July 2013

Environmental Assessment

FCCE PLACEMENT OF SAND ON BROWARD COUNTY SEGMENT II BROWARD COUNTY, FLORIDA

FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT
ON
FCCE PLACEMENT OF SAND ON BROWARD COUNTY SEGMENT II
BROWARD COUNTY, FLORIDA

I have reviewed the Environmental Assessment (EA) for the proposed action. This Finding incorporates by reference all discussions and conclusions contained in the EA enclosed hereto. Based on information analyzed in the EA, reflecting pertinent information obtained from other agencies and special interest groups having jurisdiction by law and/or special expertise, I conclude that the proposed action, Alternative #1 – "FCCE-Only Renourishment Added Into the Project Lifecycle", will have no significant impact on the quality of the human environment. Reasons for this conclusion are, in summary:

1. The work would be conducted as per the U.S. Fish and Wildlife Coordination Act Report of June 2002 found in the June 2003 Broward County Shore Protection Project, Segments II and III General Reevaluation Report with Final Environmental Impact Statement, which indicates no objection by the Department of the Interior and full compliance with the Endangered Species Act, the Coastal Barrier Resources Act and Fish and Wildlife Coordination Act. Measures to prevent or minimize impacts to sea turtles in accordance with the consultations conducted with the U.S. Fish and Wildlife Service (FWS) as detailed in the Statewide Programmatic Biological Opinion for (SPBO) and the Programmatic Piping Plover Biological Opinion (P3BO). The proposed project will adhere to the Terms and Conditions of these Opinions and will not jeopardize the continued existence of any threatened or endangered species or adversely impact any designated "critical habitat". The Corps initiated consultation FWS, requesting that the project be reviewed under the PBO and the P3BO and that FWS concur with the Corps determination that the project fell under the coverage of those documents. The Corps determined the project will have no effect on species and designated critical habitat under NMFS jurisdiction.

2. The State's concurrence with the Federal Coastal Zone Consistency Determination dated June 6, 2013 for the (Appendix B of the EA) finds the action is consistent with the State's Coastal Zone Management program. FLDEP has issued a subsequent concurrence under CZMA for the project dated July 25, 2013.

3. In coordination with the Florida State Historic Preservation Officer, it was determined that the project will not impact any sites of cultural or historical significance.

4. Measures to eliminate, reduce, or avoid potential impacts to fish and wildlife resources include the following which will be undertaken during and after project construction: (1) Placement of material above the Mean High Water Line completely on the dry beach which will prevent impacts to hardbottom associated with sedimentation and turbidity, (2) Use of high-quality processed sand from upland sand mines from which most fine material will have been removed, thereby reducing the extent of turbidity from any sand that may enter the water during or after construction (3) Upland sands have less fines and are a larger grain size, which increases stability of the sands on the beach, decreasing potential adverse effects to nearshore hardbottoms and completely eliminating impacts to hardbottoms adjacent to offshore borrow areas and those associated with pipeline corridors to transmit the sand from the dredge to the beach, and (4) Compliance with all Terms and Conditions in the SBPO and P3BO to avoid and minimize impacts to sea turtles and piping plover.

5. Benefits to the public and wildlife include the restoration of the beach to the "pre-storm" condition in Broward County, Florida, thus preventing or reducing periodic damages and potential risk to life, health and property in the developed lands adjacent to the beach.

An electronic copy of this EA can be accessed from the Jacksonville District Environmental Documents website -

http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/EnvironmentalBranch/EnvironmentalDocuments.aspx#Broward

In consideration of the information summarized, I find that the proposed action will not significantly affect the human environment and does not require an Environmental Impact Statement.

3 Aug 13
Date

Alan M. Dodd
Colonel, U.S. Army
District Engineer

ENVIRONMENTAL ASSESSMENT
ON
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1 PROJECT PURPOSE AND NEED

1.1 PROJECT AUTHORITY.

The Broward County Shore Protection Project (SPP) was authorized by Section 301 of the River and Harbor Act of 1965, Public Law 89-298. The Project was authorized in accordance with the recommendations of the Chief of Engineers. The Chief of Engineers recommended that authority be granted to permit construction of the project by local interests, if they so desire, with subsequent reimbursement of the Federal share. The non-Federal sponsor initially constructed the project in 1970, and renourishment was performed in 1983 with reimbursement of the Federal share pursuant to the authorization. Section 506(a)(1) of the Water Resources Development Act of 1996 provided for the Secretary to carry out periodic beach nourishment for the project for a period of fifty (50) years from the date of initiation of construction. Section 311 of the 1999 Water Resources Development Act, Public Law 106-53, modified the Broward County Shore Protection Project (SPP) to authorize the Secretary, on execution of a contract to construct the project, to reimburse the non-Federal interest for the Federal share of the cost of pre-construction, engineering and design for the project, if the Secretary determines that the work is compatible with and integral to the project. The project limits run from Florida Department of Environmental Protection (DEP) monument R-25 to R-85, approximately from Robbins Road on the north end of the project area to Palm Avenue on the south end of the project. A General Reevaluation Report (GRR) and Environmental Impact Statement (EIS) was approved in May 2004 and provides for periodic nourishment for Broward County Segment II from R-26 to R-53 (USACE 2004). Additional Authorization for the project is included in Public Law 84-99 for Flood Control and Coastal Emergency (FCCE) rehabilitation of federal storm damage reduction projects.

1.2 PROJECT LOCATION.

The project is located in Broward County, Florida. Broward County is located 23 miles north of Miami Beach on the southeastern coast of Florida (Figure 1). This segment of the Federal project for Broward County consists of 11.5 miles of Atlantic Ocean shoreline from Hillsboro Inlet south to Port Everglades Inlet. The segment is located on a barrier island entirely within Broward County. The municipalities within the segment include Pompano Beach, Sea Ranch Lakes, Lauderdale-by-the-Sea, and Fort Lauderdale.

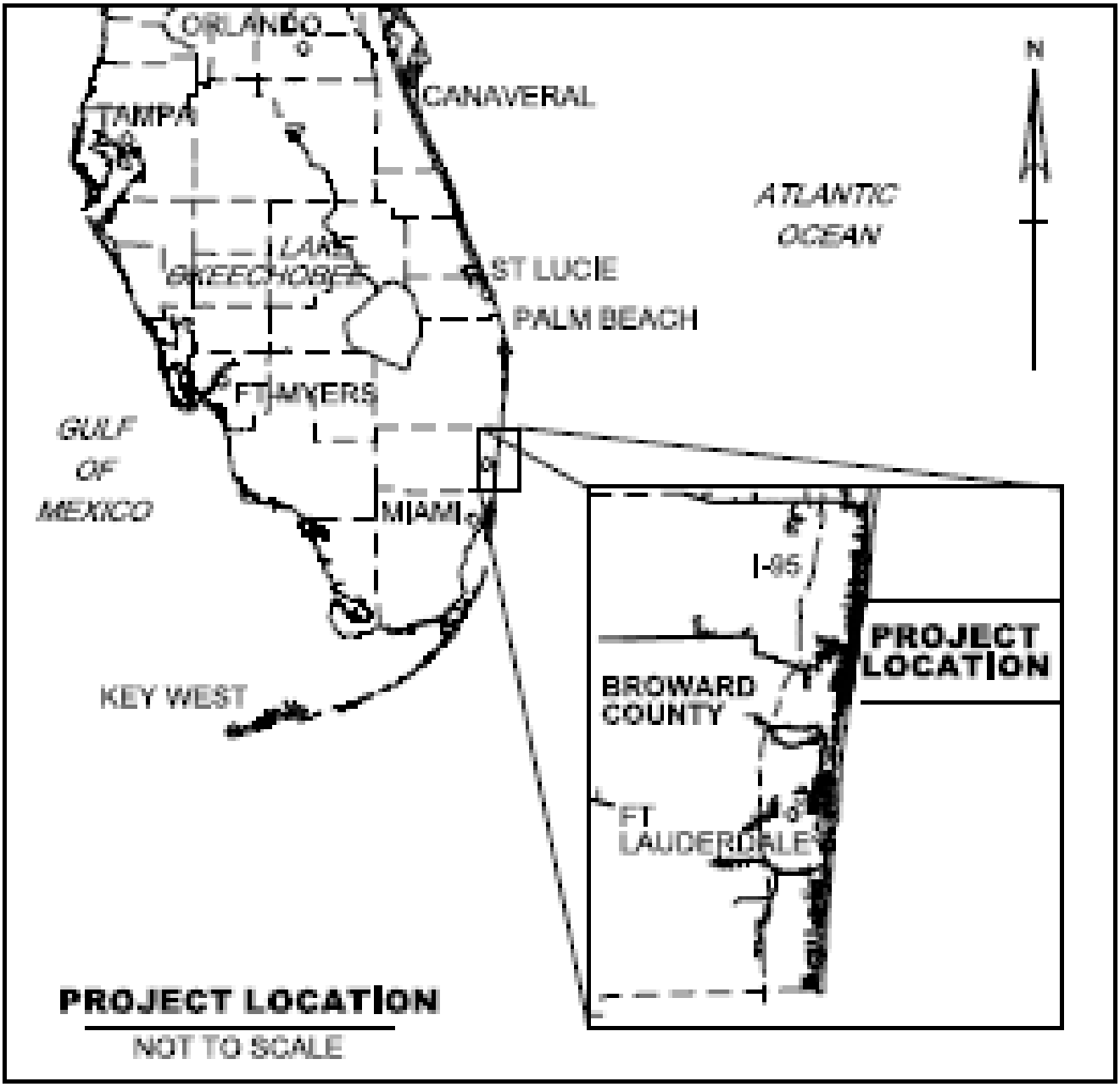


Figure 1 - Location Map

1.3 PROJECT NEED OR OPPORTUNITY.

In 2004 the Broward County SPP Segment II project area was impacted by six severe storms (including four hurricanes) in six weeks, causing considerable damage to the project. This resulted in a recommendation to repair the project by replacing 293,700 cubic yards (cy) of material that was eligible for FCCE funding. In 2005 the area was impacted by four hurricanes, but neither the storms nor the damages they inflicted met the established criteria for FCCE assistance. The recommended replacement of 293,700 cy was to be included in the 2007 renourishment of the project, but that renourishment has not yet been constructed.

