AUGUST 2020

FINAL ENVIRONMENTAL ASSESSMENT

BROWARD COUNTY
SHORE PROTECTION PROJECT
SEGMENT II BEACH RENOURISHMENT
IN
BROWARD COUNTY, FLORIDA

U.S. Army Corps of Engineers
JACKSONVILLE DISTRICT

U.S. Army Corps of Engineers
JACKSONVILLE DISTRICT

FINDING OF NO SIGNIFICANT IMPACT

FINAL ENVIRONMENTAL ASSESSMENT FOR BROWARD COUNTY SHORE PROTECTION PROJECT SEGMENT II BEACH RENOURISHMENT BROWARD COUNTY, FLORIDA

The U.S. Army Corps of Engineers, Jacksonville District (Corps) has prepared an environmental assessment (EA) in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), dated August 2020, for the continued periodic renourishment of the Broward County Shore Protection Project (BCSPP), Segment II Beach Renourishment in Broward County, Florida.

The Broward Beach Erosion Control and Navigation Project was authorized by Section 301 of the River and Harbor Act of 1965 (Public Law 89-298), as modified by Section 156 of the Water Resources Development Act of 1976 (Public Law 94-587), Section 934 of the Water Resources Development Act of 1986 (Public Law 99-662), Section 506(a) of the Water Resources Development Act of 1996 (Public Law 104-303), and Section 311 of the Water Resources Development Act of 1999 (Public Law 106-53).

The authorized Federal project for Segment II includes the Atlantic Ocean shoreline in central Broward County between Hillsboro Inlet (R-25) and Port Everglades Inlet (R-85); however, only between R-25 and R-72 have been constructed to date. The Segment II shoreline is approximately 11.3 miles long and includes the municipalities of Pompano Beach, Lauderdale-By-The-Sea, Sea Ranch Lakes, and Fort Lauderdale. Sand will be placed along the 8.9 miles shoreline previously constructed between R-25 and R-72, which includes all four municipalities, but just the northern portion of Fort Lauderdale. The project is split into four reaches: Reach 1 (R-25 to R-36), Reach 2 (R-36 to R-41.3), Reach 3 (R-41.3 to R-51) and Reach 4 (R-51 to R-72). The 2015 Broward County, Florida Shore Protection Project Segment II, Limited Reevaluation Report (LRR) with EA and 2004 Final Environmental Impact Statement (EIS) BCSPP Segments II and III, Broward County, Florida evaluated placement of sand sourced from upland mines and offshore borrow areas. This EA adopts the analysis conducted in the 2015 EA and 2004 EIS where the information is valid and applicable to this evaluation. This EA also updates the 2015 analysis and completes coordination for potential effects to Essential Fish Habitat (EFH) and newly listed threatened and endangered (T&E) species listed under the Endangered Species Act of 1973, as amended (ESA).

The 2020 EA evaluated two alternatives in detail: the No Action Alternative and

Preferred Alternative. The Preferred Alternative is the continued periodic renourishment of Segment II of the BCSPP Reach 1 shore protection and the feeder beach feature via truck haul from upland sand mines. The upcoming renourishment event will include placement of approximately 413,000 cubic yards (CY) of sand along the following Florida Department of Environmental Protection (FDEP) monuments:

- Reach 1: Approximately 166,000 CY of sand to be placed between R-25 and R-31 above and below mean high water (MHW), with the inclusion of a feeder beach feature between R-28 and R-31. Approximately 22,000 CY of sand to be placed between R-31 and R-36 above MHW only.
- Reach 2: Approximately 42,000 CY of sand to be placed between R-36 and R-41.3 above and below MHW.
- Reach 3: Approximately 32,000 CY of sand to be placed between R-41.3 and R-51 above MHW only.
- Reach 4: Approximately 151,000 CY of sand to be placed between R-51 and R-72 above and below MHW.

Sand sources for the project will be from upland sand mine(s) and truck hauled to the beach fill area. Potential existing sand sources include E.R. Jahna Ortona Mine (Ortona), Stewart Immokalee Mine (Immoklaee), Vulcan Witherspoon Mine (Witherspoon), and/or Cemex Davenport Mine (Cemex). This EA also evaluates the use of the upland sand mine Garcia Family Farm, LLC in Henry County (Garcia Mine).

Details on the final recommendation are contained in the EA and are incorporated herein by reference. The Corps took all practicable means to avoid and minimize adverse environmental effects to the maximum extent practicable into the Preferred Alternative and will implement the environmental commitments as detailed in the EA. The Corps remains committed to reviewing new information as it becomes available, as well as considering the application of new information and applying lessons learned to future projects.

The Preferred Alternative will be in compliance with Section 7 of the ESA. To address potential effects from beach renourishment activities to federally-listed T&E species under the National Marine Fisheries Service (NMFS) jurisdiction, the project (Reach 2, 3, 4) adheres to the Project Design Criteria (PDCs) as described in the NMFS South Atlantic Regional Biological Opinion for Dredging and Material Placement Activities in the Southeast United States (SARBO), dated March 27, 2020. Reach 1 will be an independent ESA consultation and once consultation is complete for Reach 1, the FONSI and EA will be amended to include this consultation. The use of equipment and/or methods not covered by the SARBO may require additional coordination and/or consultation with NMFS. For potential effects to federally-listed T&E species under the U.S. Fish and Wildlife Service (USFWS) jurisdiction, the Corps initiated consultation with the USFWS in May 2020. The Corps received concurrence from the USFWS on the Corps' "may affect, but not likely to adversely affect" (MANLAA) and "likely to adversely affect" (LAA) determinations by correspondence dated August 17, 2020.

Pursuant to Section 401 of the Clean Water Act of 1972, as amended, (CWA), a water quality certification (WQC) is required for the beach renourishment activities below the MHW line. Any applicable authorizations would be coordinated and obtained from the state of Florida prior to construction. Pursuant to Section 404 of the CWA, all discharges of fill material associated with the Preferred Alternative have been found to be compliant with the section 404(b)(1) Guidelines (40 C.F.R. Part 230). An updated CWA Section 404(b)(1) Guidelines Evaluation is included in Appendix C.

Pursuant to the Coastal Zone Management Act, the Corps prepared and submitted an updated Federal Consistency Determination (FCD) to the state of Florida for review and concurrence during this EA's review and comment period. The Corps determined that the beach renourishment activities are consistent with the enforceable polices of the Florida Coastal Management Program. Conditions imposed by the WQC will be implemented in order to minimize adverse effects to water quality. Coordination with the state of Florida was completed on July 17, 2020. The state of Florida concurred noting that based on the information submitted and minimal project impacts, the state has no objections to the subject project and, therefore, it is consistent with the Florida Coastal Management Program (FCMP).

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended, the Corps prepared an EFH assessment in accordance with the September 3, 2019 and October 2, 2019 EFH Findings between NMFS' Southeast Regional office and U.S. Army Corps of Engineers, South Atlantic Division and the Corps. The EFH Assessment for the project is integrated within this EA and consultation with NMFS is complete with concurrence received by correspondence dated August 26, 2020.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the Corps determined beach renourishment activities pose no effect to historic properties eligible or potentially eligible for listing in the National Register of Historic places. Consultation with the Florida State Historic Preservation Office (SHPO) and appropriate federally-recognized tribes is complete as of June 17, 2020.

The Corps released the proposed Finding of No Significant Impact (FONSI), draft EA, and associated appendices for a 30-calendar day public and agency review from May 18, 2020 through June 17, 2020. A copy of the comments received, as well as a summary matrix of the comments and Corps' responses, is included in Appendix B of the final NEPA document. All pertinent correspondence with Federal and state agencies is included in Appendix A.

The Corps considered all applicable laws, executive orders, and regulations in the evaluation of the alternatives. Based on this EA, previous reports, the reviews by other Federal, state and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the Preferred Alternative would not significantly affect the quality of the human environment and is not contrary to the public interest; therefore, preparation of an Environmental Impact Statement is not required.

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Date

Andrew D. Kelly, Jr.
Colonel, U.S. Army
District Commander

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FINAL ENVIRONMENTAL ASSESSMENT

BROWARD COUNTY SHORE PROTECTION PROJECT SEGMENT II BEACH RENOURISHMENT BROWARD COUNTY, FLORIDA

1 PROJECT PURPOSE AND NEED

1.1 PROJECT DESCRIPTION AND LOCATION

The U.S. Army Corps of Engineers, Jacksonville District (Corps), proposes to continue to periodically place sand as beach renourishment along portions of Segment II of the Broward County Shore Protection Project (BCSPP) in Broward County, Florida consistent with the Council on Environmental Quality regulations that define Federal actions to include those actions "subject to Federal control and responsibility" (40 C.F.R. §1508.18). The project's non-federal sponsor (NFS) is Broward County.

Broward County is located on the southeast coast of Florida between Palm Beach County to the north and Miami-Dade County to the south. The shoreline of Broward County includes 24 miles of coastline and two coastal inlets. It is divided up into three segments: Segment I extends from the northern Broward County line to Hillsboro Inlet (Florida Department of Environmental Protection (FDEP) monuments R-1 to R-24), Segment II continues from Hillsboro Inlet to Port Everglades Inlet (R-25 to R-85), and Segment III reaches from Port Everglades to the southern Broward County line (R-86 to R-128) (*see* **Figure 1**).

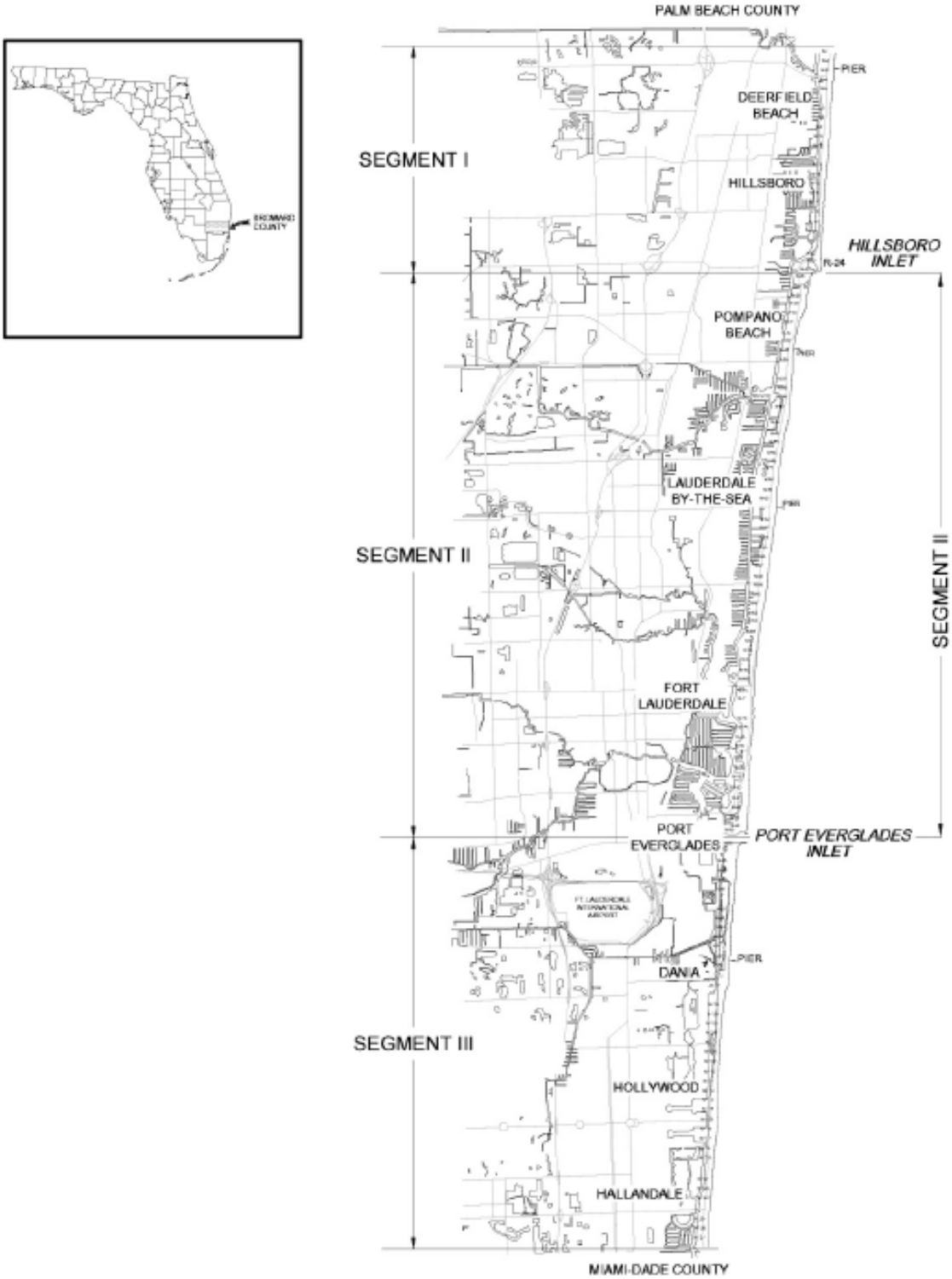

Figure 1. Map of the BCSPP segment locations.
SOURCE: CB&I and Olsen 2015

The authorized Federal project for Segment II includes the Atlantic Ocean shoreline in central Broward County between Hillsboro Inlet (R-25) and Port Everglades Inlet (R-85); however, only between R-25 and R-72 have been constructed to date. The Segment II shoreline is approximately 11.3 miles long and includes the municipalities of Pompano Beach, Lauderdale-By-The-Sea, Sea Ranch Lakes, and Fort Lauderdale. Sand will be placed along the 8.9 miles of shoreline previously constructed between R-25 and R-72, which includes all four municipalities, but just the northern portion of Fort Lauderdale. The project is split into four reaches: Reach 1 (R-25 to R-36), Reach 2 (R-36 to R-41.3), Reach 3 (R-41.3 to R-51) and Reach 4 (R-51 to R-72). Although all four reaches in Segment II have been nourished, Reach 2 and Reach 4 are not routinely nourished.

The upcoming renourishment event will include placement of approximately 413,000 cubic yards (CY) of sand[1] along the following FDEP monuments:

- Reach 1: Approximately 166,000 CY of sand to be placed between R-25 and R-31 above and below mean high water (MHW), with the inclusion of a feeder beach feature between R-28 and R-31. Approximately 22,000 CY of sand to be placed between R-31 and R-36 above MHW only.
- Reach 2: Approximately 42,000 CY of sand to be placed between R-36 and R-41.3 above and below MHW.
- Reach 3: Approximately 32,000 CY of sand to be placed between R-41.3 and R-51 above MHW only.
- Reach 4: Approximately 151,000 CY of sand to be placed between R-51 and R-72 above and below MHW.

Sand sources for the project will be from upland sand mine(s) and truck hauled to the beach fill area. Potential existing sand sources include E.R. Jahna Ortona Mine (Ortona), Stewart Immokalee Mine (Immokalee), Vulcan Witherspoon Mine (Witherspoon), and/or Cemex Davenport Mine (Cemex). This Environmental Assessment (EA) also evaluates the use of the upland sand mine Garcia Family Farm, LLC in Henry County (Garcia Mine).

1.2 PROJECT AUTHORITY

The Broward Beach Erosion Control and Navigation Project was authorized by Section 301 of the River and Harbor Act of 1965 (Public Law 89-298), as modified by Section 156 of the Water Resources Development Act of 1976 (Public Law 94-587), Section 934 of the Water Resources Development Act of 1986 (Public Law 99-662), Section 506(a) of the Water Resources Development Act of 1996 (Public Law 104-303), and Section 311 of the Water Resources Development Act of 1999 (Public Law 106-53). More details on the authority of the project can be found in the Broward County Shore Protection Project Segment II Final Limited Reevaluation Report (LRR) with EA which is an update of the authorized project for the remaining period of Federal participation.

[1] The actual quantity of volume placed may vary based on changes in the existing conditions; the volumes provided are based on existing conditions and need identified through the November 2019 beach profile survey.

1.3 PROJECT NEED OR OPPORTUNITY

The purpose for the project is to provide coastal storm risk management through beach renourishment of the Segment II portion of the BCSPP in Broward County, Florida. The need of the project is driven by the loss of sand (erosion) along the shoreline, most recently from Hurricane Irma in September 2017 (Corps 2018). Erosion has reduced the width of the beach, thus increasing the risk for storm damages that are otherwise mitigated by the beach design. Periodic renourishment of the beach is required to replace sand along the shoreline and thus maintains the beach to its federally-authorized dimensions.

