the species listed above, USACE believes that only the Florida manatee and bottlenose dolphins of the Biscayne Bay and the Western North Atlantic Central Florida Coastal stocks are likely to be in the vicinity of the project area. A stock assessment for the Biscayne Bay stock is located at http://www.nmfs.noaa.gov/pr/sars/2013/ao2013_bottlenose-biscaynebay.pdf and is incorporated by reference. A stock assessment for the Western North Atlantic Central Florida Coastal stock is located at http://www.nmfs.noaa.gov/pr/sars/pdf/stocks/atlantic/2015/f2015_bodocfl.pdf and is incorporated by reference.

3.2.3 CHANNEL BENTHOS

Sedimentary habitats, such as sand shoals, support a variety of invertebrates and demersal fishes. Invertebrate species using the shoals include infaunal and epifaunal species represented primarily by annelid worms, gastropods, bivalves, crustaceans, and echinoderms. Demersal feeding fishes prey on most of these species. The populations are removed each time that the shoals are dredged and recolonize over time from other sand sounds in the vicinity as the shoals rebuild within the channel.

3.2.4 CHANNEL WALL HABITAT

A small ledge exists on the western side of the AIWW channel (Figure 5). Along the entire length of the ledge, Miami-Dade County Department of Environmental Resources Management (DERM) documented numerous coral species and sponges (DERM 2006) and they are denoted by the blue dotted line in Figure 6. Coral species documented on the wall included *Oculina diffusa*, *Siderastrea spp.*, and *Porites spp.* (Figure 7).

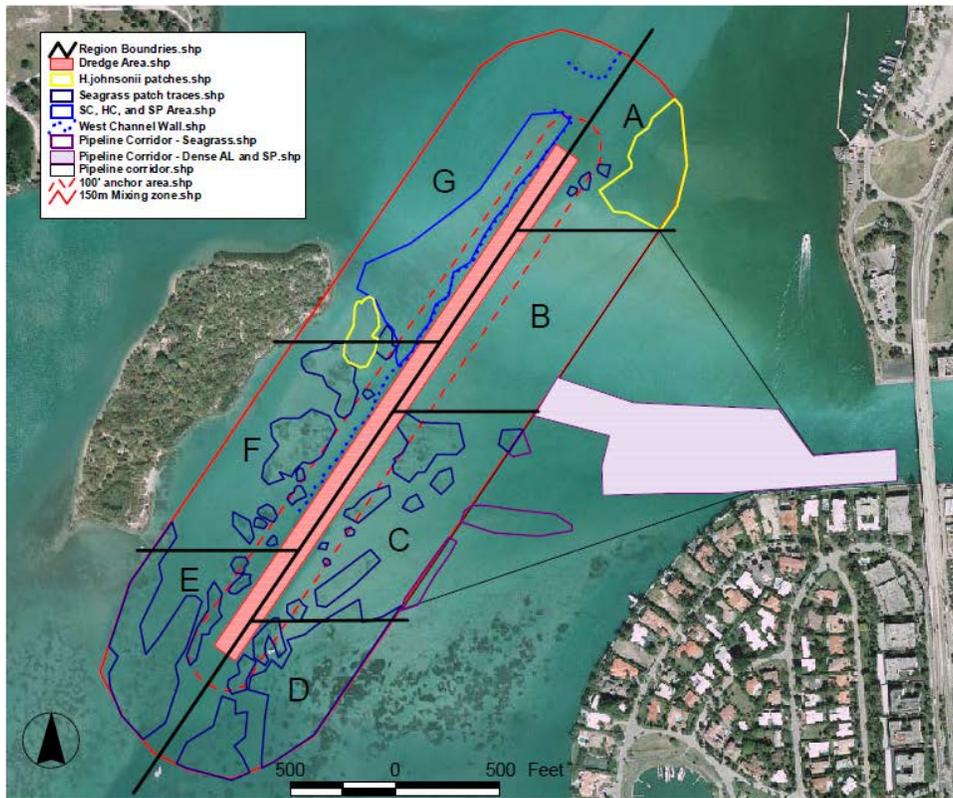


Figure 5 - Figure 1 from DERM 2006 showing all Mapped Resources in the Project Vicinity.

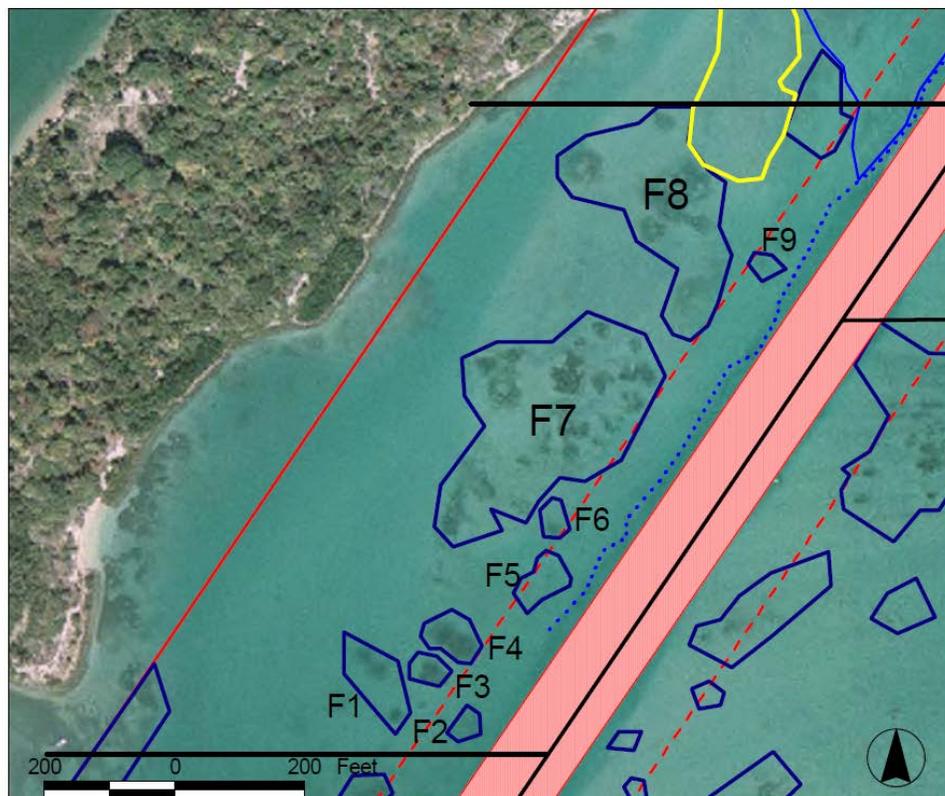


Figure 6 - Figure 10 of DERM 2006 Zooming into Mapped Resources on the east and west side of Cut DA-9 of the AIWW



Figure 7 - West wall of channel showing hardbottom resources on the face of the wall

3.2.5 SEAGRASSES

As part of the continued O&M dredging of AIWW cut DA-9, DERM conducted pre- and post-dredge seagrass surveys. DERM conducted the first survey in April 2004. Data from long-term county-wide habitat monitoring conducted by DERM since 1996 were also incorporated into the survey. DERM documented five seagrass species in the vicinity of the project area: Cuban shoal grass (*Halodule wrightii*), paddle grass (*Halophila decipiens*), Johnson's seagrass (*Halophila johnsonii*), manatee grass (*Syringodium filiforme*), and turtle grass (*Thalassia testudium*) (Figure 8). None of the grasses were mapped within the AIWW itself, but on shoal areas to the east and west of the channel. FDEP used this survey to issue their permit in 2005 (Permit #0173188-002-JC). For the 2006, 2008, and 2013 O&M dredging, pre and post dredging seagrass surveys were conducted, and for each event, no direct effect to seagrasses was documented for any of these dredging events. These surveys are included in Appendix B for reference and additional detailed information.

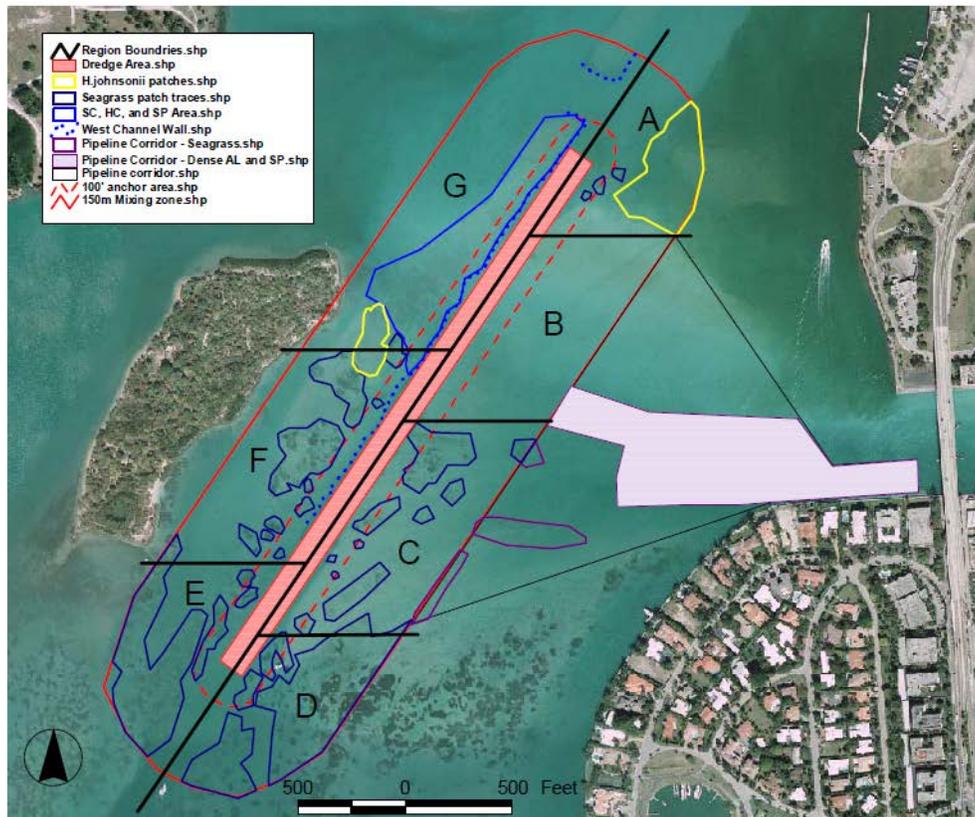


Figure 1: Haulover Intra-coastal Waterway Channel Maintenance Dredging Location.

Figure 8 - Figure 1 of DERM 2006 Mapping Resources in the Dredge Vicinity

3.2.6 BEACH PLACEMENT AREA RESOURCES

The beach located north and south of the inlet is part of both the Miami-Dade County BEC as well as being a placement area for O&M dredging for the AIWW DA-9. The dune system south of the inlet is largely artificial and was built as part of the BEC. Dominant plant species in the dune communities include sea grapes (*Coccoloba uvifera*), beach morning glory (*Ipomoea pescaprea*), beach bean (*Canavalia rose*), sea oats (*Uniola paniculat*), dune panic grass (*Panicum amarulu*), and bay bean (*Canavalia maritima*). In addition, beachberry or inkberry (*Scaevola plumieri*), sea lavender (*Malotonia gnaphalode*), spider lily (*Hymenocalis latifoli*), beach star (*Remirea maritima*), and coconut palm (*Coco nucifera*) are also present.

3.2.7 HARDBOTTOMS

Hardbottom and reef environments are found offshore of Miami-Dade County as illustrated in Figure 9.

Duane and Meisburger (1969) first described the reef distribution pattern for southeast Florida reefs north of Key Biscayne. These reefs are oriented parallel to shore and consist of an inner reef in approximately 15 to 25 feet of water, a middle patch reef zone in approximately 30 to 50 feet of water, and an outer reef in approximately 60 to 100 feet of water. This general description has been the basis for most descriptions of hardbottom areas north of Government Cut since that time (Goldberg 1973; Courtenay et al. 1974; Lighty et al. 1978; Jaap 1984; Banks et al. 2007). Development of these three reef terraces into their present form is thought to be related to

fluctuations in sea level stands associated with the Holocene sea level transgression that began about 10,000 years ago.

