

# **Draft Supplemental Environmental Assessment**

**Indian River County Sector 3 Beach Restoration**

**FEMA-DR-4283-FL**

**FEMA-DR-4337-FL**

**FEMA-DR-4468-FL**

**Indian River County, Florida**

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**FEMA**

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Region IV – Atlanta, GA

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## ACRONYMS AND ABBREVIATIONS

APE	area of potential effect
CEQ	Council on Environmental Quality
CFR	<i>Code of Federal Regulations</i>
EA	Environmental Assessment
EO	Executive Order
DCAI & CTC	Dial Cordy and Associates Inc. & Coastal Technology Corporation
FCMP	Florida Coastal Management Program
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMSF	Florida Master Site File
FONSI	Finding of No Significant Impact
IPaC	Information for Planning and Consultation
JCP	Joint Coastal Permit
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
PA	Public Assistance
PBO	Programmatic Biological Opinion
PL	Public Law
SEA	Supplemental Environmental Assessment
SHPO	State Historic Preservation Office
SSL	Sovereign Submerged Lands
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

## 1.0 INTRODUCTION

Hurricane Matthew impacted Florida between October 3, 2016 and October 19, 2016, bringing strong winds, storm surge, and flooding. President Obama signed a disaster declaration (FEMA-4283-DR-FL) on October 8, 2016 authorizing the Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA) to provide federal assistance to the designated areas of Florida. Subsequently, Hurricane Irma impacted the State of Florida between September 4, 2017 and October 18, 2017, also bringing strong winds, storm surge, and flooding. President Trump signed a disaster declaration (FEMA-4337-DR-FL) on September 10, 2017 authorizing federal assistance in Florida. Lastly, Hurricane Dorian impacted the State of Florida between August 28, 2019 and September 9, 2019, also bringing storm surge, and flooding. President Trump signed a disaster declaration (FEMA-4468-DR-FL) on October 21, 2019 authorizing federal assistance in Florida. This assistance is provided pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), and Public Law (PL) 93-288, as amended. Section 406 of the Stafford Act authorizes FEMA's Public Assistance (PA) Program to repair, restore, and replace state and local government, and certain private nonprofit facilities, damaged as a result of the events.

Indian River County, Florida was designated in all three disasters to receive federal assistance. Indian River County has applied through the PA Program to receive funding to restore the eroded shoreline associated with the Sector 3 beach in Indian River County. The shoreline is an engineered and maintained beach previously authorized for nourishment and maintenance by the U.S. Army Corps of Engineers (USACE). The Sector 3 beach and dune restoration project was originally constructed between 2010 and 2012 and was constructed to design templates using 560,592 CY of sand obtained from commercial upland sources, the Ranch Road Mine and Fischer 86th Mine. Between 2014 and 2015, approximately 173,100 CY of sand was placed within Sector 3 to maintain the sand dunes following Hurricane Sandy. Sand was obtained from commercial upland sources, the Blue Goose Mine (formerly known as Hammond Mine) and Davis Mine. Following the sand placement activities, approximately 189,300 dune vegetation plants were also installed in 2015. The beach and dune restoration projects were conducted under permits issued by the Florida Department of Environmental Protection (FDEP) and the USACE.

In March 2009, an Environmental Assessment was prepared by Dial Cordy and Associates, Inc. and Coastal Technology Corporation (DCAI & CTC) for Indian River County Sector 3 Beach Restoration Project. This EA was based on the environment of the beach at the time, which is very similar to the environment and condition of the beach currently. The USACE issued a Finding of No Significant Impact (FONSI) on the proposed action on February 5, 2010. Any federal agency may adopt another federal or state agency's EA (40 CFR §1500.4(n), §1500.5(h), and §1506.3) providing the original document satisfies the agency's National Environmental Policy Act (NEPA) requirements. FEMA has adopted this EA and USACE's findings and has also provided supplemental information. The EA can be accessed online at: [http://www.ircgov.com/Departments/Public\\_Works/Coastal\\_Engineering\\_Section/Documents/Sector\\_3\\_Environmental\\_Assessment.pdf](http://www.ircgov.com/Departments/Public_Works/Coastal_Engineering_Section/Documents/Sector_3_Environmental_Assessment.pdf).

Recent changes to the President's Council on Environmental Quality (CEQ) regulations implementing the NEPA (40 Code of Federal Regulations [C.F.R.] §§ 1500–1508) became effective on September 14, 2020. 85 Fed. R. 43304-76 (July 16, 2020). As stated in 40 C.F.R. § 1506.13, the new regulations apply to any NEPA process begun after September 14, 2020. This Supplemental Environmental Assessment (SEA) substantively commenced prior to that date; therefore, this SEA conforms to the CEQ NEPA implementing regulations that were in place prior to September 14, 2020,

and regulations adopted pursuant to Department of Homeland Security Directive 023-01, Rev 01, and FEMA Directive 108-1.

## **2.0 PURPOSE AND NEED**

The purpose of this project is to address beach erosion damage to the existing coastline in Indian River County from Hurricanes Matthew, Irma, and Dorian between FDEP reference monuments R- 20 and R-55, also known as Sector 3. The need for this project is to improve the capacity of the shoreline to withstand future storm events as well as reduce further background erosion of the beach. The need for the project is to restore the engineered beach profile in order to create a benefit to the area by providing additional habitat for sea turtles and shorebirds, and enhancing the recreational value of the beach.

## **3.0 ALTERNATIVES**

The alternatives considered in addressing the purpose and need stated are the No Action Alternative and the Comprehensive Beach Restoration Project (Preferred). Per the expedited procedures, these are the only alternatives requiring consideration.

### **3.1 Alternative 1 – No Action Alternative**

Under the No Action Alternative, the shoreline restoration project would not be constructed. Consequently, the area near the shoreline would not be protected from future storm events. Ongoing erosion would continue along the shoreline, the available habitat for listed threatened and endangered species would continue to degrade, and the recreational value created by the beach would continue to decrease. Therefore, the No Action Alternative has the potential to negatively affect the environmental habitat as well as and the tourism and economy in the vicinity of the coastline.

### **3.2 Alternative 2 – Comprehensive Beach Restoration Project (Preferred Alternative)**

Under the Proposed Action Alternative, the beach restoration project would proceed along the approximately 6.5 mile stretch of Indian River County coastline associated with Sector 3. The project will reestablish suitable nesting habitat for threatened and endangered sea turtle species, as well as protect and maintain nesting habitat for shorebird species, including the threatened piping plover. The proposed project will also restore the recreational value of the publicly-accessible shoreline along the beach within Indian River County. Lastly, the project will protect infrastructure and private property adjacent to the beach.

Indian River County has submitted applications to FEMA for funding under the PA program to repair damages as a result of Hurricane Matthew (FEMA-4283-DR-FL), Hurricane Irma (FEMA-4337-DR-FL), and Hurricane Dorian (FEMA-4468-DR-FL). The proposed projects will replace sand lost along approximately 6.5 miles of beaches in Indian River County during their next comprehensive renourishment project. The work will occur between FDEP monuments R-20 (27.81158, -80.42233) and R-55 (27.72468, -80.37893). Indian River County is proposing to replace approximately 207,576.5 cubic yards (CY) of lost sand attributable to Hurricane Matthew, 128,300 CY of lost sand attributable to Hurricane Irma, and 72,200 CY of lost sand attributable to Hurricane Dorian. Additionally, 214,323.5 CY of background erosional losses will be placed concurrently to fill the beach template of 622,400 CY. Additional sand may be placed if the beach is further eroded by storm events during the 2020 or 2021 hurricane seasons. The total sand placed will not exceed the designed

beach profile and permitting requirements. Indian River County will obtain beach compatible sand from either commercial upland sources or from a previously used offshore borrow area using hopper or hydraulic dredging. Additionally, the hurricanes caused significant loss of dune stabilization plants. Therefore, the Applicant plans to also replace approximately 166,584 plants during the sand replenishment activities. Approximately eighty percent (80%) of the stabilization plants will be sea oats while the other twenty percent (20%) will be a mixture of species including railroad vine, marsh elder, knotgrass, and sea purslane. The project may be paused to occur outside of sea turtle nesting season. It is expected that the work will begin in January 2021 and pause on April 30, 2021 to avoid impacts to sea turtle nesting. The placement of sand during this process will be in the full cross-section configuration of the beach renourishment plan. The placement of sand will then start back up on November 1, 2021 after sea turtle nesting season is over. The sand placement will continue to be placed in the full cross-section configuration of the beach.