1.4 RELATED ENVIRONMENTAL DOCUMENTS

The environmental effects of most of the activities included in the proposed action have been evaluated in recent National Environmental Policy Act (NEPA) documents (within the past four years) as summarized below. Beach placement and the use of Ortona, Immokalee, Witherspoon, and Cemex upland sand mines have been previously evaluated and have resulted in Finding of No Significant Impact (FONSIs).

The following documents included the evaluation of beach renourishment for Segment II of the BCSPP:

- 2015 Broward County, Florida Shore Protection Project – Segment II, LRR with EA*
- 2013 Final EA Flood Control and Coastal Emergency (FCCE) Placement of Sand on Broward County Segment II, Broward County, Florida.
- 2004 Final Environmental Impact Statement (EIS) BCSPP Segments II and III, Broward County, Florida

The 2015 EA included analysis for the existing sand sources (Ortona Mine, Immokalee Mine, Witherspoon Mine, and/or Cemex Mine). The Corps' Regulatory Division completed EAs for the Garcia and Cemex upland sand mines in response to an application by Garcia Family Farm, LLC in 2019 and in response to a modification application by Cemex in 2011. The Regulatory Division NEPA documents referenced for the mines include:

- Garcia Mine - Department of Army Permit - SAJ 2018-00396-SP-MGH (12 August 2019)
- Cemex Mine - Department of Army Permit - SAJ-1995-5082 (MOD-MGH) (4 February 2009) and Department of Army Permit - SAJ-1995-5082 (MOD-MGH) (23 February 2011)

Additionally, the following water quality certifications (WQCs) were issued for the Garcia and Cemex mines. The WQCs were coordinated with the Florida Department of Environmental Protection and South Florida Water Management District:

- Garcia Mine in Henry County: 0365067-001 (13 August 2019) and ERP 0148849-006 (2009)
- Cemex Mine in Polk County: ERP 0148849-008 (28 September 2011) and ERP 0148849-012 (17 February 2016).

All the above documents are incorporated by reference into this EA. Where applicable, updated information relevant to these incorporated EAs has been added. Only the areas of the proposed action not previously analyzed and covered by previous FONSIs are analyzed in this EA.

*Documents denoted with an asterisk are available on the Corps' environmental website, under Broward County, at the following link:

http://www.saj.usace.army.mil/About/Divisions-Offices/Planning/Environmental-Branch/Environmental-Documents/

(On that page, click on the "+" next to "Broward" and scroll down to the project name.) Other documents listed here are available by request.

1.5 DECISIONS TO BE MADE

This document evaluates whether the beach renourishment of Segment II of the BCSPP as described in Section 2 of this EA will result in significant effects on the human environment. The 2015 EA and 2004 EIS evaluated placement of sand sourced from upland mines and offshore borrow areas. This 2020 EA adopts the analysis conducted in the 2015 EA and 2004 EIS where the information is valid and applicable to this evaluation. The 2020 EA also evaluates the renourishment of Reach 1 and updates the 2015 analysis and completes consultation for potential effects to Essential Fish Habitat (EFH) and newly listed threatened and endangered (T&E) species listed under the Endangered Species Act of 1973, as amended (ESA). The need for mitigation measures or best management practices (BMPs) to reduce any potentially adverse effects will be determined by the Corps based upon the analysis contained within this NEPA document. The Corps will make the decision to sign the FONSI and move forward with the Preferred Alternative if no significant effects on the human environment are identified. If significant effects are identified, the Corps will choose to implement mitigation measures to reduce the effects to a lower-than-significant threshold, proceed with the Notice of Intent to prepare an EIS, or not implement the Preferred Alternative.

1.6 SCOPING AND ISSUES

1.6.1 RELEVANT ISSUES

The Corps identified the following issues as relevant to the Preferred Alternative and appropriate for further evaluation: natural setting resources (vegetation, wetlands, T&E species, fish and wildlife resources, EFH), physical setting resources (water quality, sediment characteristics, coastal barrier resource system (CBRS) units, hazardous, toxic, and radioactive waste (HTRW), air quality, noise), socioeconomic setting (aesthetic

resources, recreation resources, socioeconomics), Native American resources, cultural resources, and unavoidable adverse environmental effects and cumulative effects. The Corps analyzed many of these issues in the 2015 LRR and EA. This 2020 EA adopts the analysis conducted in the 2015 EA where the information is valid and applicable to this evaluation. This EA also supplements the 2015 NEPA analysis, documents the Corps' coordination for potential effects to EFH, and documents coordination and consultation for potential effects to federally listed T&E species since the 2015 consultations with National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). The Corps remains committed to reviewing new information as it becomes available, as well as applying lessons learned to future projects.

1.6.2 ISSUES ELIMINATED FROM FURTHER ANALYSIS

No issues were identified for elimination.

1.7 WATER QUALITY CERTIFICATION AND COASTAL ZONE MANAGEMENT ACT FEDERAL CONSISTENCY DETERMINATION CONCURRENCE

Pursuant to Section 401 of the Clean Water Act of 1972, as amended, (CWA), a WQC is required for the beach renourishment activities below the MHW line. Any applicable authorizations for the placement of sand on the beach would be coordinated and obtained from the state of Florida prior to construction.

Pursuant to Section 404 of the CWA, all discharges of fill material associated with the Preferred Alternative have been found to be compliant with the section 404(b)(1) Guidelines (40 C.F.R. Part 230). An updated CWA Section 404(b)(1) Guidelines Evaluation is included in Appendix C.

Pursuant to the Coastal Zone Management Act, the Corps prepared and submitted an updated Federal Consistency Determination to the state of Florida for review and concurrence during this EA's review and comment period. The Corps determined that the beach renourishment activities are consistent with the enforceable polices of the Florida Coastal Management Program. Conditions imposed by the WQC will be implemented in order to minimize adverse effects to water quality. Coordination with the state of Florida is complete and concurrence received on July 17, 2020. The final determination for consistency with the Coastal Zone Management Act will be obtained via issuance of the WQC.

1.8 PUBLIC INTEREST FACTORS

While the Corps does not process and issue permits for its own activities, pursuant to 33 C.F.R. §336.1, the Corps meets all applicable substantive legal requirements, including public notice, and opportunity for public hearing where its activities result in regulated discharges. As part of its review, the Corps evaluates potential effects, including cumulative effects, of the proposed activity and its intended use and/or effect on public interest. All factors which may be relevant to the proposal must be considered including the cumulative effects thereof. These factors may include:

- Economics;
- Aesthetics;
- General Environmental Concerns;
- Historic Properties;
- Fish and Wildlife Values;
- Recreation;
- Water Quality;
- Shore Erosion and Accretion;
- Energy Needs;
- Mineral Needs;
- Safety;
- Consideration of Property Ownership;
- Needs and Welfare of the People.

The following factors were considered, but were determined to be not applicable to this project:

- Wetlands;
- Navigation;
- Conservation;
- Flood Hazards;
- Flood Plain Values;
- Land Use;
- Water Supply and Conservation;
- Food and Fiber Production.

The proposed action will result in short term adverse effects to aesthetics, fish and wildlife, recreation, safety, and water quality. These short term adverse effects will cease with the completion of construction. Long-term beneficial effects associated with the action are expected to shore erosion and accretion, fish and wildlife, recreation, safety, and needs and welfare of the people. These long term benefits would be expected to remain for years following construction.

Based on the analysis provided in Section 4 of this EA, the Corps concludes that the proposed activity is in the public interest.

2 ALTERNATIVES

The alternatives section describes the No Action Alternative, the Preferred Alternative, and other reasonable alternatives that were evaluated. A comparison of the alternatives are provided, and Section 4 (Environmental Effects) compares the alternatives carried forward for evaluation in more detail, providing a clear basis for choice to the decision maker and the public.

2.1 NO ACTION ALTERNATIVE

NEPA regulations refer to the No Action Alternative as the continuation of existing conditions of the affected environment without implementation of, or in the absence of, the Preferred Alternative. The No Action Alternative provides a benchmark to allow for a comparison of the environmental effects of the proposed action and any reasonable action alternatives. Under this alternative, Segment II of the BCSPP would not be subject to periodic maintenance events. These areas would likely continue to experience erosion, reducing the beach width, and resulting in increased risk of storm damages that are otherwise mitigated by the beach design, eliminating the benefits of the BCSPP in this area.

2.2 ALTERNATIVE 1 – CONTINUED PERIODIC RENOURISHMENT OF SEGMENT II OF THE BCSPP AND CONSTRUCTION OF THE REACH 1 SHORE PROTECTION AND FEEDER BEACH FEATURE VIA TRUCK HAUL FROM UPLAND SAND MINES

Alternative 1, the Preferred Alternative, consists of the truck haul and placement of sand on Segment II of the BCSPP. The upcoming renourishment event will include placement of approximately 413,000 CY of sand[2] along the following FDEP monuments:

- Reach 1: Approximately 166,000 CY of sand to be placed between R-25 and R-31 above and below MHW, with the inclusion of a feeder beach feature between R-28 and R-31. Approximately 22,000 CY of sand to be placed between R-31 and R-36 above MHW only.
- Reach 2: Approximately 42,000 CY of sand to be placed between R-36 and R-41.3 above and below MHW.
- Reach 3: Approximately 32,000 CY of sand to be placed between R-41.3 and R-51 above MHW only.
- Reach 4: Approximately 151,000 CY of sand to be placed between R-51 and R-72 above and below MHW.

Sand placement generally located between R-25 and R-27 establishes a fill template and the ability to protect the vulnerable upland infrastructure in this area when needed, rather

[2] The actual quantity of volume placed may vary based on changes in the existing conditions; the volumes provided are based on existing conditions and need identified through the November 2019 beach profile survey.

than being subject to the Hillsboro Inlet bypassing project's inconsistent, and recently reduced, fill schedule. The feeder beach, generally located between R-28 and R-31, introduces sand into the coastal system to provide a slow sustained transport to the south that may extend the time required until the next renourishment. The remaining fill, generally located between R-31 and R-36 and between R-41.3 and R-51, will be placed above MHW only and provides sand to portions of the beach where the berm is deflated to provide adequate upland protection and reduce ponding along the landward side of the berm. All proposed fill templates are located within the historical envelope of beach changes.

Under this alternative, renourishment of Segment II of the BCSPP would occur on a periodic cycle or as-needed basis using any combination of existing sand sources (Ortona Mine, Immokalee Mine, Witherspoon Mine, and/or Cemex Mine) and/or Garcia upland sand mine. The analysis of this alternative covers the potential effects of the use of Garcia Mine, as well as including nourishment above and below MHW within Reach 1 (between R-25 and R-31) as shore protection and a feeder beach feature.

Renourishment may only be needed in certain portions of the project, which would be less than the full project footprint. The actual quantity of volume placed may vary based on changes in the existing conditions; the volumes provided are based on existing conditions and need identified through the November 2019 beach profile survey. There are also a variety of different combinations of upland mines that could provide sand. All of these alternative scenarios would have similar effects on the quality of the human environment. As such, the analysis in this EA supports renourishment of Segment II of the BCSPP where less than the entire project footprint is nourished and for any combination of upland sand mines discussed herein.

Sand from upland mines would be hauled by dump truck, entering the project area at designated access points. At the beach, the sand would be transferred through temporary stockpiling and reloading from road trucks to beach transport vehicles, where it would be taken to the location on the beach where it is needed. Water quality would be controlled to ensure compliance with the Clean Water Act. Heavy equipment would be used to place and grade the sand to the specified design grades.

NOTE: Reach 1 is considered a separate element and ESA consultation for Reach 1 must be finalized prior to placement of material in this area. Once consultation is complete for Reach 1, the FONSI and EA will be amended to include this consultation. See Section 4 for a detailed analysis discussion.

Additionally, for Reach 1 (R-25 to R-31), a reconnaissance survey is scheduled to be conducted late-summer or fall 2020 and will identify benthic community composition and condition and the coral species present, including ESA-listed corals. After this survey, transects will be established and a baseline survey will be completed. Following the completion of the reconnaissance and baseline surveys and prior to the start of construction in Reach 1, the Corps and NMFS will compare the new survey information

to previous survey findings. If the new survey shows the presence of hardbottom resources that may be subject to indirect or direct impacts resulting from the project, the Corps will coordinate with NMFS for any necessary mitigation and/or relocation efforts. If the new surveys indicate potential for direct or indirect effects that were not assessed in this EA the Corps will complete supplemental NEPA.

2.3 PREVIOUSLY CONSIDERED ALTERNATIVES

Many alternatives were considered for Segment II in the 2004 EIS and 2015 EA and are summarized in Tables 1 and 2 below:

Table 1. Alternatives previously considered in the 2004 EIS.

Project Alternative	EIS Section	Treatment in EIS	Reason Eliminated
No-Action alternative (Status-Quo)	2.1.1	Included in detailed evaluation	N/A
Rezoning of beach area	2.1.2	Eliminated	Not in jurisdiction of Lead Agency.
Condemnation of land and structures	2.1.3	Eliminated	Does not meet the Purpose & Need as stated in Section 1.5.
Revetments	2.1.4	Eliminated	Not in jurisdiction of Lead Agency
Beach fill with periodic nourishment (including alternate sand sources)	2.1.5	Included in detailed evaluation	N/A
Beach fill with periodic nourishment, with stabilization by offshore breakwater or submerged artificial reef	2.1.6	Eliminated	Potential to result in increased erosion and does not meet the Purpose & Need.
Beach nourishment with maintenance material from updrift inlet or sand by-passing methods	2.1.7	Included in detailed evaluation	N/A
Beach fill and periodic renourishment with stabilization by groins	2.1.8	Included in detailed evaluation	N/A
Beach fill design modifications of beach fill amounts	2.1.9	Included in detailed evaluation (Jan 2001 beach fill design only)	N/A
Seawalls	2.1.10	Eliminated	Not considered because they function only to protect upland property that is already well armored.
Beach fill with periodic renourishment and hurricane surge protection sand dune	2.1.11	Eliminated	Does not meet the Purpose & Need.
Beach nourishment with creation of nearshore berm from maintenance material from adjacent inlet	2.1.12	Eliminated	Increased potential for negative impact to nearshore hardbottom due to placement of dredged material in shallow water.
Stabilization of beaches and dune by vegetation	2.1.13	Eliminated	Does not meet the Purpose & Need.
Modify navigation project	2.1.14	Eliminated	Would not reduce the erostion rates within the project areas and does not meet the Purpose & Need.
Sand tightening of jetties	2.1.15	Eliminated	Would not reduce the erostion rates within the project areas and does not meet the Purpose & Need.

SOURCE: Corps 2005.

Table 2. Alternatives previously considered in the 2015 EA.

Project Alternative	EA Section	Treatment in EA	Reason Eliminated
No Action	2.1	Included in detailed evaluation	NA
Nourishment using upland sand	2.2	Included in detailed evaluation	NA
Nourishment using offshore sand	2.3	Included in detailed evaluation	NA
Nourishment using a non-domestic sand source	2.4.1	Eliminated	Federal projects cannot use foreign sand sources unless domestic sand is not available for economical or environmental reasons, which is not the case in Broward County
Nourishment with shoreline	2.4.2	Eliminated	Due to the low rate of background erosion

stabilizing structures			coupled with the predicted shoreline recession downdrift of a structure, shore-stabilizing structures were not recommended

2.4 ISSUES AND BASIS FOR CHOICE

The effects of sand placement on Segment II of the BCSPP have been evaluated in previous NEPA documents (see Section 1.4). The effects of nourishing the Reach 1 portion of the project above MHW are similar in nature to the effects of other portions of the project previously evaluated by this project's NEPA (see Section 1.4) and are hereby incorporated by reference. The effects of Garcia Mine have been evaluated through the Corps' Regulatory NEPA (see Section 1.4). The effects of transporting beach quality sand from Garcia Mine are similar in nature to the effects of other upland mines previously evaluated by this project's NEPA (see Section 1.4) and are hereby incorporated by reference. Therefore, the detailed effects analysis for Alternative 1 addresses effects associated with the inclusion of the Reach 1 shore protection and feeder beach feature and effects to listed T&E species which were not previously evaluated.

Table 3 lists the potentially affected factors considered in this EA and provides a brief comparison of the No Action Alternative and other reasonable alternatives. Section 4 provides the analysis of the major features and consequences of the No Action Alternative in comparison to Alternative 1, which was carried forward for evaluation. The No Action Alternative is carried forward as a basis of comparison for NEPA purposes. It is noted however, that the No Action Alternative would not allow the Corps to continue to meet the objectives of the BCSPP in Segment II.

By introducing the Garcia upland sand mine as an additional sand source option, this provides additional flexibility to contractors for securing the requisite volume of sand for renourishment activities. This flexibility results in more competition amongst sand suppliers and potential cost savings to the Government. By designing a feeder beach within Reach 1, sand is introduced into the coastal system in a slow sustained manner to the south. The prolonged natural nourishment of beaches to the south may extend the time until the next renourishment is needed.