The composition of hardbottom biological assemblages along Florida's east coast has been detailed by Goldberg (1970, 1973), Marszalek and Taylor (1977), Raymond and Antonius (1977), Marszalek (1978), Continental Shelf Associates, Inc. (1984; 1985; 1987; 1993), Blair and Flynn (1989), Moyer et al. (2003), and Gilliam (2008). Although there are a large variety of hard coral species growing on the reefs north of Government Cut, these corals are no longer actively producing the reef features seen there. Unlike coral reefs in the Florida Keys, the reef structure is not accreting. The reef features seen north of Government Cut have been termed "gorgonian reefs" (Goldberg, 1970; Raymond and Antonius, 1977) because they support such an extensive and healthy assemblage of octocorals. Goldberg (1973) identified 39 species of octocorals from Palm Beach County waters. Surveys by Continental Shelf Associates, Inc. (1984; 1985) identified 33 sponge, 21 octocoral, and five hard coral species on offshore reefs off Ocean Ridge and 40 sponge, 18 octocoral, and 14 hard coral species on the offshore reefs off Boca Raton.

Blair and Flynn (1989) described the reefs and hard bottom communities off Miami-Dade County and compared them to the offshore reef communities from Broward and Palm Beach Counties. They and others (Gilliam 2008) documented a decrease in the hard coral species density moving northward from Miami-Dade County to Palm Beach County. Despite this gradual decrease in the density of hard coral species present, the overall hardbottom assemblage of hard corals, soft corals, and sponges seen along southeast Florida's offshore reefs remains remarkably consistent throughout the counties of Miami-Dade, Broward, and Palm Beach.

In conjunction with the 1996 Coast of Florida Erosion and Storm Effects Study, the hardbottom areas offshore of Miami-Dade County were mapped using side scan sonar. Subsequent aerial photography flown in July 1997 and April 2000 has also been used to map the nearshore hardbottom. DERM has conducted numerous hardbottom mapping efforts between 2008 and 2010 and FDEP's Coral Program contracted with Dr. Brian Walker at NOVA Southeastern University to conduct mapping of resources offshore of Miami Dade County (Figure 9).

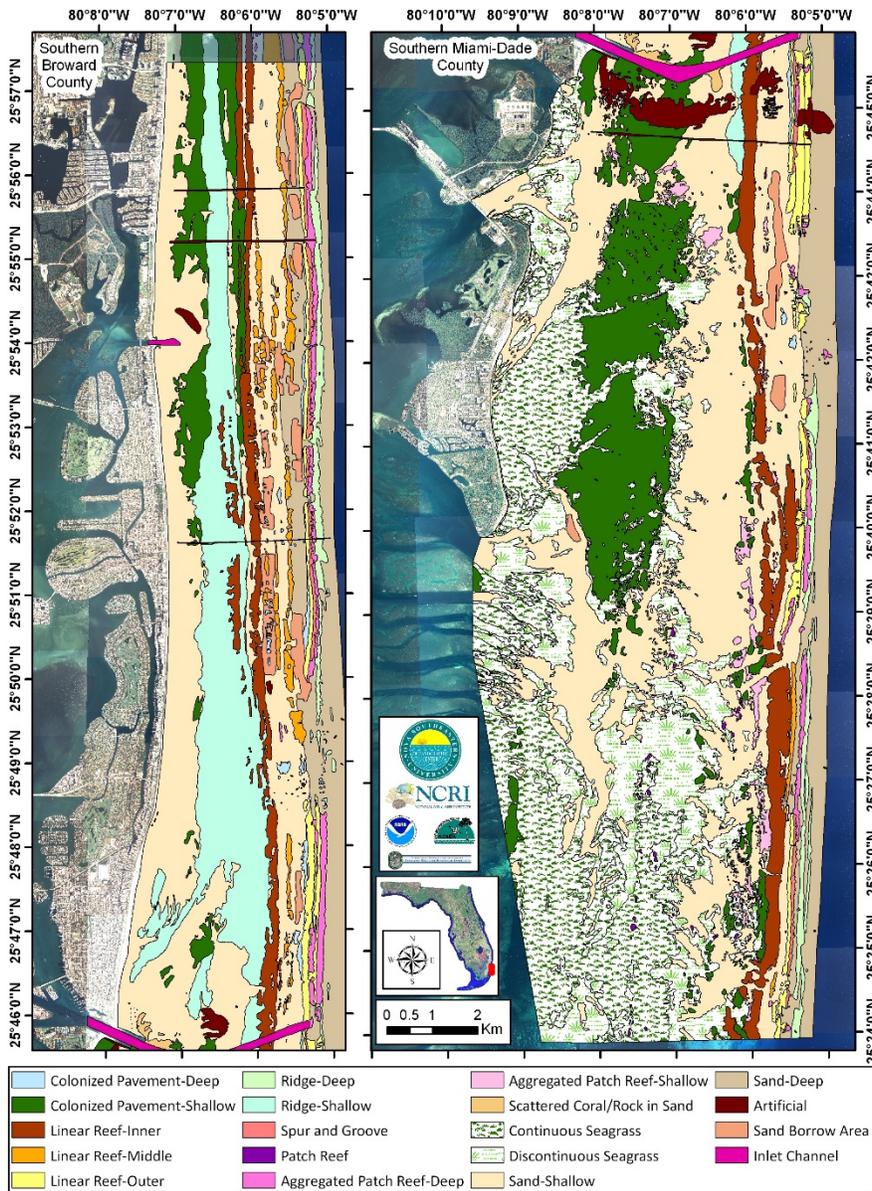


Figure 9 - Miami-Dade County Mapped Offshore Habitats

3.3 THREATENED AND ENDANGERED SPECIES

USACE compiled the lists of endangered and threatened species developed for this EA (Table 4) from the SARBO, the Statewide Programmatic Biological Opinion (SPBO) for Shore Protection Activities along the Coast of Florida, as well as project specific biological assessments and biological opinions (BOs) prepared for previous projects which have taken place in the vicinity of the proposed project.

Table 4 - Threatened and Endangered Species in the Project Area

Common Name	Scientific Name	Listing Status
Blue whale	<i>Balaenoptera musculus</i>	Endangered
Finback whale	<i>Balaenoptera physalus</i>	Endangered
Sei whale	<i>Balaenoptera borealis</i>	Endangered
Sperm whale	<i>Physeter macrocephalus</i>	Endangered
Green sea turtle North Atlantic Distinct Population Segment (DPS)	<i>Chelonia mydas</i>	Threatened
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	Endangered
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	Endangered
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered
Loggerhead sea turtle Northwest Atlantic DPS	<i>Caretta caretta</i>	Threatened/Critical Habitat
Florida manatee	<i>Trichechus manatus</i>	Threatened
Smalltooth sawfish	<i>Pristis pectinata</i>	Endangered
Least tern	<i>Sterna antillarum</i>	Threatened
Rufa Red Knot	<i>Calidris canutus rufa</i>	Threatened
Johnson's seagrass	<i>Halophila johnsonii</i>	Threatened

3.3.1 SEA TURTLES

Miami-Dade County is within the normal nesting range of four species of sea turtles: the loggerhead (*Caretta caretta*), the North Atlantic distinct population segment (DPS) of green sea turtle (*Chelonia mydas*) (80 Fed. Reg. 15272 (23 March 2015)), hawksbill (*Eretmochelys imbricata*), and the leatherback (*Dermochelys coriacea*). The leatherback sea turtle is listed as endangered under the ESA. The loggerhead sea turtle is listed as threatened and the North Atlantic DPS of the green sea turtle is currently proposed as a threatened species; previously all green sea turtles found in the United States were listed as endangered species. Additionally, the waters offshore of Miami-Dade County are also used for foraging and shelter for the four species listed above, as well as the Kemp's ridley sea turtle (*Lepidochelys kempii*).

NMFS has designated two units of critical habitat for the loggerhead sea turtle in the waters offshore of Miami-Dade County (Figure 10). Unit 18 is Constricted Migratory Habitat, denoted by the blue area, and Unit 19 is Nearshore Breeding Habitat, denoted by the green area. The primary constituent elements of each designated unit can be found in the final rule issued by NMFS designating the habitat (NMFS 2014).

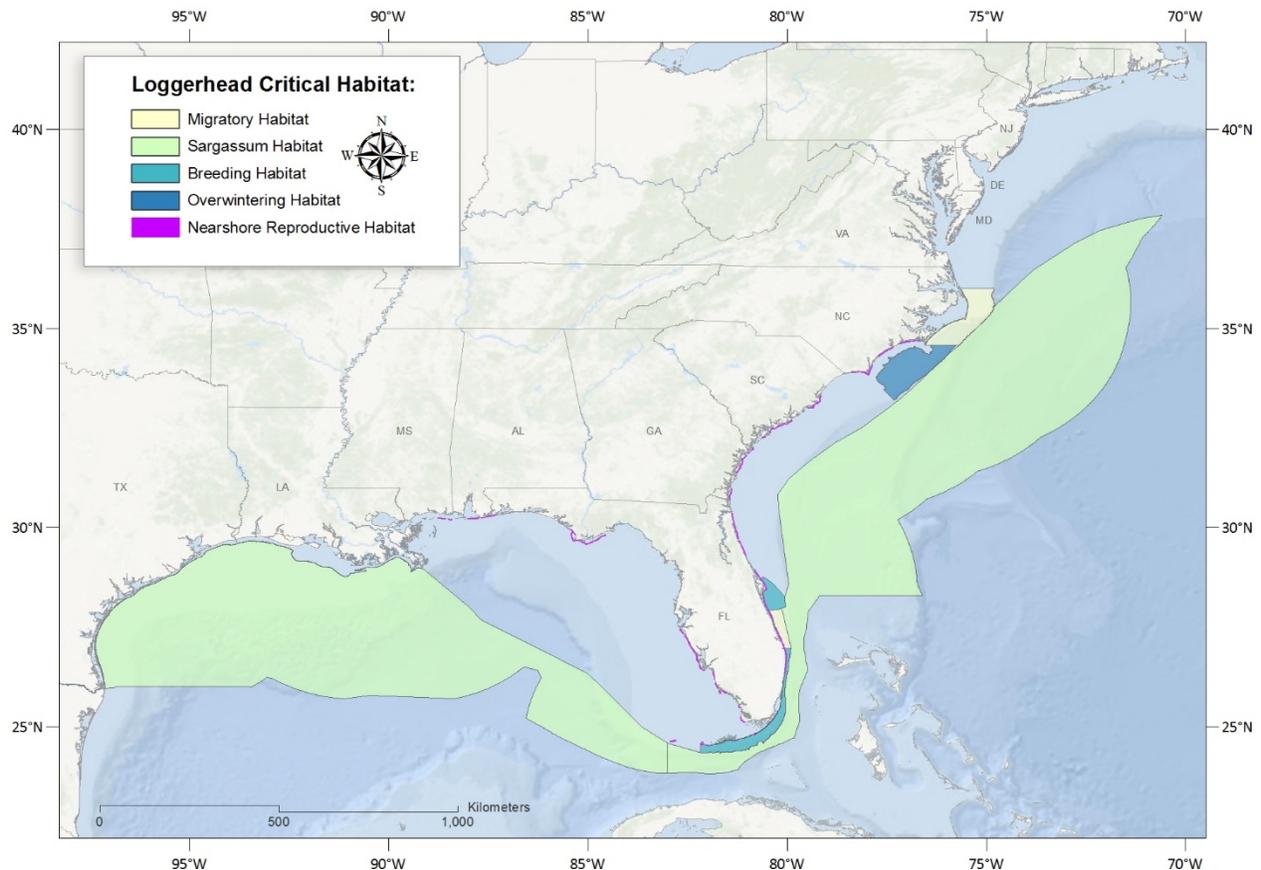


Figure 10 – Summary Map of Designated Critical Habitat for Loggerhead Sea Turtles

3.3.2 MARINE MAMMALS

Four baleen whales (Bryde’s, blue, finback, and sei), one toothed whale (the sperm whale), and one sirenian (the West Indian manatee) occur in the Atlantic Ocean offshore of Bakers Haulover Inlet and are listed as endangered under the ESA. All of the whales are typically found offshore in deeper waters and are not expected to be encountered close to shore.

The Florida manatee is a subspecies of the West Indian manatee (*Trichechus manatus*) and can be found throughout the southeastern United States, including the project area. Manatees can be found in the inshore waters of the project channels and in the coastal waters of the Atlantic Ocean primarily during migration. The proposed work is within designated critical habitat for this species and is within an “Important Manatee Area” (Figure 11).