Hurricane Sandy passed within 160 nautical miles of the Atlantic Coast of Florida and moved slowly northward during the last week of October 2012. The storm had devastating consequences on Florida's Federal shore protection projects causing extensive beach and dune erosion along several hundred miles of Florida coastline, including the Broward County SPP Segment II. Due to the slow forward speed of the storm, high-energy waves and elevated water levels (storm surge and wave setup) persisted for more than a week, which is longer than typical for tropical storms and hurricanes. The combination of high waves and water levels over a long duration creates the potential for extensive beach erosion. The erosion potential of the storm, based on the Central Florida wave and water level gages, is a Category 5 using the Storm Erosion Index (SEI). Based on this index, the erosion potential of Hurricane Sandy was higher than the severe storms of 2004 and 2005 and it represents a 30-year erosion event. Based on the SEI analysis, the US Army Corps of Engineers – Jacksonville District (Corps) has found a preponderance of evidence to support the fact that Hurricane Sandy is an extraordinary storm per Engineering Regulation (ER) 500-1-1, 5-20.f (USACE 2013).

The authorized Segment II project limits extend from Hillsboro Inlet southward to Port Everglades, a distance of 11.5 miles. This corresponds to DEP monuments R-25 to R-85 and includes the communities of Pompano Beach, Sea Ranch Lakes, Lauderdale-by-the-Sea, and Ft. Lauderdale. However, only the northern 47% of this reach has been constructed, extending from R-26 southward to R-53 (corresponding to portions of Pompano Beach and Lauderdale-by-the-Sea). The project's design berm varies in width, and represents "a general width of 100 feet with a berm elevation of 10 feet above mean low water". This translates to a 75 to 100-foot seaward extension of the mean high water line

In general, the shoreline along Segment II protects a densely developed barrier island which contains a combination of hotel/motel complexes and single family residential, commercial, and recreational developments. These barrier islands are mandatory evacuation areas for major storm events, so there should not be a high potential for loss of life if evacuation orders are followed. However, the protective value of the beaches along the previously constructed area of Segment II has been significantly reduced due to the impacts from Hurricane Sandy. This has resulted in an increased damage potential through both direct wave attack as well as increased flooding risk to structures and roads. In the southern reach of Segment II, beach erosion and wave damage was so severe that significant damage was caused to S.R. A1A, a major hurricane evacuation route. According to the 2004 GRR and an ongoing 2013 Limited Reevaluation Report (LRR) study, the Segment II beaches protect a total value of shorefront infrastructure of more than $2,000,000,000 (USACE 2004; USACE 2013a).

Along the constructed portion of Segment II extending from R-26 to R-53 the Federal Project experienced moderate to severe erosion of the beach berm. The berm was narrowed and lowered significantly in many areas, and moderate to heavy dune scarping, overwash, and damage to dune and beachfront vegetation was noted at many locations (see Figures 2 through 5). A post-storm aerial inspection was performed along the east coast of Florida, including the Broward County shoreline on October 29, 2012 by SAJ engineers. Generally about one to six

feet of vertical erosion was observed at scarp-lines, and along seawalls and around the base of coconut palms along the Segment II area. The high water line had receded within about 30 feet of a number of seawalls and residential structures (Figure 2)) and a significant amount of public infrastructure (roads, beach access parking, etc) is currently exposed to damage (Figure 4 and Figure 5). Without renourishment, the infrastructure protected by the project will be highly vulnerable to further damage due to erosion and flooding from winter northeasters and future hurricane events.

As described above, along northern Ft. Lauderdale a section of the berm was damaged to the degree that a subsequent storm (Thanksgiving Day northeaster) overwashed the beach entirely, damaging the adjacent roadway. This roadway is the only hurricane evacuation route along this region of the coastline, and remains vulnerable to further damages. Figure 3 and Figure 4 show substantial berm erosion and overwashed sand from Hurricane Sandy being scraped off of the oceanfront roadway (S.R. A1A) and formed into a dune-line along the seaward edge of the road, for eventual replacement back onto the beach. The specific area of damage to S.R. A1A is shown in Figure 4.

Figure 2 - Loss of berm width and height, scarping into dune line. Photo taken at Bel Aire Drive, northern Lauderdale-by-the-Sea

Figure 3 - Loss of berm width and elevation. Significant erosion in front of seawalls, some houses within 30 feet of waterline. Photo of NE 28th St. Fort Lauderdale

Figure 4 - Area of damage to S.R. A1A. Sand scraped from roadway as a result of overwash is placed along seaward side of road). Photo taken at NE 16th Ct, Ft. Lauderdale.

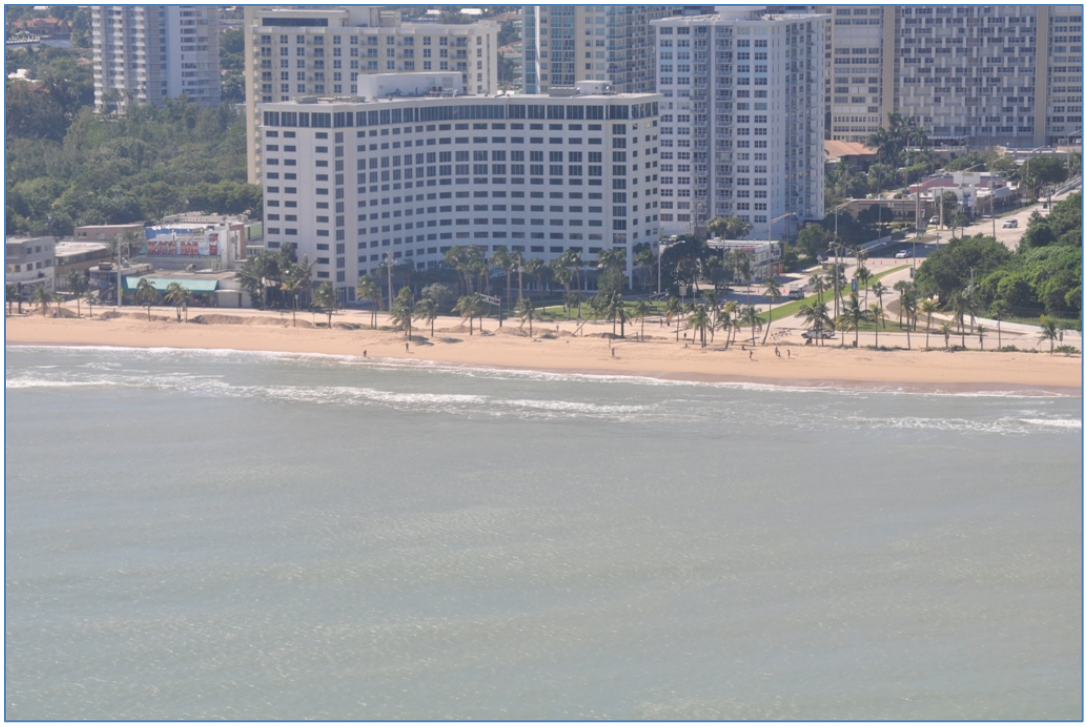


Figure 5 - Sand scraped off of adjacent roadways as a result of overwash (placed as a dune-line along seaward side of A1A). Photo taken at E. Sunrise Blvd, Ft. Lauderdale

Storm-Induced Beach Volume Change.

The volume changes discussed below represent the impacts of Hurricane Sandy that occurred between the pre- and post- storm surveys (April 2011 to January 2013, see Figure 6). All volumes were computed from the landward limit of fill of the 1983 nourishment project, seaward to the approximate toe of fill. The differences between the pre- and post-storm surveys were measured at each profile line and multiplied by the distance between each profile pair to obtain the volumetric changes contained in the tables in Appendix I of USACE 2013.

The volume of fill required to reconstruct the construction template was calculated in a similar manner, by computing the difference between the post-storm survey and the construction template as shown in Figure 6.