#### **4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

Sector 3 beach is located in Indian River County on the east coast of Florida. Indian River County contains approximately 22.4 miles of sandy beach fronting the Atlantic Ocean, all of which is suitable habitat for endangered species such as sea turtles and piping plover. This stretch of beach is divided into eight sectors, numbered from north to south. Sector 3 comprises 6.5 miles of this coastline. This Sector hosts vacation rentals, condominiums, single family homes, and parks including the Archie Carr National Wildlife Refuge, all of which facilitate recreational use of the shoreline. The baseline for this project is similar to the prior renourishment project.

The population of Indian River County is made up of both year-round and seasonal residents. The economy is largely tourism-driven. The beaches along Indian River County host beach resorts, vacation rentals, and parks that facilitate recreational use of the shoreline.

## 4.1 Potential Environmental Consequences

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

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
<b>Floodplains</b>	<p>Updated from DCAI &amp; CTC EA (2009) – see Section 4.2 below for details.</p> <p>Alternative 1 – No impact. Risk to human life and improved property continues at current level.</p> <p>Alternative 2 – Minor beneficial impact as the beach would reduce flood risk to adjacent communities and preserve the floodplain for open space and recreational use.</p>	Not applicable
<b>Coastal Zone Management</b>	<p>Updated from DCAI &amp; CTC EA (2009) – see Section 4.3 below for details.</p> <p>Alternative 1 – No impact.</p> <p>Alternative 2 – Minor beneficial impact due to restoration of the sandy beach along the shoreline.</p>	<p>Alternative 2 requires an FDEP Joint Coastal Permit (JCP) and Sovereign Submerged Lands (SSL) Authorization. The applicant has received an FDEP Consolidated JCP and SSL Authorization (Permit No. 0285993-009-JC) which constitutes consistency review under the state’s coastal zone management program. The project is required to follow all conditions of the FDEP JCP and SSL Authorization.</p>

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<p><b>Wetlands (Executive Order 11990)</b></p>	<p>Updated from DCAI &amp; CTC EA (2009) – see Section 4.4 below for details.</p> <p>Alternative 1 – No impact</p> <p>Alternative 2 – Short term minor impacts from construction. No long-term impacts.</p>	<p>Alternative 2 would require compliance with the conditions outlined in the FDEP Permit (No. 0285993-009-JC), and an Individual Permit from the USACE.</p>
<p><b>Environmental Justice (Executive Order 12898)</b></p>	<p>No change from DCAI &amp; CTC EA (2009).</p> <p>Alternative 1 and 2 – No impact</p>	<p>Not applicable</p>
<p><b>Threatened and Endangered Species</b></p>	<p>Updated from DCAI &amp; CTC EA Sections 3.6 and 4.6 (2009). See Section 4.5 below for details.</p> <p>Alternative 1 – No impact, loss of suitable habitat for listed species</p> <p>Alternative 2 – Minor beneficial effects due to increased habitat for sea turtles and shorebirds. Potential for incidental take during construction minimized by application of measures set forth in U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) Programmatic Biological Opinions (PBOs) with the USACE.</p>	<p>Under Alternative 2, the following measures would be implemented from the applicable PBOs:</p> <ol style="list-style-type: none"> <li>1. The applicant will comply with the following conditions from the USFWS Statewide Programmatic Biological Opinion for Sand Placement # 41910-2011-F-0170 issued to the U.S. Army Corps of Engineers on March 13, 2015:                     <ol style="list-style-type: none"> <li>a) Beach-compatible fill shall be placed on the beach or in any associated dune system. Beach compatible fill must be sand that is similar to a native beach in the vicinity of the site that has not been affected by prior sand placement activity. The fill material must be similar in both coloration and grain size distribution to that native beach. Beach compatible fill is material that maintains the general character and functionality of the material occurring on the beach and in the adjacent dune and coastal system. Fill material shall comply with FDEP requirements pursuant to the Florida Administrative Code (FAC) subsection 62B-41.005(15). If a variance is requested from FDEP, the Service must be contacted to discuss whether the project falls outside of the SPBO. A Quality Control Plan shall be</li> </ol> </li> </ol>

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		<p>implemented pursuant to FAC Rule 62B-41.008(1)(k)4.b.</p> <ul style="list-style-type: none"> <li>b) Sand placement shall not occur during the period of peak sea turtle egg laying and egg hatching to reduce the possibility of sea turtle nest burial, crushing of eggs, or nest excavation.                             <ul style="list-style-type: none"> <li>i. Sand placement projects in Indian River county shall be started after October 31 and be completed before May 1. During the May 1 through October 31 period, no construction equipment or pipes may be placed and/or stored on the beach.</li> </ul> </li> <li>c) All derelict concrete, metal, and coastal armoring geotextile material and other debris shall be removed from the beach to the maximum extent possible prior to any sand placement in accordance with the dates in b. If debris removal activities take place during shorebird breeding or peak sea turtle nesting season, the work shall be conducted during daylight hours only and shall not commence until completion of daily seabird, shorebird or marine turtle surveys each day.</li> <li>d) The beach profile template for the sand placement project shall be designed to mimic, the native beach berm elevation and beach slopes landward and seaward of the equilibrated berm crest. Prior to drafting the plans and specifications for a beach nourishment project, the Corps and Indian River County must meet with the Service, FWC, and FDEP to discuss the beach profile surveys, dune formation (specifically on high density green turtle nesting beaches), and the sea turtle monitoring reports from previous placement events. The meeting will be used to discuss modifications to the beach profile based on the post-construction monitoring data.</li> </ul>

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		<p>Beach profile may vary depending on location, shoreline dynamics, nature of the fill material, and other factors. If a native beach berm elevation is not possible, due to the beach width, impacts to nearshore hardbottom, or other considerations, as discussed during the meeting, the alternative template shall include features to minimize impacts to sea turtle nesting success and the potential for ponding and escarpment formation for that beach. For all high-density green turtle nesting beaches, the formation of a dune, either through direct creation or natural accretion, will be included in the project design. Dunes and other construction features must be within the scope of the Congressionally-authorized project, if it is a civil works project, and constructible without impacting other resources. If a recommended dune is not possible, the Corps will contact the Service to see if consultation needs to be reinitiated or discuss features incorporated with the profile that will enhance the existing dune. Dune features included in the profile design (or project) shall have a slope of 1.5:1 followed by a gradual slope of 4:1 for approximately 20 feet seaward on a high erosion beach (SPBO Figure 13) or a 4:1 slope (SPBO Figure 14) on a low erosion beach. The Corps must explore options to include a dune system in the project design for existing authorized projects and new non-Federal projects. If another slope is proposed for use, the Corps shall consult the Service. The seaward toe of the dune should be at least 20 feet from the waterline.</p> <p>e) Predator-proof trash receptacles shall be installed and maintained during construction at all beach access points used for the project construction to minimize the potential for attracting predators of sea turtles and beach mice (SPBO Appendix F). The Corps shall</p>