In consideration of applicable factors listed in 33 C.F.R. § 320.4 (as discussed in this EA's section 1.8) and the analysis completed in Section 4 of this EA, the Corps determined Alternative 1 is not contrary to public interest and is carried forward as the Preferred Alternative. The Preferred Alternative is the least cost, environmentally acceptable alternative.

Table 3. Comparison of project alternatives' environmental direct and indirect effects.

Environmental Factor (Section)	**No Action Alternative**	**Preferred Alternative: Renourishment of Segment II BCSPP and Reach 1 shore protection and feeder beach feature via truck haul from upland sand mines**
Vegetation (§4.1)	Erosion would continue to reduce available beach and dune habitat	Stabilized dune and beach habitat may increase available area for new vegetation Temporary impacts to vegetation and/or available habitat during truck haul operations
Fish and Wildlife Resources (other than T&E Species) (§4.2)	Erosion would continue to reduce available beach and dune habitat	Temporary increases in turbidity and sedimentation Smothering/burial of non-motile benthic species within Reach 1 between R-25 and R-31 Temporary avoidance and/or displacement due to noise and activities Long-term benefit to migratory and shorebirds due to increased available beach area for nesting and foraging
Mobile T&E Species *Sea turtles (green, hawksbill, leatherback, loggerhead, and Kemp's ridley)* *American crocodile* *Florida manatee* *Fish (Smalltooth sawfish, Nassau grouper* *Giant manta ray* *Piping Plover* (§4.3)	Reduced dune vegetation and adjacent scrub habitat available piping plover Ongoing erosion will reduce available habitat for nesting sea turtles and may result in poor site selection by nesting females	Long-term benefit of restoration of habitat for nesting sea turtles and piping plovers, Short term adverse impact to nesting habitat available to sea turtles (e.g. escarpments, compaction, etc.) Potential risk for direct, physical injury during construction operations due to interactions with the species and heavy equipment Temporary avoidance and/or displacement due to noise and/or construction activities

Environmental Factor (Section)	**No Action Alternative**	**Preferred Alternative: Renourishment of Segment II BCSPP and Reach 1 shore protection and feeder beach feature via truck haul from upland sand mines**
Non-mobile T&E Species *Beach jacquemontia* *Corals (pillar coral, rough cactus coral, lobed star coral, mountainous star coral, boulder star coral, elkhorn coral, and staghorn coral)* (§4.3)	Potential exposure of nearshore rock outcroppings which may serve as habitat for coral colonization Reduced recruitment due to the interference with coral spawning or coral health from increased turbidity associated with continued erosion Reduced dune vegetation and adjacent scrub habitat available for beach jacquemontia Coral disease may continue to spread across the Florida reef tract Natural and anthropogenic sedimentation and/or turbidity effects, should they occur, may exacerbate the effects of coral disease	No effects anticipated for beach jacquemontia given its low documented abundance in the project area Short term, temporary increases in turbidity Coral disease may continue to spread across the Florida reef tract Natural and anthropogenic sedimentation and/or turbidity effects, should they occur, may exacerbate the effects of coral disease
Essential Fish Habitat (EFH) (§4.4)	Coral disease may continue to spread across the Florida reef tract Natural and anthropogenic sedimentation and/or turbidity effects, should they occur, may exacerbate the effects of coral disease.	Short term, temporary increases in turbidity Smothering/burial of non-motile macrofaunal communities (i.e. worms, clams, etc.) located within the feeder beach footprint (minor and temporary effects given the expected immediate recolonization of the area from adjacent communities) Coral disease may continue to spread across the Florida reef tract Natural and anthropogenic sedimentation and/or turbidity effects, should they occur, may exacerbate the effects of coral disease.
Water Quality (§4.5)	Erosion would continue to contribute to turbidity	Short-term increases in turbidity at the feeder beach site during construction
Sediment Characteristics (§4.6)	No effect	Same as No Action

Environmental Factor (Section)	No Action Alternative	Preferred Alternative: Renourishment of Segment II BCSPP and Reach 1 shore protection and feeder beach feature via truck haul from upland sand mines
Coastal Barrier Resources Systems (CBRS) Units (§4.7)	No effect	Same as No Action
Hazardous Toxic and Radioactive Waste (HTRW) (§4.8)	No effect	Same as No Action
Air Quality (§4.9)	No effect	Minor, temporary degradation of air quality will occur due to emissions from trucks and other heavy equipment during construction
Noise (§4.10)	No effect	Temporary increase in the noise level in the project area would occur due to trucks and other heavy equipment during construction
Aesthetic Resources (§4.11)	No effect	Equipment used during construction may be considered unsightly Long term improvement in the aesthetics of the shoreline
Recreation Resources (§4.12)	Ongoing erosion would reduce the beach area available for recreation	Long term benefits by restoring the amount of the beach available for recreation purposes Longer duration of available beach for recreation purposes
Socioeconomic Resources (§4.13)	Ongoing erosion would reduce the amount of beach available for recreation and tourism resulting in a potential loss of revenue	Maintains economic benefits from recreation and tourism Less frequent renourishment cycles Longer duration of available beach for recreation and tourism purposes
Safety (§4.14)	Ongoing erosion would continue, resulting in reduced shoreline protection from storm damages	Maintain shoreline protection Temporary closure of the beach during active construction to ensure the safety of the public

Environmental Factor (Section)	No Action Alternative	Preferred Alternative: Renourishment of Segment II BCSPP and Reach 1 shore protection and feeder beach feature via truck haul from upland sand mines
Cultural Resources (§4.16)	No effect	Same as No Action
Native Americans (§4.15)	No effect	Same as No Action

3 EXISTING ENVIRONMENT

The Existing Environment section describes the existing environmental resources of the areas that would be affected if any of the alternatives 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 will affect or that will 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.

A brief summary of existing conditions is included in this section; however, a full detailed analysis is provided within Section 3 of the 2015 EA and is hereby incorporated by reference within this EA. (The 2015 EA is included as Appendix E to this document and is available on the Corps' environmental website, under Broward County.)

3.1 NATURAL SETTING

Segment II of the BCSPP is located entirely on a barrier island and is bounded by Hillsboro Inlet to the north and Port Everglades to the south. The northern portion of Segment II is highly developed and urban with many condominiums and hotels encroaching on the beach. The southern portion of Segment II (south of R-64) is adjacent to State Road A1A, which provides storm damage protection to this hurricane evacuation route. The dune system in south Florida is limited due primarily to the encroachment of development onto the beach berm. Typical dune vegetation in this area includes hearty plants tolerant of changing conditions, such as sea oats (*Uniola paniculata*) and sea grape (*Cocoloba uvifera*). No wetlands are in the project area. Few animals use the beach and dunes due to heavy disturbance and development of the area; however, wildlife typically seen in the project area includes small mammals and reptiles; migratory and shorebirds; invertebrates, fish, and infaunal and epifaunal species.

3.1.1 FEDERALLY LISTED T&E SPECIES

Federally-listed T&E species that may be present in or around the Segment II BCSPP area are listed below in **Table 4**.

Table 4. Federally listed T&E species that may occur in the project area. (Species highlighted in bold were not previously evaluated for potential effects and are being evaluated in this EA.)

Common Name	Scientific Name	Federal Status
Green sea turtle[1]	*Chelonia mydas*	Threatened
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered
Leatherback sea turtle	*Dermochelys coriacea*	Endangered
Loggerhead sea turtle	*Caretta caretta*	Threatened
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered
American crocodile	***Crocodylus acutus***	**Threatened**
Florida manatee	*Trichechus manatus latirostris*	Threatened
Smalltooth sawfish	*Pristis pectinata*	Endangered
Nassau grouper	***Epinephelus striatus***	**Threatened**
Giant manta ray	***Manta birostris***	**Threatened**
Beach Jaquemontia	*Jacquemontia reclinata*	Endangered
Piping Plover	*Charadrius melodus*	Endangered
Pillar coral	*Dendrogyra cylindrus*	Threatened
Rough cactus coral	*Mycetophyllia ferox*	Threatened
Lobed star coral	*Orbicella annularis*	Threatened
Mountainous star coral	*Orbicella faveolata*	Threatened
Boulder star coral	*Orbicella franksi*	Threatened
Elkhorn coral[D]	*Acropora palmata*	Threatened
Staghorn coral[D]	*Acropora cericornis*	Threatened

[1]North Atlantic distinct population segment (DPS); [2]South Atlantic DPS; [D]Designated Critical Habitat (DCH)

Details on the presence and biology of the above listed species under NMFS jurisdiction can be found in the 2020 South Atlantic Regional Biological Opinion for Dredging and Material Placement Activities in the Southeast United States (SARBO)[3], 2004 EIS, and 2015 EA. (These documents are included with this EA as Appendix E.) The project is located in NMFS' Designated Critical Habitat (DCH) for *Acropora* (elkhorn and staghorn) corals (73 FR 72236) (*see* **Figures 2** and **3**). NMFS also established DCH for loggerhead sea turtles to protect nearshore reproductive habitats, winter areas, breeding areas, and migratory corridors, and/or Sargassum habitat (79 FR 39856) (*see* **Figure 4**). Critical habitat area was designated by NMFS to protect nearshore reproductive habitat, constricted migratory habitat, and breeding habitat in southern Florida. USFWS also established DCH for the northwest DPS of loggerheads (79 FR 39855). Segment II is adjacent to LOGG-N-19 and contains critical habitat for loggerhead constricted migratory habitat and breeding habitat. LOGG-N-19 also includes nearshore reproductive areas (located north of Segment II), from the Martin County/Palm Beach County line to Hillsboro Inlet from the MHW line seaward 1 mile.

[3] The 2020 SARBO is available to be downloaded from the NMFS Southeast frequently requested biological opinions website:
https://www.fisheries.noaa.gov/content/endangered-species-act-section-7-biological-opinions-southeast

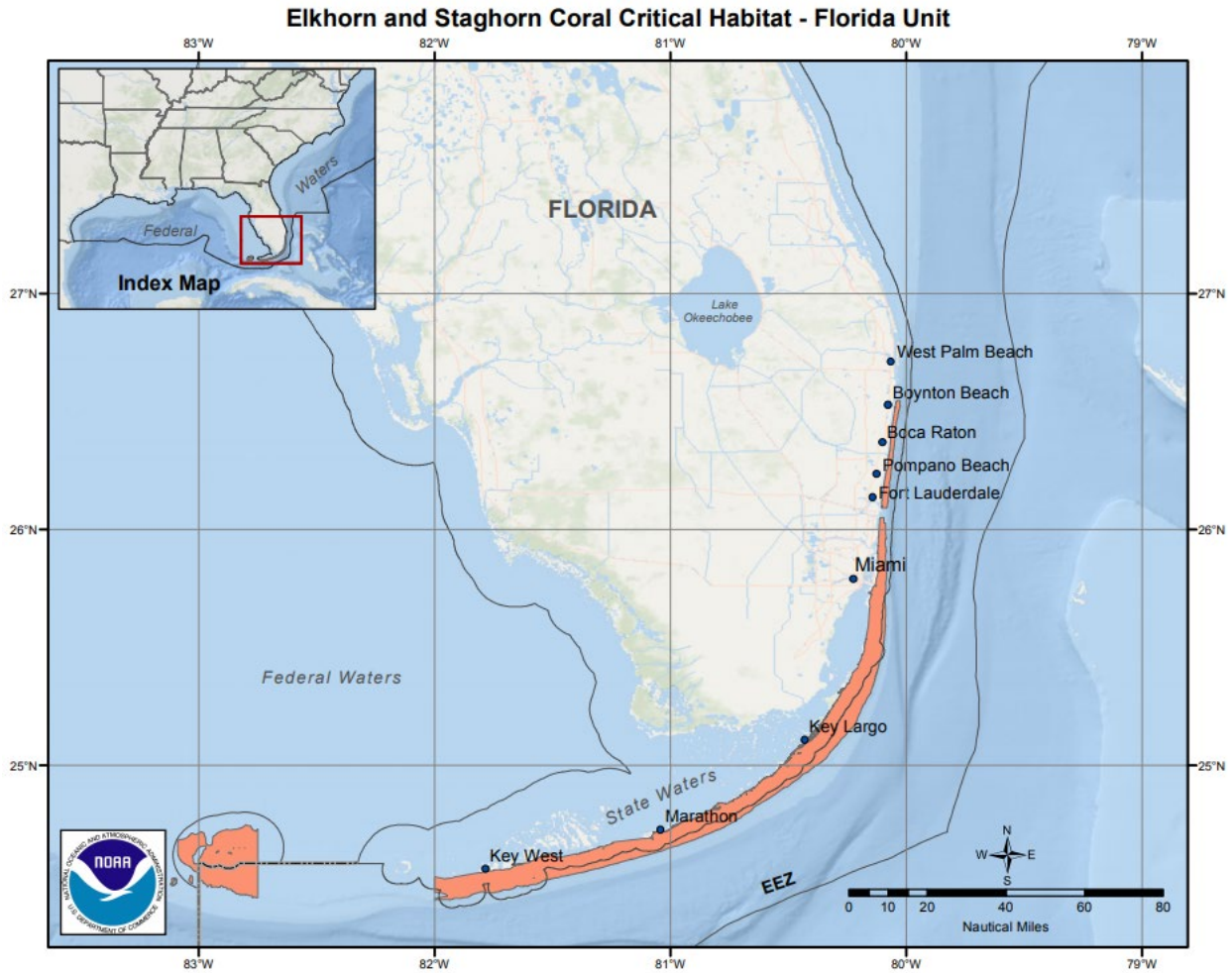

Figure 2. *Acropora* (elkhorn and staghorn) corals DCH in southeast Florida. (SOURCE: https://www.fisheries.noaa.gov/resource/map/acropora-elkhorn-and-staghorn-coral-critical-habitat-map-and-gis-data)

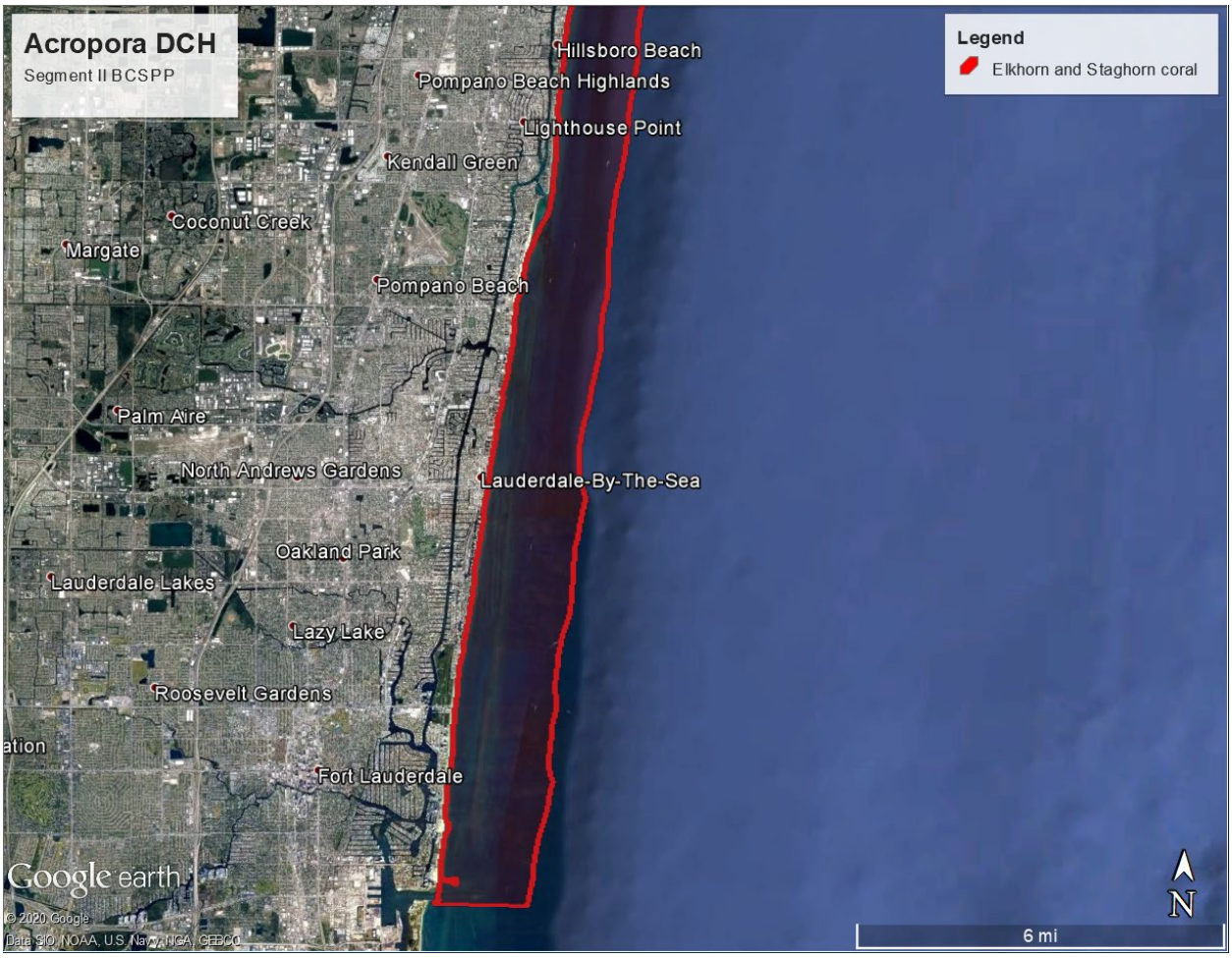

Figure 3. *Acropora* DCH in the project vicinity.
(SOURCE: https://www.fisheries.noaa.gov/resource/map/acropora-elkhorn-and-staghorn-coral-critical-habitat-map-and-gis-data)