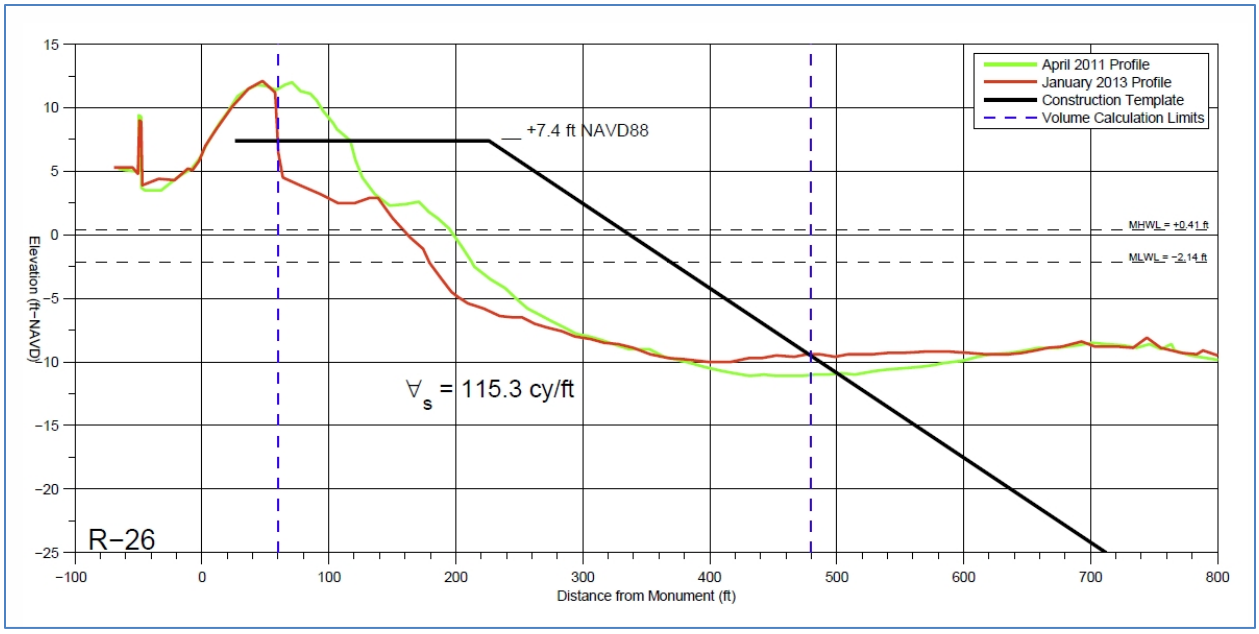


Figure 6 - Pre- and post-storm beach profiles, and Construction Template at profile DNR-26, along northern portion of Segment II.

As a result of erosion caused by hurricane Sandy, as well as the four hurricanes that passed the project area in 2004 and 2005, the northern section of Segment II has undergone significant erosion. A Project Implementation Report (PIR) for Segment II was prepared under PL 84-99 IJ 2005 in response to the 2004-2005 hurricanes and an additional PIR was prepared in 2012 in response to hurricane Sandy. Both of the PIRs determinate that Segment II needed material to be placed on the beach to restore the beach profile to the pre-storm condition. An analysis of the beach, post-Sandy in 2013 determined that no more than 150,000 cy of material needed to be placed between DEP Monuments R26 and R53. The preferred method for beach construction is a truck-haul approach in which fill will be obtained from an upland commercial sand mine(s) and trucked to the R26 to R53 project reach for beach placement.

1.4 AGENCY GOAL OR OBJECTIVE.

1.4.1 OBJECTIVE

The goal of the project is to restore this section of Segment II to pre-Sandy and 2004/2005 hurricane conditions and ensure the beach serves to reduce storm induced impacts to infrastructure inland of the beach.

1.4.2 PROPOSED ACTION

The Jacksonville District proposes to reconstruct the full construction template with FCCE funds paying for the portion to restore the project to pre-storm conditions. The project will consist of the placement of no more than 150,000 cy along 5.08 miles from R-26 southward to R-53 and will follow a construction template consisting of a beach berm elevation of 10 feet above mean low water (MLW). All material will be placed above MHW (Figure 7).

The proposed sand borrow source for the work has not been finalized, however up to four upland mines are being considered. The Corps is restricted from requiring contractors to purchase sand from specific mines; however, we are including a sand specification in our contracting bid package which requires the contractor's sand to meet a certain set of criteria, consistent with the State of Florida sand rule for sand quality (FAC 62B-41.007(2)(j)). The intention is to truck haul this material to the project site. The fill material in the proposed borrow areas are compatible with the native beach material.

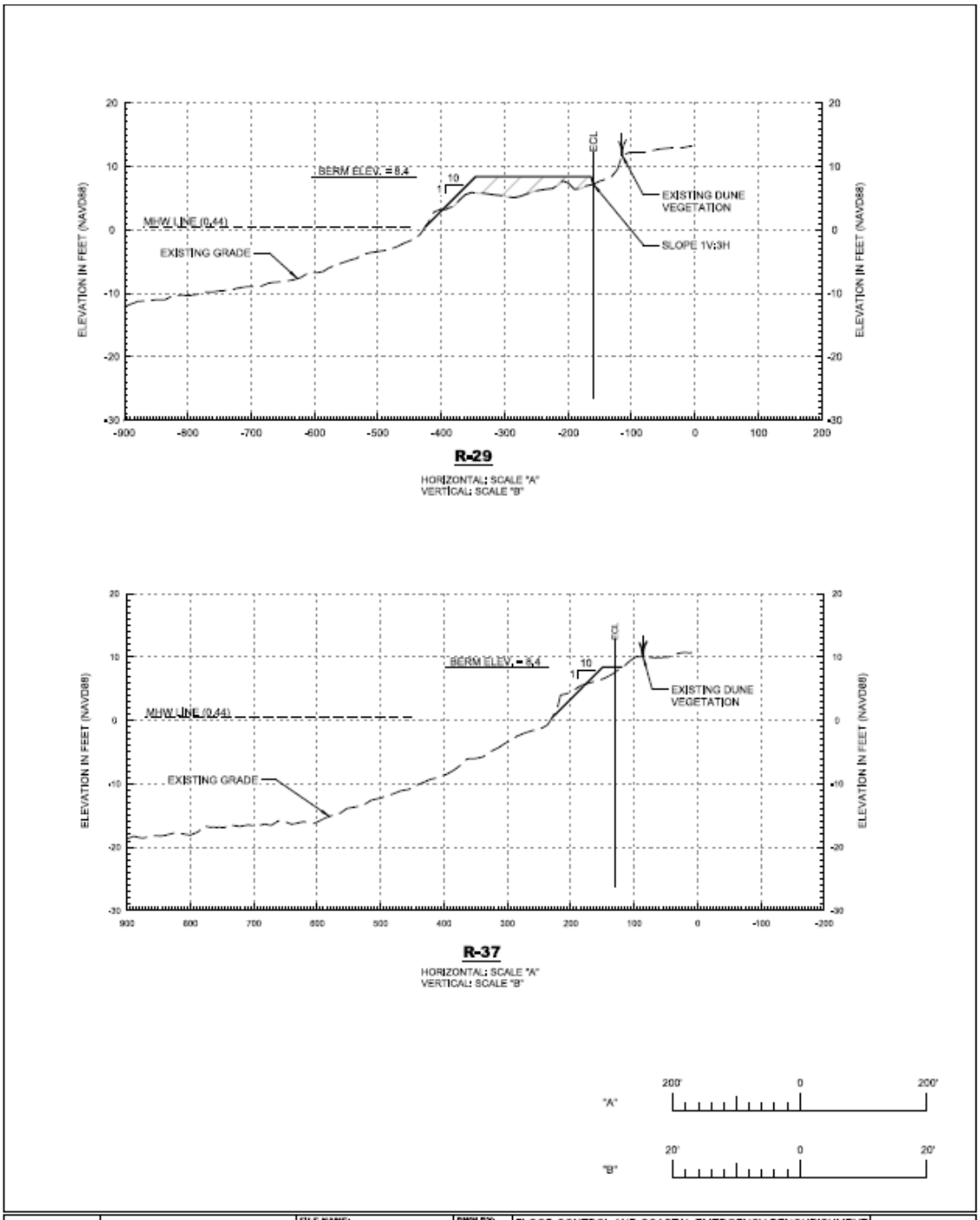


Figure 7 - Typical Cross Sections (R-29 and R-37)

1.5 RELATED ENVIRONMENTAL DOCUMENTS.

USACE 2013. Project Information Report. Rehabilitation Effort for the Broward County Shore Protection Project. Segment II Broward County, Florida. February 2013.

USACE, 2013b. Environmental Assessment, Broward County Shore Protection Project, Segment II. Prepared for the Corps by Broward County.

USACE 2005. Project Implementation Report. Rehabilitation Effort for the Broward County Segment II Hurricane/Shore Protection Project. May 2005.

USACE, 2004. Broward County Shore Protection Project, Segments II and III. Final Environmental Impact Statement, Jacksonville District. May 2004.

USACE, 1996. Coast of Florida Erosion and Storm Effects Study, Region III: Feasibility Report with Draft Environmental Impact Statement.