Within Miami-Dade County, manatees are frequently found in Biscayne Bay, canals, the Miami River, and the Intracoastal Waterway. They are less often seen in the Atlantic Ocean. Mortality data for the Florida manatee is available from 1974-2014 through the Florida Fish and Wildlife Research Institute (FWRI 2014). Mortality data within one-mile of the project area reported the occurrence and cause of six manatee deaths between 1974 and 2015 (Figure 12) (FWRI 2017). Four of the mortalities were determined to be as a result of natural causes, one was due to a watercraft collision, and in one the cause was unknown.



Figure 11 - Important Manatee Areas in the Project Area

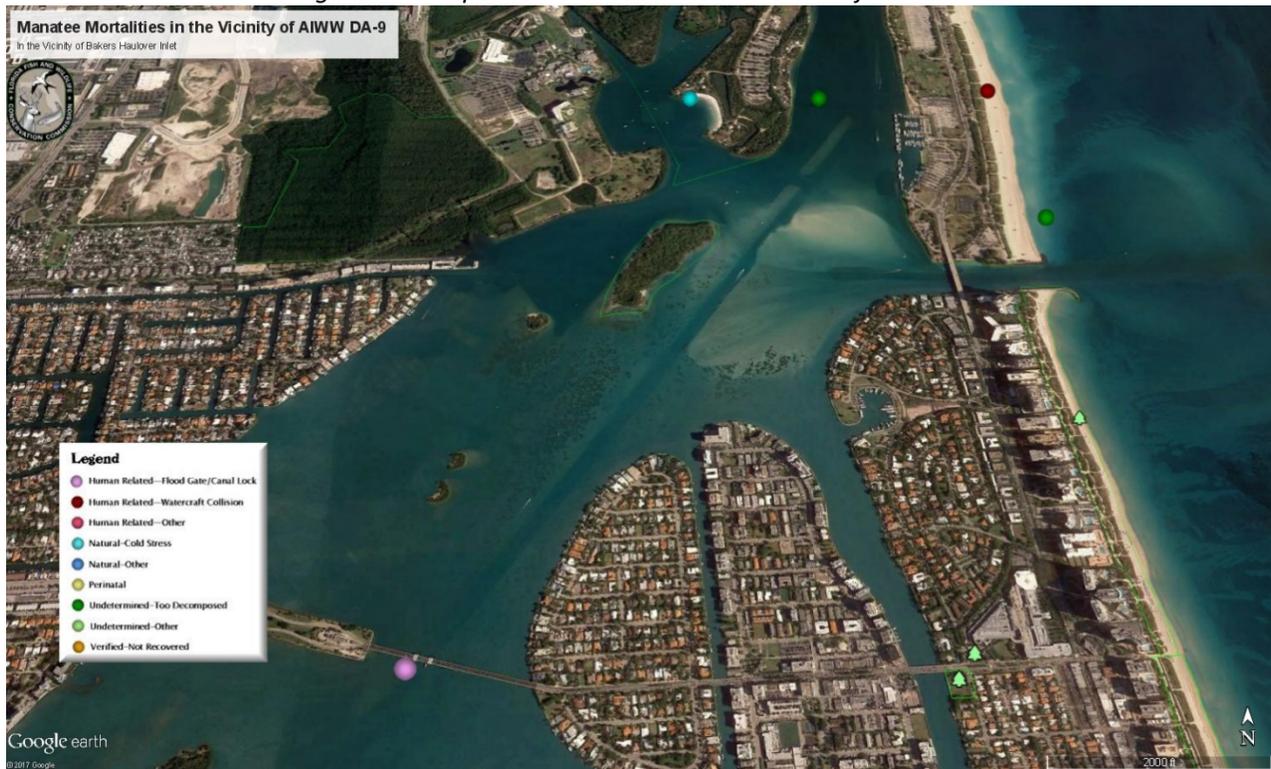


Figure 12 - Manatee Mortalities in the Vicinity of AIWW DA-9

3.3.3 SMALLTOOTH SAWFISH

The smalltooth sawfish (*Pristis pectinata*) is currently listed as endangered by NMFS. The species has become rare along the southeastern Atlantic and northern Gulf of Mexico coasts of the United States during the past 30 years and its known primary range is now reduced to the coastal waters of Everglades National Park in extreme southern Florida. Fishing and habitat degradation have extirpated the smalltooth sawfish from much of this former range.

The smalltooth sawfish is distributed in tropical and subtropical waters worldwide. It normally inhabits shallow waters (33 feet/ 10 meters or less), often near river mouths or in estuarine lagoons over sandy or muddy substrates, but may also occur in deeper waters (66 feet/20 meters) of the continental shelf. Shallow water less than 3.3 feet (1 meter) deep is an important nursery area for young smalltooth sawfish and maintenance and protection of these habitat is an important component of the "Recovery Plan for Smalltooth Sawfish (*Pristis pectinata*)." (NMFS 2009). Recent studies indicate that key habitat features, particularly for immature individuals, nominally consist of shallow water, proximity to mangroves, and estuarine conditions. Smalltooth sawfish grow slowly and mature at about 10 years of age. Females bear live young and the litters reportedly range from 15 to 20 embryos requiring a year of gestation. Their diet consists of macroinvertebrates and fishes such as herrings and mullets. The saw is reportedly used to rake surficial sediments in search of crustaceans and benthic fishes or to slash through schools of herrings and mullets (NMFS 2009).

Although NMFS designated critical habitat for the species in 2009, there is no designated critical habitat in any of the project areas, either dredging or placement areas. As part of a previous EA for a project in the same area, a request for sighting info for the species was made in December 2014. For Miami-Dade County, there are more sightings in the offshore areas, including sightings more than eight miles from shore (Figure 13).

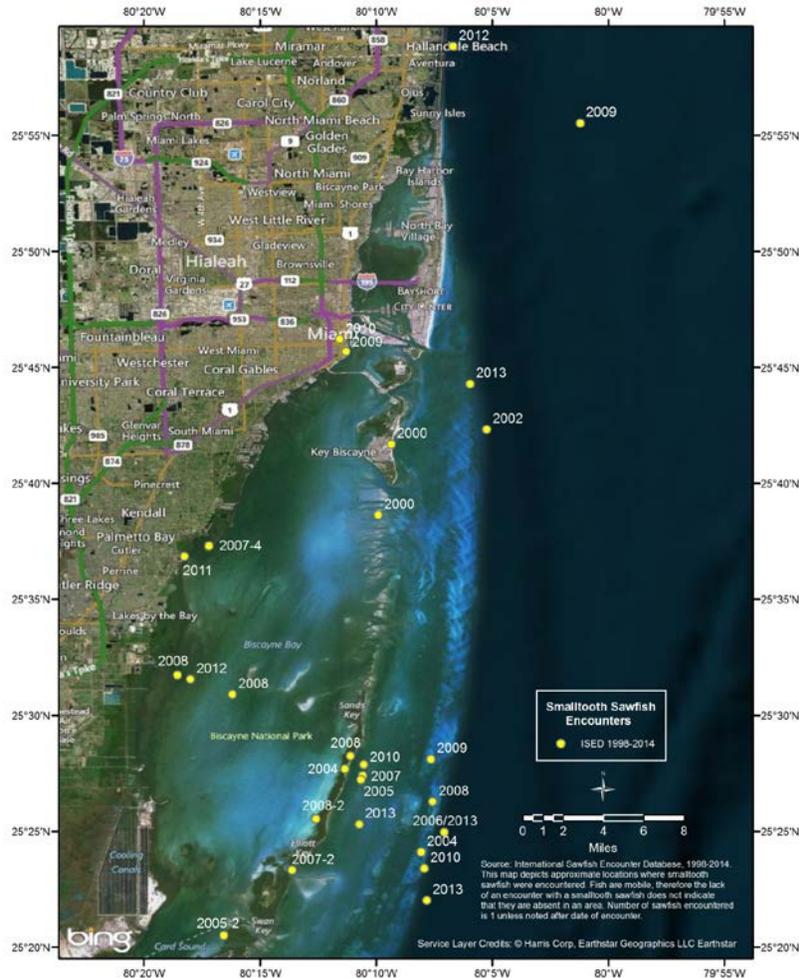


Figure 13 - Smalltooth Sawfish Sightings – Miami-Dade County and Offshore Waters through 2014

3.3.4 LEAST TERN

Least terns (*Sterna antillarum*) are protected under State of Florida and Federal laws and are listed as threatened under the ESA. They nest on beaches and on gravel rooftops, where nearby waters supply foraging grounds for small fish. Least terns also occupy recently dredged or deposited sandy substrates in active phosphate mines and in limerock quarries in South Florida. Least terns usually return to the same nesting site each year, unless the colony has consistently failed to fledge young. Nesting begins in May and young are fledged through August or early September. The period of time for least terns to migrate away from South Florida is between August and September.

Least terns are considered a threatened species based on previous population declines and threats to their coastal habitat (Wood 1991). Except for areas with extensive salt marsh or mangrove habitat, least terns nest along nearly all of Florida's Gulf coast, while occasionally nesting along the Atlantic coast. Because of their use of gravel-covered roofs, least terns are found even along intensively developed portions of the coast and populations are believed to be stable or increasing. Although least tern ground colonies are known to occur in Miami-Dade County, over the last 15 years, the only location of documented beach nesting in the County is at Crandon State Park on Key Biscayne, which is not in the project area due to the highly recreated nature of Miami-Dade County

beaches (pers comm. R. Zambrano, FWC 2015).

3.3.5 RUFA RED KNOT

The rufa subspecies of the red knot (*Calidris canutus rufa*), listed as threatened, is a small shorebird that can occur along the Atlantic and Gulf coasts during migration. It is also known to overwinter in low numbers along both coasts. Florida is home to the largest concentration of wintering rufa in the United States (A.C. Schwarzer et al. 2012). In migration and winter, it prefers coastal mudflats, tidal zones, and sometimes open sandy beaches where it feeds on small invertebrates such as small mollusks, marine worms, and crustaceans (Kaufman 1996). The knot population has declined primarily due to reduced food availability from increased harvests of horseshoe crabs (USFWS 2015). Their numbers appear to have stabilized in the past few years, but they remain at low levels relative to earlier decades (USFWS 2015). Critical habitat has not been designated for this species.

3.3.6 JOHNSON'S SEAGRASS

Halophila johnsonii was listed as a threatened species by NMFS on 14 September 1998 (63 Fed. Reg. 49035 (14 September 1998)) and the final rule for critical habitat designation for *H. johnsonii* was published 5 April 2000 (65 Fed. Reg. 17786). Although NMFS has listed *H. johnsonii* as a threatened species under Section 4 of the ESA (16 U.S.C. §1533), it has not promulgated a 4d rule under the Act, and as a result, there is no prohibition on take. *H. johnsonii* has the most limited geographic ranges of all seagrass species. It is known to occur only from 21.5 km north of Sebastian Inlet (i.e. near Palm Bay in Brevard County) south to northern Biscayne Bay (i.e. near North Miami) on the east coast of Florida (Kenworthy 1997; Virnstein and Hall 2009). There is not any designated critical habitat in the project area. Johnson's seagrass has been mapped within the project area in all of the surveys conducted for the project in varying amounts, which is expected understanding Johnson's ephemeral nature.

3.4 WILDLIFE REFUGES AND STATE PARKS

AIWW Cut DA-9 is located within the boundaries of the Biscayne Bay Aquatic Preserve (BBAP), a 64,607 acre area with Miami-Dade and Monroe Counties (Figure 14).

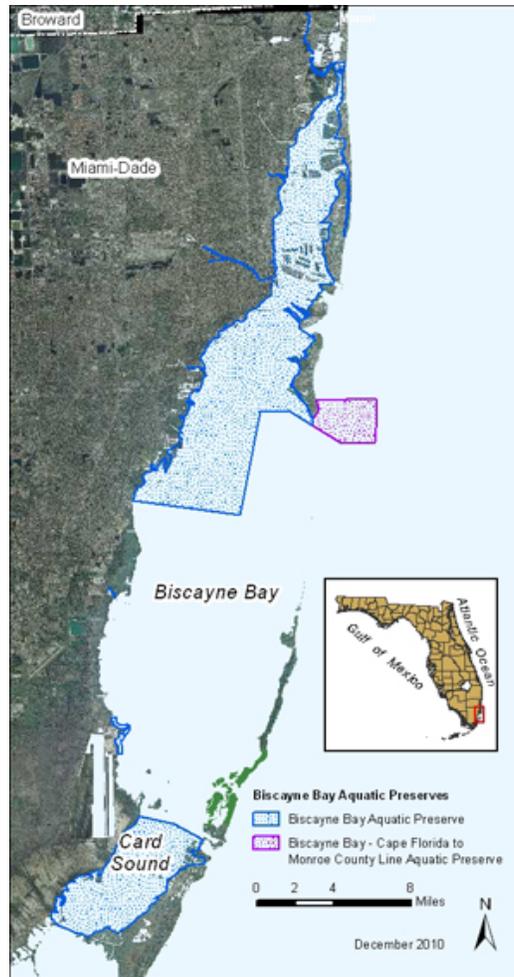


Figure 14 – Boundaries of Biscayne Bay Aquatic Preserve.