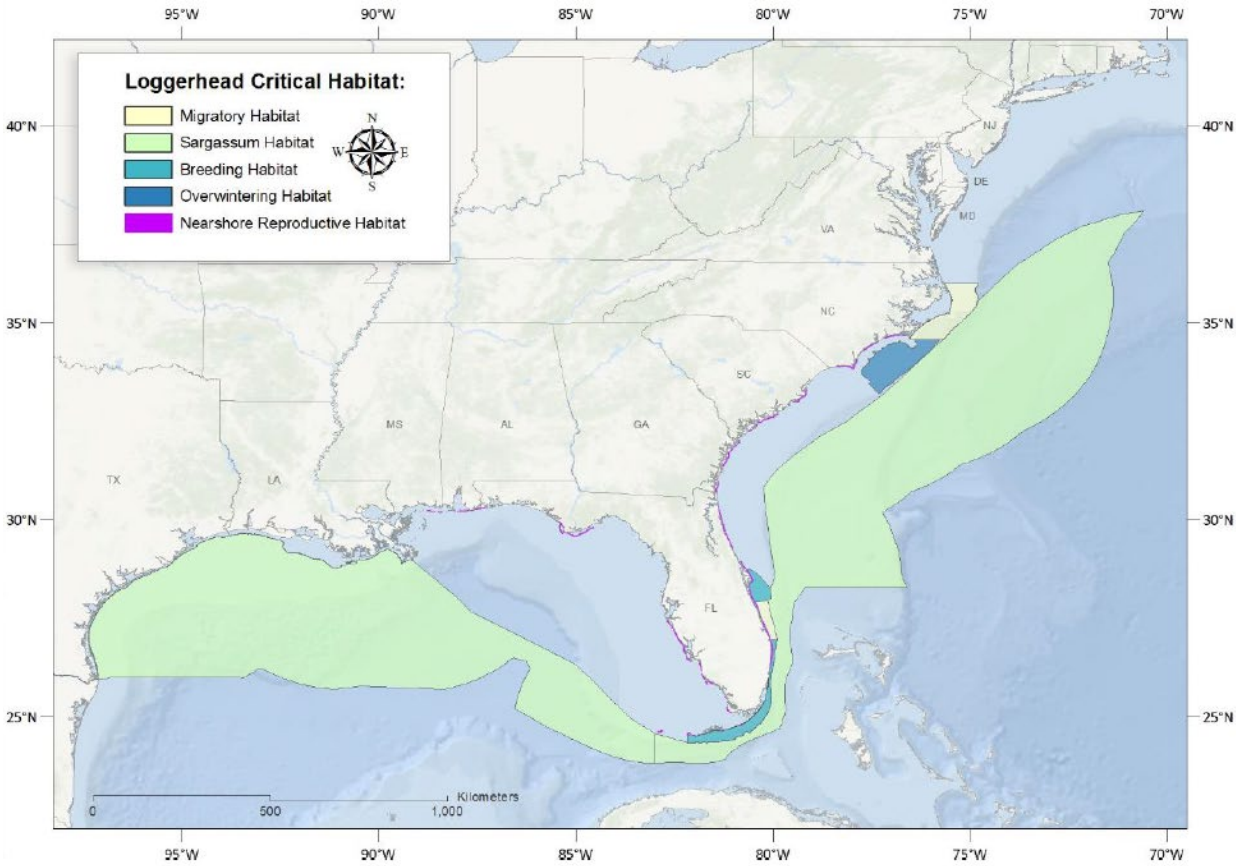

Figure 4. Loggerhead DCH established by NMFS.
SOURCE: https://www.fisheries.noaa.gov/tags/southeast-critical-habitat-map

Information on presence and biology of species under USFWS jurisdiction, can be found in the 2013 Piping Plover Programmatic Biological Opinion (P3BO), 2015 Statewide Programmatic Biological Opinion (SPBO), 2004 EIS, 2015 EA, and this project's consultation documents. (These documents are included with this EA as Appendix E.)

Details on the Corps' coordination efforts and consultation with USFWS and NMFS under the ESA are included in Section 6 of this EA. The Corps' effect determinations are included in Section 4.

3.2 ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996, requires Federal agencies to consult with NMFS for spawning, breeding, or growth to maturity" (South Atlantic Fish Management Council (SAFMC) 1998).

The South Atlantic Fish Management Council (SAFMC) designated seagrasses, corals, coral reefs, hardbottom, and unconsolidated sediments as EFH. Hardbottom habitats 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. maculates*), spiny lobster, and pink shrimp (*Farfantepenaeus duorarum*). All demersal fish species under SAFMC management that associate with coral habitats are addressed in 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, hardbottom and seagrass, including the Port Everglades project area, as Habitat Areas of Particular Concern (HAPCs). HAPCs are a subset of EFH that are either rare, particularly susceptible to human-induced degradation, important ecologically, or located in an environmentally stressed area. In light of their designation as EFH-HAPC's and Executive Order (E.O.) 13089 (Coral Reef Protection), NMFS applies greater scrutiny to projects affecting corals, coral reefs, hardbottom, and seagrass to ensure practicable measures to avoid and minimize adverse effects to these habitats are fully explored.

3.2.1.1 SEAGRASSES

There are no known seagrass beds located within or adjacent to the proposed beach fill areas (Corps 2004, CB&I and Olsen 2015, FWC 2020).

3.2.1.2 CORALS, CORAL REEFS, AND HARDBOTTOM HABITATS

The coral reef communities present in southeast Florida are tropical to subtropical and have a similar species composition to the Florida Keys and wider Caribbean (NOAA, 2011). HAPCs for corals, coral reefs and hardbottom habitats of central east Florida include 1) worm reefs in nearshore waters; 2) nearshore hardbottom in water depths 0 to 4 meters; 3) offshore hardbottom habitats in water depths 5 to 30 meters, and 4) Oculina banks from Fort Pierce to Cape Canaveral in water depths > 30 meters.

Since 2014, the Florida Reef Tract has been experiencing the most widespread and lethal coral disease outbreak in the world. While originally thought to be a white-plague-disease (Precht et al. 2016), the current case definition assigns the name *Stony Coral Tissue Loss Disease* (SCTLD)[4]. This disease outbreak is unprecedented in terms of the large geographic range, duration of the outbreak, number of species affected (22 species)[5], high rates of transmission and mortality, and considerably high prevalence, e.g., within certain species, disease is seen in 66 to 100 of every 100 colonies surveyed whereas background levels of disease in Florida is typically 2 to 3 of every 100 colonies (FDEP

[4] https://nmsfloridakeys.blob.core.windows.net/floridakeys-prod/media/docs/20181002-stony-coral-tissue-loss-disease-case-definition.pdf cited herein Case definition.
[5] https://floridadep.gov/sites/default/files/Coral-Disease-Outbreak-FAQ_v5.2.pdf

2018). Hundreds of millions of corals have died from this outbreak so far, including all known colonies of pillar coral (*Dendrogyra cylindrus*), listed as threatened under the ESA, in southeast Florida, Biscayne National Park, and the Upper Keys (FDEP 2018). The disease has since spread to other Caribbean reefs in Mexico, Jamaica, St. Maarten, Dominican Republic, and St. Thomas in the U.S. Virgin Islands[6]. It is likely that increases in coral disease incidence results from not a single abiotic or biotic factor, but rather the prolonged and multiplicative effect of simultaneous stressors (Vega-Thurber et al. 2009).

While SCTLD may not have reached outbreak status until the Fall of 2014, the disease was present in the Port of Miami area several months earlier. A knobby brain coral (*Pseudodiploria clivosa*), now known to be highly susceptible to SCTLD[7], was the first coral recorded to have SCTLD in the Miami area along the Nearshore Ridge Complex south of the federal channel (HBSC1, T3 C5)[8]. By fall of 2015 widespread disease had been confirmed across approximately 55 miles of reef, including locations as far north as Pompano Beach (Broward County) and as far south as Biscayne National Park. Disease continued to spread into the Florida Keys throughout 2016, and by summer of 2017 reports of widespread disease were confirmed as far north as St. Lucie Inlet (Martin County) and to the southern boundary of the upper Keys. By 2018 the disease had reached Looe Key in the lower Keys, and as of 2019 it continues to spread southward into the Lower Keys (*see* **Figure 5**). For the most up to date information, refer to https://floridakeys.noaa.gov/coral-disease/disease.html

In 2016 Broward County began implementing the Coral Relocation Plan developed as an impact minimization measure for the previous iteration of the Broward County Segment II Shore Protection Project. Corals within the impact area were relocated from the area landward of the ETOF. However, due to an administrative appeal the schedule was hindered for the continued construction of 6.64 acres of artificial reef modules. The Department of Army Regulatory Division has extended the timeframe for construction of the mitigation.

[6] http://www.agrra.org/where-is-this-occurring/
[7] Case definition
[8] DC&A response to Port of Miami Request for Information tracker item #64b

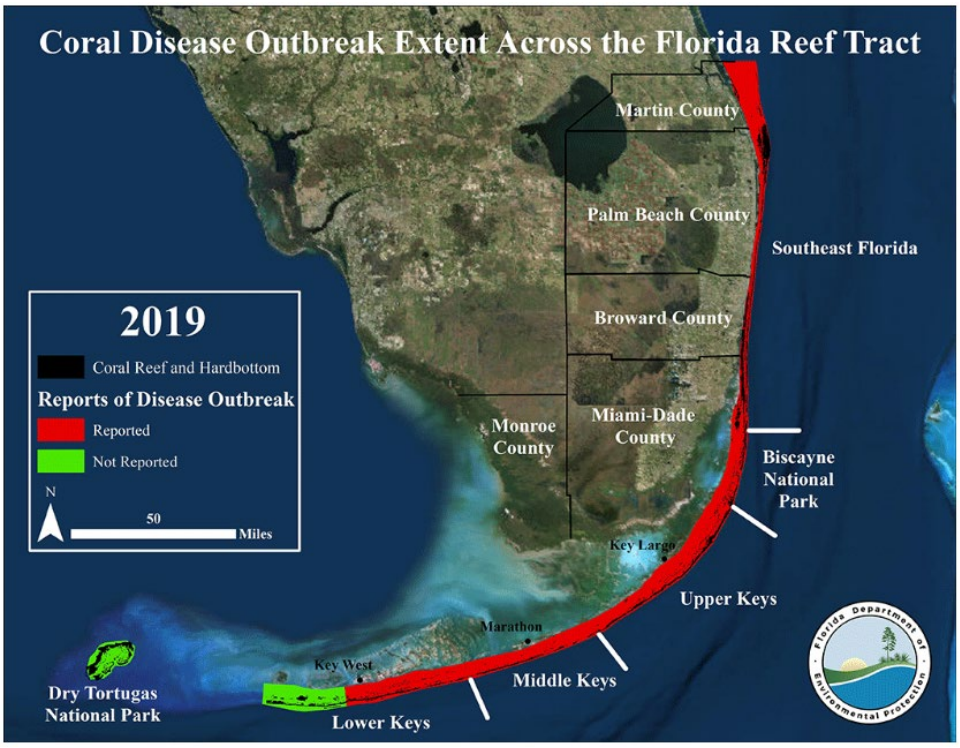

Figure 5. Extent of coral disease outbreak across the Florida reef tract, which includes Broward County, where the project is located.
SOURCE: https://floridakeys.noaa.gov/coral-disease/disease.html

Coral disease may continue to spread across the Florida reef tract. Natural and anthropogenic sedimentation and/or turbidity effects, should they occur, may exacerbate the effects of coral disease. Elevated sedimentation and turbidity, associated with both weather events and anthropogenic activities, are proposed to contribute to increased coral disease prevalence (Harvell et al. 2007). Stress induced changes in coral-associated micro-organisms (the coral microbiome) have been correlated with coral disease (Vega-Thurber et al. 2009). Stress on the microbiome can disturb the normal host resistance and/or restriction from other members of the microbiome thereby allowing for overgrowth by opportunistic pathogens (Lesser et al. 2007). Shifts in the microbiome are increasingly being studied and understood to have effects on coral health, disease resistance, and pathogenicity (Vega-Thurber et al. 2009; Krediet et al. 2013; Staley et al. 2017).

Coral and hardbottom habitats are located in the nearshore areas adjacent to the project. In general, the nearshore edge of the reef is approximately 200 to 800 feet from shore, and the corresponding seaward edge of these formations is located an additional 700 to 1,500 offshore. The 2004 EIS describes the nearshore areas as ephemeral in nature, being alternatively covered and uncovered by shifting beach sand. The EIS also notes that Broward County documented burial events, which occurred seasonally and over an extended period of time. Broward County's Biological Monitoring Plan includes annual hardbottom edge surveys, which were used in the design to provide adequate buffer

distances from hardbottom habitat. Additionally, the 2015 EA includes a technical report on the nearshore Acropora surveys between Port Everglades and Hillsboro Inlets, which documents the distribution and relative abundance of two stony coral species (*Acropora cervicornis* and *Acropora palmata*) (Corps 2015). Habitats in the project area are discussed in more detail in the 2004 EIS (section 3.4) and 2015 EA (section 3.2.3).

3.3 PHYSICAL SETTING

Extensive development and nearby inlet and port activities have resulted in a highly urbanized setting of the study area. The 2015 EA describes the Segment II beaches as generally containing a mixture of silica and calcium carbonate sand with negligible organic content. The typical mean grain sizes reportedly ranges from 0.2 to 0.7 mm with an average of about 0.4 mm. The larger grain sizes reportedly consisted of shell fragments. Beaches contained approximately 1% silt and appeared yellow or light gray in color with a slight tan or orange cast (Munsell values were predominantly 6-7). Waters around the project area have been designated by the state of Florida as Class III waters, suitable for recreation as well as propagation and maintenance of a healthy and well-balanced population of fish and wildlife. In Class III waters, Florida state guidelines limit turbidity values from exceeding 29 NTU above ambient levels outside the turbidity mixing zone during beach restoration activities. In order to comply with this standard, turbidity will be monitored during the proposed placement work as part of the water quality monitoring plan. The area surrounding the Segment II shoreline is highly developed; therefore, hazardous waste sources such as gas stations, dry cleaners, etc., exist around the project area (*see* **Figure 6**).