1.6 DECISIONS TO BE MADE.

This Environmental Assessment (EA) will evaluate whether to place sand on the portion of Segment II between R26 and R53 and, if so, evaluate alternatives to accomplish that goal.

1.7 SCOPING AND ISSUES.

1.7.1 ISSUES EVALUATED IN DETAIL.

The following issues were identified to be relevant to the proposed action and appropriate for detailed evaluation:

- Nesting sea turtles
- Resting piping plover
- Impacts to beach vegetation during construction
- Impacts to nearshore hardbottom due to material placement and equilibration.
- Upland truck traffic impacts associated with truck haul operations.

1.7.2 ISSUES ELIMINATED FROM DETAIL ANALYSIS.

No issues were identified that were eliminated from detailed analysis specific to this emergency restoration effort.

1.8 PERMITS, LICENSES, AND ENTITLEMENTS.

Refer also to section 4.28, Compliance with Environmental Requirements:

- Complete Consultation under Section 7 of the Endangered Species Act of 1973 with USFWS for affects on the project to nesting sea turtles and piping plover.

- Coastal Zone Program consistency concurrence from the Florida Department of Environmental Protection.

1.9 METHODOLGY

This EA compiles information from a variety of sources including previous and current NEPA documents for the Broward County Shore Protection Project previously listed in Section 1.5 of this EA and specific shoreline and nearshore surveys conducted by Broward County environmental staff to evaluate the potential for impacts from the proposed project. All of these NEPA documents relied on an interdisciplinary team using a systematic approach to analyze the affected area, to estimate the probable environmental effects, and to prepare the documents. This included literature searches, coordination with Federal, State and local resource agencies having expertise in certain areas, and on-site field investigations.

2 ALTERNATIVES

The alternatives section is the heart of this EA. This section describes in detail the no-action alternative, the proposed action, and other reasonable alternatives that were studied in detail. Then based on the information and analysis presented in the sections on the Affected Environment and the Probable Impacts, this section presents the beneficial and adverse environmental effects of all alternatives in comparative form, providing a clear basis for choice among the options for the decision maker and the public.

2.1 DESCRIPTION OF ALTERNATIVES.

The alternatives for this effort were taken directly from the 2013 PIR prepared for the project in response to hurricane Sandy. The 2013 EA entitled "Environmental Assessment – Broward County Shore Protection Project Segment II" reviewed the options for obtaining sand associated with the required renourishment including upland sand and offshore sand and the impacts associated with those options. That EA determined that dredging of offshore sand and placement on the beach would result in unacceptable impacts to nearshore hardbottoms from burial and sedimentation and designated critical habitat for listed corals adjacent to Segment II of the Broward County SPP. These impacts were due to a higher level of fines in sand dredged from offshore, as well as potential for impacts to hardbottoms adjacent to the offshore borrow areas, that are also designated critical habitat for listed corals and impacts associated with placement of the pipeline to convey dredged materials. Upland sands have less fines and are a larger grain size which will increase stability of the sands on the beach, decreasing potential adverse effects to nearshore hardbottoms and completely eliminating impacts to hardbottoms adjacent to offshore borrow areas and those associated with pipeline corridors to transmit the sand from the dredge to the beach (USACE 2013b).

Both alternatives (fcce-only renourishment added into the project lifecycle and FCCE placement congruent with renourishment of the full construction template) would mechanically place sand between R-26 and R-53 on the northern portion of Segment II, using upland sand from commercial mines brought to the project by the contractor selected to construct the project. The sand brought to the project would have to meet the State of Florida's sand rule (62B-41.007(2)(j)). Because there are not upland sand sources within Broward County having clean, beach compatible material in sufficient quantities to satisfy this project, potential upland sources beyond the County were sought. There are known mines within 115 miles of the Segment II shoreline that have provided clean, quality material for past nourishment projects in southeast Florida. Due to a larger mean grain size and smaller fines content, upland sand is expected to be more stable on the beach (OAI, 2012). Proposed sediment quality guidelines are provided in Table 1.

Table 1 - Proposed Sediment quality guidelines for Broward County Segment II FCCE project

Sediment Parameter	Compliance Value
Mean Grain Size (mm)	0.35-0.65
Silt Content (% passing #230 sieve)	<5%
Gravel Content (% not passing #4 sieve)	<5%
Color (allowable moist Munsell Value)	≥7
Carbonate Content	≥ 10%

To identify potential sources for the Broward County Segment II project, Broward County conducted an evaluation of fourteen upland sand mines (USACE 2013b). These evaluations included sand sample analyses and site visits to each mine. The fourteen mines selected for investigation were chosen based on usage for past projects and recommendations from government entities having experience with upland sand mine use. This evaluation is adopted for the FCCE project.

Each mine was assessed based on compliance with the quality guidelines outlined in Table 1, sediment characteristics, location relative to Broward County, compliance with state and federal laws and method of transport available. Broward County determined that four mines out of the fourteen mines were most suitable for Broward County. Each of these mines has compatible sand, sufficient production capacity and, with the exception of Cemex Davenport, is a reasonable trucking distance from Broward County. Cemex Davenport is approximately 200 miles from Segment II but is the only mine with direct rail access (OAI, 2012). Any of these mines may be used for the FCCE project, however if the contractor selected for this project may choose to use an alternative mine, as long as that mine meets all the sand criteria stated in Table #1, and possess all required state and federal permits and reviews and the Corps' project specifications.

One consideration involved with selecting upland sand sources is the availability of material within the mines, as this can affect overall construction rate of the beach fill project. The mine(s) selected must have sufficient total and daily production capacity to meet the project needs. It is anticipated that the desired daily production rate for the Segment II FCCE project will be between 2,500 to 6,000 tons of sand per day. Sand mines can stockpile some of the material to ensure that they can keep pace with required delivery rates. Other considerations that affect efficiency include the distance from the mine to the project, number of trucks and other machinery at the staging and beach fill areas, as well as the number of active access points. In the event that delivery rate exceeds handling time on the beach, it may be useful to employ offsite truck waiting areas to avoid congestion at the access points.

This alternative would require beach access points along SR-A1A large enough to allow passage of dump trucks and heavy machinery. A total of sixteen access points were identified as suitable along the Segment II shoreline. These sites are close to major roads with bridges crossing the Intracoastal Waterway, near large offsite staging areas, and have 1 mile or less between adjacent access points. There are eight bridges identified as potential delivery routes, however

four - Atlantic Blvd., Commercial Blvd., Oakland Park Blvd., and Sunrise Blvd. – would likely be the principal corridors.

It is preferred that, where possible, the access areas be large enough to employ a circular entrance and exit pattern to prevent congestion and maximize efficiency. In extreme cases, in which space at the access it too limited to allow efficient transfer from long-haul road truck to off-road truck, a conveyor system may be used. However, this method slows production and should remain a last resort. It is also preferred that multiple access sites be simultaneously used to increase productivity, although no more than three are recommended. Use of more than three sites can potentially increase traffic and communication difficulties, thereby decreasing productivity (OAI, 2012). The Corps will work extensively with Broward County to identify beach access areas.

Utilizing a truck-haul approach for a beach fill project involves several stages of transport: loading of material at the mine site, road transport via dump trucks, beachside delivery and stockpiling, transfer from stockpile to off-road vehicles, beach transport, placement and grading. Some of the major handling steps involved once trucks reach Broward County include: offloading material at the stockpile staging area, transfer of material from a stockpile to an offroad dump truck, dumping of sand on the beach and finally, spreading of material and grooming to the design shape.

For transport to the Segment II shoreline, the project will likely employ a 'mixed fleet' of longhaul road trucks including two-axle and six axle dump trucks. Long-haul road trucks are capable of transporting 15 to 20 cy of material and, when fully loaded, have a gross weight of approximately 20 to 27 tons, respectively. If more distant sand sources are used, such as mines in northern Florida, it is possible that material would be transported from the mine via railway. Material can be transported as a single railcar, a group of cars, or a unit train of 80 to 100 cars each. A single railcar can carry 100 tons of material, or about 74 cy. A unit train could transport between 80,000 to 100,000 tons of sand and would be the most cost-effective rail method. Once delivered to Broward County, material may be offloaded and handled at the Conrad Yelvington yard for stockpiling or unloading to trucks. Another option for delivery of material from domestic upland sand sources is to do so by barge. Although possible, this approach would require many steps to transfer sand to and from the barge as well as truck delivery to the beach. As such, this approach is highly inefficient and not recommended (OAI, 2012).

After sand is mechanically placed on the beach, the material will undergo compaction in which consolidation occurs due to settling and exposure to rain and wave activity. As such, the mechanically placed material occupies an initially greater volume (about 5 to 10%) than it will after compaction. As such, an initial volume that is 5 to 10% greater than the specified design beach fill volume will be measured on the beach at the time of construction. This volume will gradually consolidate to the anticipated and permitted design volume.

By the same token, when sand from a mine is loaded onto trucks it occupies 10% to 20% more volume than compact in-situ material. This difference in volume is due to "bulking" or fluffing"

as the complete material is disturbed. It is the bulked material volume that is actually delivered to the beach site. Once the material is placed, graded and reconsolidates, it is anticipated that the bulked transport volume will transformed to the intended consolidated design volume.