3.5 ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §801 *et. seq.*), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires Federal agencies to consult with NMFS on activities that may adversely affect Essential Fish Habitat (EFH). USACE prepared this Supplemental EA consistent with guidance provided by the NMFS Southeast Regional Office to USACE, Jacksonville District regarding coordinating EFH consultation requirements in conjunction with NEPA (NMFS 1999). EFH is defined as “those waters and substrate necessary to fish for spawning, breeding, or growth to maturity” (SAFMC 1998).

The South Atlantic Fishery Management Council (SAFMC) designated corals, coral reefs, hardbottom, and unconsolidated sediments as EFH. Hardbottoms are EFH for coral, red grouper (*Epinephelus morio*), gag grouper (*Mycteroperca microlepis*), gray snapper (*Lutjanus griseus*), mutton snapper (*L. analis*), white grunt (*Haemulon plumieri*), and spiny lobster (*Panulirus argus*). Unconsolidated habitats are EFH for cobia (*Rachycentron canadum*), black seabass (*Centropristis striata*), king mackerel (*Scomberomorus cavalla*), Spanish mackerel (*S. maculatus*), spiny lobster, and pink shrimp (*Farfantepenaeus duorarum*). All demersal fish species under SAFMC management that associate with coral habitats are contained within the fishery management plan for snapper-

grouper species and include some of the more commercially and recreationally valuable fish of the region. All of these species show an association with coral or hardbottom habitat during their life history. In groupers, the demersal life history of almost all *Epinephelus* species, several *Mycteroperca* species, and all *Centropristis* species, takes place in association with coral habitat (SAFMC 2009). Coral, coral reef, and hardbottom habitats benefit fishery resources by providing food or shelter (SAFMC 1983). SAFMC also designated corals, coral reefs, and hardbottoms as a Habitat Area of Particular Concern (HAPC), which is a subset of EFH that is either rare, particularly susceptible to human-induced degradation, especially important ecologically, or located in an environmentally stressed area. In light of their designation as EFH-HAPC's and Executive Order (E.O.) 13089, NMFS applies greater scrutiny to projects affecting corals, coral reefs, and hardbottoms to ensure practicable measures to avoid and minimize adverse effects to these habitats are fully explored.

3.5.1 CORALS, CORAL REEF AND HARD/LIVE BOTTOMS

Hardbottom resources (including corals) are present on the west side of the channel on the shelf of the AIWW channel, likely created when the channel was dredged, as denoted in the 2008 resource delineation (Figure 8). HAPCs for corals, coral reefs and hard/live bottom habitats of central east Florida include 1) the worm reefs in nearshore waters; 2) nearshore hardbottom in water depths 0 to 4m; 3) offshore hardbottom habitats in water depths 5 to 30m; and 4) *Oculina* banks from Fort Pierce to Cape Canaveral in water depths >30m. Only the second type of HAPCs is found in the project area, as hardbottoms offshore of Bakers Haulover Inlet.

3.5.2 SEAGRASSES

Seagrasses within the project area were previously discussed in Section 3.2.5 and are incorporated by reference.

3.6 AIR QUALITY

Ambient air quality along the southeast Florida coast is generally good due to prevalent ocean breezes from the northeast to the southeast. The area is in the Southeast Florida Intrastate Air Quality Control Region, as established by 40 CFR §81.49. USEPA designates air quality compliance on a county level and Miami-Dade County is considered as being in attainment with National Ambient Air Quality Standards for ozone, nitrogen dioxide, carbon monoxide, total suspended particulates, and sulfur dioxide. See (40 CFR § 81.310). USEPA has not made a designation for lead in southeastern Florida.

3.7 WATER QUALITY

The State of Florida classifies surface waters from "I" (drinking water quality) to "V" (industrial water discharge quality). The predominant issue that affects water quality in offshore waters in South Florida is turbidity, which is considered a good measure of water quality. Turbidity is measured in Nephelometric Turbidity Units (NTU), which is a measure of light-scatter by particulates within the water. This measurement does not address the characteristics of the suspended material that creates turbid conditions. Florida state guidelines set to minimize turbidity effects from beach restoration activities confine turbidity values to under 29 NTU above ambient levels outside the turbidity mixing zone for the beach placement areas. For dredging inside the BBAP, state water quality permits require that turbidity remains at 0 NTU above background.

3.8 NOISE

Noise is defined as unwanted sound and, in the context of protecting public health and welfare, implies potential effects on the human and natural environment. Noise is a significant concern associated with construction, dredging, and transportation activities and projects. Ambient noise levels within a given region may fluctuate over time because of variations in the intensity and abundance of noise sources. Ambient sources of noise within the project area are recreational activities (boating and fishing), commercial vessels transiting up and down the coast, and natural sounds from the physical and biological environment. Because Miami-Dade County has many seasonal residents and tourists, many more residents are present in the winter months, which results in more boating traffic during the winter tourist season. The AIWW and Bakers Haulover are areas of very high recreational boat traffic, particularly on weekends (Figure 15).

3.9 AESTHETIC RESOURCES

The area of the AIWW in the vicinity of Bakers Haulover is an urban environment and as previously discussed, heavily used by recreational and commercial vessels. The project area consists of light beige sandy beaches that contrast strikingly with the deep hues of the panoramic Atlantic Ocean. Dunes, dune vegetation, and tropical landscaping separate the beach from condominiums and hotels along the shore. Landscaping vegetation consists of trees such as coconut, sabal, and date palms, as well as a shrub canopy including seagrape and cocoa plum, which transitions into sea oats, dune sunflower, and morning glory vines. These, and many other tropical beach plantings, provide an aesthetic transition between the dunes and the beach.

3.10 RECREATIONAL RESOURCES

Miami-Dade County is a heavily populated county on Florida's Atlantic Coast, which receives a tremendous volume of tourists, particularly during the winter months. The county's beaches that can be accessed by the general public are heavily used year round. In the recent past, new developments have been required to build public beach access to allow the general public access to beaches which are in front of private condominiums. Additionally, a boardwalk has been built along the Miami-Dade beaches allowing visitors greater access to all the county beaches.

Miami Beach has public access and receives heavy use by swimmers and sunbathers. Adjacent to these beaches are many condominiums and hotels used by long-term and short-term visitors and residents of the area. Other water-related activities within the project area include onshore and offshore fishing, snorkeling, SCUBA diving, windsurfing and recreational boating (Figure 15). Most of the boating activity in the area originates from either Bakers Haulover Inlet or Government Cut. Both offshore fishing and diving utilize the natural and artificial reefs located within and adjacent to the project area. Commercial enterprises along the beach rent beach chairs, cushions, umbrellas, and jet skis. Food vendors can also be found along the beach areas.



Figure 15 - High Usage of the Flood Shoal by Recreational Boats

3.11 COASTAL BARRIER RESOURCES

There are no designated Coastal Barrier Resource System Units located in the project area that would be affected by this project.

3.12 NATIVE AMERICANS

The AIWW in the vicinity of Bakers Haulover, or the beaches to the north or south of the inlet, are not located within, or adjacent to, known Native American-owned lands, reservation lands, or Traditional Cultural Properties.

3.13 CULTURAL RESOURCES

The Baker's Haulover channel was first cut in 1925 with the USACE creating a more formal inlet channel around 1962. Due to the relatively modern creation of this inlet, the probability for the inlet region to contain historic shipwrecks is considerably lower than those areas where natural inlets attracted more intensive, historic maritime activity. However, the inland waters still provided navigable maritime corridors for local commerce and recreation, and the potential for historic sites associated with these activities exist. Therefore, the flood shoal and portions of the DA-9 channel were surveyed for submerged cultural resources in 1997. The survey identified no remote-sensing targets that were indicative of archaeological sites. The SHPO concurred with a recommendation of no further work within this survey area. The navigation channel has been dredged for maintenance at least five times since this survey with no effects to cultural resources. There are no recorded archaeological sites within the beach placement areas, though the Bal Harbour Apartments Historic District (8DA11612) exists inland from the beach along A1A south of the inlet. Placement of the sand along the southern beach would serve to help protect the uplands here from erosion, ultimately providing additional erosion protection to the historic district. No further cultural resources listed, or eligible for listing, on the National Register of Historic Places have been documented in the project footprint.

4 ENVIRONMENTAL EFFECTS

This section is the analytic basis for the comparisons of the alternatives. See Table 2 in section 2.0 Alternatives, for summary of effects. The following includes anticipated changes to the existing environment including direct, indirect, and cumulative effects. Previous EAs have assessed the effects of placing material dredged from the AIWW onto the beach within as identified in Section 1.1. All of these previous EA/FONSIs are incorporated by reference (Section 1.4, *Related Environmental Studies*).

4.1 SEDIMENT QUALITY

No Action Alternative. No effect to native sediment characteristics within the navigation channels. The channel will continue to fill with sediments brought in on the flood tide each day and in association with weather events.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

No changes to sediment quality in the AIWW are expected due to the continued O&M dredging. A review of sediment quality from previous dredging events shows that the sediment dredged from each event was very similar in nature, and is likely due to the deposition of beach quality sand being brought into the inlet from the ebb shoal on incoming tides and settling out onto the flood shoal as demonstrated in Figure 3.

4.2 FISH AND WILDLIFE

4.2.1 MIGRATORY BIRDS

No Action Alternative. If placement of dredged material takes place during migratory bird nesting season, short-term, localized effects may occur. Timeframe for the O&M dredge events will be in accordance with SPBO Terms and Conditions. There are long-term benefits by creating additional nesting and foraging areas for migratory birds by the increase in dry beach.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

During the placement of sand on the beach, there may be some interruption of foraging and resting activities for shorebirds that utilize the project area. This effect would be short-term and limited to the immediate area of disposal and time of construction. There would be sufficient beach area north and south of the renourishment sites that can be used by displaced birds during construction. Elevated turbidity levels within the immediate vicinity of the discharge site may interfere with foraging by sight feeders such as the brown pelican (*Pelecanus occidentalis*). However, increased turbidity levels would be limited to a small portion of the shoreline and should not result in significant effects to foraging activities.

Dredging also results in temporary increases in turbidity and sedimentation, removal and burial of benthic species, and displacement of fishes that could adversely impact local foraging opportunities; however, those effects are minimal given the short duration of activities and widespread availability of equivalent habitat. Temporary displacement and noise related to use of heavy construction equipment could disturb nesting and foraging birds. Birds, like gulls, may forage in the immediate area of equipment operation where heavy equipment is used to shape

dewatering sediment discharged from the pipeline. Temporary adverse effects may also occur from a reduction in available food sources following burial. Beach fill generally occurs at an alongshore rate of 300-500 feet of beach per day; benthic invertebrates can immediately recolonize the newly created habitat (Burlas et al. 2001). Any tilling and scarp removal that must be done to shape the beach to accommodate nesting sea turtles should be done outside the shorebird nesting season. Following construction, the newly created beach will create suitable shorebird nesting habitat.

USACE, in conjunction with the USFWS and FWC, has developed statewide guidelines to avoid and monitor potential effects to shorebirds. USACE has developed a suite of contractual specifications for dredge contractors to implement during construction. The contractor shall keep all dredging and construction activities under surveillance, management, and control to prevent effects to migratory birds and their nests. The contractor may be held responsible for harming or harassing the birds, their eggs, or their nests as a result of their activities. The FDEP Joint Coastal Permit and USACE's protection guidelines jointly require monitoring of shore birds and operation restrictions during the nesting season between April and September, when nesting and courting behavior is most prevalent.