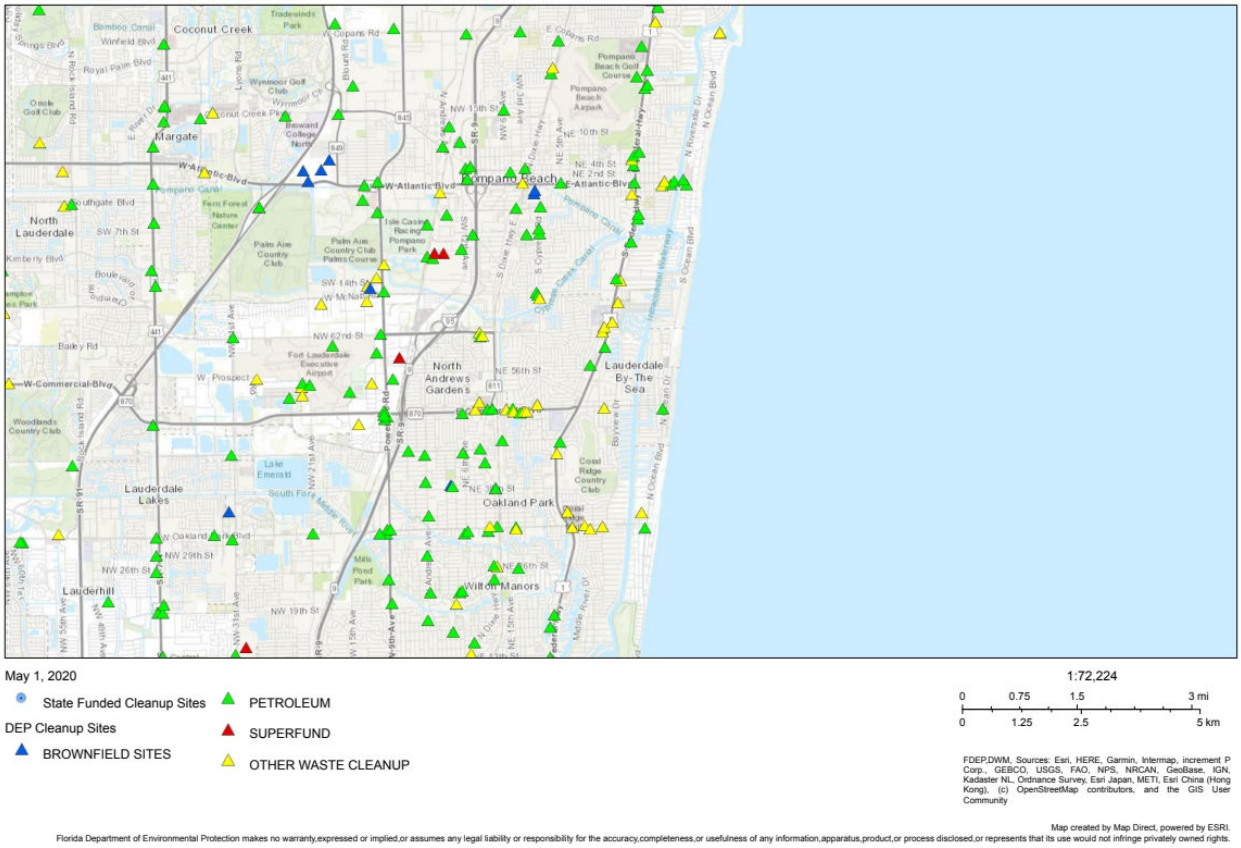

Figure 6. FDEP listed contamination sites located in the vicinity of Segment II of the BCSPP. (SOURCE: https://ca.dep.state.fl.us/mapdirect/?focus=contamlocator)

The Coastal Barrier Resources Act and Coastal Barrier Improvement Act restrict Federal expenditures and financial assistance that encourage development in hurricane prone, biologically-rich coastal barriers; however, Federal funds may be used within coastal barrier resource otherwise protected areas. The Acts do not restrict private developers or other non-Federal parties from developing within CBRS units provided they pay the full cost. CBRS Unit FL-20P (Lloyd Beach) is located immediately south of the project area and CBRS Unit FL-19P (Birch Park) is located within the project area (*see* **Figure 7**).

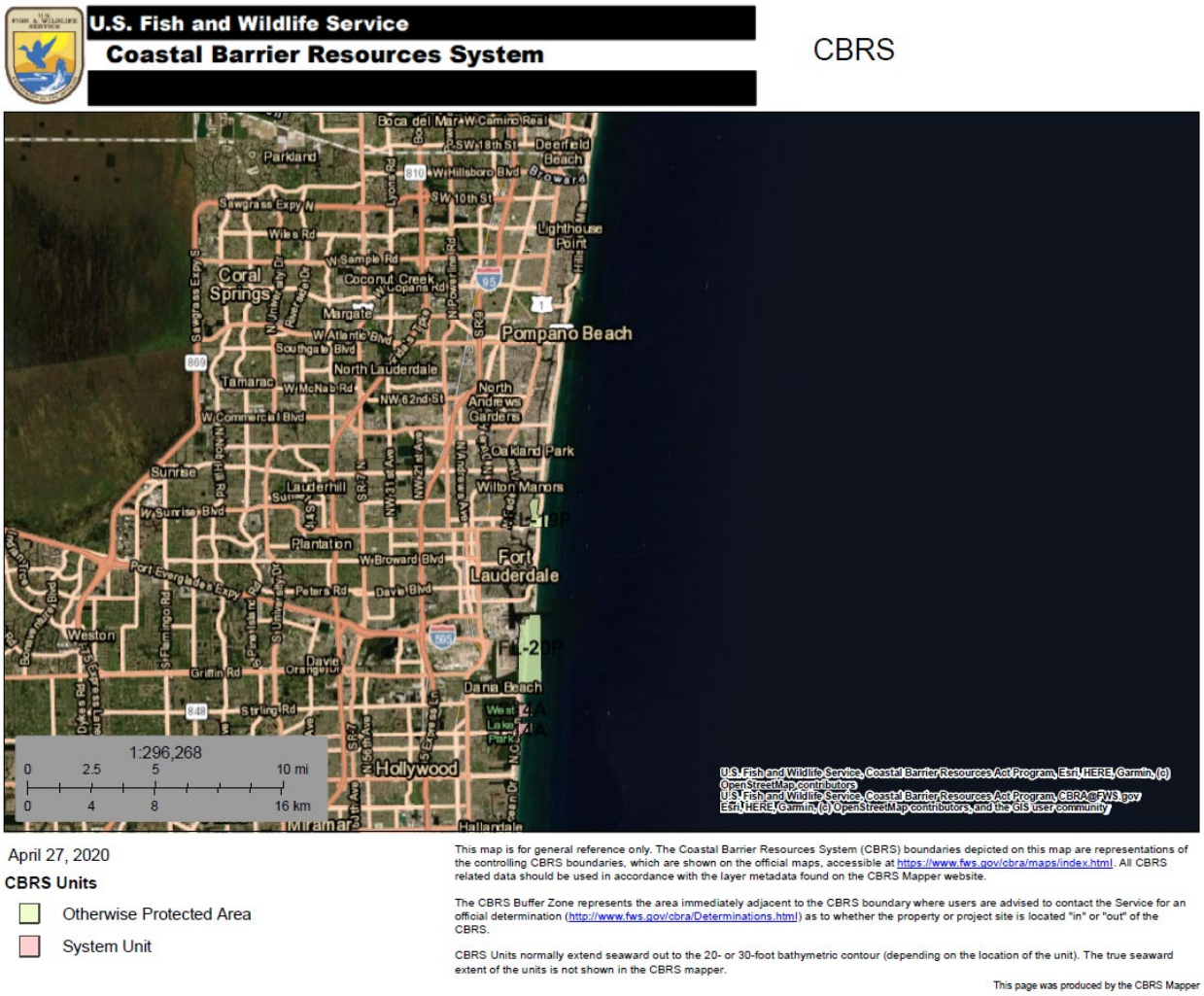

Figure 7. CBRS units in project vicinity.
(SOURCE: USFWS CBRS Mapper.)

3.4 SOCIOECONOMIC RESOURCES

Broward County beaches draw recreation and tourism year-round. Common water related activities in southeast Florida include onshore fishing, offshore fishing, recreational diving, sailing, sailboarding, surfing, personnel water craft, and other activities. Recreational activities such as fishing, diving, surfing and bird watching, etc. are commonly seen in the project area. The U.S. Census (2020) estimated Broward County's 2019 population to be almost 2 million people with a median household income of $57,333 in 2018. Port Everglades is located at the south end of Segment II and provides significant value to the economics and navigation in and around the area by supporting container cargo, cruise ship calls, and petroleum storage and distribution. More details on the socioeconomic resources in the project area can be found in section 3.4 of the 2015 EA.

3.5 CULTURAL RESOURCES

Archaeological evidence indicates the earliest known prehistoric native peoples entered into Florida during the Paleoindian Period at least 12,000 years ago, inhabiting a landscape and environment considerably different from the present (Milanich 1994). At that time, the Florida peninsula was almost double the size of its current area, sea levels were 200 to 350 feet lower, fresh sources of water were limited, and Lake Okeechobee and the Everglades did not exist (Meltzer 1989; Milanich 1994). The interior of Florida was likely covered by extensive and moderately dry expanses of grasslands. Intensive Paleoindian habitation was most likely restricted to Florida's coastline; however, remnants and other evidence of these coastal habitation sites are currently located offshore, progressively inundated by rising sea levels in the past.

Paleoindian populations are characterized as consisting of highly mobile bands of large-game hunters. Projectile points during this period are lanceolates ranging from skillfully fluted (e.g. Clovis) to unfluted varieties (e.g. Suwanee-Simpson). These points, hafted to long stout spears, and propelled by the atlatl, suggest the existence of a subsistence strategy based primarily on hunting large mammals (Wilmsen 1970). In Southeast Florida, Paleoindians hunted mammoths, bison, and other types of megafauna in arid or semi-arid climatic conditions at first, adapting to a transitioning climate toward the end of the period coinciding with the new emerging wetlands, and subsistence strategies relying on marine life, gathering, and small game hunting. Few Paleoindian archaeological sites are recorded in Florida, and none are identified within the area of potential effect for the project.

During the Archaic Period, lasting from 8500 – 500 BC, the environment and physiology of Florida transformed, undergoing a gradual warming trend, rising sea levels, a reduction in the area of the peninsula, and an increase in the proliferation of oak forests and hammocks within the interior of the state (Milanich 1994). Population increases and cultural changes begin to appear in the archaeological record. The Archaic period is divided into three subperiods –Early (8500 – 5000 BC), Middle (5000 – 3000 BC), and Late (3000 – 500 BC).

The Early Archaic archaeological sites in the project area are not well represented. Similar to the Paleoindian Period, an arid climate, limited freshwater sources, and scarce availability of raw lithic materials for tool-making, likely deterred Early Archaic settlement. During the Middle Archaic, coastal resources were exploited as the modern estuaries began to form resulting in a variety of new settlement and subsistence strategies adapted to local environments. With the beginning of the Late Archaic, exploitation of inland areas began, and tree islands are inhabited. Pre-ceramic tree-island middens in the Everglades are radiocarbon dated to around 2500 BC (Schwadron 2006). Importantly, the native peoples of Florida began to make the first pottery during this period.

In south Florida, two distinct Late Archaic cultures developed: the Orange culture and the Glades Archaic culture. Orange cultures sites are typically oyster and coquina shell middens along the coastline of Florida, and freshwater-pond snail middens along the

inland rivers and streams. Glades Archaic culture sites are represented as non-ceramic bone middens occurring on interior tree islands in the marshes of south Florida. Faunal remains from Glades Archaic sites are mainly freshwater species, such as fish, turtle, and apple snail. While most widely known from northeast Florida, Orange culture sites have been identified along the southeast coast.

During the Glades Period (500 BC – AD 1513), cultures are adapting their lifeways regionally, allowing well-defined archaeological geographic cultural subdivisions to be established. The cultural chronology of the Glades Period is founded in the seminal research of John Goggin (1947), who originally defined the Glades I, Glades II, and Glades III subperiods based on analysis of decorated pottery motifs. The early Glades I Period (500 BC – AD 200) is characterized by the presence of undecorated sand-tempered pottery. The undecorated pottery type continues to dominate the late Glades 1 Period; however, the decorated Fort Drum series, including punctated and incised varieties, begin to appear in the archaeological record. During the Glades III Period, newly introduced sand-tempered pottery types (e.g. Key Largo, Miami Incised, and Sanibel Incised) are identified in the archaeological record, allowing further subdivision of the period into the subperiods; Glades IIa, Glades IIb, and Glades IIc. By the Glades III Period (AD 1200 – 1513), decorated pots are almost entirely absent in the archaeological record (Griffen 1989); however, trade in exotic wares are evidenced by the presence of St. John's Checked-Stamped and Safety Harbor sherds recovered from prehistoric middens.

At the time of initial European contact, the area of present-day Broward County was inhabited by the Tequesta Indians, which can be traced back in time at least to 500 BC (Milanich 1994). The archaeological information from the pre-Columbian period provides no evidence that the Tequesta were organized in as complex a fashion as the Calusa, who dominated the lands on the southwestern coast of Florida. Sixteenth-century Spanish documents indicate the Tequesta chief ruled over a small population with allegiance to the Calusa chief. With European expansion to the north came the arrival of displaced native populations from the northern areas into South Florida. By the mid-eighteenth century, a Jesuit mission was established for a brief time at the mouth of the Miami River where the Tequesta's main village had once been. Documents relative to that mission no longer refer to the Tequesta, but they do mention two other groups, the Santaluces and the Boca Ratones. The Spanish probably named the Boca Ratones Indians after the small coastal inlet in which they lived, which is still today called Boca Raton located just north of the project area (Milanich 1995; Wilson et al. 2018).

The first European to land on and explore Florida was Ponce de Leon. In 1763, the English gained temporary possession of the region from the Spanish. During the American Revolution, the Spanish retook Florida from the British in 1781. During the Second Spanish period, the population of Florida continued to grow. As the eighteenth century ended and the nineteenth century began, the Seminole Indians were increasingly forced into the interior of Florida. In the early nineteenth century, Spain's control over Florida was weak, and after the First Seminole War, Spain sold Florida to the U.S. (McIver

1983). In 1821, Florida became an American territory and remained a territory until 1845, when it was granted statehood. Dade County encompassing present-day Miami-Dade, Broward, and Palm Beach counties, was established in 1936.

The 1920s were a boom time across Florida, including Broward County. New developments sprang up across the county (Allen and Capone 2000). In the 1920s, the Port of Palm Beach opened and was very successful. In 1926, hurricanes and a banking crisis ended the boom times for Florida. Despite the difficulties of the times, Port Everglades successfully opened in 1928 (McIver 1983). World War II brought civilian jobs and military base construction to Broward and Palm Beach counties. The Postwar period brought yet another surge in development to Broward County, with the creation of new subdivisions and towns. Improved flood control opened up more land in the county for real estate development. This pattern of development continued through the 1960s. Today, the east coast of Florida is one of America's premier retirement locations and the beaches are a tourism attraction.

3.6 NATIVE AMERICANS

The Broward County Segment II beaches are not located within or adjacent to known Native-American-owned lands, reservations lands, or Traditional Cultural Properties.

4 ENVIRONMENTAL EFFECTS

This section provides the analysis of the anticipated changes to the existing environment (including direct and indirect effects) for the No Action Alternative and the Preferred Alternative (Alternative 1). Cumulative effects are also discussed in **Tables 6** and **7** of this section.

The effects of sand placement on Segment II of the BCSPP have been evaluated in previous NEPA documents (see Section 1.4). The effects of nourishing the Reach 1 portion of the project above MHW are similar in nature to the effects of other portions of the project previously evaluated by this project's NEPA (see Section 1.4) and are hereby incorporated by reference. The effects of Garcia Mine have been evaluated through the Corps' Regulatory NEPA (see Section 1.4). The effects of transporting beach quality sand from Garcia Mine are similar in nature to the effects of other upland mines previously evaluated by this project's NEPA (see Section 1.4) and are hereby incorporated by reference. Therefore, the effects analysis for the Preferred Alternative addresses effects associated with the inclusion of the feeder beach feature and effects to listed T&E species which were not previously evaluated.

4.1 VEGETATION

Inclusion of the feeder beach feature would have no direct effect on vegetation; however, the feeder beach may extend the time until the next renourishment is needed. The placement of sand on the beach may stabilize dune and beach habitat, which may result in increased available area for new vegetation. Temporary impacts to available habitat and/or existing vegetation may occur as truck haul operations access the beach from the uplands. Any damaged vegetation would be replanted following completion of the project.

Under the No Action Alternative, renourishment of Segment II of the BCSPP would not occur. The ongoing erosion would likely continue to reduce beach and dune habitat available for vegetation.

4.2 FISH AND WILDLIFE RESOURCES (OTHER THAN T&E SPECIES)

Under the No Action Alternative, erosion of the beach would continue resulting in decreased habitat available for wildlife. Construction of the feeder beach may result in temporary increases in turbidity and sedimentation as well as potential smothering and burial of non-mobile benthic species (i.e. worms, clams, etc.) within the feeder beach footprint. Construction activities may also temporarily cause avoidance and/or displacement of fish and other mobile species in and around the feeder beach construction area. Direct effects to birds and other wildlife would be expected to be minimal as these animals are motile and can avoid construction activities. Presence of construction equipment and noise generated by the operations could disturb nesting and foraging birds and other wildlife (Speybroek et al. 2006). Some wildlife and birds may experience temporary adverse effects from a reduction in available food sources. These effects would be short-term and limited to the immediate area of placement and time of

construction. There is sufficient area north and south of the feeder beach's construction zone that can be used by displaced birds and wildlife during construction. Increasing the size of the beach would benefit migratory birds. The additional beach area would result in more available nesting and foraging areas.