In addition to work hours, other limitations include truck availability, traffic congestion on the roads and at access points and the time associated with re-handling and movement of sand on the beach. The timeline for completion of an upland truck haul would therefore span multiple seasons.

2.1.1 ALTERNATIVE 1 – FCCE-ONLY RENOURISHMENT ADDED INTO THE PROJECT LIFECYCLE

This first alternative is the FCCE emergency placement restoring the pre-storm profile without simultaneous placement of material seaward of the pre-storm profile associated with the full renourishment of Segment II. The authorized renourishment interval would be preserved as outline in the 2004 GRR. The construction timeframe for this alternative is expected to be 150 days. Because of concerns with the sea turtle nesting season, it is recommended that construction occur during the non-peak nesting winter months. Assuming concurrence from USFWS, construction is proposed to occur between October 1 and April 30, a total of 211 calendar days in which to complete the project.

The Broward County Segment II project is scheduled to be re-nourished in 2014 with no future renourishments since the 2014 renourishment is expected to last until the end of the project life. This analysis assumes that the PL 84-99 emergency renourishment takes place in 2013, restoring the pre-storm profile. Separate authorizations under applicable federal and state laws would be obtained and the project would be wholly separate from the 2014 regularly scheduled renourishment to the full construction template. All material placed as part of the FCCE project would be placed shoreward of the MHW line. This is the preferred Alternative and Environmentally preferred Alternative.

2.1.2 ALTERNATIVE 2 – FCCE PLACEMENT CONGRUENT WITH RENOURISHMENT OF THE FULL CONSTRUCTION TEMPLATE

The second alternative is the placement of FCCE emergency material on the project restoring the pre-storm profile and placement of material seaward of the pre-storm profile out to the full construction template as part of the local sponsor's previously scheduled full renourishment as detailed in the 2004 GRR. The details of the local sponsor's nourishment are found in the 2004 GRR and the subsequent 2013 EA (USACE 2013b). In summary Broward County proposes to place approximately 706,700 cubic yards (cy) of beach compatible sand along 4.94 miles of shoreline along two reaches of the Broward County Segment II shoreline, Broward County, Florida (Figure 1). Specifically, the sand placement template includes 0.96 mile of the Pompano Beach/Lauderdale-By-The-Sea (LBTS) shoreline (between the Florida Department of Environmental Protection [DEP] reference monument R-36 and R-41.3) and 3.98 miles along the LBTS and Fort Lauderdale (between DEP reference monument R-51 and R-72). Approximately 167,700 cy and 539,000 cy of sand will be placed along Pompano Beach and Fort Lauderdale fill templates, respectively. An additional 20,000 cy of sand will be placed along the

upper beach profile along discrete areas of the shoreline between DEP reference monument R-51 and R-72 as dune habitat. The intent of the proposed project is shoreline stabilization.

Sand would be mined from upland mines in Immokalee, Witherspoon, Ortona or Davenport as evaluated in the "Segment II Limited Re-evalution Report and Environmental Assessment" (USACE 2013b), or from any upland mine which meets the sand standards included in the project specification. Broward County expects that construction of the full renourishment of Segment II will take up to three construction seasons. A "season" is defined as October 1 to April 30, the non-nesting season for sea turtles.

The Broward County Segment II project is scheduled to be re-nourished in 2014 with no future renourishments since the 2014 renourishment is expected to last until the end of the project life. Modifications to the local sponsor's permits from the state of Florida and the Corps would be required, which may result in delays to the needed repairs.

2.1.3 NO ACTION ALTERNATIVE (STATUS QUO)

The No Action alternative, as determined in the 2004 GRR/EIS (section 2.1.1) and carried forward into this EA, would allow erosion to continue unabated and provides no solution to the existing erosion and shore protection problems. As explained in the GRR/EIS, this would be a viable option in under-developed areas. However, these types of areas do not exist in Broward County, therefore it is expected that accretion would not occur as a result of the heavily developed nature of the shoreline. An estimation of storm damages and benefits for the Broward Segment II project was provided in the 2004 GRR/EIS. In the analysis, it was estimated that infrastructure replacement costs would total nearly $2 billion.

2.2 ALTERNATIVES ELIMINATED FROM DETAILED EVALUATION

The Broward County SPP 2004 EIS included an extensive list of alternatives considered for erosion control associated with the overall Federal project. Those alternatives, including those eliminated from detailed evaluation are incorporated by reference. Additionally, as previously discussed in Section 2.1, hydraulic dredging of sand from offshore borrow areas was reviewed as a potential alternative in the 2013 EA for Segment II renourishment (USACE. 2013b) and rejected as an alternative for this effort due to potential impacts to hardbottom and coral resources.

Table 2 - Alternatives Eliminated from Detailed Review

Project Alternative	EIS Section	Treatment in EIS
No-Action alternative (Status-Quo)	2.1.1	Included in detailed evaluation
Rezoning of beach Area	2.1.2	Eliminated
Condemnation of land and structures	2.1.3	Eliminated
Revetments	2.1.4	Eliminated

Beach fill with periodic nourishment (including alternate sand sources)	2.1.5	Included in detailed evaluation
Beach fill with periodic nourishment, with stabilization by offshore breakwater or submerged artificial reef	2.1.6	Eliminated
Beach nourishment with maintenance material from updrift inlet or sand by-passing methods	2.1.7	Included in detailed evaluation
Beach fill and periodic renourishment with stabilization by groins	2.1.8	Included in detailed evaluation
Beach fill design modifications of beach fill amounts	2.1.9	Included in detailed evaluations (Jan 2001 beach fill design only)
Seawalls	2.1.10	Eliminated
Beach fill with periodic renourishment and hurricane surge protection sand dune	2.1.11	Eliminated
Beach nourishment with creation of nearshore berm from maintenance material from adjacent inlet	2.1.12	Eliminated
Stabilization of beaches and dune by vegetation	2.1.13	Eliminated
Modify navigation project	2.1.14	Eliminated
Sand tightening of jetties	2.1.15	Eliminated

2.3 ALTERNATIVES NOT WITHIN JURISDICTION OF LEAD AGENCY

There are no Alternatives not within the jurisdiction of the lead agency.

2.4 COMPARISON OF ALTERNATIVES

Table 2 lists alternatives considered and summarizes the major features and consequences of the proposed action and alternatives. See section 4.0 Environmental Effects for a more detailed discussion of impacts of alternatives.

2.5 MITIGATION

The proposed action will not impact fish and wildlife resources requiring compensatory mitigation.

Table 3 - Summary of Direct and Indirect Impacts

ALTERNATIVE ENVIRONMENTAL FACTOR	Alternative 1 Stand Alone Placement Above Mean High Water	Alternative 2 Placement in Conjunction with County Placement Below Mean High Water	No Action Status Quo
PROTECTED SPECIES - SEA TURTLES	Restored nesting habitat; potential vehicle strikes; heavy machinery on beach may create barrier for nesting females; potential for vehicle tracks interfering with hatchlings reaching water; potential nest destruction; potential for sand compaction, or unfavorable beach design for sea turtle Nesting.	Restored nesting habitat; potential vehicle strikes; heavy machinery on beach may create barrier for nesting females; potential for vehicle tracks interfering with hatchlings reaching water; potential nest destruction; potential for sand compaction, or unfavorable beach design for sea turtle Nesting. Possible burial of macroalgae communities important for foraging sea turtles.	Increased erosion leading to loss of potential nesting habitat; increased false crawls and hatchling mortality from nest washout. In the event of armoring in response to increased erosion, reduced nesting habitat and hatchling success will be exacerbated.
- **FLORIDA MANATEE**	No Effect. Material is being placed above Mean High Water.	Based on the low probability that manatees will enter the project area, and the use of a truck-haul approach, it is determined that the project may affect, but is not likely to adversely affect manatees.	No effect
- **SMALLTOOTH SAWFISH**	No Effect. Material is being placed above Mean High Water.	Based on the low probability that sawfish will enter the project area, and the use of a truck-haul approach, it is determined that the project may affect, but is not likely to adversely affect sawfish.	No effect

ALTERNATIVE ENVIRONMENTAL FACTOR	Alternative 1 Stand Alone Placement Above Mean High Water	Alternative 2 Placement in Conjunction with County Placement Below Mean High Water	No Action Status Quo
- **PIPING PLOVER**	Avoidance due to noise and presence of heavy machinery; creation of additional roosting\ foraging habitat for overwintering population	Avoidance due to noise and presence of heavy machinery; creation of additional roosting\ foraging habitat for overwintering population	Increased erosion leading to loss of potential roosting/foraging habitat
- **BEACH JACQUEMONTIA**	Creation of potential habitat	Creation of potential habitat	Increased erosion leading to loss of potential habitat
- **CORAL SPECIES**	No effect. Material is being placed above Mean High Water to prevent impacts to coral species.	Relocation of colonies in project footprint; potential burial of *Acropora and Dichocoenia stokes* colonies not relocated prior to nourishment activities; burial of *Acropora* critical habitat; mortality/stress caused by temporarily elevated turbidity or sedimentation. Increased likelihood of temporary increases in sedimentation beyond the ETOF.	Due to potential increased erosion, exposure of more hardbottom habitat for coral colonization
HARDBOTTOM	No effect. Material is being placed above Mean High Water to prevent impacts to hardbottom habitats.	Burial of up to 4.8 acres of nearshore hardbottom and 2.7 acres of unvegetated sand bottom by placement of sand and equilibration of the ETOF	Continued erosion may expose new hardbottom habitats.
SHORELINE EROSION	Repairs the damage from the 2004/2005 and 2012 storm damage.	Repairs the damage from the 2004/2005 and 2012 storm damage, restores the project to the original authorized project footprint.	Continued erosion of the beaches in Segment II.