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		<p>provide predator-proof trash receptacles for the construction workers. The Corps shall brief workers on the importance of not littering and keeping the project area trash and debris free.</p> <p>f) A meeting between representatives of Indian River County, the Corps (including the Corps project manager and/or the managing contractor), the Service, the FWC, the FWC Marine Turtle Permit Holder, and other species surveyors, as appropriate, shall be held prior to the commencement of work on projects. At least 10 business days advance notice shall be provided prior to conducting this meeting. The meeting will provide an opportunity for explanation and/or clarification of the sea turtle and beach mouse protection measures as well as additional guidelines when construction occurs during the sea turtle nesting season, and will include the following</p> <ul style="list-style-type: none"> <li>i. Staging locations, storing equipment including fuel stations</li> <li>ii. Coordination with the Marine Turtle Permit Holder on nesting surveys and any nighttime work</li> <li>iii. Pipeline placement (between 5 to 10 feet from dune)</li> <li>iv. Minimizing driving</li> <li>v. Egg relocation- permit holder and location (must be approved by FWC)</li> <li>vi. Free-roaming cat observation (for projects in or near beach mouse habitat)</li> <li>vii. Follow up lighting surveys - dates and inspector</li> <li>viii. Follow up coordination during construction and post construction</li> <li>ix. Coordination on construction lighting including dredge lighting and travel within and adjacent to</li> </ul>

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		<p>the work area</p> <ul style="list-style-type: none"> <li>x. Direction of the project including progression of sand placement along the beach</li> <li>xi. Late season nests present in project area (if any)</li> <li>xii. Plans for compaction monitoring or tilling</li> <li>xiii. Plans for escarpment surveys</li> </ul> <p>At the preconstruction meeting, the Corps and Indian River County shall also provide the Service with specific anticipated shoreline lengths and anticipated duration using the form on the following web link:  <a href="http://www.fws.gov/northflorida/SeaTurtles/Docs/Corp%20of%20Engineers%20Sea%20Turtle%20Permit%20Information.pdf">http://www.fws.gov/northflorida/SeaTurtles/Docs/Corp%20of%20Engineers%20Sea%20Turtle%20Permit%20Information.pdf</a>. Only the following information should be filled out: Corps Permit Number, FWS Log Number, Project Location, Construction Activity, Duration of Protect, and Actual Take (linear feet of beach). This form shall be emailed to the Service at <a href="mailto:seaturtle@fws.gov">seaturtle@fws.gov</a>. This form is in addition to the annual report listed below.</p> <ul style="list-style-type: none"> <li>g) Daily early morning surveys for sea turtle nests shall be required and continue throughout the season as outlined in SPBO Tables 16 and 17 (Nesting Season Monitoring) if construction occurs during the nesting and hatching season. Any known nests recorded just prior to the beginning of Nesting Season Monitoring must be relocated if it will be impacted by the construction activity or marked and avoided if feasible.</li> <li>h) If nests are constructed in the area of anticipated sand placement, the eggs shall</li> </ul>

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		<p>be relocated to minimize sea turtle nest burial, crushing of eggs, or nest excavation as outlined in below. If nests are laid on the dune outside of the immediate sand placement area, the Corps must contact the Service to discuss whether relocation or mark and avoidance is required. Any known nests recorded just prior to the beginning of Nesting Season Monitoring must be relocated if it will be impacted by the construction activity or marked and avoided if feasible.</p> <p>i. For and placement projects in Indian River County that occur during the earlier part of the nesting season (see Table 14) through April 30, daily early morning surveys shall begin March 1 and continue through the end of the beach placement window, with egg relocation continuing only until completion of fill placement. Eggs shall be relocated per the following requirements (i through iii below). For sand placement projects that occur during the period from November 1 through the end of hatching season (see Table 16), daily early morning sea turtle nesting surveys shall be conducted 65 days prior to project initiation and continue through November 11, and eggs shall be relocated per the requirements listed below. The Corps must contact the Service if there are any nests still incubating after November 30:</p> <ul style="list-style-type: none"> <li>• Nesting surveys and egg relocations will only be conducted by persons with prior experience and training in these activities and who are duly authorized to conduct such activities through a valid permit issued by FWC, pursuant to FAC</li> </ul>

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		<p>68E-1. Please contact FWC’s Imperiled Species Management Section in Tequesta at <a href="mailto:mtp@myfwc.com">mtp@myfwc.com</a> for information on the permit holder in the project area. Relocation cannot begin until the Corps has a copy of the FWC permit authorizing relocation for construction purposes at that particular sand placement project. Nesting surveys shall be conducted daily between sunrise and 9 a.m. (this is for all time zones).</p> <ul style="list-style-type: none"> <li>• Only those nests that may be affected by sand placement activities will be relocated. Nest relocation shall not occur upon completion of the project. Nests requiring relocation shall be moved no later than 9 a.m. the morning following deposition to a nearby self-release beach site in a secure setting where artificial lighting will not interfere with hatchling orientation. Relocated nests shall not be placed in organized groupings. Relocated nests shall be randomly staggered along the length and width of the beach in settings that are not expected to experience daily inundation by high tides or known to routinely experience severe erosion and egg loss, predation, or be subject to artificial lighting. Nest relocations in association with construction activities shall cease when construction activities no longer threaten nests.</li> <li>• Nests deposited within areas where construction activities have ceased or will not occur for 65 days or nests laid in the nourished berm prior to tilling shall be marked and left in situ unless</li> </ul>

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		<p>other factors threaten the success of the nest. The turtle permit holder shall install an on-beach marker at the nest site and a secondary marker at a point as far landward as possible to assure that future location of the nest will be possible should the on-beach marker be lost. No activity will occur within this area nor will any activities occur that could result in impacts to the nest. Nest sites shall be inspected daily to assure nest markers remain in place and the nest has not been disturbed by the project activity.</p> <ul style="list-style-type: none"> <li>• Daytime surveys shall be conducted for leatherback sea turtle nests beginning March 1. Nighttime surveys for leatherback sea turtles shall begin when the first leatherback crawl is recorded within the project area through April 30 or until completion of the project (whichever is earliest). Nightly nesting surveys shall be conducted from 9 p.m. until 6 a.m. The project area shall be surveyed at 1-hour intervals (since leatherbacks require at least 1.5 hours to complete nesting, this will ensure all nesting leatherbacks are encountered) and eggs shall be relocated per the requirements listed above.</li> <li>i) Two surveys shall be conducted of all lighting visible from the beach placement area by the Applicant or Corps, using standard techniques for such a survey (SPBO Appendix C), in the year following construction. The first survey shall be conducted between May 1 and May 15 and a fill out FWS Sea Turtle Lighting Survey Form (SPBO Appendix D) and send electronically to <a href="mailto:seaturtle@fws.gov">seaturtle@fws.gov</a>.</li> </ul>

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		<p>The second survey shall be conducted between July 15 and August 1. A summary report of the surveys, including any actions taken, shall be submitted to the Service by December 31 of the year in which surveys are conducted.</p> <p>After the annual report is completed, a meeting shall be set up with the Applicant, county or municipality, FWC, Corps, and the Service to discuss the survey report, as well as any documented sea turtle disorientations in or adjacent to the project area. If the project is completed during the nesting season and prior to May 1, the Corps may conduct the lighting surveys during the year of construction.</p> <p>j) Daily nesting surveys shall be conducted for two nesting seasons following construction in accordance with SPBO Table 18 and reported in accordance with SPBO Table 20 by the Corps or the Applicant if placed material still remains on the beach. Post construction year-one surveys shall record the number of nests, nesting success, reproductive success, disorientations, and lost nests due to erosion and/or inundation. Post construction year- two surveys shall only need to record nest numbers, nesting success, and disorientations (SPBO Table 20). This information will be used to periodically assess the cumulative effects of these projects on sea turtle nesting and hatchling production and monitor suitability of post construction beaches for nesting.</p> <p>k) Sand compaction shall be monitored in the area of sand placement immediately after completion of the project and prior to the dates in SPBO Table 19 for 3 subsequent years.                      If tilling is needed, the area shall be tilled to a depth of 36 inches. Each pass of the tilling</p>