- Within the project area, a 200 foot-wide buffer zone will be established around any location where shorebirds have been engaged in nesting behavior. Any and all construction activities, including movement of vehicles, should be prohibited in the buffer zone.
- If shorebird nesting occurs within the project area, a bulletin board will be placed and maintained in the construction area with the location map of the construction site showing the bird nesting areas and a warning, clearly visible, stating that "BIRD NESTING AREAS ARE PROTECTED BY THE FLORIDA THREATENED AND ENDANGERED SPECIES ACT AND THE FEDERAL MIGRATORY BIRD TREATY ACT."
- If it will be necessary to extend construction pipes past a known nesting site or overwintering area, then, whenever possible, those pipes should be placed landward of the site before birds are active in that area. No sand shall be placed seaward of a known nesting site during the nesting season.

4.2.2 MARINE MAMMALS

No Action Alternative. The No Action Alternative is not expected to affect marine mammals in the project area.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet. Marine mammals in the action area may be temporarily displaced from the area by dredging activities, although the operation of the dredge is not expected to affect marine mammals any more than recreational and commercial vessels operating within the AIWW or in the nearshore north or south of the inlet during sand placement activities.

4.2.3 CHANNEL BENTHOS

No Action Alternative. As the channel fills in with sediment, the area available to benthos already in the sediment will increase and the number of benthic invertebrates may increase in proportion to the available substrate.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

Benthos that inhabits the dredging area or nearshore placement area would be removed from the area by either the dredging activity or burial with nearshore placement. This effect is likely to be temporary and localized and would likely recover within 12 to 18 months. No long-term adverse effects are anticipated to the intertidal macroinfaunal community due to dredging activities. The undisturbed areas adjacent to the AIWW channel will serve as the primary source of colonizing fauna for the recovery of those species into the excavation site (Van Dolah et al. 1984; Jutte et al. 2002)

4.2.4 CHANNEL WALL HABITAT

No Action Alternative. As the channel fills with sand, any organisms that have colonized the rock walls of the channel, where the channel walls are exposed rock, would be buried in sand and this burial would be lethal to these organisms. This would also permanently remove the channel wall habitat for organism colonization.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

The O&M dredging will remove sediment and may expose more of the rock channel wall, allowing for colonization, until the channel refills with sediment, requiring another maintenance event. It is possible that individual hard coral, soft coral, and sponges may potentially be knocked off of the channel wall, resulting in their permanent removal from the habitat.

4.2.5 SEAGRASSES

No Action Alternative. The sand filling into the channel may result in the colonization of the channel by seagrasses as the channel shallows and more light reaches the bottom of the channel.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

Seagrasses within the channel will be removed through the dredging activity. Although dredging will not take place in the channel side slopes, seagrasses that have colonized the side slopes may also be removed through the sloughing resulting from box cuts associated with dredging. Such effects are expected in associated with the dredging. Depending on the dredging method, anchors may also be used. The anchors would be placed in the side slopes, which may result in temporary effects associated with the placement and removal of anchors.

A review of pre and post seagrass surveys shows, where present, seagrass recolonizes within the channel and side slopes following dredging events. USACE has concluded that maintaining DA-9 will have minimal adverse effects on seagrasses as the O&M dredging events are limited in scope and duration and negligible in considering the small impact to seagrass within an existing disturbed habitat, i.e. the Federal navigation channel, compared to the extensive seagrass beds outside the channel in natural undisturbed areas. USACE-Regulatory Division conducted an analysis of effects to seagrasses associated with maintaining the entire AIWW, including DA-9, for dredging conducted

from 1999-2014. The analysis states:

- *Within the actual Federal navigation channel, seagrass has been documented to recover and recolonize. Pre and post-dredging surveys from 1999 through 2014 show “gains” of 12.78 acres and “losses” of 9.05 acres of seagrass within the Federal navigation channel. This is due to the ability of seagrass to recolonize after dredging events. The channel side slopes form a buffer between the actual dredging activity and natural water bodies where seagrass is most prevalent. – Memorandum for Record, Department of the Army (DA) Environmental Assessment and Statement of Finding for Regional General Permit SAJ-93, issued 26 April 2016 (cited in Section 1.4).*

A review of three pre- and post- dredging seagrass monitoring reports for O&M dredging at DA-9 support this statement.

*In general, negative impacts were not observed to the seagrass beds and other benthic resources in the vicinity of the maintenance dredging near Baker’s Haulover Inlet... Quantitative assessments of seagrass beds within 100ft of the channel and of beds containing the threatened species *Halophila johnsonii* did not show discernable changes in the abundance or composition of species (Table 2). – DERM 2006*

*Overall, the seagrass cover in the vicinity of Haulover ICW Maintenance Dredging was lower in post construction surveys than in the pre-construction surveys. Within the channel, the decline in seagrass cover could be partially attributed to authorized dredging activity. However, outside of the channel, the lower seagrass abundance is most likely attributed to normal seasonal declines as the pre-construction survey efforts were conducted in late summer/early fall during the peak growing season while the post construction surveys were carried out in colder, winter months. The seasonal variation is especially true for both *H. decipiens* and *H. johnsonii* species which were generally absent in the post construction surveys. Other fluctuations in the seagrass cover before and after construction may be attributed to the random quadrat placement methodology utilized for these surveys.*

Based on the post construction survey efforts, the changes observed in the seagrass cover in the vicinity of the Haulover ICW do not appear to be a result of dredging activities, but as a result of seasonal changes and random survey methodology. – DERM 2010

Differences in the relative abundance of seagrasses were noted between the pre and post construction surveys. However, the differences in the seagrass and algae community noted in the pre and post construction surveys were within the range of variation expected based on seasonal fluctuations. Data from on-going monitoring in the vicinity of the project area, have documented that the benthic community is diverse and dynamic as a result of the heterogeneous substrate and the high tidal energy (Milano 1991). Additionally, the timing of the pre and post sampling is a significant consideration, given that the pre-construction surveys were conducted in late summer/early fall during the peak shoot density and biomass period for seagrass (Fourquean et. al., 2001; Fourquenan 1995; Milano 1991, Zieman 1982,

1975). While the post construction surveys were carried out in late winter and early spring, when seagrasses have been documented to have their lowest shoot densities and biomass (Fourqurean et. al., 2001; Forqueran 1995; Milano 1991; Gilbert and Clark, 1981; Zieman 1982, 1975). It was noted that the frequency of occurrence of the seagrasses was consistent during the pre and post construction surveys, indicates that the occurrence of the seagrass didn't change between the samplings, but the amount (density) did vary. This is also consistent with the consideration of seasonal variation of the densities and biomass. Therefore, the differences between the pre and post construction seagrass assessments are consistent with documented seasonal variations of shoot density and biomass (canopy). These variations resulted from the relative timing of the pre-construction (high density/biomass period) and post-construction (low density/biomass period) surveys, and no data (qualitative or quantitative) indicated impacts to the seagrass community associated with the dredging activities. – DERM 2014

Based on these statements from the event-specific monitoring reports, long-term adverse effects to seagrasses in DA-9, and in the surrounding areas, are not expected and seagrasses removed from dredging are expected to recolonize the channel as sand fills into the channel between dredging events. Appendix B contains all of the seagrass survey reports from DERM and includes quantitative analysis conducted by DERM that support their quoted statements.

4.2.6 BEACH PLACEMENT AREA RESOURCES

No Action Alternative. Without continued placement of dredged material on the beaches to the north and south of the inlet, erosion in these areas may increase, which would result in less physical areas for animals and plants that live on and in the beach to live.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

The effects of placing sand on the beaches of Miami-Dade County have been assessed numerous times. Those analyses remain valid. Nelson (1989) reviewed the literature on the effects of beach renourishment projects on sand beach fauna and concluded that minimal biological effects resulted from beach nourishment. In addition, some mortality of organisms may occur where grain size is a poor match to existing sediments; however, recovery of the beach system appears to be rapid. Nelson reviewed several studies on the most common beach invertebrates of the southeastern United States, including the mole crab (*Emerita talpoida*), the surf clam (*Donax sp.*), and the ghost crab (*Ocypode quadrata*). None of the studies cited by Nelson (1989) showed significant or lasting impacts to any of the above species resulting from beach nourishment. Hackney et al. (1996) provide a more recent review of the effects of beach restoration projects on beach infauna in the southeastern United States. They also reviewed studies on the above species and agree with the conclusions set forth by Nelson (1989), with the suggestion that construction should take place in winter months to minimize potential effects, and that the sand used should be a close match to native beach sand. In review of past studies, there was a considerable short-term reduction in the abundances of mole crabs, surf clams, and ghost crabs attributable to direct burial. Recruitment and immigration were generally sufficient to reestablish populations within one year of construction. No long-term adverse effects are anticipated to the intertidal macroinfaunal community due to nourishment activities (Deis et al. 1992, Nelson 1985, Gorzelany & Nelson 1987).

4.2.7 HARDBOTTOMS

No Action Alternative. The No Action Alternative is not expected to affect hardbottoms in the project area.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

Sand placement on the beach is expected to cause minimal adverse effects to nearshore hardbottom communities due to the distance of the hardbottom from the shoreline. The closest hardbottom community in the vicinity of the proposed beach fill in Miami Beach is between 500 and 1,000 feet offshore (DERM nearshore resource mapping surveys). This is the same determination made in association with the Dade County BEC in 2016 (USACE 2016).

4.3 THREATENED AND ENDANGERED SPECIES

No Action Alternative. Without continued placement of dredged material on the beaches to the north and south of the inlet, erosion in these areas may increase, which may result in less nesting habitat for listed sea turtles and least terns. Ceasing O&M dredging of the AIWW DA-9 may result in the expansion of Johnson's seagrass into the previously dredged areas. This would be a benefit to the species, until such time as the species is overtaken by other seagrass species, which is commonly seen in seagrass colonization areas in southeast Florida. There will be no effect to swimming sea turtles, manatees, and smalltooth sawfish if the AIWW is not maintained to authorized depths.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

Potential adverse effects of dredging and placement of material on the beach has been reviewed in the SARBO and SPBO. Those BOs include Terms and Conditions (T&Cs) to minimize adverse effects to listed species and provide incidental take authorizations where adverse effects cannot be avoided. The BOs and their T&Cs are available in Appendix A of this EA and are incorporated by reference. USACE is incorporating those T&Cs into the project plans and specifications and will be followed during construction. As a result of the BOs, the effects of the continued dredging of the AIWW DA-9 in the vicinity of Bakers Haulover Inlet with placement of dredged material either on the updrift or downdrift beaches, may adversely affect, but is not likely to jeopardize the continued existence of any listed species.

Additional analysis, by species group or species is provided below.

4.3.1 SEA TURTLES

Dredging and the use of the various placement locations could potentially directly and indirectly affect sea turtles in several ways, including:

- Dredging activities that utilize a hopper dredge may lethally take or injure sea turtles through entrainment; preventative measures will be taken, including the use of draghead deflectors and monitoring to reduce the potential for entrainment. Placement activities on nesting beaches may affect sea turtles (see SARBO and Gulf Regional Biological Opinion 2003 (as amended in 2005 and 2007) (GRBO) for more details).
- Sand placement shall not occur on the beach between 1 May and 31 October.

- Escarpment formations and resulting impediments to nesting females, as well as potential losses to the beach equilibration process.
- Sediment density (compaction), shear resistance (hardness), sediment moisture content, beach slope, sediment color, sediment grain size, sediment grain shape, and sediment grain mineral content can be altered potentially affecting the nesting and incubating environment.
- Hard sediment can prevent a female turtle from digging a nest or result in a poorly constructed nest cavity.
- Changes in sediment properties and color could alter the temperature of the beach and incubating nests, thus influencing sex ratios.

With respect to effects of hopper dredging on sea turtles, the SARBO (1997) states:

Therefore, NMFS believes that up to 35 loggerheads may be taken by injury or mortality, as well as 7 Kemp's ridleys, 7 green turtles, 2 hawksbills, and 5 shortnose sturgeon. These takes are not likely to jeopardize the continued existence of these species and the ongoing commitment by the COE to further minimize takes may reduce the likelihood of sea turtle takes in the future even if nearshore sea turtle abundances increase.

The 1991 SARBO;(amended in 1995 and 1997; NMFS 1991) states:

Clamshell dredges are the least likely to adversely affect sea turtles because they are stationary and impact very small areas at a given time. Any sea turtle injured or killed by a clamshell dredge would have to be directly beneath the bucket. The chances of such an occurrence are extremely low, although the take of a live turtle by a clamshell dredge has been documented at Canaveral. On the basis of the best available information, NMFS has determined that dredging with a clamshell dredge is unlikely to result in the take of sea turtles. . . . Pipeline dredges are relatively stationary and only influence small areas at a given time. For a turtle to be taken with a pipeline dredge, it would have to approach the cutterhead and be caught in the suction. This type of behavior would appear unlikely, but may be possible. Presently, NMFS has determined that pipeline dredges are unlikely to adversely affect sea turtles. . . . the special purpose split-hull hopper dredge and sidecast dredges are used in a limited basis in the southeast. These dredges are not believed harmful to sea turtles because of the small size of dragheads (roughly 2' by 2'). For the present consultation, NMFS has determined that these dredges are unlikely to adversely affect sea turtles.