ALTERNATIVE ENVIRONMENTAL FACTOR	Alternative 1 Stand Alone Placement Above Mean High Water	Alternative 2 Placement in Conjunction with County Placement Below Mean High Water	No Action Status Quo
FISH AND WILDLIFE RESOURCES	Restored nesting and foraging habitat; potential vehicle strikes; heavy machinery on beach leading to avoidance of the area by wildlife.	Restored nesting and foraging habitat; potential vehicle strikes; heavy machinery on beach leading to avoidance of the area by wildlife.	Continued erosion of nesting and foraging habitat.
VEGETATION	Replacement of lost habitat by elevating the beach face and maintenance of habitat for a longer period of time through the use of upland sand.	Creation of potential habitat	Increased erosion leading to loss of potential habitat
WATER QUALITY	No effect. Material is being placed above MHW to prevent water quality impacts.	Temporary increase in turbidity during construction placement of material below MHW and as beach equalizes, particularly during storms or very high tide events.	No impact.
CULTURAL RESOURCES	No impacts are anticipated for cultural resources.	Temporary closure of Bonnet Beach (in front of Bonnet House) during construction of that phase of the project. Increased truck traffic passing Bonnet House entrance on Sunrise Blvd.	No impact.

ALTERNATIVE ENVIRONMENTAL FACTOR	Alternative 1 Stand Alone Placement Above Mean High Water	Alternative 2 Placement in Conjunction with County Placement Below Mean High Water	No Action Status Quo
RECREATION	Enhancement of beach space for recreational activities; temporary disruption of recreational/fishing activities in active construction areas	Enhancement of beach space for recreational activities; temporary disruption of recreational/fishing activities in active construction areas; Potential decrease of in-water visibility for swimming, snorkeling, diving; burial of hardbottom may reduce fish habitat and impact fishing	Loss of beach available for recreational activity/tourism. Beachgoers may visit other beaches.
AESTHETICS	Improvement (wider, no scarp) ; visual and auditory disturbance during construction may temporarily decrease value	Improvement (wider, no scarp) ; visual and auditory disturbance during construction may temporarily decrease value	Decreased value due to narrow beach. Potential for increased armoring.
ECONOMICS	Temporary closure of beach with active construction; potential loss of tourism during construction; increased traffic, road wear and tear; increase in property value; increased storm protection; boost local economy; Increases tax base; creates jobs; sustains Florida's tourist industry	Temporary closure of beach with active construction; potential loss of tourism during construction; increased traffic, road wear and tear; increase in property value; increased storm protection; boost local economy; Increases tax base; creates jobs; sustains Florida's tourist industry	Loss of tourism due to reduced beachfront; compromised upland property protection; Decreased beachfront property value; loss of tax revenue from decreased tourism

ALTERNATIVE ENVIRONMENTAL FACTOR	Alternative 1 Stand Alone Placement Above Mean High Water	Alternative 2 Placement in Conjunction with County Placement Below Mean High Water	No Action Status Quo
ESSENTIAL FISH HABITAT	No adverse effect as material is being placed above mean high water	Fill of nearshore habitats and coverage nearshore hardbottom. Mitigation to be constructed for the unavoidable impacts.	No impact to EFH. May result in increased exposure of neashore rock outcrops that could serve as EFH.
INVASIVE SPECIES	By increasing the available habitat thought sand placement, both alternatives have the potential to allow the spread of invasive species.	By increasing the available habitat thought sand placement, both alternatives have the potential to allow the spread of invasive species.	Invasive and exotic species are expected to stay in the dune habitats of the project area, potentially crowding out native species

3 AFFECTED ENVIRONMENT

The Affected Environment section succinctly 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 would affect or that would be affected by the alternatives if they were implemented. This section, in conjunction with the description of the "no-action" alternative, forms the base line conditions for determining the environmental impacts of the proposed action and reasonable alternatives.

3.1 GENERAL ENVIRONMENTAL SETTING

The coastline of Segment II in Broward County is located entirely on a barrier island and is bounded by Hillsboro Inlet to the north and Port Everglades to the south. Hillsboro Inlet is an improved inlet designed for recreational and commercial navigation. Port Everglades channel provides entrance to Port Everglades, one of the three largest ports in the State of Florida. Sediment transport along the Atlantic coastline is generally from north to south with some localized reversals due to tidal inlets or bathymetric irregularities. Inlets interrupt the normal transport of sediments along the coastline, and the need to maintain inlet channels for commercial and recreational purposes while providing and protecting beaches often results in conflicting interests and competing needs.

The action area for this project is defined as all areas to be affected directly or indirectly by the proposed action. Thus, the action area extends from the fill area (R-26 to R-53) to adjacent sections of the beach within 1000 ft north and south of the project.

3.2 VEGETATION

Dune vegetation is essential to maintaining dune structure, and generally consists of hearty plants tolerant of extreme conditions such as sea oats, beach elder, trailing grasses and forbes (Duever, 1983; Johnson et al., 1992). In south Florida the typical beach vegetation community consists of sea rocket (*Cakile edentula*), beach morning glory (*Ipomoea pes-caprae*), beach elder (*Iva imbricate*), and sea purslane (*Sesuvium portulacastrum*) (Koch, 1992). A review of studies covering Florida dune vegetation concluded that 31 species of plants are commonly found in the beach and dune environment (Koch, 1992). The fore dune typically begins with sea oats (*Uniola paniculata*) and ends with sea grape (*Cocoloba uvifera*) at the dune crest (Koch et al. 1992).

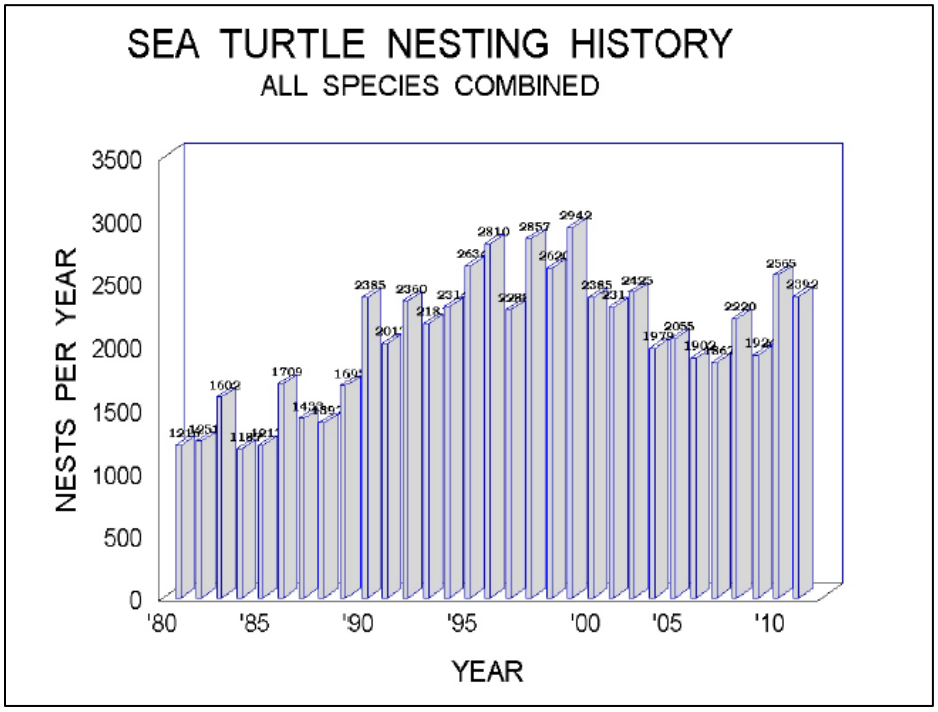
Refer to section 3.2.1 of the GRR/EIS for further discussion of the flora associated with beach and dune communities in southeast Florida (USACE, 2004).