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		<p>equipment shall be overlapped to allow more thorough and even tilling. All tilling activity shall be completed at least once prior to the nesting season. An electronic copy of the results of the compaction monitoring shall be submitted electronically to seaturtle@fws.gov prior to any tilling actions being taken or if a request not to till is made based on compaction results. The requirement for compaction monitoring can be eliminated if the decision is made to till regardless of post construction compaction levels. Additionally, out-year compaction monitoring and remediation are not required if placed material no longer remains on the dry beach.</p> <p>(NOTE: If tilling occurs during shorebird nesting season (February 15-August 31), shorebirds surveys prior to tilling are required per the Migratory Bird Treaty Act. See Appendix E for shorebird conditions recommended by FWC.</p> <ol style="list-style-type: none"> <li data-bbox="852 1024 1377 1381">i. Compaction sampling stations shall be located at 500-foot intervals along the sand placement template. One station shall be at the seaward edge of the dune/bulkhead line (when material is placed in this area), and one station shall be midway between the dune line and the high-water line (normal wrack line).</li> <li data-bbox="852 1392 1377 1925">ii. At each station, the cone penetrometer shall be pushed to a depth of 6, 12, and 18 inches three times (three replicates at each depth). Material may be removed from the hole if necessary to ensure accurate readings of successive levels of sediment. The penetrometer may need to be reset between pushes, especially if sediment layering exists. Layers of highly compact material may lie over less compact layers. Replicates shall be located as close to each other as possible, without</li> </ol>

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		<p>interacting with the previous hole or disturbed sediments. The three replicate compaction values for each depth shall be averaged to produce final values for each depth at each station. Reports will include all 18 values for each transect line, and the final six averaged compaction values.</p> <ul style="list-style-type: none"> <li>iii. If the average value for any depth exceeds 500 pounds per square inch (psi) for any two or more adjacent stations, then that area shall be tilled immediately prior to the appropriate date listed in SPBO Table 19.</li> <li>iv. If values exceeding 500 psi are distributed throughout the project area but in no case do those values exist at two adjacent stations at the same depth, then consultation with the Service will be required to determine if tilling is required. If a few values exceeding 500 psi are present randomly within the project area, tilling will not be required.</li> <li>v. Tilling shall occur landward of the wrack line and avoid all vegetated areas 3 square feet or greater with a 3 square foot buffer around the vegetated areas.</li> </ul> <p>1) Visual weekly surveys for escarpments along the project area shall be made immediately after completion of the sand placement and within 30 days prior to the start dates for Nesting Season Monitoring in SPBO Table 19 for 3 subsequent years if sand in the project area still remains on the dry beach.</p> <p>Escarpments that interfere with sea turtle nesting or that exceed 18 inches in height for a distance of 100 feet shall be leveled and the beach profile shall be reconfigured to minimize scarp formation by the dates listed in SPBO Table 19. Any escarpment removal</p>

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
		<p>shall be reported by location in the annual report. If the project is completed during the early part of the sea turtle nesting and hatching season (March 1 through April 30), escarpments may be required to be leveled immediately, while protecting nests that have been relocated or left in place. If during weekly escarpment surveys, it is found that subsequent reformation of escarpments interferes with sea turtle nesting or that they exceed 18 inches in height for a distance of 100 feet during the nesting and hatching season, the Service shall be contacted immediately to determine the appropriate action to be taken. If it is determined by the Service or FWC that that escarpment leveling is required during the nesting or hatching season the Service, in coordination with the FWC, will provide a brief written authorization within 5 days that describes methods to be used to reduce the likelihood of impacting existing nests. An annual summary of escarpment surveys and actions taken shall be sent electronically to <a href="mailto:seaturtle@fws.gov">seaturtle@fws.gov</a>. A summary is required even when no action has been taken (SPBO Table 3).</p> <p>m) Staging areas for construction equipment shall be located off the beach during early (before April 30) and late (after November 1) nesting season for Brevard through Broward counties (see table 14) and peak nesting season (May 1 through October 31) for the remaining counties. Nighttime storage of construction equipment not in use shall be off the beach to minimize disturbance to sea turtle nesting and hatching activities. In addition, all construction pipes placed on the beach shall be located as far landward as possible without compromising the integrity of the dune system. Pipes placed parallel to the dune shall be 5 to 10 feet away from the toe of the dune if the width of the beach allows. Temporary storage of pipes shall be off the beach to the maximum extent possible. If the pipes are</p>

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
		<p>stored on the beach, they shall be placed in a manner that will minimize the impact to nesting habitat and shall not compromise the integrity of the dune systems. If the pipes placed parallel to the dune cannot be placed between 5 to 10 feet away from the toe of the dune during nesting and hatching season, the Corps must reinitiate consultation with the Service as this represents adverse effects not addressed in this SPBO. If it will be necessary to extend construction pipes past a known shorebird nesting site or over-wintering area for piping plovers, then whenever possible those pipes shall be placed landward of the site before birds are active in that area. No pipe or sand shall be placed seaward of a shorebird nesting site during the shorebird nesting season.</p> <p>n) Direct lighting of the beach and nearshore waters shall be limited to the immediate construction area during early (before April 30) and late (after November 1) nesting season for Brevard through Broward counties (see SPBO Table 14) and peak nesting season (May 1 through October 31) for the remaining counties, and shall comply with safety requirements. A light management plan for the dredge and the work site shall be submitted for approval by the Service and FWC prior to the pre-construction meeting. In accordance with this plan, lighting on all equipment shall be minimized through reduction, shielding, lowering, and appropriate placement to avoid excessive illumination of the water's surface and nesting beach while meeting all Coast Guard, Corps EM 385-1-1, and OSHA requirements. Light intensity of lighting equipment shall be reduced to the minimum standard required by OSHA for General Construction areas, in order not to misdirect sea turtles. Shields shall be affixed to the light</p>

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
		<p>housing on dredge and land- based lights and be large enough to block light from all lamps from being transmitted outside the construction area or to the adjacent sea turtle nesting beach in line-of-sight of the dredge (SPBO Figure 15).</p> <p>o) During the early (before April 30) and late (after November 1) nesting season for Brevard through Broward counties (see Table 14) and peak nesting season (May 1 through October 31) for the remaining counties, the Corps shall not extend the beach fill more than 500 feet (or other agreed upon length) along the shoreline between dusk and dawn of the following day until the daily nesting survey has been completed and the beach cleared for fill advancement. An exception to this may occur if there is a permitted sea turtle surveyor present on-site to ensure no nesting and hatching sea turtles are present within the extended work area. If the 500 feet is not feasible for the project, an agreed upon distance will be decided on during the preconstruction meeting. Once the beach has been cleared and the necessary nest relocations have been completed, the Corps will be allowed to proceed with the placement of fill during daylight hours until dusk at which time the 500-foot length (or other agreed upon length) limitation shall apply. If any nesting turtles are sighted on the beach within the immediate construction area, activities shall cease immediately until the turtle has returned to the water and the sea turtle permit holder responsible for nest monitoring has relocated the nest.</p> <p>p) All vegetation planting shall be designed and conducted to minimize impacts to sea turtles and beach mice. Dune vegetation planting may occur during the sea turtle nesting season under the following conditions.</p>

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
		<p>i. Daily early morning sea turtle nesting surveys (before 9 a.m.) shall be conducted during the Nest Laying period for all counties in Florida where sea turtle nesting occurs (see Tables 16 and 17). Nesting surveys shall only be conducted by personnel with prior experience and training in nesting surveys. Surveyors shall have a valid FWC permit. Nesting surveys shall be conducted daily between sunrise and 9 a.m. (all times). No dune planting activity shall occur until after the daily turtle survey and nest conservation and protection efforts have been completed. Hatching and emerging success monitoring will involve checking nests beyond the completion date of the daily early morning nesting surveys;</p> <p>ii. Any nests deposited in the dune planting area not requiring relocation for conservation purposes shall be left in place. The turtle permit holder shall install an on-beach marker at the nest site and a secondary marker at a point as far landward as possible to assure that future location of the nest will be possible should the on- beach marker be lost. A series of stakes and highly visible survey ribbon or string shall be installed to establish a 3-foot radius around the nest. No planting or other activity shall occur within this area nor will any activities be allowed that could result in impacts to the nest. Nest sites shall be inspected daily to assure nest markers remain in place and</p>