Of the three major dredge types, only the hopper dredge has been implicated in the mortality of endangered and threatened species. In the 1997 SARBO, NMFS also determined that leatherback sea turtles are unlikely to be adversely affected by hopper dredging activities.

NMFS that the *Currituck* class of dredge “is not expected to adversely affect listed species of sea turtles because of the slow speed of the vessels, the low suction levels inherent to these small dredges, and the small size of the dragheads.” This opinion applies to the *Currituck*, as well as

“vessels of this or similar type and size class...” (NMFS, 1999).

USFWS biological opinions for similar projects acknowledge that placement of sand on a critically eroded beach can enhance sea turtle nesting habitat if the sand placed is highly compatible (*i.e.*, grain size, shape, color, etc.) with naturally occurring beach sediments at the recipient site and compaction and escarpment remediation measures are properly adopted (USFWS 2015). USACE completed an ESA consultation with USFWS in February 2017 with regard to placement of dredged sand on the beaches of Miami-Dade County under the Dade BEC (Service CPA Code: 04EF2000-201 5-CPA-0394/Service Consultation Code: 04EF2000-20 I 5-F-0286). The actions in this proposal take place within the previously consulted footprint of the Dade BEC and the effects to listed species are the same as those previously considered.

The USACE plans to minimize potential effects to nesting sea turtles in the project area by implementing steps that are now common practice including, but not limited to:

- contingency plans;
- risk assessments;
- sediment quality monitoring;
- compaction tests;
- tilling; and
- leveling escarpments in the fill

4.3.2 MARINE MAMMALS

In accordance with Section 7 of the ESA of 1973, as amended (16 U.S.C. §1536), USACE consulted with the USFWS in accordance with the SPBO. USACE has determined that the proposed dredge work may affect, but is not likely to adversely affect, manatees. This determination was based on the implementation of species specific protective measures and the type of dredging equipment typically used to dredge the channel. Regarding protection for manatees, the 2015 USFWS SPBO T&Cs will be followed.

Whales are infrequently encountered when work vessels are in transit to either of the beach placement areas. In the 1991 SARBO, NMFS stated that although several ESA-listed whale species were known to occur along the Atlantic coast (finback, humpback, and sei), it was unlikely that they would be adversely affected by hopper dredging activities. In addition, as clamshell and cutterhead dredges are static, they are also unlikely to affect the species. Therefore, whales are not likely to be struck by vessels. Work crews will monitor for whales during all waterborne work. USACE has determined that based on NMFS’ conclusions, the proposed dredging and placement operations may affect, but are not likely to adversely affect, ESA-listed whales in the project area.

4.3.3 SMALLTOOTH SAWFISH

The logic set forth in the GRBO regarding hopper dredge effects to smalltooth sawfish in the Gulf of Mexico is also applicable to the AIWW DA-9 where sawfish occurrences are rare. As stated in the GRBO (page 21):

Smalltooth sawfish (Pristis pectinata) are tropical marine and estuarine fish that have the northwestern terminus of their Atlantic range in the waters of the eastern U.S. Currently, their

distribution has contracted to peninsular Florida and, within that area, they can only be found with any regularity off the extreme southern portion of the state. The current distribution is centered in the Everglades National Park, including Florida Bay. They have been historically caught as bycatch in commercial and recreational fisheries throughout their historic range; however, such bycatch is now rare due to population declines, population extirpations and a ban on fishing with floating nets. Between 1990 and 1999, only four documented takes of smalltooth sawfish occurred in shrimp trawls in Florida (Simpendorfer 2000). After consultation with individuals with many years in the business of providing qualified observers to the hopper dredge industry to monitor incoming dredged material for endangered species remains (C. Slay, Coastwise Consulting, pers. comm. August 18, 2003) and a review of the available scientific literature, NOAA Fisheries has determined that there has never been a reported take of a smalltooth sawfish by a hopper dredge, and such take is unlikely to occur because of smalltooth sawfishes' affinity for shallow, estuarine systems. Only hopper dredging of Key West channels would have the potential to impact smalltooth sawfish but those channels are not within the area of influence of this project. Therefore, NOAA Fisheries believes that smalltooth sawfish are rare in the action area, the likelihood of their entrainment is very low, and that the chances of the proposed action affecting them are discountable.

USACE agrees with this determination and hereby incorporates it into this effects determination.

4.3.4 LEAST TERN

Least tern ground colonies are known to occur in Miami-Dade County, although few have been documented since 1998 and no ground colonies have been reported since 2005 (FWC 2009). Therefore, the proposed action is not likely to affect the least tern. If least terns are found on the beach placement area, the protective conditions developed for migratory birds will be utilized as well.

The No Action Alternative would not have any direct effect on the least tern. However, adverse effects would be expected on least terns loafing, resting, and nesting habitat along the eroded beach.

4.3.5 RUFA RED KNOT

Like the least tern, the rufa red knot is also known to rarely use the beaches of Miami-Dade County. And, as with the least tern, placement of dredged O&M material on the beach may displace foraging and resting. The displacement is expected to be short-term and habitat exists outside of the beach placement areas with similar characteristics that may be used by displaced species while placement activities are underway. Direct effects to piping plovers from project construction are expected to be minimal as birds are motile and can avoid construction activities. The disposal of sand on the beach may temporarily interrupt foraging and resting activities of shorebirds that utilize the project beach area. This interruption would be limited to the immediate area of disposal and duration of construction. As previously discussed in Section 4.2.1, the prey base which includes the benthic organisms may be temporarily reduced in the placement area. This effect would be short-term as recovery of beach infauna is expected within one year after sand placement.

4.3.6 JOHNSONS SEAGRASS

As previously discussed in Section 4.2.5, Johnson's seagrass that has directly colonized the AIWW at DA-9 would be removed by the dredging activity and the potential side slope sloughing. These grasses are expected to recolonize these areas as they refill with sand between dredging events.

4.4 WILDLIFE REFUGES, SANCTUARIES, AND MANAGEMENT AREAS

No Action Alternative. Cut DA-9 of the AIWW is within the boundaries of the BBAP. As the channel fills in and seagrass begins to colonize the channel, the grass may be impacted or destroyed if vessels attempt to navigate the channel.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet. No adverse effects to refuges, sanctuaries, and management areas would occur.

4.5 ESSENTIAL FISH HABITAT

No Action Alternative. As the channel fills with sand, any organisms, including corals, which have colonized the rock walls of the channel (where the channel walls are exposed rock) would be buried in sand and this burial would be lethal to these organisms. The sand fill of the channel may also result in the colonization of the channel by seagrasses as the channel shallows and more light reaches the bottom of the channel. This would be a negative effect to these colonizing resources and a beneficial effect to seagrasses, both of which are designated as EFH.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet. Potential effects to EFH include temporary effects to the estuarine water column through turbidity. The Programmatic Essential Fish Habitat Assessment (PEFHA) was completed by USACE for the issuance of RGP-93. The assessment determined that no significant effects through the dredging of seagrasses that have colonized the AIWW will occur, because the monitoring of grasses before and after dredging have shown either no effect to the grasses of the dredging or the grass recolonized the channel after dredging. Seagrass monitoring is conducted for each dredging event and will continue for the foreseeable future.

4.6 AIR QUALITY

No Action Alternative. The No Action Alternative is not expected to affect air quality in the project area.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet. Minor, temporary reduction of air quality due to emissions from dredging and beach placement operations.

4.7 WATER QUALITY

No Action Alternative. The No Action Alternative is not expected to affect water quality in the project area.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet. The work would temporarily reduce water quality due to turbidity. After dredging and placement, water quality will quickly return to pre-dredging conditions.

This project will be performed in compliance with State of Florida water quality standards. Coastal Zone Management Plan consistency was determined through the acquisition of the issuance of Joint Coastal Permit (JCP) No. 0173188-004-JN to USACE on 27 June 2013. The JCP included monitoring protocols which requires turbidity monitoring during placement activities. The project is expected to cause temporary and insignificant increases in turbidity associated with the dredging, at the borrow area and intertidal swash zone seaward of the beach. Due to the relatively low silt content and high density of the material, sand is expected to quickly fall out of the water column and only a short-term increase in turbidity is expected. A turbidity control and monitoring plan is a special condition of the permit to minimize effects to surrounding waters. The FDEP JCP includes conditions for water quality and certifies that the project is consistent with Water Quality Certification. The fill material will be free from items such as trash, debris, construction materials, and soils contaminated with any toxic substance, in toxic amounts, in accordance with Section 307 of the Clean Water Act (33 U.S.C. §1317).

No long-term adverse effect on water quality is expected to occur as a result of the continued O&M of the AIWW DA-9. Dredging operations will create minor, temporary reduction of water quality in the vicinity of the construction by increased turbidities. Elevated turbidity levels would occur within the mixing zone in dredging areas and in the return water from the disposal site. Turbidities directly due to dredging are expected to return to ambient levels within a short time period.

4.8 NOISE

No Action Alternative. The No Action Alternative is not expected to affect noise in the project area.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

Temporary minor increases in noise would occur during the dredging and dredged material placement in the vicinity of the construction. Waterways where dredging will occur currently experience elevated background noise associated with navigation activities from recreational and commercial vessels. Dredging and disposal operations near populated or other noise-sensitive locations may result in increased levels of noise. Following dredging and placement operations, noise levels would revert to existing levels.

4.9 AESTHETIC RESOURCES

No Action Alternative. No direct effect is anticipated. However, lack of the O&M dredged sand placement may increase the loss of the beach between nourishment events conducted as part of the Dade County BEC project and may result in loss of beach and an increase in scarping, which may have a negative effect on aesthetics.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

Dredges, pipelines, and heavy equipment will be used during beach placement and may be considered “unsightly” by members of the public. Also temporary air emissions, turbid water, and increased noise can also temporarily impact aesthetics. During construction, equipment used for

dredging would be visible, resulting in a temporary reduction in the aesthetic value offshore during construction. Effects to aesthetics depend on the locations of the dredging and disposal areas. Aesthetic values are less likely to be impacted in remote or highly industrialized dredging and disposal areas.

4.10 RECREATIONAL RESOURCES

No Action Alternative. No direct effect is anticipated. However, lack of the O&M dredged sand placement may increase the loss of beach between nourishment events conducted as part of the Dade County BEC project and may result in loss of beach and an increase in scarping, which may have a negative effect on recreation.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

Short-term effects to recreational boat traffic and beach activities in the project vicinity due to the presence of the dredge, support vessels, and pipelines. Long-term benefits by maintaining recreational opportunities associated with maintaining the beach and the AIWW DA-9 (see Figure 15). Failure to maintain the AIWW in DA-9 would have negative effects on recreational use of the area.

4.11 SOCIOECONOMICS

No Action Alternative. Adverse effects to recreational and commercial vessels would be limited on their ability to navigate the AIWW. This could result in a loss of navigation to more than 500,000 recreational vessels that provide \$12 billion in economic output, including \$3 billion in personal wages and 66,843 jobs, generate \$540 million in tax revenues, and increase property values by \$19.4 billion. Studies have shown that these economic benefits generated by the waterways would be reduced by 45% to 50% if the Federal navigation channels are not properly maintained.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

Social and economic benefits that are based on navigation associated with the Federal project would continue. The extent of dredging may be limited by the appropriation of funds, approvals by Federal and state agencies, and appropriate access to dredging and placement areas.

4.12 NAVIGATION AND PUBLIC SAFETY

No Action Alternative. The No Action Alternative would result in shoaling and shallowing of the channel. As shoaling continues, the navigability of the channel would decrease. Because vessels would tend to use the center of the channel, shoaling at the sides would result in a narrowing of the channel, which would affect public safety by increasing the potential for collisions.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

Dredging operations during construction may impede or restrict commercial or recreational access or ingress/egress to the area. Continuing to maintain the AIWW assures safe navigation for the public. This temporary, localized effect is considered only a minor inconvenience to navigation.

4.13 NATIVE AMERICANS

No portion of the proposed action is located within or adjacent to known Native American-owned lands, reservation lands, or Traditional Cultural Properties.