4.3 THREATENED & ENDANGERED SPECIES

Under the No Action Alternative, renourishment of Segment II of the BCSPP and construction of the feeder beach via truck haul from upland sand mines would not occur. Continued erosion could result in exposure of nearshore rock outcroppings which may serve as habitat for coral colonization. The increased turbidity associated with the continued erosion may also reduce recruitment due to the interference with coral spawning or coral health. Fragmentation would still be a potential. Additionally, the continued erosion of the beach could threaten the existence of the remaining dune vegetation and adjacent scrub habitat in Broward County. This decrease in available habitat will negatively affect beach jacquemontia as well as result in a loss of potential foraging habitat that will negatively affect the piping plover. The continued shoreline recession will also reduce the amount of dry beach available for sea turtle nesting and may result in poor site selection by nesting females. As the beaches recede, nests become more susceptible to tidal inundation leading to an increase in hatchling mortality (Brock and Erhard 2008; Witherington et al. 2008). Other studies have documented an increase in the number of false crawls with increased erosion (Mosier and Witherington 2002). In the absence of renourishment, coastal property owners may turn to armoring measures, such as sea walls, groins and revetments, which severely decreases suitable nesting habitat and leads to an increase in false crawls and hatchling mortality due to wash out (Mosier and Witherington 2002; Brock and Erhart 2008; Witherington et al. 2008).

Pursuant to NEPA and the ESA, the 2004 EIS and 2015 EA included consultation with NMFS and USFWS for potential effects to listed species. Due to addition of newly listed species, the release of the NMFS' SARBO, dated March 27, 2020, and the inclusion of the feeder beach feature, the Corps reevaluated the project's potential effects to species under the NMFS' and USFWS jurisdiction. The Corps determined that implementation of the Preferred Alternative (continued periodic renourishment of Segment II of the BCSPP and construction of the feeder beach feature via truck haul from upland sand mines) may affect some federally-listed species under NMFS and USFWS jurisdiction. A summary of the Corps' effect determinations are described below in Table 5. Compliance with the ESA is discussed in Section 6 of this EA.

NOTE: Reach 1 is considered a separate element and ESA consultation for Reach 1 must be finalized prior to placement of material in this area. Once consultation is complete for Reach 1, the FONSI and EA will be amended to include this consultation. Section 4 contains a detailed analysis discussion.

Table 5. Corps' 2020 T&E Species Effect Determinations.

Common Name	Scientific Name	Consultation Document	Corps' Determination
Green sea turtle[1]	*Chelonia mydas*	SARBO (swimming sea turtles SPBO (nesting sea turtles)	Likely to adversely affect (LAA)
Hawksbill sea turtle	*Eretmochelys imbricata*		
Leatherback sea turtle	*Dermochelys coriacea*		
Loggerhead sea turtle	*Caretta caretta*		
Kemp's ridley sea turtle	*Lepidochelys kempii*		
American crocodile	*Crocodylus acutus*	2020 EA	May affect, not likely to adversely affect (MANLAA)
Piping Plover	*Charadrius melodus*	SPBO	MANLAA
Pillar coral	*Dendrogyra cylindrus*	SARBO	MANLAA
Rough cactus coral	*Mycetophyllia ferox*	SARBO	MANLAA
Lobed star coral	*Orbicella annularis*	SARBO	MANLAA
Mountainous star coral	*Orbicella faveolata*	SARBO	MANLAA
Boulder star coral	*Orbicella franksi*	SARBO	MANLAA
Elkhorn coral[D]	*Acropora palmata*	SARBO	MANLAA
Staghorn coral[D]	*Acropora cericornis*	SARBO	MANLAA
Beach jaquemontia	*Jacquemontia reclinata*	2020 EA	No effect
Smalltooth sawfish	*Pristis pectinata*	SARBO	MANLAA - Discountable
Nassau grouper	*Epinephelus striatus*	SARBO	MANLAA - Discountable
Giant manta ray	*Manta birostris*	SARBO	MANLAA - Discountable
Florida manatee	*Trichechus manatus latirostris*	2020 EA	MANLAA

[1] North Atlantic distinct population segment (DPS); [D] Designated Critical Habitat (DCH)

<u>Sea turtles</u>

While beach renourishment can be beneficial in restoring nesting sea turtle habitat, it also has the potential to adversely impact nesting and hatchling sea turtles in a number of ways and is considered a primary threat that may impact proposed critical habitat for nesting loggerhead sea turtles (78 FR 17999-18082). There have been mixed results reported in studies measuring sea turtle hatchling success for nourished versus non-nourished beaches. Section 4.3.1.1 of the 2004 EIS provides a review of some studies and analysis of other positive and negative impacts to sea turtles (Corps 2004). Renourishment of Segment II of the BCSPP could potentially directly and indirectly affect sea turtles in several ways:

- Placement activities on nesting beaches may affect sea turtles;
- 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.

The 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). Because a truck haul project would not require use of dredges or other vessels, it is unlikely that offshore sea turtle habitat would be impacted. A truck haul approach also minimizes the use of in-water vessels and the potential for entanglement, entrainment, or strikes. Effects to sea turtles from truck haul activity include risk of injury from interaction with heavy equipment during construction as well as avoidance of construction activities, related noise, and physical exclusion from areas blocked by turbidity curtains (if implemented). These effects are determined to be insignificant as direct, physical injury is not anticipated since sea turtles are highly mobile and able to easily avoid the area.

The Corps determined that beach renourishment above MHW is consistent with the SPBO and the proposed activities are likely to adversely affect nesting sea turtles but not likely to jeopardize the continued existence of the species. The Corps will minimize potential effects to nesting sea turtles in the project area by implementing the applicable terms and conditions (T&Cs) of the SPBO. The Corps determined that the construction of the feeder beach (which includes placement of sand below MHW) is consistent with the SARBO, and the proposed activities may affect, but are not likely to adversely affect, swimming sea turtles. The Corps will minimize potential effects to swimming sea turtles by implementing the applicable project design criteria (PDCs) of the SARBO. NMFS' standard in-water protection measures for swimming sea turtles and applicable T&Cs and PDCs will be included in the project plans and specifications to be followed during construction.

<u>American crocodiles</u>
Although American crocodiles are unlikely to be found in an area with high levels of disturbance (i.e. vessel traffic, human attention, etc.), this species has been sighted in the surf zone in beaches south of the project area. Although a truck haul approach minimizes the use of in-water vessels and the potential for entanglement, entrainment, or strikes in the water, American crocodiles could also be found on the beach or in the surf zone. Due to the species being highly mobile and able to easily avoid the area, direct, physical injury effects to this species are not anticipated from construction operations, machinery, or materials. The Corps determined implementation of the Preferred Alternative may affect,

but is not likely to adversely affect, American crocodiles.

Florida manatees

Although Florida manatees are unlikely to enter the project area, the species is located in the project vicinity. The use of a truck haul approach instead of a dredge-and-fill approach minimizes the use of in-water vessels and the potential for entanglement, entrainment, or strikes in the water. Direct, physical injury effects to this species are not anticipated from construction operations, machinery, or materials as the species are highly mobile and able to easily avoid the area; however, the Corps will include the USFWS' Standard Manatee Conditions for In-Water Work (2011) in the project plans and specifications to ensure protection of the species. The Corps determined implementation of the Preferred Alternative may affect, but is not likely to adversely affect, Florida manatees.

Smalltooth sawfish, Nassau grouper, and giant manta ray

Based on the low probability that this species will enter the project area and the use of a truck haul approach instead of a dredge-and-fill approach, the Corps determined that the unlikelihood of encountering this species deems the possibility of affecting them as discountable.

Piping plover

Implementation of the Preferred Alternative would increase habitat that could be used by the piping plover; however, it is not considered optimal habitat for either species. Direct effects to the birds from project construction are expected to be minimal as birds are motile and can avoid construction activities. Placement of sand on the beach may temporarily displace foraging and resting birds. This interruption is limited to the immediate area and duration of construction. Habitat exists outside of the beach placement areas with similar characteristics that may be used by displaced species while renourishment activities are underway. The prey base, which includes the benthic organisms, may be temporarily reduced in the proposed beach placement areas. This effect would be short-term as recovery of beach infauna is expected to occur quickly. If either species are found in the project footprint, the protective conditions developed for migratory birds will be utilized as well as conditions of the P3BO. Compliance with the reasonable and prudent measures and T&Cs listed in the P3BO will provide sufficient protection for piping plover. The Corps determined that the Preferred Alternative may affect, but is not likely to adversely affect piping plovers.

Beach jacquemontia

Renourishment of Segment II of BCSPP may impart both negative and positive impacts on beach jacquemontia, a perennial plant. In the short term, presence of construction equipment may mechanically damage any existing plants, while sand placement, if done improperly, may bury extant plants. Construction of the beach may provide potential habitat for this species. Due to the low number of observations for this species in Broward County, the Corps determined the project will have no effect on this species.

Corals

There are no hardbottoms in the direct footprint of the project; therefore, no direct effects to corals are anticipated. Renourishment activities and construction of the feeder beach would be expected to result in short term, temporary increases in turbidity since the source of the material is beach-quality sand. Conditions would revert to background levels after the newly constructed beach adjusts to conditions and reaches the Equilibrium Toe Of Fill (ETOF). The fill templates are designed to be located within the historical envelope of beach conditions in this area. To avoid potential impacts to nearshore hardbottom resources, the fill between R-31 and R-36, and between R-41.3 and R-51, will only be above MHW which will have no effect on corals. The fill between R-28 and R-31 is designed to act as a "feeder beach" with the primary benefit being the introduction of sand into the coastal system in a slow sustained manner to the south that may extend the time until the next renourishment is needed. Between R-28 and R-31, the hardbottom edge is located approximately 800 to 1000 feet offshore of the ETOF. South of R-31.5 the hardbottom edge is located approximately 300 to 600 feet offshore of the current shoreline. The Corps developed and analyzed equilibrium profiles for the feeder beach construction at each R-monument transect where the fill template extends below mean high water (R-25 to R-30).

Equilibrium Toe of Fill (ETOF) Analysis

For each transect the ETOF was identified. The equilibrated profiles were developed using engineering judgment from analysis of historical conditions at each transect. The development of the equilibrated profiles included extending seaward from the lower berm at a 1V:10H slope, and then beginning an exponential curve between -2 and -3 feet North Atlantic Vertical Datum 1988 (NAVD88), and extending to meet with the existing grade between -7 and -10 feet NAVD88. In general, R-28 – R-30 had a higher and flatter nearshore profile. Analysis of the equilibrated profiles indicates that the ETOF between R-25 and R-28 is generally located approximately 500 feet away from the hardbottom edge. Between R-25 and R-26, the ETOF is located slightly closer (approximately 450 feet away) due to the curvature of the shoreline and the presence of the artificial reef, but well within the placement footprint for the Hillsboro Inlet bypassing project. Between R-28 and R-31, the estimated ETOF is generally located approximately 800 to 1000 feet away from nearshore hardbottom resources. Please note that some of the equilibrated templates do not account for a cross shore balance of volume change (example, R-25). Historical analysis of the profile evolution indicates that the profiles do not tend to equilibrate in a typical cross shore response. Rather, due to the strong southerly transport, the profile shape remains somewhat consistent as it erodes landward, with the losses being transported to the adjacent beaches to the south.

NOTE: Reach 1 is considered a separate element and ESA consultation for Reach 1 must be finalized prior to placement of material in this area. Once consultation is complete for Reach 1, the FONSI and EA will be amended to include this consultation. Section 4 contains a detailed analysis discussion.

4.4 EFH

Under the No Action Alternative, no effect to EFH would be expected. Construction of the feeder beach will affect unconsolidated sediment habitat, nearshore habitat, and marine water column environments (e.g. beach surf zone and shallow subtidal water depths in the nearshore zone). However, no significant or long-term adverse effects on EFH or managed species are expected.

Specific habitats in the water column can best be defined in terms of gradients and discontinuities in temperature, salinity, density, nutrients, light, etc. These 'structural' components of the water column environment exhibit spatial and temporal variability. (Coastal Eco-Group, Inc. (CEG) 2020). Most marine fish and shellfish utilize the water column during some portion of their life cycle. Minor and temporary increases in turbidity during construction are likely to occur in the nearshore area and marine water column during construction; however, mechanical placement of sand transported to the project area by trucks from upland mines minimizes these potential effects. Conditions would revert to background levels after the newly constructed beach adjusts to conditions and reaches the ETOF.

Direct, adverse effects would be expected to occur to non-motile macrofaunal communities (i.e. worms, clams, etc.) located within the feeder beach footprint (i.e. beach, surf zone, and shallow subtidal water depths in the nearshore zone) as a result of burial; however, the effects are expected to be minor and temporary, given the expected immediate recolonization of the area from adjacent communities. Beach fill equilibrium will have significantly lower than direct burial impacts as most macrofaunal populations can adjust to gradual burial by population from adjacent areas through horizontal migration (CEG 2020). Due to the distance of the feeder beach to hardbottom habitat, the action is not expected to affect corals which may be present in the vicinity. Broward County has conducted biological monitoring and surveys in accordance with the biological monitoring plan, which was a requirement of the FDEP WQC. The plan includes nearshore hardbottom monitoring via permanent transects and hardbottom edge mapping for Reaches 2 – 4 (R-32 to R-80). Benthic characterization surveys will be completed in late-summer or fall of 2020, specifically in areas where existing information is more than two years old and in areas not previously surveyed. Potential effects from the proposed activities in Reach 1 are not expected to be substantially different than the anticipated effects in the other Reaches.

4.5 WATER QUALITY

Under the No Action Alternative, erosion of the beach would continue to contribute to background turbidity levels. Construction of the feeder beach would be expected to result in short term, temporary increases in turbidity since the source of the material is beach-quality sand. Conditions would revert to background levels after the newly constructed beach adjusts to conditions and reaches the ETOF.

4.6 SEDIMENT CHARACTERISTICS

Construction of the feeder beach would have no effect on sediment characteristics as the

sand used for construction would meet the sand criteria established by FDEP for the Broward County beaches. Temporary and minor increased turbidity would be expected as discussed in section 4.5 of this document. Implementation of the No Action Alternative would have no effect on sediment characteristics.

4.7 CBRS UNITS

Construction of the feeder beach would not occur within or near the existing CBRS units; therefore, no effect to the existing units is expected from the construction of the feeder beach or under the No Action Alternative.

4.8 HTRW

Neither the No Action Alternative nor construction of the feeder beach would introduce any new HTRW sources; therefore, no effect to HTRW is expected.

4.9 AIR QUALITY

Construction of the feeder beach would have similar effects as the renourishment activities. A minor, temporary degradation of air quality could occur due to emissions from truck haul operations and associated heavy equipment and machinery during construction operations. Air quality would revert to background levels following the completion of construction. No effect to air quality would be expected under the No Action Alternative.

4.10 NOISE

Construction of the feeder beach would have similar effects as the renourishment activities. A temporary increase in the noise level in the project area would be expected. Noise levels would revert to background levels following the completion of construction. No effect to noise level would be expected under the No Action Alternative.

4.11 AESTHETIC RESOURCES

Under the No Action Alternative, ongoing erosion would continue to degrade the current aesthetics. Construction of the feeder beach would have similar effects to the renourishment activities. A temporary reduction in the aesthetic value of the beach during renourishment activities may be expected due to the presence of trucks and heavy equipment, which may be considered unsightly by members of the public. However, long term improvements of in aesthetics would also be expected as the inclusion of the feeder beach may extend the time until the next renourishment is needed.

4.12 RECREATION RESOURCES

The No Action Alternative would result in continued erosion of the beach, which would reduce the amount of beach available for recreation. Construction of the feeder beach would cause minor, temporary restrictions for safety purposes during renourishment operations, but long-term benefits could be expected by restoring the amount of the beach available for recreation purposes. Additionally, inclusion of the feeder beach may extend the time until the next renourishment is needed, thus offering a longer duration of available

beach for recreation purposes.

4.13 SOCIOECONOMIC RESOURCES

Under the No Action Alternative, erosion would continue, decreasing the amount of beach available for recreation and tourism resulting in a potential loss of revenue due to decreased use. Construction of the feeder beach would require temporary closure of the beach in the active construction area. This temporary closure could result in the potential loss of recreation and/or tourism during construction; however, renourishment of the beach would result in long-term benefit as the increased beach size would maintain and/or improve the existing recreation and tourism. Additionally, inclusion of the feeder beach may extend the time until the next renourishment is needed, thus offering a longer duration of available beach for recreation and tourism, which would maintain socioeconomic conditions.