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
		<p>the nest has not been disturbed by the planting activity;</p> <ul style="list-style-type: none"> <li>iii. If a nest is disturbed or uncovered during planting activity, the Corps, or the Applicant shall cease all work and immediately contact the project turtle permit holder. If a nest(s) cannot be safely avoided during planting, all activity within 10 feet of a nest shall be delayed until hatching and emerging success monitoring of the nest is completed;</li> <li>iv. All dune planting activities shall be conducted by hand and only during daylight hours;</li> <li>v. All dune vegetation shall consist of coastal dune species native to the local area; (i.e., native to coastal dunes in the respective county and grown from plant stock from that region of Florida). Vegetation shall be planted with an appropriate amount of fertilizer and antidesiccant material for the plant size;</li> <li>vi. No use of heavy equipment shall occur on the dunes or seaward for planting purposes. A lightweight (all-terrain type) vehicle, with tire pressures of 10 psi or less may be used for this purpose; and</li> <li>vii. Irrigation equipment, if needed, shall be authorized under a FDEP permit.</li> </ul> <p>q) Beach mouse habitat shall be avoided when selecting sites for equipment, pipes, vehicle storage and staging to the maximum extent possible. Suitable beach mouse habitat constitutes the primary dunes (characterized by sea oats and other grasses), secondary dunes (similar to primary dunes, but also frequently includes such plants as woody goldenrod, false rosemary), and interior or scrub</p>

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
		<p>dunes.</p> <ul style="list-style-type: none"> <li>r) Equipment placement or storage shall be excluded in the area between 5 to 10 feet seaward of the existing dune toe or 10 percent of the beach width (for projects occurring on narrow eroded beach segments) seaward of the dune toe in areas of occupied beach mouse habitat (SPBO Figure 16). The toe of the dune is where the slope breaks at the seaward foot of the dune. If the pipes placed parallel to the dune cannot be placed between 5 to 10 feet away from the toe of the dune as required during sea turtle nesting and hatching season, Indian River County must work with the Corps to reinitiate consultation with the Service as this represents adverse effects not addressed in this SPBO.</li> <li>s) Existing beach access points shall be used for vehicle and equipment beach access to the maximum extent possible. These access points shall be delineated by post and rope or other suitable material to ensure vehicles and equipment transport stay within the access corridor. The access corridors shall be fully restored to the preconstruction conditions following project completion. Parking areas for construction crews shall be located as close as possible to the work sites, but outside of vegetated dune areas to minimize impacts to existing habitat and transporting workers along the beachfront.</li> <li>t) A report with the information specified in SPBO Tables 20 and 21 shall be submitted to the Service electronically (<a href="mailto:seaturtle@fws.gov">seaturtle@fws.gov</a>) by December 31 after completion of construction.</li> <li>u) In the event a sea turtle nest is excavated during construction activities, the project turtle permit holder responsible for egg relocation for the project shall be notified immediately so the eggs can be moved to</li> </ul>

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
		<p>a suitable relocation site.</p> <p>Upon locating a dead or injured sea turtle adult, hatchling, egg, or beach mouse that may have been harmed or destroyed as a direct or indirect result of the project, the Corps, Applicant shall be responsible for notifying FWC Wildlife Alert at 1-888-404-FWCC (3922) and the appropriate Service Field Office immediately (Table 3). Care shall be taken in handling injured sea turtles, eggs or beach mice to ensure effective treatment or disposition, and in handling dead specimens to preserve biological materials in the best possible state for later analysis.</p> <p>v) Manatees</p> <ol style="list-style-type: none"> <li>i. Shall follow the 2011 Standard Manatee In-water Construction Conditions</li> <li>ii. Barges shall install mooring bumpers that provide a minimum 4-foot standoff distance under maximum compression between other moored barges and large vessels, when in the vicinity of inlets, river mouths, and large estuaries where manatees are known to congregate.</li> <li>iii. Pipelines shall be positioned such that they do not restrict manatee movement to the maximum extent possible. Plastic pipelines shall be weighted or floated. Pipelines transporting dredged material within the vicinity of inlets, river mouths, and large estuaries where manatees are known to congregate shall be weighted or secured to the bottom substrate as necessary to prevent movement of the pipeline and to prevent manatee entrapment or crushing.</li> <li>iv. In the event that such positioning has the potential to impact submerged aquatic vegetation (SAV) or nearshore hardbottom, the</li> </ol>

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
		<p>pipeline may be elevated or secured to the bottom substrate to minimize impacts to SAV.</p> <p>w) Migratory Birds: Applicant shall follow the latest Florida Fish and Wildlife Conservation Commission (FWC) standard guidelines to protect against impacts to nesting shorebirds during implementation of this project during periods from February 15 to August 31.</p> <p>2. The applicant will comply with the following additional conditions from the USFWS Programmatic Piping Plover Biological Opinion #04EF1000-2013-F-0124 dated May 22, 2013:</p> <p>a) The Corps or the Permittee must provide the following information to the Service Field Supervisor of the appropriate Field Office at least 10 business days prior to the commencement of work:</p> <ul style="list-style-type: none"> <li>i. Project location (include FDEP Range Monuments and latitude and longitude coordinates);</li> <li>ii. Project description (include linear feet of beach, actual fill template, access points, and borrow areas);</li> <li>iii. Date of commencement and anticipated duration of construction; and</li> <li>iv. Names and qualifications of personnel involved in piping plover surveys.</li> </ul> <p>b) Prior to construction, the Corps and Indian River County shall delineate preferred piping plover habitat (intertidal portions of ocean beaches, ephemeral pools, washover areas, wrack lines) adjacent to or outside of the project footprint that might be impacted by construction activities. Obvious identifiers shall be used (for example, pink flagging on metal poles) to</p>

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
		<p>clearly mark the beginning and end points to prevent accidental impacts to use areas.</p> <p>c) Piping plover habitat delineated adjacent to or outside of the project footprint shall be avoided to the maximum extent practicable when staging equipment, establishing travel corridors, and aligning pipeline.</p> <p>d) Driving on the beach for construction shall be limited to the minimum necessary within the designated travel corridor, which will be established just above or just below the primary “wrack” line.</p> <p>e) Educational signs shall be installed at public access points within the project area with emphasis on the importance of the beach habitat and wrack for piping plovers. When the project area has a pet or dog regulation, the provisions of the regulation shall be included on the educational signs.</p> <p>f) For one full piping plover migration and winter season (beginning July 15 to May 15) prior to construction, and 2 years following each dredging and sand placement event, bimonthly (twice-monthly) surveys for piping plovers shall be conducted in the beach fill and in any other intertidal or shoreline areas within or affected by the project. If a full season is not available, at least 5 consecutive months with three surveys per month spaced at least 9 days apart are required. During emergency projects, the surveys will begin as soon as possible prior to, and up to implementing the project. Piping plover identification, especially when in non-breeding plumage, can be difficult. If preconstruction monitoring is not practicable, it will be so indicated in the notification to the Service (see P3BO Term and Condition #2) and the Service will decide whether to require a separate individual consultation. See introductory paragraph to Reasonable and</p>