No Action Alternative. There will be no effect to Native Americans with the No Action Alternative.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet. There would be no effect to Native Americans from O&M dredging the AIWW and sand placement on the beach.

4.14 CULTURAL RESOURCES

No Action Alternative. The No Action Alternative would have no effect to cultural resources listed or eligible for listing in the National Register of Historic Places (NRHP).

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet. The proposed action would have no effect to cultural resources listed or eligible for listing in the National Register of Historic Places (NRHP). USACE consulted with the SHPO on the continued O&M dredging of Bakers Haulover with placement on the beach as part of the 1997 EA on 30 September 1996 and SHPO concurred with a determination of no effect to cultural resources within the project area. The channel has been maintained at least five times since that determination with sand placement occurring along the beaches. The two beach placement areas are also part of the Dade County Beach Erosion Control Project and, in a letter dated 28 September 2015, the SHPO determined that “no historic properties would be effected” by placement of sand on the beach in Miami-Dade County. USACE sent a letter conveying a continuing no adverse effect to cultural resources at the end of July 2017 to update the consultation. Project specifications include cultural resource inadvertent discoveries language that requires the contractor to shut down if discoveries are made.

4.15 ENERGY REQUIREMENTS AND CONSERVATION

No Action Alternative. There would be no effect to energy from O&M dredging the AIWW.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet. The work will involve the use of fuel to power dredges, pumps, and associated machinery in conjunction with the maintenance of the Federal channel and placement of dredged material.

4.16 NATURAL OR DEPLETABLE RESOURCES

No Action Alternative. There would be no effect to energy from O&M dredging the AIWW.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet. No direct effects caused by the work on natural/depletable resources would occur. However, indirect effects include the use of fuel for construction and operations (petroleum depletion), machinery wear and tear (metal ore depletion), and similar effects. However, these effects are considered to be of minor consequence.

4.17 CUMULATIVE EFFECTS

Cumulative effects are defined in 40 CFR §1508.7 as those effects that result from:

...the incremental effect 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 effects can result from individually minor but collectively significant actions taking place over a period of time.

Cumulative environmental effects for the proposed project were assessed in accordance with guidance provided by the President's Council on Environmental Quality (CEQ). Cumulative environmental effects were also evaluated in the NEPA documents listed in Section 1.4 and those analysis are incorporated by reference.

Past projects in the AIWW in the vicinity of Bakers Haulover (Cut DA-9) include the Dade BEC, as well as the previous O&M of the AIWW, both dating back to at least the late 1970s, early 1980s. The Dade BEC EA, dated March 2016, includes a detailed Cumulative Effects analysis in Section 4.21 that is hereby incorporated by reference. The AIWW at Cut DA-9 has been maintained since at least 1987 (based on available public notices, however, it was originally dredged in the late 1960s and was likely maintained soon after based on historic shoaling rates). An EA was prepared for the ongoing O&M dredging in July 1997 that included a Cumulative Effects analysis, and that analysis is hereby incorporated by reference.

There are two Federal projects ongoing in the vicinity of the AIWW DA-9. These include the Dade BEC and the O&M of Bakers Haulover Inlet Federal Navigation Channel. Additionally, the entire length of the AIWW is permitted for O&M activities and several areas are maintained each year by either USACE or our partner, the FIND. All of these activities have been evaluated under NEPA directly for each project, or under a permit issued by USACE- RD. These activities are not expected to have significant effects on the environment individually or cumulatively.

4.18 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

No Action Alternative. Cessation of O&M dredging of the AIWW DA-9 may result in adverse effects to seagrasses that may colonize the channel due to sand filling it in as recreational and commercial vessels attempt to transit the channel. This may also adversely affect the environment as there is damage to vessels that may result in the spilling of oil or other fluids from the vessels if they run aground.

Proposed Action, Dredging and Placement on the Beach North or South of Bakers Haulover Inlet.

Continued O&M dredging of the AIWW DA-9 with placement of dredged material in on the beaches to the north and south side of the inlet will have some unavoidable effects to sea turtles swimming in the water if hopper dredges are used. Additionally, marine animals, including fishes and marine mammals, may experience increased noise and turbidity associated with the placement of material on the beach. Infaunal resources that live inside the boundaries of the beach areas may also be adversely effected due to burial under dredged material as it is placed on the beach. Shorebirds may also be effected through the placement of material on the beach, avoidance of

nesting/foraging areas, or burial of infaunal forage. All of these effects are expected to be short term and minor in nature.

5 ENVIRONMENTAL COMMITMENTS

USACE shall comply with all terms and conditions of the revised SPBO, the SARBO, and the State's JCP issued for the project. USACE also commits to avoiding, minimizing, or mitigating for adverse effects during construction activities by including the following commitments in the contract specifications.

5.1 PROTECTION OF FISH AND WILDLIFE RESOURCES

The contractor shall keep construction activities under surveillance, management, and control to minimize interference with, disturbance to, and damage of fish and wildlife. Species that require specific attention, along with measures for their protection, shall be listed in the Contractor's Environmental Protection Plan (EPP) prior to the beginning of construction.

5.2 ENDANGERED SPECIES PROTECTION

USACE and contractors commit to avoiding, minimizing, or mitigating for adverse effects to sea turtles, manatees, and sawfish during construction activities. USACE has included the T&Cs of the SPBO for sand placement and the SARBO for dredging in the project specifications. The contractor shall also include protection criteria for Endangered and Threatened species protections in their EPP.

5.3 WATER QUALITY

The USACE contractor will prevent oil, fuel, or other hazardous substances from entering the air or water. This will be accomplished by design and procedural controls. All wastes and refuse generated by project construction would be removed and properly disposed. The USACE contractor will implement a spill contingency plan for hazardous, toxic, or petroleum material for the borrow area. The contractor shall monitor water quality (turbidity) at the dredging and beach placement sites, as required by the State JCP.

5.4 CULTURAL RESOURCES

An unexpected cultural resources finds clause has been included in the project specifications. In the event that the dredge operators discover any archaeological resource while conducting dredging operations, dredge operations will be halted immediately within the area and USACE contacted in order to establish protective measures. If investigations determine that the resource is significant, state and Federal agencies, in consultation with appropriate tribes and interested parties, would determine how best to protect it.

5.5 PROTECTION OF MIGRATORY BIRDS

USACE will incorporate the standard migratory bird protection protocols into the project plans and specifications and will require the contractor to abide by those requirements.

6 COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

6.1 NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (42 U.S.C. §4321 ET. SEQ.)

Environmental information on the project has been compiled and this Supplemental EA has been prepared. The final EA and signed FONSI will be made available to the public and a notice of availability of the signed FONSI will be sent to interested parties. The project has also undergone numerous reviews under NEPA as detailed in Section 1.4. This EA summarizes and incorporates those findings by reference. The project is in compliance with NEPA.

6.2 ENDANGERED SPECIES ACT OF 1973 (16 U.S.C. §1531 ET. SEQ.)

USACE coordinated this project with NMFS through the SARBO dated 25 September 1997. By letter dated 25 October 2007, NMFS instructed USACE to continue to apply the 1997 SARBO on all O&M dredging projects while NMFS completes the new SARBO. That document is not yet complete. If a Currituck class dredge is used for the project, the T&C of the 9 March 1999 BO shall also be incorporated. For species under the jurisdiction of the USFWS, USACE will use the SPBO dated 13 March 2015 for O&M dredging and placement activities for the IAWW DA-9 in the vicinity of Bakers Haulover inlet. The conservation recommendations included in the SPBO for least terns will also provide protections to the rufa red knot. USACE completed an ESA consultation with USFWS in February 2017 with regard to placement of dredged sand on the beaches of Miami-Dade County under the Dade BEC (Service CPA Code: 04EF2000-201 5-CPA-0394/Service Consultation Code: 04EF2000-201 5-F-0286). The actions in this proposal take place within the previously consulted footprint of the Dade BEC, and the effects to listed species are the same as those previously considered. USACE has fully coordinated this project in accordance with the ESA of 1973, as amended and is in full compliance with the Act.

6.3 FISH AND WILDLIFE COORDINATION ACT OF 1958 (16 U.S.C. §§661-665; 665A; 666; 666A-666C)

USACE coordinated each activity constructed pursuant to this NEPA document with the USFWS in accordance with the Fish and Wildlife Coordination Act (FWCA) prior to construction. This project is in full compliance with this Act.

6.4 NATIONAL HISTORIC PRESERVATION ACT OF 1966 (INTER ALIA)

The Proposed Action is in compliance with Section 106 of the National Historic Preservation Act, as amended (54 U.S.C. § 306108). As part of the requirements and consultation process contained within the National Historic Preservation Act implementing regulations of 36 CFR Part 800, this project is also in compliance through ongoing consultation with the Archaeological and Historic Preservation Act, as amended (16 U.S.C. §§469-469c) (P.L. 93- 29), Archeological Resources Protection Act (16 U.S.C. §§470aa-470mm) (P.L. 96-95), American Indian Religious Freedom Act (42 U.S.C. §§1996 and 1996a) (P.L. 95- 341), Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. §3001 *et. seq.*), Executive Orders 11593, 13007, and 13175, the Presidential Memo of 1994 on Government to Government Relations, and appropriate Florida Statutes. USACE completed consultation with the SHPO for each aspect of this project. USACE sent a letter conveying a continuing no adverse effect to cultural resources to the SHPO at the end of July 2017 to update the consultation.

- 1997 EA – “An archival and literature review, including a review of the current National Register of Historic Places listing and consultation with the Florida State Historic Preservation Officer (SHPO), was conducted to determine if significant cultural resources are present in the project area. No significant archeological sites or historic properties are recorded in the project area, and the area is judged to have little potential for containing significant cultural resources. January 1995, the SHPO recommended that no further cultural resources investigations are required to meet the requirements of the National Historic Preservation Act (PL 89-665). Therefore, the project would be in compliance.”
- 2016 Dade BEC EA – “Consultation with the Florida SHPO, appropriate federally recognized tribes, and other interested parties has been initiated and is ongoing. SHPO concurred with the results of the cultural resource assessment and “no historic properties will be effected” by letter dated 28 September 2015.”
- 2016 Memorandum for the Record/Statement of Findings for Regional General Permit SAJ-93. A public notice was published on 31 March 2015. Comments were received from the State Historic Preservation Officer (SHPO). USACE responded to the comments, and the comments were incorporated into the permit, where applicable. The permit was issued on 26 April 2016.

6.5 CLEAN WATER ACT OF 1972 (33 U.S.C. §1251 ET. SEQ.)

Maintenance dredging of the AIWW DA-9 in the vicinity of Bakers Haulover Inlet, with placement on the beaches to the north and south of the inlet, is covered by Section 401 of the CWA (33 U.S.C. §1341). The issuance of the JCP to USACE provides the analysis for the project’s compliance with Section 401 of the CWA. USACE will meet all state water quality requirements. The project is in full compliance with this Act.

6.6 CLEAN AIR ACT OF 1972 (42 U.S.C. §7401 ET. SEQ.)

The short-term effects from construction equipment associated with the project would not significantly effect air quality. No air quality permits would be required for this project. Miami-Dade County is designated as an attainment area for Federal air quality standards under the Clean Air Act. Because the project is located within an attainment area, USEPA’s General Conformity Rule to implement Section 176(c) of the Clean Air Act (42 U.S.C. §7506(c)) does not apply and a conformity determination is not required.

6.7 COASTAL ZONE MANAGEMENT ACT OF 1972 (16 U.S.C. §1451 ET. SEQ.)

The State of Florida’s issuance of the JCP for the project is their determination in accordance with 15 C.F.R. Part 930, Subpart C. This project is in full compliance with this Act.

6.8 FARMLAND PROTECTION POLICY ACT OF 1981 (7 U.S.C. §4201 ET. SEQ.)

This project will not affect any prime or unique farmland. This Act is not applicable.

6.9 WILD AND SCENIC RIVER ACT OF 1968 (28 U.S.C. §1271 ET. SEQ.)

This project will not affect anydesignated wild and scenic river reaches. This Act is not applicable.

6.10 MARINE MAMMAL PROTECTION ACT OF 1972 (16 U.S.C. §1361 ET. SEQ.)

USACE will incorporate the safeguards used to ensure the protection of any manatees, whales, or dolphins present in the project area. USACE included these safeguards in the project plans and specifications and the contractor must implement them during dredging and placement operations. In addition, if dredging is conducted with a clamshell dredge, a dedicated manatee monitor will be assigned to watch for manatee conflicts. Therefore, this project is in compliance with the Act.