4.14 SAFETY

Under the No Action Alternative, erosion would continue resulting reduced shoreline protection from storm damages whereas inclusion of the feeder beach may extend the time until the next renourishment is needed thus offering a longer duration of protection from storm damages. Construction of the feeder beach would require temporary closure of the beach in the active construction area to ensure safety of the public; however, this closure would be temporary, ceasing with the completion of the construction.

4.15 CULTURAL RESOURCES

Under the No Action Alternative, no effect to cultural or historic resources would occur. All proposed fill templates are located within the historical envelope of beach modifications; therefore, construction of feeder beach feature will occur in previously disturbed areas. The 2015 EA and 2004 EIS evaluated placement of sand sourced from upland mines and offshore borrow areas for effects to historic properties and this current EA adopts the analysis conducted in those reports where the information is valid and applicable to this evaluation. Previous consultations did not include the beach renourishment of the feeder beach from FDEP Monuments R28 to R31; however, this area has been previously constructed. No cultural resources are located within this specific placement area, and the placement of sand at this location would be considered a protective measure preventing erosion and potential disturbance to unknown resources that may exist further inland beyond the current project's area of potential effect. Section 106 consultation regarding renourishment of the feeder beach was completed during a 30-calendar day review period that ended on June 17, 2020.

The commercial upland sand sources identified for the Segment II Project include the Ortona Sand Mine and the Witherspoon Sand Mine. Over the years, a number of cultural resource surveys have been conducted for the Ortona Sand Mine (Department of Historical Resources [DHR] Survey Nos. 6689, 4847, 3021, 17005, and 16862). Several prehistoric archaeological sites associated with the Ortona Mound complex have been identified and recorded within the mine property including Ortona Canal East (8GL4a),

Quarry Mound (8GL81), Lance's Mound (8GL419), Sawpalmetto Haven Mound (8GL420), and Tallant Mound (8GL00083). Florida Master Site File records indicate that the Ortona Canal East (8GL4a) and Quarry Mound (8GL81) have been mitigated. Cultural resources investigations for the adjacent Witherspoon sand mine have been completed (DHR Survey No. 4602). Two archaeological sites (8GL378 T.C. Cabbage Palm Mound and 8GL379 Fox Hammock Midden) were identified as eligible for inclusion in the National Register of Historic Places. These sites will not be impacted by the sand mining activities. Any upland sand mines (including Imokalee, CEMEX, and Garcia Land Mines) employed for this project are subject to the requirement of proving compliance with the State of Florida's statutory requirements in Chapter 267 for protection of historical resources in the sand source footprints before the Corps will approve utilizing the source. Consultation under Section 106 of National Historic Preservation Act (54 U.S.C. §306108) with Florida SHPO and appropriate Federally-recognized tribes for use of these mines is ongoing and will be completed prior to the finalization of this EA. Based on this information, the Corps anticipates that the use of any of these mines as upland sand sources will pose no effect on historic properties. No effect to cultural or historic resources is anticipated from implementation of the Preferred Alternative.

4.16 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. However, Native American groups have lived throughout the region as evidenced by the presence of prehistoric archaeological sites near the project area, and their descendants continue to live within the State of Florida and throughout the United States. Pursuant to Section 106 of the National Historic Preservation Act (54 U.S.C. §306101 et seq.), obligations regarding the Corps' Trust Responsibilities to federally-recognized Native American Tribes, and in consideration of the Burial Resources Agreement between the Corps and the Seminole Tribe of Florida, prior consultation on the project has not indicated any historic use of the project area. Consultation with Native American tribes having ancestral ties to this region, including the Miccosukee Tribe of Indians of Florida, Seminole Tribe of Florida, Seminole Nation of Oklahoma, and Thlopthlocco Tribal Town was completed during a 30-calendar day review period that ended on June 17, 2020.

4.17 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Under the No Action Alternative, erosion would continue, which adversely affects the area's recreation and aesthetics, reduces the shoreline protection against storm events, reduces beach and dune habitat available for T&E species and other wildlife and vegetation.

Construction of the feeder beach would have similar effects to that of the renourishment activities, resulting in minor and temporary increases in turbidity of the surf zone, degradation of air quality, increases in the noise level, and reduction in the aesthetic value of the beach during construction. Mobile species are likely to leave the project area during construction to avoid the temporary increases in noise and turbidity. Adverse effects would be expected to occur to non-motile macrofaunal communities (i.e. worms, clams,

etc.) located within the feeder beach footprint as a result of burial; however, the effects are expected to be minor and temporary, given the expected immediate recolonization of the area from adjacent communities. Due to the distance of the feeder beach to hardbottom habitat, the action is not expected to affect corals which may be present in the vicinity.

4.18 CUMULATIVE IMPACTS

Cumulative impacts (hereafter referred to as cumulative effects) are defined in 40 C.F.R. §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."

Past, present, and reasonably foreseeable actions and plans are summarized below in **Table 6**. Section 1.4 of this EA contains more details on environmental reports completed in/around the project's vicinity. In addition, it is expected that the public, State of Florida, and local governments could have permitted activities in or around the project area. Federal activities are evaluated under NEPA directly for each project. Other projects that take place in-water or would affect wetlands are evaluated under a permit issued by the Corps' Regulatory Division. Reasonably foreseeable future actions and plans could include continued port operations and maintenance dredging at Port Everglades, freshwater inflow releases, Hillsborough Inlet sand bypass, and future renourishment of the BCSPP. Other proposed future actions and plans include Broward County sand bypass project, and the South Atlantic Coastal Study; however, potential effects of these proposed future actions and plans are speculative and remote at this time. Preparation of a separate NEPA document, which would contain detailed analysis of potential effects, will be required during the development of the proposed future projects. An EIS describing the potential effects of the authorized Port Everglades Deepening Project was completed in 2015. However, due to new information, a supplemental NEPA document will be prepared. The Corps has reinitiated ESA consultation for the deepening project. The evaluation of the overall indirect effects is still under consideration and will be thoroughly documented and discussed in the supplemental NEPA document.

The cumulative effects analysis for this action considers the potential effects of the Preferred Alternative in conjunction with past, current, and reasonably foreseeable future actions in the area. A summary of cumulative effects on environmental factors from past actions, the Preferred Alternative, present actions, and reasonably foreseeable actions and plans is provided in **Table 7**. The Preferred Alternative, when considered with past, present, and reasonably foreseeable future actions and plans actions in the project area, is not expected to have additional significant cumulative effect on the environmental conditions of the project area.

Table 6. Past, present, and reasonably foreseeable actions and plans affecting the project area.

Past Actions/Authorized Plans	Current and Future Actions
- Beach nourishment projects; - Construction of Port Everglades and past maintenance - General urbanization.	- Continued, general port operations; - Freshwater inflow releases; - Hillsborough Inlet sand bypass project; - Future maintenance dredging of the Port Everglades Harbor, Florida navigation project; - Future renourishment of BCSPP.

Table 7. Summary of cumulative effects.

Natural Setting (Vegetation, T&E Species, Fish and Wildlife Resources, EFH)	
Past Actions	Construction of residential and commercial/public infrastructure, including the dredging and filling of the bay bottom, has decreased the amount of habitat available for fish, wildlife, and T&E species use in the area.
Present Actions	General port operations and beach nourishment activities may result in temporary effects (e.g. avoidance, minor disruption/displacement) to fish, wildlife, and T&E species due to noise, vessel traffic, and/or heavy equipment usage in the project vicinity.
Future Without Project	Availability of beach habitat would continue to fluctuate based on the ongoing erosion and nourishment activities.
Preferred Alternative	Implementation of the Preferred Alternative may result in temporary effects to fish, wildlife, and T&E species due to noise and/or construction activities; however, these effects are expected to be minor and will cease with the completion of construction. Due to the implementation of the applicable T&Cs and PDCs of the SARBO, P3BO, SPBO, and standard in-water work protection measures, potential effects to T&E species are reduced to the maximum extent practicable. Adverse effects may occur to non-motile macrofaunal communities (i.e. worms, clams, etc.) located within the feeder beach footprint as a result of burial, sedimentation, and/or turbidity; however, the effects are expected to be minor and temporary, given the expected immediate recolonization of the area from adjacent communities. Long-term benefits associated with placement of sand on the beach may be expected due to increased available habitat for wildlife and T&E species use.
Future Actions	Any Federal and/or state/local projects will be required to follow regulations to maintain and protect T&E species and their habitats within the area. Broward County maintains a biological monitoring plan which includes annual monitoring of the project area.
Cumulative Effect	Implementation of the T&Cs, PDCs, and in-water work protection measures will minimize cumulative effects to the natural setting to the maximum extent practicable.

Physical Setting (Water Quality, Sediment Characteristics, CBRS Units, HTRW, Air Quality, Noise)	
Past Actions	Ongoing erosion and continued development of residential and/or commercial infrastructure may contribute to the degradation of water and air quality as well as increases in noise and potential HTRW sources.
Present Actions	Maintenance dredging, beach renourishment, and freshwater discharges have been ongoing for decades and will continue.
Future Without Project	No change to present conditions.
Preferred Alternative	The Preferred Alternative may result in short-term increases in turbidity and/or sedimentation. Construction equipment may release negligible amounts of pollutants, including oils and grease. Best management practices will be used to limit the possibility of adverse effects, and detailed pollution control plans will be developed during the design phase. Increased noise and degradation of air quality may occur during truck haul and construction; however, these effects are expected to be minor and will cease with the completion of construction. No change to HTRW or sediment characteristics would occur.
Future Actions	Future activities in the project area (e.g. dredging, beach renourishment, etc.) can temporarily elevate localized levels of suspended solids and turbidity. Projects implemented would be required to maintain and meet regulated water quality standards within the area.
Cumulative Effect	Effects on water quality from future actions, seasonal weather, and storm events are unlikely to be eliminated; however, implementation of the will maintain shoreline protection against storm damages. The Corps is committed to ensuring that projects will not result in violations of water quality standards. No cumulative effects to the physical setting of this area are expected.
Socioeconomic Resources (Aesthetic Resources, Recreation Resources, Economic Resources)	
Past Actions	General urbanization of the region has increased the aesthetic, recreation, and economic resources in this area.
Present Actions	Sand bypassing, beach renourishment, dredging of navigation channels, and general port operations result in continuation of benefits to the area's economics.
Future Without Project	Availability of beach for recreating would continue to fluctuate based on the ongoing erosion and nourishment activities. Broward Segment II beaches may experience degraded aesthetics and decreased revenue as a result of ongoing erosion and as tourists choose to recreate elsewhere.
Preferred Alternative	Renourishment of Segment II of the BCSPP will ensure continued recreation and tourism, which provides benefits to the recreation and economy in this area. By creating a feeder beach in the northern reach of Segment II, sand is introduced into the coastal system in a slow sustained manner to the south, which may extend the time until the next renourishment is needed.
Future Actions	Port operations and recreation and tourism needs are likely to continue. The demands will continue to support the need of the future actions in order to continue to increase benefits to the economy in this region.

Cumulative Effect	Continuation of benefits to socioeconomic resources may be anticipated when considering the cumulative effects of projects in this area.
Native Americans	
Past Actions	The project area does not occur on lands owned by Native Americans; however, Native American groups have lived throughout this region in the past, and their descendants continue to live within the state of Florida and throughout the U.S.
Present Actions	No known projects occur within or adjacent to any Native American properties.
Future Without Project	No known effects.
Preferred Alternative	There are no known effects.
Future Actions	Future actions are not anticipated to effect any known tribal resources in the project vicinity.
Cumulative Effect	Activities in this area are not likely to have any effect on tribal resources and are unlikely to in the future; therefore, no cumulative effects are expected.
Cultural Resources	
Past Actions	Ongoing beach nourishment activities have not added to the degradation of any known historic properties.
Present Actions	No present actions are anticipated to effect cultural resources.
Future Without Project	Continued urban development, sea level change, and coastal erosion may adversely affect some cultural resources.
Preferred Alternative	Sand placement using upland sand sources (proposed action) would have no effect on cultural resources. Additional surveys and consultation with the Florida SHPO and appropriate federally-recognized tribes may be required. Other factors, such as sea level rise, may increase erosion and impact some cultural resources
Future Actions	Future actions are not anticipated to impact any known historic properties in the area of potential effect.
Cumulative Effect	Activities in this area are not likely to have an effect on cultural resources in the area and are unlikely to in the future; therefore, no cumulative effects are expected.

5 PUBLIC AND AGENCY COORDINATION

The Corps released the proposed Finding of No Significant Impact (FONSI), draft EA, and associated appendices for a 30-day public and agency review from May 18, 2020 through June 17, 2020. The project is in compliance with the NEPA of 1969, as amended, §42 U.S.C. 4321, *et seq*., Public Law 91-190.

5.1 COMMENTS RECEIVED AND CORPS' RESPONSES

A copy of all comments received during the public and agency review and comment period, as well as a summary matrix of the comments and Corps' responses, is included in the final NEPA document's Appendix B. All pertinent correspondence with Federal and state agencies is included in Appendix A.

6 ENVIRONMENTAL COMMITMENTS AND COMPLIANCE

The Corps will comply with all applicable conditions of the 401 WQC, FCD concurrence and biological opinions (e.g. SARBO, SPBO, and P3BO) for the Preferred Alternative. Renourishment of Segment II of the BCSPP was previously coordinated in the 2015 EA. The Corps and its contractors commit to avoiding and minimizing adverse effects during construction activities by including the commitments in **Table 8** in the contract specifications:

Table 8. Corps' environmental commitments.

Environmental Commitment	Corps' Commitment
Protection of Fish and Wildlife Resources	Construction activities will be managed to minimize interference with, disturbance of, and damage to fish and wildlife. Prior to the start of construction, the Contractor will submit their Environmental Protection Plan (EPP) that will include protective measures for species that require specific attention.
Endangered and Threatened Species Protection	Adverse effects to T&E species will be avoided and/or minimized. The Corps will include applicable T&Cs and PDCs of the SARBO, SPBO, and P3BO in the project plans and specifications. Implementation of standard protection conditions and BMPs will ensure that the potential adverse effects to protected species are reduced to the maximum extent practicable. T&E species protection criteria will be included in the Contractor's EPP.
Water Quality	Implementation of design and procedural controls will prevent oil, fuel, or other hazardous substances from entering the air or water. All wastes and refuse generated by project construction will be removed and properly disposed. Contractors will implement a spill contingency plan for hazardous, toxic, or petroleum material. Conditions imposed by WQCs will be implemented in order to minimize adverse effects to water quality.

Environmental Commitment	Corps' Commitment
Cultural Resources	An unexpected cultural resources finds clause will be included in the project specifications. In the event that any archaeological resources are uncovered during construction activities, all activities will be halted immediately within the area. Once reported, the Corps' staff will initiate coordination with the appropriate Federal and state agencies to determine if archaeological investigation is required. Additional work in the area of the discovery will be suspended at the site until compliance with all Federal and state regulations is successfully completed and Corps' staff members provide further directive.
Protection of Migratory Birds	Standard migratory bird protection protocols will be incorporated into the project plans and specifications. The contractor will be required to abide by those protocols and all monitoring timeframes as specified by all applicable licenses and permits.

This EA has been prepared pursuant to NEPA and its implementing regulations. The status of the proposed project's compliance with environmental acts and Executive Orders (E.O.s) are provided in **Table 9**:

Table 9. Proposed project's environmental act and E.O. compliance status.

Environmental Act or E.O.	Project Compliance Status
National Environmental Policy Act of 1969 (42 U.S.C. §4321 *et seq*.)	This EA has been prepared pursuant to NEPA and its implementing regulations. A Notice of Availability for the proposed FONSI, draft EA, and associated appendices were released and coordinated with pertinent agencies and interested stakeholders from May 18, 2020 through June 17, 2020 to allow for a 30-calendar day review and comment period. This public coordination and the final NEPA document complies with the intent of NEPA. Pertinent correspondence can be found in Appendix A.