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
		<p>Prudent Measures.</p> <p>g) The person(s) conducting the survey must demonstrate the qualifications and ability to identify shorebird species and be able to provide the information listed below. The following will be collected, mapped, and reported:</p> <ul style="list-style-type: none"> <li>i. Date, location, time of day, weather, and tide cycle when survey was conducted;</li> <li>ii. Latitude and longitude of observed piping plover locations (decimal degrees preferred);</li> <li>iii. Any color bands observed on piping plovers;</li> <li>iv. Behavior of piping plovers (<i>e.g.</i>, foraging, roosting, preening, bathing, flying, aggression, walking);</li> <li>v. Landscape features(s) where piping plovers are located (<i>e.g.</i>, inlet spit, tidal creeks, shoals, lagoon shoreline);</li> <li>vi. Habitat features(s) used by piping plovers when observed (<i>e.g.</i>, intertidal, fresh wrack, old wrack, dune, mid-beach, vegetation);</li> <li>vii. Substrata used by piping plovers (<i>e.g.</i>, sand, mud/sand, mud, algal mat);</li> <li>viii. The amount and type of recreational use (<i>e.g.</i>, people, dogs on or off leash, vehicles, kite-boarders); and</li> <li>ix. All other shorebirds/waterbirds seen within the survey area.</li> </ul> <p>All information shall be provided in an Excel spreadsheet. Monitoring results shall be submitted (datasheets, maps, database) on standard electronic media (<i>e.g.</i>, CD, DVD) to the appropriate Field Office by July 31 of each year in which monitoring is completed. If an</p>

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
		<p>appropriate web-based reporting system becomes available, it would be used in lieu of hard copy/media.</p> <p>[NOTE: As a condition to a permit from the FDEP, the bird monitor may also be required to report shorebird data to the Florida Fish and Wildlife Conservation Commission (FWC) <a href="https://public.myfwc.com/crossdoi/shorbirds/SigninExploreData.aspx">https://public.myfwc.com/crossdoi/shorbirds/SigninExploreData.aspx</a>.]</p> <p>3. If the applicant does not use an upland source and intends to dredge using a hopper dredge, the project will comply with the NMFS South Atlantic Regional Biological Opinion (SARBO) and all relevant conditions contained therein.</p>
<p><b>Cultural Resources</b></p>	<p>Updated – see DCAI &amp; CTC EA Section 3.17 and 4.17 (2009) – See Section 4.6 below for details.</p> <p>Alternative 1 and 2 – No impact.</p> <p>Concurrence with SHPO received on FEMA’s determination of No Effect on Historic Properties</p>	<p>Alternative 2 would require the following measures:</p> <ul style="list-style-type: none"> <li>• The applicant will establish a 200-foot buffer zone around two magnetic anomalies within the South Borrow area identified in a cultural resources survey by Dr. Robert Baer.</li> <li>• If human remains or intact archaeological deposits are uncovered, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. The Applicant will assure that archaeological discoveries are secured in place, that access to the sensitive area is restricted, and that all reasonable measures are taken to avoid further disturbance of the discoveries. The Applicant’s contractor will provide immediate notice of such discoveries to the Applicant. The Applicant will contact the Florida Division of Historical Resources and FEMA within 24 hours of the discovery. Work in the vicinity of the discovery may not resume until FEMA has completed consultation with the State Historic Preservation Office, tribes, and other consulting parties as necessary. If unmarked human remains are encountered during permitted activities, all work will stop immediately, and the proper authorities will be notified in accordance with Florida Statutes, Section 872.05.</li> </ul>

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
		<ul style="list-style-type: none"> <li>• Construction vehicles and equipment will be stored onsite during the project or at existing access points within the Applicant’s right-of-way.</li> <li>• Prior to conducting repairs, applicant must identify the source and location of fill material and provide this information to FDEM and FEMA. If the borrow pit is privately owned, or is located on previously undisturbed land, or if the fill is obtained by the horizontal expansion of a pre-existing borrow pit, FEMA consultation with the State Historic Preservation Officer will be required. Failure to comply with this condition may jeopardize FEMA funding; verification of compliance will be required at project closeout.</li> <li>• Any changes to the approved scope of work will require submission to, and evaluation and approval by, the State of Florida and FEMA, prior to initiation of any work, for compliance with Section 106 of the NHPA.</li> </ul>
<p><b>Geology and Geomorphology</b></p>	<p>No change – see DCAI &amp; CTC EA Sections 3.2 and 4.2 (2009)</p> <p>Alternative 1 – No impact</p> <p>Alternative 2 – No long-term impacts. Beach compatible sand will be used during construction.</p>	<p>Alternative 2 requires implementation of FDEP permit (No. 0285993-009-JC) and USACE permit conditions regarding beach compatible sand placement.</p>

<b>RESOURCE</b>	<b>ENVIRONMENTAL CONSEQUENCES</b>	<b>ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS</b>
<b>Vegetation</b>	<p>No change – see DCAI &amp; CTC EA Section 3.5 and 4.5 (2009)</p> <p>Alternative 1 – No impact from construction. Continuing erosion could lead to ongoing dune vegetation loss due to escarpment and construction of seawalls by residents.</p> <p>Alternative 2 – No impact to dune vegetation during construction, beneficial impact from restored shoreline due to buffer from storm surge.</p>	<p>Alternative 2 requires implementation of FDEP (Permit No. 0285993-009-JC) and USACE permit conditions regarding vegetation protection during construction, and dune planting.</p>
<b>Water Resources</b>	<p>No change – see DCAI &amp; CTC EA Section 3.4 (2009)</p> <p>Alternative 1 – No Impact</p> <p>Alternative 2- Minor short term impacts due to restoration of the sandy beach and potential dredging</p>	<p>Alternative 2 would require a USACE permit to ensure compliance with the Clean Water Act and the Rivers and Harbors Act. Applicant would be responsible for implementing all permit conditions.</p>

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
<p><b>Fish and Wildlife Resources</b></p>	<p>No change – see DCAI &amp; CTC EA Sections 3.8, 3.9, 4.8, and 4.9</p> <p>Alternative 1 – No impact</p> <p>Alternative 2 – Indirect impacts to nearshore hardbottom habitat, which is a prominent feature in Indian River County is likely to occur; short term changes in nearshore and offshore areas are expected. The design volume has been reduced from historic renourishment projects to minimize hardbottom coverage. Temporary impacts to migratory birds and surf-zone fishes may occur. If dredging is the selected method of sourcing sand, hardbottom may be impacted by dredge pipelines but not significantly. After construction, fish and wildlife resources are expected to recover.</p>	<p>Alternative 2 requires implementation of FDEP permit (No. 0285993-009-JC) and USACE permit conditions regarding hardbottom, Essential Fish Habitat and Migratory Bird Treaty Act, including provisions in applicable PBOs regarding shorebirds.</p> <p>Hardbottom is present in the nearshore environment but the permits do not authorize any impacts to occur to hardbottom resources. An initial pre-construction monitoring event will serve as the baseline for post-construction monitoring. Additionally, these surveys will serve as a guide to minimize impacts of pipeline corridors, if dredging is chosen as the fill source.</p> <p>Indian River County obtained a letter from the National Marine Fisheries Service (NMFS) on October 10, 2019 identifying that the project is in essential fish habitat (EFH) but no further coordination was planned due to current staffing levels (Appendix A).</p>

<b>RESOURCE</b>	<b>ENVIRONMENTAL CONSEQUENCES</b>	<b>ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS</b>
<b>Socioeconomic</b>	No change – see DCAI & CTC EA Section 10.2 (2009)  Alternative 1 – Impacts could result from future storm damages along the shoreline  Alternative 2- Beneficial impact due to risk reduction along the shoreline and increase in recreational value.	Not applicable
<b>Coastal Barrier Resources</b>	Updated – see DCAI & CTC EA Section 3.10  Alternative 1 and 2 – No impact, not located within Coastal Barrier Resource System unit	Not applicable
<b>Hazardous, Toxic, and Radioactive Waste</b>	Alternative 1 - No impact  Alternative 2- Minor short term impact due to potential for spills during construction.	Assessment indicated no evidence of hazardous, toxic, or radioactive waste (HTRW) at the project area.
<b>Air Quality</b>	No change – see DCAI & CTC EA Section 3.12 and 4.12  Alternative 1 – No impact  Alternative 2 – No impact	Not applicable

RESOURCE	ENVIRONMENTAL CONSEQUENCES	ENVIRONMENTAL PROTECTION MEASURES AND REQUIRED PERMITS
Noise	No change – see DCAI & CTC EA Section 3.13 and 4.13  Alternative 1 – No impact  Alternative 2 – Minor short term impacts from construction equipment including offshore dredge. Project is not expected to change the long term ambient noise levels in the area.	Not applicable

## 4.2 Floodplain Management (Executive Order 11988)

Executive Order (EO) 11988 requires federal agencies to take action to minimize occupancy and modification of the floodplain. Specifically, EO 11988 prohibits federal agencies from funding construction in the 100-year floodplain unless there are no practicable alternatives. FEMA’s regulations for complying with EO 11988 are promulgated in 44 CFR Part 9. Based on the current FEMA Flood Insurance Rate Map (FIRM), the project area is located within the coastal high hazard area (VE Zone) (Appendix B).