3.3 THREATENED AND ENDANGERED SPECIES

3.3.1 SEA TURTLES

Five species of sea turtles can be found in Florida waters: loggerhead (*Caretta caretta*), green, *(Chelonia mydas)*, leatherback *(Dermochelys coriacea)*, hawksbill *(Eretmochelys imbricata)*, and Kemp's ridley *(Lepidochelys kempii)*. The U.S. Fish and Wildlife Service (USFWS) has listed green (Florida breeding populations), leatherback, hawksbill and Kemp's Ridley sea turtles as Endangered, and the Northwest Atlantic population of loggerheads as Threatened (USFWS, 2012). Three species of sea turtle – the loggerheads, greens and leatherbacks – are known to regularly nest on Broward County beaches. The Broward County Natural Resources Planning and Management Division (BCNRPMD) has provided for the conservation of endangered and threatened sea turtle species within Broward County since 1978. The BCNRPMD has maintained the conservation program in non-nourishment years to provide a continuous database of sea turtle nesting and monitoring after beach nourishment projects. Conservation activities include the permitted relocation of nests from hazardous locations, accurate surveys of nesting patterns and nesting success, response to strandings and turtle emergencies, and public outreach.

The sea turtle nesting season in Broward County, Florida begins in early March with the leatherbacks, followed by loggerheads in April, and greens in May and June (Figure 12). In 2011, a total of 2392 nests were recorded in Broward, which was 173 fewer nests than in 2010, but exceeded the average of the previous ten years by 229 nests. Nesting densities were by far the highest in Hillsboro Beach, followed by Fort Lauderdale, Pompano Beach, Lloyd Park and Hollywood (Burney and Wright, 2012).



Recent data suggests that for loggerhead sea turtles, there are only two locations with greater than 10,000 nesting females: south Florida and Masirah Island in Oman. In the U.S., nesting is estimated at approximately 68,000 to 90,000 nests per year (NMFS, 2011). In Broward County, Florida, loggerheads deposited 2126 nests in 2011, which was down slightly from the 2010 count, but exceeded the previous ten year average by 152 nests. There is a positive nesting trend from 2007 to 2011, with an average gain of 141 nests per year, but the overall nesting trend since 1995 is still negative. In 2010 and 2011, loggerhead nesting density was highest in Hillsboro Beach, Pompano Beach, and on the Galt Ocean Mile in southern Fort Lauderdale (Burney and Wright, 2012).

Green turtles deposited 261 nests in Broward County in 2011 – marginally fewer than 2010 nest counts, and the third highest count since surveying began in 1981. There is an overall upward trend in yearly number of green sea turtle nests, with an average increase of about 7 nests per year. Green turtle nesting densities were highest in Hillsboro Beach (Burney and Wright, 2012).

Leatherbacks have successfully nested in Broward County every year since 1982. Leatherback turtles deposited only 5 nests in 2011, down 18 nests from the previous ten-year average, but the overall nesting trend remains positive (Burney and Wright, 2012).

Although hawksbill sea turtles have previously nested in Broward, the instances are rare. Refer to Section 3.3.1 of GRR/EIS for additional information (USACE, 2004). No hawksbill nests were observed on Broward County beaches in 2011. Kemp's ridley sea turtles are not known to nest on Broward County Beaches (Burney and Wright, 2012).

The heavily developed nature of the Broward county coastline, the location of Highway A1A relative to the beach, and extensive beachfront lighting all have negatively impacted sea turtle nesting activity and hatchling behavior. As a result, Broward County has relocated all discovered nests at Pompano Beach, Deerfield Beach, Hollywood-Hallendale and Fort Lauderdale since the projects' inception in 1978 (Burney and Wright, 2012).

Refer to section 3.3.1 of the GRR/EIS for discussion of nearshore and offshore habitat usage of sea turtles. A synopsis of boat-towed diver sea turtle surveys performed in 2001 for the proposed project area can also be found in the referenced section. Sea turtle enumeration surveys were conducted between 2003 – 2007 in conjunction with the Segment III Shore Protection Project (section 4.3.1.1(c) of the GRR/EIS (USACE, 2004)). The most recent survey of juvenile green sea turtles in the nearshore environment covered only Segment II and was completed in late June, 2011 (CPE, 2011). The surveys were done using the towed-diver method in which two divers were towed behind the boat with mask and snorkel. Two surveys were performed nearshore, (closely following hardbottom edge established by CPE in March, 2011) and two were performed offshore (100m east of hardbottom edge). The towed divers communicated sea turtle sightings with the boat, including the behavior (swimming, resting, eating). Topside personnel recorded time, behavior and GPS location of each sighting. Turtles

spotted at the surface but not during surveys were also recorded. A total of 79 sea turtles were recorded - 78 juvenile green turtles and one hawksbill. Of the 78 green turtles, the majority were observed swimming in the water column for both the nearshore and offshore surveys (Figure 15). The mean turtle abundance for the 2011 survey (39) was similar to those means reported from 2003 to 2007. These results show that green sea turtles are abundant and active in the nearshore habitat in Segment II, and suggest there is a consistent population. One notable occurrence from the 2011 survey was a particularly high abundance of juvenile green sea turtles observed on June 24, in which 38 sea turtles were documented. Observations all other days ranged from four to 14 turtles (CPE, 2011b).

3.3.2 FLORIDA MANATEE

The Florida manatee (*Trichechus manatus latirostris*) was listed as a state threatened species in 1974 and subsequently as endangered in 1979. Previously, however, Florida prohibited the killing of manatees in 1893, making it one of the first wildlife species in the U.S. to receive protection. A subspecies of the West Indian manatee, it occurs only in the southeastern U.S. They rarely venture into nearshore ocean waters except to travel between estuaries or rivers. Manatees are very sensitive to temperatures below 18 °C (65° F), and therefore aggregate to warm water springs and power plant discharge areas in the lower two-thirds of the Florida peninsula (Laist, 2005). Refer to section 3.3.2 of the GRR/EIS (USACE, 2004) for a general discussion of manatee presence in south Florida.

3.3.3 SMALLTOOTH SAWFISH

Historically, sawfish were a common sight off Florida's coastline. However, they have become less common during the last century because they were unintentionally overfished. Their long "saws", referred to scientifically as "rostrums" or "rostra", were easily entangled in any kind of fishing gear. Sawfish rostrums have also been popular trophy items. Since these fish produce few young, it has been a challenge for their population to recover after being depleted (FWC, 2011). Juvenile sawfish use shallow habitats with a lot of vegetation, such as mangrove forests, as important nursery areas. Many such habitats have been modified or lost due to development of the waterfront in Florida and other southeastern states. The loss of juvenile habitat likely contributed to the decline of this species (NMFS, 2011). Based on the contraction in range and anecdotal data, it is likely that the population is currently at a level less than 5% of its size at the time of European settlement (NMFS, 2009).

Although smalltooth sawfish sightings or captures are rare on the east coast of Florida, within the past few years, sightings have occurred along southeast Florida in areas such as West Lake Park in Broward County (USACE, 2013b). An additional sighting occurred in the John U. Lloyd state park at approximately 80 ft depth in 2012 (USACE, 2013b). Currently, smalltooth sawfish are mostly found in southwest Florida between the Caloosahatchee River and the Florida Keys. Smalltooth sawfish are found primarily in two regions of proposed critical habitat: the Charlotte Harbor Estuary Unit and the Ten Thousand Islands/Everglades Unit. These two units are located along the southwestern coast of Florida between Charlotte Harbor and Florida Bay (73 FR 70290).

The International Sawfish Encounter Database (ISED) globally tracks recent and historic encounters with smalltooth sawfish. According to ISED, one sawfish encounter was entered in the database for Broward County between May 2010 to May 2011. It does not appear that the two encounters referenced above have been entered into the database.

3.3.4 PIPING PLOVER

Piping plovers *(Charadrius melodus)* are listed as federally endangered in the Great Lakes area, and federally threatened in the Northern Great Plains and Atlantic coast. This species does not nest in the state of Florida but does overwinter there (USFWS, 2013a). There is no federally designated piping plover critical habitat within or near the project area, and the project area is not considered "optimal" piping plover habitat based on the Programmatic Piping Plover Biological Opinion of May 22, 2013 from the US Fish and Wildlife Service. The closest designated critical habitat for wintering piping plover to the project area is Unit FL-33, located on the north shore of St. Lucie Inlet in Martin County, to the north of Palm Beach County (USFWS, 2013a).

Since 1991, the International Piping Plover Census has been conducted at five year intervals to survey the species' wintering and breeding ranges in Canada, the United States, Mexico, the Bahamas, and the Greater Antilles. Data from the USGS 2006 International Piping Plover Census indicated that the total number of wintering Piping Plovers observed along Florida's Atlantic coast (44) was similar to the 1991 census (46) but higher than the 1996 results (15), and lower than the 2001 results (67). Data from the 2006 census reported no piping plover observations for Broward County. This species was previously observed in Broward County during the 1991 census at the Broward County Northern Link to Hillsboro Inlet and again in 2001 at the John U. Lloyd State Park. There were no piping plovers observed in Broward County in 2001 (Elliott-Smith et. al, 2009).

According to e-Bird, a database launched by the Cornell Lab of Ornithology and National Audubon Society, there has been a limited number of piping plover sightings in Broward County since 2008. In 2010, one bird was observed at Hillsboro Beach. There were a total of four piping plovers observed in 2012, and all four observations were made within the John U. Lloyd Beach State Park (e-Bird, 2012), south of the project area.