Endangered Species Act of 1973 (16 U.S.C. §1531 *et seq*.)	Pursuant to Section 7 of the ESA, the Corps coordinated with the USFWS and NMFS for beach renourishment activities. Detailed analysis of the Corps' effect determinations are in Section 4 of this EA. NOTE: Reach 1 is considered a separate element and ESA consultation for Reach 1 must be finalized prior to placement of material in this area. Once consultation is complete for Reach 1, the FONSI and EA will be amended to include this consultation. Section 4 contains a detailed analysis discussion. A summary of the effect determinations are as follows: <u>Effect determinations for species under NMFS jurisdiction:</u> *MANLAA*: Swimming sea turtles (green sea turtle, hawksbill sea turtle, leatherback sea turtle, loggerhead sea turtle, Kemp's ridley sea turtle), smalltooth sawfish, Nassau grouper, giant manta ray, and corals (pillar coral, rough cactus coral, lobed star coral, mountainous star coral, boulder star coral, elkhorn coral, staghorn coral) <u>Effect determinations for species under USFWS jurisdiction:</u> <u>*LAA*</u> Nesting sea turtles (green sea turtle, hawksbill sea turtle, leatherback sea turtle, loggerhead sea turtle, Kemp's ridley sea turtle) *MANLAA*: American crocodile, Florida manatee, piping plover *No Effect*: Beach jacquemontia To address potential effects from beach renourishment activities to federally-listed T&E species under the NMFS jurisdiction, the project adheres to the PDCs as described in the NMFS' SARBO dated March 27, 2020. The SARBO covers material placement (e.g. sand placement for beach nourishment, nearshore placement, and upland placement), geotechnical and geophysical (G&G)

	surveys, and species handling in the southeast U.S., specifically from North Carolina/Virginia border through and including Key West, Florida and the islands of Puerto Rico and the U.S. Virgin Islands. The use of equipment and/or methods not covered by the SARBO may require additional coordination and/or consultation with NMFS. The Preferred Alternative's potential effects to listed species and their DCH under NMFS jurisdiction are covered by the SARBO. The project adheres to the SARBO's PDCs. PDCs are the specific criteria, including the technical and engineering specifications, indicating how an individual project must be sited, constructed, or otherwise carried out to avoid or minimize adverse effects to ESA-listed species or DCH. PDCs help protect species and critical habitat and ensure that the actions covered by the SARBO are sufficiently similar so that their effects can be analyzed together. In designing the PDCs, conditions are established that avoid adverse effects on listed species or DCH or, where the adverse effect cannot be avoided, to limit effects to predictable levels that will not jeopardize the continued existence of listed species or destroy or adversely modify critical habitat either at the individual project level or in aggregate. The project will comply with all terms and conditions of the SARBO. Additionally, NMFS' sea turtle and smalltooth sawfish construction conditions would be implemented. For potential effects to federally-listed T&E species under the USFWS jurisdiction, the Corps initiated consultation with the USFWS in May 2020. The Corps requested concurrence from the USFWS on the Corps' LAA and MANLAA determinations. The Corps determined that the project meets the criteria to be eligible for coverage through the USFWS SPBO and P3BO. Consultation with USFWS is complete and concurrence received by correspondence dated August 17, 2020. Pertinent correspondence can be found in Appendix A. The SPBO covers civil works and regulatory sand placement activities in Florida and their effects on the following nesting sea turtles, beach mice, and their DCH: nesting sea turtles (loggerhead, green, leatherback, hawksbill, and Kemp's ridley) and

Environmental Act or E.O.	Project Compliance Status
	beach mice (southeastern, Anastasia Island, Choctawhatchee, St. Andrews, and Perdido Key). The P3BO covers civil works and regulatory shore protection activities on the non-breeding piping plover and its DCH, specifically sand placement on the sandy beach and dune (including up to or over hardened structures), the swash zone, and the nearshore regions association with both shore protection projects and maintenance dredging. The P3BO action area includes sandy beaches; emergent bayside and Ocean/Gulf-side shoals and sand bars; bayside mudflats, sand flats, and algal flats; bayside shorelines of bays and lagoons; and emergent nearshore sand bars of the Atlantic Coast (Nassau County to Miami-Dade County) of Florida. The Preferred Alternative's beach placement activities and potential effects to nesting sea turtles and piping plover are covered by the SPBO and P3BO, respectively. The project will comply with all applicable minimization measures, Reasonable and Prudent Measures, and T&Cs of the SPBO and P3BO. The project complies with this Act.
Fish and Wildlife Coordination Act of 1958 (16 U.S.C. §661 *et seq.*)	A Final Coordination Act Report was completed during the 2015 EA. A Memorandum for the Record dated August 24, 2020, found in Appendix A, has been signed by USFWS and the Corps to document an agreement between the agencies to use the NEPA review and ESA consultation processes to complete coordination responsibilities for this action under the FWCA. The project complies with this Act.
National Historic Preservation Act of 1966 (54 U.S.C. §300101 *et seq.*)	Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the Corps determined beach renourishment activities pose no effect to historic properties eligible or potentially eligible for listing in the National Register of Historic places. Consultation with the Florida SHPO and appropriate federally-recognized tribes is complete as of June 17, 2020 during a 30-calendar day coordination period. Pertinent correspondence can be found in Appendix A. The project complies with this Act.

Environmental Act or E.O.	Project Compliance Status
Clean Water Act of 1972, Section 401 and Section 404(B) (33 U.S.C. §1341 and 33 U.S.C. §1344(b))	Pursuant to Section 401 of the Clean Water Act of 1972, as amended, (CWA), a WQC is required for the beach renourishment activities. Any applicable authorizations would be coordinated and obtained from the state of Florida prior to construction. Pursuant to Section 404 of the CWA, all discharges of fill material associated with the Preferred Alternative have been found to be compliant with the section 404(b)(1) Guidelines (40 C.F.R. 230). An updated CWA Section 404(b)(1) Guidelines Evaluation is included in Appendix C. The evaluation concludes that the discharge of fill material associated with beach renourishment activities is in compliance with the Act. The project complies with this Act.
Clean Air Act of 1970 (42 U.S.C. §7401 *et seq*.)	Broward County is not designated as a nonattainment or maintenance area for any criteria pollutant and therefore USEPA's General Conformity Rule to implement Section 176(c) of the Clean Air Act (42 U.S.C. §7506(c)) does not apply. No air quality permits nor a conformity determination are required for this project.
Coastal Zone Management Act of 1972 (16 U.S.C. §1451 *et seq*.)	Pursuant to the Coastal Zone Management Act, the Corps prepared and submitted an updated Federal Consistency Determination (FCD) to the state of Florida for review and concurrence during this EA's review and comment period. The Corps determined that the beach renourishment activities are consistent with the enforceable polices of the Florida Coastal Management Program. Conditions imposed by the WQC will be implemented in order to minimize adverse effects to water quality. Coordination with the state of Florida is complete and concurrence received by correspondence dated July 17, 2020. The final determination will be noted in the WQC when issued. Pertinent correspondence is included in Appendix A. The project complies with this Act.
Farmland Protection Policy Act of 1981 (7 U.S.C. §4201 *et seq*.)	No prime or unique farmland exists in the project area; therefore, this Act is not applicable.
Wild and Scenic River Act of 1968 (16 U.S.C. §1271 *et seq*.)	No designated Wild and Scenic river reaches exist in the project area; therefore, the Act is not applicable.

Environmental Act or E.O.	Project Compliance Status
Marine Mammal Protection Act of 1972 (16 U.S.C. §1361 *et seq*.)	To ensure the protection of any manatees present in the project area, the USFWS 2011 Standard Manatee Conditions for In-Water Work will be included in the project plans and specifications and will be implemented by the contractor during in-water work. The project will not result in the take of marine mammals and complies with this Act.
Estuary Protection Act of 1968 (16 U.S.C. §§1221-26)	No estuaries of national significance exist in the project area; therefore, the Act is not applicable.
Federal Water Project Recreation Act (16 U.S.C. §460(L)(12)-460(L)(21))	Recreational resources and opportunities are discussed in Section 4 of this report. The project complies with this Act.
Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended (16 U.S.C. §1801 *et seq*.)	Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended, an EFH assessment was conducted with NMFS during coordination for the 2015 EA; however, due to new information, the Corps is reinitiating coordination with NMFS under the EFH provisions of the Magnuson-Stevens Fishery Conservation and Management Act. The Corps prepared an EFH assessment in accordance with the September 3, 2019 and October 2, 2019 EFH Findings between NMFS' Southeast Regional office and U.S. Army Corps of Engineers, South Atlantic Division and the Corps. The EFH Assessment (see Section 4.4) for the project is integrated within this final NEPA document. The Corps determined that the Preferred Alternative would not result in significant adverse effects to EFH. The Corps sent the EFH consultation letter, along with the draft NEPA document, to NMFS in May 2020. Consultation with NMFS is complete and concurrence received by correspondence dated August 26, 2020. The final findings have been noted in the final NEPA. Pertinent correspondence is in Appendix A. The project complies with this Act.
Submerged Lands Act of 1953 (43 U.S.C. § 1301 *et seq*.)	Portions of the project will occur on submerged lands of the State of Florida. The Corps will coordinate the project with the State of Florida through the issuance of a WQC, FCD review, and/or the review process of this EA. The project complies with this Act.

Environmental Act or E.O.	Project Compliance Status
Coastal Barrier Resources Act and Coastal Barrier Improvement Act (16 U.S.C. §3501 *et seq*.)	Two CBRS units are located within the vicinity of the proposed beach renourishment activities: Unit FL-19P (Birch Park) and Unit FL-20P (Lloyd Beach). The Corps previously completed coordination with USFWS on April 30, 2003 for beach renourishment activities as part of the EIS process for the BCSPP. USFWS concluded that renourishment of the Park unit is "*…consistent with the intent of the Act and are exempt pursuant to section 6(a)(G) which authorizes "nonstructural projects for shoreline stabilization that is designed to mimic, enhance, or restore a natural stabilization system.*" Additionally, placement of beach quality sand associated with maintenance dredging of a Federal navigation project is an exempted activity under U.S.C.A. §3505(a)(2) ("maintenance or construction of improvements of existing Federal navigation channels…, including the disposal of dredged materials related to such maintenance or construction"). The project complies with this Act.
River and Harbor Act of 1899, Section 10 (33 U.S.C. §403)	The proposed work is not expected to obstruct navigable waters of the U.S. during construction. The project complies with the Act.
Anadromous Fish Conservation Act (16 U.S.C. §§757a-757g)	Anadromous fish are not located in the project area; therefore, this Act is not applicable.
Migratory Bird Treaty Act (16 U.S.C. §§703-712) and Migratory Bird Conservation Act (16 U.S.C. §§715-715D, 715E, 715F-715R)	The Corps will include standard migratory bird protection measures in the project plans and specifications and will require the Contractor to abide by those requirements. The project has been coordinated with USFWS and complies with these Acts.
Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. §1431 *et seq*. and 33 U.S.C. §1401 *et seq*.)	Placement of dredged material in an Ocean Dredged Material Disposal Site (ODMDS) is not a component of this project; therefore, this Act is not applicable.
Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. §4601 *et seq*.)	The Corps will work with the NFS to ensure that authorizations for entry to all lands, easements, and rights-of-way are provided prior to the start of construction. The project complies with the Act.

E.O. 11988, Flood Plain Management	To comply with E.O. 11988, the policy of the Corps is to formulate projects that, to the extent possible, avoid or minimize adverse effects associated with the use of the floodplain and avoid inducing development in the floodplain unless there is no practicable alternative. Per guidance provided in E.O. 11988, the following factors were evaluated: 1. *Determine if a proposed action is in the base floodplain (area with a one percent or greater chance of flooding in any given year).* Most of the land area near the project is within the 100-year flood zone as mapped by the Federal Emergency Management Agency (FEMA) (FEMA 2019). 2. *Conduct early public review, including public notice.* Public and agency coordination (including scoping efforts and NEPA reviews) is described in Section 5. 3. *Identify and evaluate practicable alternatives to locating in the base floodplain, including alternative sites outside of the floodplain.* There is no practicable alternative to locating the project outside of the floodplain due to the nature of the project's purpose and need, which is described in Section 1. 4. *Identify impacts of the proposed action.* Impacts of the proposed action are described in Section 4. 5. *Minimize threats to life and property and to natural and beneficial floodplain values. Restore and preserve natural and beneficial floodplain values.* Renourishment of Broward Segment II BCSPP will continue to provide protection to coastal infrastructure thereby minimizing threats to life and property while restoring and preserving natural and beneficial floodplain values. More details on the project's purpose and need are included in

Environmental Act or E.O.	Project Compliance Status
	Section 1. Details on the environmental commitments are included in Section 6.1. 6. *Reevaluate alternatives.* Alternatives are described in Section 2. The Preferred Alternative that is selected best meets the purpose and need, which is described in Section 1. 7. *Issue findings and a public explanation.* This NEPA document provides a proposed FONSI and describes the Preferred Alternative in Section 2. Public and agency coordination is described in Section 5. 8. *Implement the action.* Construction will occur after all appropriate documentation (e.g. agreements, permitting, etc.) is completed and funds are received. The Corps concludes that the proposed project will not result in harm to people, property, and floodplain values; will not induce development in the floodplain; and the project is in the public interest. For the reasons stated above, the project complies with this E.O.
E.O. 11990, Protection of Wetlands	Wetlands will not be affected by the project. The project complies with this E.O.
E.O. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	The study area was evaluated using the USEPA EJAssist tool to determine whether it contains a concentration of minority and/or low-income populations. Based on the information provided by EJAssist, the average minority population is approximately 23% of the total population and the average low-income population is approximately 24% of the total population. The study area which comprises the project does not constitute an EJ community because there is not a high concentration of minority and/or low-income populations. This project will not cause any disproportionate and adverse effects to minority or low income populations. The project is in compliance with this E.O.

Environmental Act or E.O.	Project Compliance Status
E.O. 13045, Protection of Children from Environmental Health Risks and Safety Risks	The proposed action does not affect children disproportionately from other members of the population and would not increase any environmental health or safety risks to children. The project complies with this E.O.
E.O. 13089, Coral Reef Protection	The proposed action would occur in areas near coral reefs. Coordination with pertinent agencies and the implementation of protective measures during construction will avoid and/or minimize effects to these ecosystems. The Corps will include applicable PDCs of the SARBO in the project plans and specifications. Implementation of standard protection conditions and BMPs will ensure that the potential adverse effects to protected coral reefs are reduced to the maximum extent practicable. Coral reef protection criteria will be included in the Contractor's EPP. The project complies with this E.O.
E.O. 13112, Invasive Species	The project's plans and specifications will include conditions to avoid the introduction and/or promotion of non-native species to the region. The Corps will require the Contractor to abide by those requirements. The project complies with this E.O.
E.O. 13186, Responsibilities of Federal Agencies to Protect Migratory Birds	This E.O. requires, among other things, a memorandum of understanding (MOU) between the Corps and USFWS concerning migratory birds. Neither the Department of Defense MOU nor the Corps' Draft MOU clearly address migratory birds on lands not owned or controlled by the Corps. For many Corps' civil works projects, the real estate interests are provided by the NFS. 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 Section 4 of this EA and are incorporated by reference. The Corps will include standard migratory bird protection requirements in the Project plans and specifications and will require the contractor to abide by those requirements. The project complies with this E.O.

7 LIST OF PREPARERS

Name	Organization	Expertise	Role in Preparation
Kristen Donofrio, Biologist	Corps	NEPA/Biologist	Primary Author
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Jason Spinning, Coastal Section Chief	Corps	Supervisory Biologist	Document Reviewer
Angela Dunn, Environmental Branch Chief	Corps	Supervisory Biologist	Document Reviewer

8 ACRONYM LIST

BCSPP	Broward County Shore Protection Project
BMPs	Best Management Practices
CBRS	Coastal Barrier Resource System
C.F.R.	Code of Federal Regulations
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
CY	Cubic Yards
DCH	Designated Critical Habitat
DHR	Department of Historic Resources
DPS	Distinct Population Segment
E.O.	Executive Order
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPP	Environmental Protection Plan
ESA	Endangered Species Act of 1973, as amended
ETOF	Equilibrium Toe of Fill
FDEP	Florida Department of Environmental Protection
FONSI	Finding of No Significant Impact
FWC	Florida Fish and Wildlife Conservation Commission
HAPC	Habitat Area of Particular Concern
HTRW	Hazardous, Toxic, and Radioactive Waste
LRR	Limited Reevaluation Report
MHW	Mean High Water
NEPA	National Environmental Policy Act of 1969
NFS	Non-Federal Sponsor
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NTU	Nephelometric Turbidity Units
ODMDS	Ocean Dredged Material Disposal Site
P3BO	Piping Plover Programmatic Biological Opinion
PDCs	Project Design Criteria
SAFMC	South Atlantic Fish Management Council
SARBO	South Atlantic Regional Biological Opinion for Dredging and Material Placement Activities in the Southeast United States
SAV	Submerged Aquatic Vegetation
SCTLD	Stony Coral Tissue Loss Disease
SHPO	State Historic Preservation Office
SPBO	Statewide Programmatic Biological Opinion
T&Cs	Terms and conditions
T&E	Threatened and endangered

U.S.	United States
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WQC	Water Quality Certification

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