### 4.2.1 Alternative 1 – No Action Alternative

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

### 4.2.2 Alternative 2 – Comprehensive Beach Restoration Project

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

## 4.3 Coastal Zone Management

The Florida Coastal Management Program (FCMP) is a network of statutes that protect Florida’s coastal resources. FDEP implements federal consistency reviews through the Florida State Clearinghouse or its permitting process.

An FDEP Joint Coastal Permit (JCP) is required for activities located on Florida’s natural sandy beaches that extend seaward of the mean high water line, extend into sovereign submerged lands, and are likely to affect the distribution of sand along the beach.

#### **4.3.1 Alternative 1 – No Action Alternative**

Under the no action alternative, no work would occur and there would be no impact to the coastal zone. Additionally, if the beach renourishment project was not completed, additional hardening of the shoreline may occur to protect homes.

#### **4.3.2 Alternative 2 – Comprehensive Beach Restoration Project**

Under the preferred alternative, activity and construction would occur in the coastal zone. The project would restore eroded areas of the shore by replacing beach compatible sand to a designed beach profile meant to mimic the natural dune system. The applicant obtained a Consolidated Joint Coastal Permit and Sovereign Submerged Lands Authorization (Permit No. 0285993-009-JC) from FDEP and must adhere to the construction conditions and monitoring requirements. Issuance of this permit constitutes consistency review with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Zone Management Act.

### **4.4 Wetlands (Executive Order 11990)**

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

#### **4.4.1 Alternative 1 – No Action Alternative**

Under the no action alternative, no impacts to wetlands are anticipated.

#### **4.4.2 Alternative 2 – Comprehensive Beach Restoration Project**

Under the preferred alternative, short-term impacts are anticipated. The action may involve dredging of marine wetlands and placing sand in the near and foreshore environment. Temporary increases to turbidity could be expected due to dredging and sand placement; however, no long-term impacts are expected due to the lack of estuarine or marshy wetlands in the project vicinity. Short-term negative impacts would also be expected to commercial and recreational fisheries near the shoreline and the dredge area, but impacts are expected to be limited to the construction timeframe. Impact would include the higher turbidity in the habitat causing species to move from the area and reducing the number of catch available for a short period of time. The long-term impacts to the marine wetlands would be beneficial for preserving habitat and recreational value as well as reducing rates of sand loss and erosion from future storms. The applicant will be required to comply with the FDEP Permit (No. 0285993-009-JC) and USACE Individual Permit to minimize impacts from construction.

### **4.5 Threatened and Endangered Species**

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

#### **4.5.1 Existing Conditions**

Potential threatened and endangered species that may be present in the project area were identified in the previous DCAI & CTC EA. The species were verified and updated by accessing the USFWS Information for Planning and Consultation (IPaC) database in May 2019 to identify species that may

occur in Indian River County. Additionally, species under NMFS jurisdiction were identified using the NOAA Fisheries Species Directory (<https://www.fisheries.noaa.gov/species-directory>). The species likely to occur in the project area are the green sea turtle (*Chelonia mydas*), hawksbill sea turtle (*Eretmochelys imbricata*), leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), Kemp's ridley sea turtle (*Lepidochelys kempii*), red knot (*Calidris canutus rufa*), piping plover (*Charadrius melodus*), southeastern beach mouse (*Peromyscus polionotus niveiventris*), west Indian manatee (*Trichechus manatus latirostris*), smalltooth sawfish (*Pristis pectinata*), giant manta ray (*Manta birostris*), and the north Atlantic right whale (*Eubalaena glacialis*). The shoreline of the project area is suitable sea turtle nesting habitat for listed sea turtles as well as foraging habitat for the piping plover and red knot. There is no designated critical habitat within the project area.

#### **4.5.2 Alternative 1 – No Action Alternative**

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

#### **4.5.3 Alternative 2 – Comprehensive Beach Restoration Project**

Alternative 2 is expected to have impacts to species along the shoreline and in the nearshore environment due to sand placement and potential dredging, if that is the method selected for sourcing sand. If sand placement and renourishment of the engineered beach occurs during sea turtle nesting season, the action may adversely affect nesting sea turtles and hatchlings directly. These short term impacts could include relocation of nests, nests being disturbed by sand placement activities, and equipment causing obstacles to adult or hatchling turtles, to name a few. In order to avoid these impacts, the work will begin in January 2021 but will pause in May 2021 to avoid impacts during sea turtle nesting. The work will then start again once the nesting season is over in November 2021. Long term impacts are also likely and may include sand compaction and changes in the sand quality. Sand quality features including size and color are crucial for incubation and impact nest success, sex determination, and size of hatchlings. Short-term adverse impacts may be expected to the red knot and piping plover due to disruption in foraging habitat during construction. Dredging activities may affect, but are not likely to adversely affect sea turtles, smalltooth sawfish, manatees, giant manta, or whale species near the dredging area and nearshore environment due to the usage of a hydraulic dredge. If a hopper dredge is used, conditions within the biological opinion below would need to be followed.

The project will be required to meet the terms and conditions of these three applicable USACE programmatic biological opinions to minimize impacts to listed species: the USFWS Statewide Sand Placement Biological Opinion (Service Log 41910-2011-F-0170, dated March 13, 2015), the USFWS Programmatic Piping Plover Biological Opinion (Service Log 04EF1000-2013-F-0124, dated May 22, 2013), and if hopper dredging occurs, the NMFS South Atlantic Regional Biological Opinion (dated September 25, 1997). The project will also adhere to the Florida Standard Manatee Conditions as required by the PBOs. The terms and conditions of these documents can be found in Table 4.1.

### **4.6 Cultural Resources**

Consideration of impacts to cultural resources is mandated by Section 106 of the National Historic Preservation Act (NHPA) as implemented by CFR Part 800. Requirements include identifying historic properties that may be impacted by the proposed action or alternatives within the area of potential affect (APE). Historic properties may be archeological sites, structures, historic districts, or other historic resources listed in or determined eligible for listing in the National Register of Historic Places

(NRHP). If adverse effects on historic, archeological, or cultural properties are identified, federal agencies must attempt to avoid, minimize, or mitigate the impacts to these resources.

FEMA, the Florida State Historic Preservation Office (SHPO), the Florida Division of Emergency Management, the Choctaw Nation of Oklahoma, and the Advisory Council on Historic Preservation have executed a Statewide Programmatic Agreement dated September 10, 2014 to streamline the Section 106 review process.

#### **4.6.1 Existing Conditions**

A review of the National Park Service (NPS) National Register of Historic Places (NRHP) GIS resource and the Florida Archaeological Master Site Files was used to determine if any previously identified historic properties are located within a one-mile radius of this undertaking. The review of this existing information by a FEMA Archaeologist meeting the Secretary of the Interior's Professional Qualification Standards (36 CFR Part 61) revealed that no properties listed in the National Register and no National Historic Landmarks are located within the proposed project's APE. One archaeological site, The Green Cabin Historic Shipwreck, was determined to be potentially eligible for inclusion in the National Register and is located within the proposed project's APE but the Florida SHPO has not made a final determination on its eligibility.

#### **4.6.2 Alternative 1 – No Action Alternative**

Alternative 1 does not include any FEMA undertaking and no construction, therefore there would be no potential for effects and no further responsibility under Section 106.