6.11 ESTUARY PROTECTION ACT OF 1968 (16 U.S.C. §§1221-26)

This project will not affect any designated Estuary of National Significance. This Act is not applicable.

6.12 FEDERAL WATER PROJECT RECREATION ACT (16 U.S.C. §460L-12 ET SEQ.)

The principles of the Federal Water Project Recreation Act do not apply to this project.

6.13 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976, AS AMENDED (16 U.S.C. §801 ET. SEQ.)

USACE fully coordinated the project in accordance with the Essential Fish Habitat consultation requirements as part of the recently authorized Department of Army Regional General Permit (refer to Section 1.4). USACE provided the PEFHA to NMFS on 27 April 2015. NMFS provided six conservation recommendations by letter dated 5 May 2015. USACE-RD undertook approximately a year of discussions and assessment in partnership with NMFS under the Act's EFH provisions, making the final determination of compliance with the Act on 18 March 2016. USACE notified NMFS via letter that they had 10 days to elevate the consultation to higher authority. On 4 April 2016, NMFS requested additional time to respond to the USACE's 10 day letter. USACE declined, as it would have resulted in a delay issuing the permit, and as a result, delay two scheduled O&M projects. USACE conducted additional coordination via email, conference call, and in person meetings. On 15 April 2016, USACE informed the NMFS Regional Administrator that the permit was being issued and all responsibilities under the Act had been met.

For the ongoing Federal O&M activities at the AIWW DA-9, the last EA was completed in 1997. EFH requirements were put in place in 1999 and NMFS advised USACE that per the 3 May 1999 interagency finding, where maintenance dredging activities were occurring, EFH consultation would be required when the NEPA document for the project was updated, unless project parameters change. Normally this EA would be the instrument of that coordination. However, due to the PEFHA conducted by the Regulatory Division for the entire length of the AIWW, including dredging completed by USACE, USACE completed this effort and the consultation does not need to be updated at this time. As a result, this EA is in compliance with the Act.

6.14 SUBMERGED LANDS ACT OF 1953 (43 U.S.C. § 1312 ET. SEQ.)

The project would occur on submerged lands of the State of Florida. USACE coordinated on this project with the State via the issuance of their JCP (#0173188-002-JC) and is in compliance with the Act.

6.15 COASTAL BARRIER RESOURCES ACT AND COASTAL BARRIER IMPROVEMENT ACT OF 1990 (16 U.S.C. §3501 ET. SEQ.)

There are no designated coastal barrier resources in the project area that would be affected by this project. These Acts are not applicable.

6.16 RIVERS AND HARBORS ACT OF 1899 (33 USC §401 ET. SEQ.)

The proposed work will not obstruct the navigable waters of the United States. USACE does not permit itself for civil works projects. As such, the activity discussed in this Supplemental EA is in compliance with the intent of the Act.

6.17 ANADROMOUS FISH CONSERVATION ACT (16 U.S.C. §§757A-757G)

The project is not anticipated to affect anadromous fish species. USACE coordinated with both NMFS and the USFWS on this project and is in compliance with this Act.

6.18 MIGRATORY BIRD TREATY ACT (16 U.S.C. §§703-712) AND MIGRATORY BIRD CONSERVATION ACT (16 U.S.C. §§715-715D, 715E, 715F-715R)

USACE included migratory bird protection measures in the project plans and specifications for operations on the beach placement areas. If nesting activities occur within the construction area, appropriate buffers will be placed around nests to ensure their protection. The project is in compliance with these Acts.

6.19 MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT (33 U.S.C. §1401 ET. SEQ.)

The term *dumping* as defined in the Act [33 U.S.C. §1402(f)] does not apply to the disposal of material for beach nourishment or to the placement of material for a purpose other than disposal (i.e. placement of rock material as an artificial reef or the construction of artificial reefs as mitigation). Material placed on the beach would not unreasonably degrade or endanger human health or the marine environment. Therefore, the project is in compliance with this Act.

6.20 UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT OF 1970 (42 U.S.C. §4601 ET. SEQ.)

The purpose of this Act is to ensure that owners of real property to be acquired for Federal and federally assisted projects are treated fairly and consistently and that persons displaced as a direct result of such acquisition will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. This project shall not acquire property. Therefore, this Act is not applicable.

6.21 E.O. 11990, PROTECTION OF WETLANDS

This project will not affect any wetlands. This project is in compliance with this E.O.

6.22 E.O. 11988, FLOOD PLAIN MANAGEMENT

To comply with E.O. 11988, the policy of USACE is to formulate projects that, to the extent possible, avoid or minimize the adverse effects associated with the use of the floodplain and avoid inducing development in the floodplain unless there is no practicable alternative. No activities associated with this project are located within a floodplain, which is defined by E.O. 11988 as an “area which

has a one percent or greater chance of flooding in any given year.” The project is in compliance with the E.O.

6.23 E.O. 12898, ENVIRONMENTAL JUSTICE

On 11 February 1994, the President of the United States issued E.O. 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. The E.O. mandates that each Federal agency make environmental justice part of the agency mission and to address, as appropriate, disproportionately high and adverse human health or environmental effects of the programs and policies on minority and low-income populations. This project will not cause any disproportionate adverse effects to minority or low income populations. The project is in compliance with the E.O.

6.24 E.O. 13045, DISPARATE RISKS INVOLVING CHILDREN

On 21 April 1997, the President of the United States issued E.O. 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. The E.O. mandates that each Federal agency make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children and ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. As the proposed action does not affect children disproportionately from other members of the population, the proposed action would not increase any environmental health or safety risks to children. The project is in compliance with the E.O.

6.25 E.O. 13089, CORAL REEF PROTECTION

While there are no coral reefs near the project area, there are hardbottom habitats that support some coral species approximately 1,000 feet east of the beach placement areas. Due to their distance from the placement area and the classification of the dredged material as sand, it is unlikely that adverse effects to these hardbottom habitats will occur. The project is in compliance with the E.O.

6.26 E.O. 13112, INVASIVE SPECIES

The proposed action will require the mobilization of dredge equipment from other geographical regions. Dredge equipment has the potential to transport species from one region to another, introducing them to new habitats where they are able to out-compete native species. The benefits of the proposed project outweigh the risks associated with the very slight potential for introducing non-native species to this region.

6.27 E.O. 13186, MIGRATORY BIRDS

This E.O. requires, among other things, a Memorandum of Understanding (MOU) between the Federal Agency and the USFWS concerning migratory birds. Neither the Department of Defense MOU nor the USACE's Draft MOU clearly address migratory birds on lands not owned or controlled by USACE. For many USACE civil works projects, the real estate interests are provided by the non-federal sponsor. Control and ownership of the project lands remain with a non-federal interest. Measures to avoid the destruction of migratory birds and their eggs or hatchlings are described in a section above on the Migratory Bird Treaty Act. USACE will include

our standard migratory bird protection requirements in the project plans and specifications and will require the contractor to abide by those requirements. The project is in compliance with the E.O.

7 PUBLIC/AGENCY COORDINATION

7.1 SCOPING AND DRAFT EA

The project, as proposed, was previously coordinated under a previous EA from 1997 and a DA regional general permit issued by USACE on 26 April 2016. The issuance of the permit modification was preceded by a 30-day public notice period. USACE provided a Notice of Availability of the draft Supplemental EA and FONSI for 30 days. Comments received on the draft were incorporated into the final EA and a Notice of Availability will be provided to the public and agencies.

7.2 AGENCY COORDINATION

The draft Supplemental EA and FONSI were provided to Federal, state, and local agencies and interested parties via email on 30 June 2017 for a 30-day comment period. Recipients included:

Federal Agencies

National Marine Fisheries Service – Protected Resources and Habitat Conservation Divisions
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

State Agencies

Florida Fish and Wildlife Conservation Commission – Imperiled Species Branch
Florida Department of Environmental Protection – Florida Coastal Office; Coastal Management Program and Coral Reef Conservation Program
Florida Department of Environmental Protection – Beaches and Coastal Systems
Florida Inland Navigation District
State Historic Preservation Officer

Local Agencies

Miami-Dade County Department of Environmental Resources Management
Miami-Dade County Department of Parks and Recreation
City of Miami-Beach

Non-Governmental Organizations

Florida Shore and Beach Preservation
Association
Biscayne Bay Waterkeeper
Tropical Audubon Society
Sea Turtle Conservancy

Sierra Club, Miami
Miami Surfrider
Save the Manatee Club
Cry of the Water
South Florida Audubon Society

7.3 COMMENTS RECEIVED ON THE DRAFT ENVIRONMENTAL ASSESSMENT

Comments on the Draft EA and FONSI were received from three agencies. These comments were addressed in the Final EA. Comments that were received and how they were addressed are included below.

ENVIRONMENTAL PROTECTION AGENCY:

Email from Jamie Higgins with attachment; dated June 28, 2017.

In Table 1 (starting on page 8), the USACE outlines environmental factors evaluated in the various NEPA documents. The EPA thinks this is an appropriate approach to portraying information; however, there is no cross reference as to where this information is appropriate for the current EA. Recommendation: The EPA recommends the USACE provide a cross reference in Table 1 to the appropriate section within the Final EA.

Response: Table 1 is a summary of the previous NEPA analyses conducted in the project area. Table 2 provides the summary of effects associated with this analysis. A statement was added to the table to refer readers to Table 2 for a summary of effects associated with this analysis.

In Table 2 (page 16), the USACE discusses cultural resources and the proposed alternative and states, "A letter conveying a continuing no adverse effect to cultural resources was sent to the SHPO [State Historic Preservation Office] at the end of June 2017 to update the consultation." Recommendation: The EPA recommends the USACE briefly discuss the outcome of the SHPO correspondence and provide a copy of the SHPO's correspondence in the Final EA.

Response: The section number of each resource area analysis was added to each row header in Table 2.

On page 40, the USACE discusses a study conducted by the Regulatory Division regarding effects of operations and maintenance dredging on seagrasses, but does not provide a citation. Recommendation: The EPA recommends the USACE provide a citation for this study in the Final EA.

Response: A citation was added.

On page 40, the USACE quotes a Miami-Dade County (Department of Environmental Resources Management, DERM)) study that states, "Differences in the relative abundance of seagrasses were noted between the pre and post construction surveys." However, the USACE does not provide any quantitative data that correspond with the "pre" and "post" construction surveys. Also, on page 41, the USACE further quotes the DERM study that states, "Therefore, the differences between the pre and post construction seagrass assessments are consistent with documented seasonal variations of shoot density and biomass (canopy)." Again, there is no quantitative data that backs up the narrative. Recommendation: For disclosure purposes, the EPA recommends the USACE provide specific quantitative data (i.e., percentage or raw number of either the delta between "pre" and "post" or the actual numbers) in the Final EA.

Response: USACE included all of the seagrass surveys conducted by DERM over four different monitoring events in Appendix B, with the major conclusions cited in section 4.2.5. As the reports discuss, acreage of seagrass cover was not measured. Seagrass monitoring was conducted utilizing the Braun-Blanquet cover abundance visual survey method, monitoring to determine if

the dredging of the IWW at DA-9 was having an indirect adverse effect on seagrasses that surround the dredge area. As a result, there are no pre- and post- survey “actual numbers” to include in the EA. No changes we were made to other EA as a result of this comment, as the data requested by EPA does not exist in the record.

On page 42, discusses the U.S. Fish and Wildlife Service’s Biological Opinion (BO) and states, “Those BOs include Terms and Conditions (T&Cs) to minimize adverse effects to listed species and provide incidental take authorizations where adverse effects cannot be avoided.”

Recommendation: The EPA recommends the USACE discuss the T&Cs in the Final EA and commit to these T&Cs in the FONSI.

Response: The Terms and Conditions of the SPBO are more than 19 pages in length and are too long to include in the FONSI or in the EA itself. A statement referring the reader to Appendix A has been added to the appropriate section.

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION:

No comments to offer on the Draft Supplemental EA. Email dated 28 June 2017, Kellie Youmans.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION:

No comments to offer on the Draft Supplemental EA. Email dated 31 July 2017, Chris Stahl.

8 LIST OF PREPARERS

Name	Organization	Expertise	Role in Preparation
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Rebecca Onchaga	USACE	Technical Writer/Editor	Document Review and formatting
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APPENDIX A
PERTINENT CORRESPONDENCE