#### **4.6.3 Alternative 2 – Comprehensive Beach Restoration Project**

Alternative 2 would include renourishing the beach utilizing either an offshore or upland sand source. It is not anticipated for the work along the shoreline to have an impact as any known sites are located outside of the APE and renourishment activities have occurred in this area previously. Ground disturbance will be limited to construction activities and there will be no excavation below the existing beach profile, in fact the addition of sand would serve as a potential additional layer of protection for any in situ archaeological/historic material.

During the 2000 underwater survey by Morgan and Eklund of the proposed offshore borrow pit, four magnetic anomalies and one previously identified historic shipwreck were identified. The applicant has a 500 ft. exclusion area around the shipwreck and 200ft. exclusion areas around the previously identified magnetic anomaly. The previously identified shipwreck that was relocated during the underwater survey was the Golden Quest #1 historic shipwreck (8IR00860).

Based on the results of previous investigations and our historic property identification efforts, no properties listed in, and only one site potentially eligible for listing in the NRHP were located within the APE of this undertaking. FEMA has made a determination of *No Historic Properties Affected* and received concurrence from the Florida SHPO on April 23, 2019 (Appendix C). Additionally, FEMA contacted six Native American tribes: Miccosukee Tribe of Indians of Florida, Alabama-Quassarte Tribal Town of the Creek Nation, Muscogee Creek Nation, Poarch Band of Creek Indians, Seminole Tribe of Florida, and Seminole Nation of Oklahoma. Two of the tribes (Muscogee Creek Nation and Poarch Band of Creek Indians) provided concurrence with FEMA's finding of *No Historic Properties Affected* and the four other tribes did not express any objections to the proposed project. The following conditions will be applied to the project:

- The applicant will establish a 200-foot buffer zone around two magnetic anomalies within the South Borrow area identified in a cultural resources survey by Dr. Robert Baer.

- If human remains or intact archaeological deposits are uncovered, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. The Applicant will assure that archaeological discoveries are secured in place, that access to the sensitive area is restricted, and that all reasonable measures are taken to avoid further disturbance of the discoveries. The Applicant's contractor will provide immediate notice of such discoveries to the Applicant. The Applicant will contact the Florida Division of Historical Resources and FEMA within 24 hours of the discovery. Work in the vicinity of the discovery may not resume until FEMA has completed consultation with the State Historic Preservation Office, tribes, and other consulting parties as necessary. If unmarked human remains are encountered during permitted activities, all work will stop immediately, and the proper authorities will be notified in accordance with Florida Statutes, Section 872.05.
- Construction vehicles and equipment will be stored onsite during the project or at existing access points within the Applicant's right-of-way.
- Prior to conducting repairs, applicant must identify the source and location of fill material and provide this information to FDEM and FEMA. If the borrow pit is privately owned, or is located on previously undisturbed land, or if the fill is obtained by the horizontal expansion of a pre-existing borrow pit, FEMA consultation with the State Historic Preservation Officer will be required. Failure to comply with this condition may jeopardize FEMA funding; verification of compliance will be required at project closeout.
- Any changes to the approved scope of work will require submission to, and evaluation and approval by, the State and FEMA, prior to initiation of any work, for compliance with Section 106.

## 5.0 CUMULATIVE IMPACTS

Per the Council on Environmental Quality (CEQ) regulations, cumulative impacts is the impact on the environment that "results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). In accordance with NEPA, this SEA considered the combined effect of the preferred alternative and other actions occurring or proposed in the vicinity of the proposed project site.

The shoreline of Indian River County is vulnerable to coastal erosion and expected to be subject to damages from future tropical storms and hurricanes, which may result in presidential declarations. As an engineered and maintained facility, future renourishments due to storm or background erosion are expected. The previous Dial Cordy and Associates Inc. & Coastal Technology Corporation EA issued in 2009 identified cumulative impacts from ongoing shoreline stabilization efforts.

The proposed project includes replacing an estimated total of up to 622,400 cubic yards (CY) of beach compatible sand during a comprehensive Sector 3 beach restoration project. Of this total, approximately 408,076.5 CY of sand is related to declared disasters: 207,576.5 CY was lost during Hurricane Matthew, 128,300 CY was lost during Hurricane Irma, and 72,200 CY was lost during Hurricane Dorian. The remaining 214,323.5 CY was lost during background erosional losses. Sand will either be sourced from an approved upland sand mine, or the permitted offshore borrow pit. Placing the sand during this comprehensive project is preferred to placement during individual

projects. Restoring the engineered beach fully, will help ensure the shoreline is fully protected from future storm events. Additionally, minimizing the number of renourishment events will allow any impact species optimal time to recover. Pausing the project to avoid sea turtle nesting season, and completing the renourishment in full cross-sections will also help minimize duplicative impacts.

The project is expected to protect the coastal infrastructure from future storm risks. The sand placement will also improve the area for nesting sea turtles, foraging shorebirds, and recreational use. The larger scale project will minimize coastal armoring and small-scale sand placement projects. The shoreline of the project area is largely developed with condominiums, residential housing, and recreational facilities. It is not anticipated that the proposed project or future maintenance actions will have an impact on development due to the nature of the existing area. The continued existence of improved property and redevelopment of that property may be associated with the continued maintenance and restoration of the Indian River County Sector 3 dune system.

The project and anticipated future actions in the area will have short-term impacts to commercial and recreational usage of the shoreline and possibly the associated borrow area (if it is used) due to construction efforts. However, it is anticipated there will be no long-term impact to commercial fisheries and beneficial long-term impacts to commercial and recreational usage of the shoreline as a result of the continued existence of the engineered beach. The shoreline of Indian River County is a large component of the economy as a component of tourism – continued maintenance of the engineered beach will continue its benefit for tourism and recreational value. Additionally, it will protect the improved property and habitat along the beach.

The proposed action is not expected to have significant adverse cumulative impacts on any resource based on the review conducted when added to past, present, and reasonably foreseeable future actions within the proposed project area.

## **6.0 PUBLIC INVOLVEMENT**

USACE is the lead federal agency that conducted the original NEPA analysis and issued a public notice on the original project in 2007. FEMA issued a disaster-wide initial public notice for Hurricane Matthew on November 21, 2016, Hurricane Irma on October 7, 2017, and Hurricane Dorian on October 18, 2019 to notify the public of projects under the Public Assistance program that may be occurring within floodplains. The county issued a public notice for the previous renourishment project and considered comments from the public. Indian River County has a *Public Beach and Shores* meeting where beach renourishment projects are discussed.

The public will be notified that the FEMA SEA is available for review and comment, by posting the public notice (Appendix D). An electronic version of the SEA will be made available for review on Indian River County's website. A hardcopy will be made available at the Indian River County Administration Building A, Public Works Office located at 1801 27th Street, Vero Beach, Florida 32960 during normal business hours. The public comment period will end after 15 days of posting.

## **7.0 AGENCY COORDINATION**

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

- U.S. Army Corps of Engineers (USACE), Jacksonville District

- Florida Division of Historical Resources (SHPO)
- U.S. Fish and Wildlife Service (USFWS)
- National Marine Fisheries Service (NMFS)

## 8.0 LIST OF PREPARERS

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## 9.0 REFERENCES

Dial Cordy and Associates Inc. & Coastal Technology Corporation (DCAI & CTC), 2009. Environmental Assessment for Indian River County Sector 3 Beach Restoration Project. Accessed online May 6, 2019 at [http://www.ircgov.com/Departments/Public Works/Coastal Engineering Section/Documents/Sector\\_3\\_Environmental\\_Assessment.pdf](http://www.ircgov.com/Departments/Public Works/Coastal Engineering Section/Documents/Sector_3_Environmental_Assessment.pdf)

USACE, 2010. MEMORANDUM FOR RECORD: Department of the Army Environmental Assessment and Statement of Finding for SAJ-2007-1645 (SP-TSB)

**Appendices A-D available upon request to FEMA  
Region IV EHP (FEMA-R4EHP@fema.dhs.gov)**