3.3.5 BEACH JACQUEMONTIA

Jacquemontia reclinata is commonly known as beach jacquemontia or beach clustervine. This species is a perennial vine with a woody base and non-woody, twining stems up to six feet long. Leaves are fleshy, rounded or egg-shaped and approximately 1-inch long with blunted or indented tips. Flowers are white or pinkish, 1-inch across, and deeply five-lobed with a short tube. *Jacquemontia reclinata* is endemic to the coastal barrier islands in southeast Florida from Palm Beach to Miami-Dade Counties, including areas within the Segment II shoreline (Johnson et al., 1992; FNAI, 2000).

Jacquemontia reclinata was listed as federally Endangered in 1993 (USFWS, 1993), and is also state listed as endangered. The majority of habitat - coastal beach strand - has been destroyed or lost due to residential and commercial construction, development of recreational areas, and beach erosion. This species is further threatened by invasion of exotic plant species including Australian pine, carrotwood, Brazilian pepper and turf grass. All but one of the wild populations exist on public lands in parks or conservation areas (USFWS, 2007). The most recent surveys indicate that studied populations were declining in total number of individuals; total area occupied and stem density (Maschinski *et al.,* 2005; 2006). There has been a 13% decline in total wild populations since 2000. Protection and management of this species involves removal of exotics, protecting coastal habitats from development by conservation purchases or easements, and establishing new populations of this species in protected areas (Chafin *et al.* [date unknown]). Reintroductions of *J. reclinata* have increased the number of plants in the wild, although survival after transplant is quite variable (2-98%) (Maschinski and Wright, 2006) due to mortality caused by human and natural factors.

3.3.6 CORAL SPECIES

3.3.6.1 *Acropora sp*.

Staghorn coral (*Acropora cervicornis*) and Elkhorn coral (*Acropora palmata)* were once two of the most abundant species of coral in the Caribbean and the Florida Keys. Both species play crucial roles on Caribbean reefs, not only as habitat providers, but also as reef building organisms. Since the 1970's, population declines have been drastic, and it has been estimated that 90-95% of these corals have been lost (Williams *et al*., 1999). In 2006, both Acroporids were listed as Threatened under the U.S. Endangered Species Act (71 FR 26852, May 9, 2006). Additionally NMFS recently proposed to reclassify these two species from threatened to endangered.

Major threats to elkhorn and staghorn coral include disease, coral bleaching, predation, climate change, storm damage, and human activity. All of these factors have created a synergistic effect that greatly diminishes the survival and reproductive success of these corals (Precht *et al*., 2004). Natural recovery of coral is a slow process and may never occur with this species because there are so many inhibitors to its survival. Predators of elkhorn and staghorn coral include coral eating snails (*Coralliophila abbreviata*), polychaetes such as the bearded fireworm and damselfish. Predation by these organisms reduces the growth and reproductive abilities of the coral. Predation can eventually lead to the death of the coral colony.

Rapid growth rates and reproductive strategies exhibited by both species were key to allowing reefs to keep pace with environmental changes. Staghorn coral, one of the fastest growing corals in the Western Atlantic, may exhibit growth rates from 4 to 8 inches (10 to 20 centimeters) per year. The primary method of reproduction is via asexual fragmentation, in which new colonies form when branches are broken off and reattach to the substrate. Elkhorn coral may grow as much as 2 to 4 inches (5 to 10 centimeters) per year. Similarly, the primary reproductive mode for this species is asexual fragmentation. In both species, sexual

reproduction also occurs once a year via mass broadcast spawning of gametes into the water column between August and September. Colonies are simultaneous hermaphrodites and release millions of gametes during the spawning season.

Environmental influences have driven the morphological differences between the two species. Staghorn coral occurs in back reef and fore reef environments in depths from 0 to 100 feet, and habitat is limited by wave activity, suspended sediments and light availability. Prior to the mid 1980's, fore reef zones at depths of 5 to 25 meters (15 to 18 ft) were dominated by extensive stands of staghorn coral. This species characteristically grows in antler-like colonies with cylindrical, fragile branches of 1 to 4 centimeters in diameter. Elkhorn coral, by contrast, typically occurs in reef crest and fore reef environments exposed to heavy surf, in depths less than 6 m (20 ft). Colonies grow in robust, antler-like formations with thick, sturdy branches that can reach 2 to 10 cm in thickness.

In general, the two species have the same geographic range with a few exceptions. Both are found throughout mainland south Florida, the Florida Keys, the Bahamas, and the Caribbean islands, as well as the eastern coasts of Mexico, Belize, Honduras, Nicaragua, Costa Rica, Panama, and Venezuela. The approximate northern limit for staghorn coral is in Palm Beach County, Florida while that of elkhorn coral is in Broward County, Florida.

Critical habitat for threatened elkhorn and staghorn coral was designated by NMFS on November 26, 2008 in four areas: Florida, Puerto Rico, St. John/St. Thomas and St. Croix. In Florida, critical habitat is divided into three sub-areas. The northernmost unit of the Florida Area (Sub-area A) is inclusive of the Broward Segment II project area and ranges from Boynton Inlet, Palm Beach County to Government Cut in Miami-Dade County, from the inshore boundary at the 1.8 m (6 ft) contour out to the shoreward boundary at the 30 m (98 ft) contour. Critical habitat area continues in sub-area B from Government Cut in Miami-Dade County to Key West, Monroe County, from the inshore boundary at the mean low water (MLW) line out the 30m (98 ft) contour. Sub-area C includes the area around the Dry Tortugas, with the 30 m (98 ft) contour as the seaward boundary (73 FR 72210).

Acropora spp. are known to occur on all hardbottom and reef habitats offshore of Segment II including the Nearshore Ridge Complex, the Inner, Middle and Outer Reefs. There are several documented thickets of *Acropora cervicornis* located in the shallow (3-7 m depth) nearshore waters off the coast of Ft. Lauderdale (Vargas-Ángel *et al.*, 2003). Broward County conducted an extensive survey in 2011 for *Acropora* species within 350-450 m east of the nearshore hardbottom edge. The sample area included nearshore hardbottom and the nearshore ridge complex (Walker *et al.,* 2008) habitats within 400 m of the nearshore hardbottom edge in water depths generally less than 10 m. The approximate total project along shore linear distance was 18 km, and the area surveyed was greater than an estimated 7 kilometers^2. Methodology was based on the NMFS 2007 Recommended Survey Protocol for *Acropora* spp. A total of 714 sites were surveyed, and each site encompassed an area of 10,000 m^2. Divers surveyed each site in a structured pattern during a 20-minute timed swim, noting colony abundance for each *Acropora*

species. Survey results were summarized by abundance category (0, 1-5, 6-25, 26-50, 51-150, and greater than 150 colonies) of each species per site surveyed and the distance from shore (50 m, 150m, 250 m, 350 m and 450 m). Results of that survey are available from Broward County.

3.3.6.2 Seven Coral Species Proposed for Listing

In 2009, NOAA was petitioned by the Center for Biological Diversity (CBD) to list 83 species of reef-building corals under the ESA. Substantial information was provided to warrant possible listing for 82 of the 83 species, and a Biological Review Team (BRT) was assembled to develop a peer-reviewed Status Review Report providing the most up-to-date scientific information for each species (Brainard *et al*., 2011). On November 30, 2012, NOAA proposed listing 66 coral species, including seven in the Caribbean. Life history information for each of the seven Caribbean species proposed for listing is provided below.

3.3.6.2.1 Pillar Coral (Dendrogyra cylindrus)

This species is protected as a State-designated Threatened species by Florida's Endangered and Threatened Species Rule. It is described as rare on many Caribbean reefs, and juveniles or small colonies have not been reported (FWC, 2011a). Colonies of *Dendrogyra cylindrus* form numerous large pillars that stem from an encrusting base mass. Colonies of this species are light tan to golden brown, and may reach heights from just over a meter to over three meters (4 – 10 ft). When polyps are retracted the contrasting color between valleys and walls is evident. It inhabits most reef environments, on flat or slightly sloping bottoms (Humann, 2002). This species is restricted to the western Atlantic and can be found throughout the Caribbean, although it is only occasionally observed in Florida (Humann, 2002). Contributing to extinction risk, it is the only species within its genus (Brainard et al., 2011). It appears this is a naturally rare species in modern times (Brainard et al., 2011). It is estimated that density in south Florida is approximately 0.6 colonies per 10 m² (Wagner et al., 2010), while monitoring studies from Puerto Rico and St. Croix show consistently less than 1% cover of *D. cylindrus* (Brainard et al., 2011).

3.3.6.2.2 Genus Montastraea

Montastrea annularis is one of three species (*Montastrea faveolata* and *Montastrea* franksi) that comprise the *Montastrea annularis* complex. Once considered a single species, it is generally accepted that these are three separate species based on morphology, depth range and ecology (Weil and Knowlton, 1994) and subsequently by reproductive and genetic studies.

3.3.6.2.2.1 Boulder Star Coral (Montastraea annularis)

Montastrea annularis colonies grow in clusters of thick columns with dome-like tops. Living portions are restricted to the upper portions of the colony; margins on the sides of columns are typically senescent (Weil and Knowton, 1994; Humann, 2002). Surfaces are smooth and corallites are closely packed and uniformly distributed. This species is restricted to the western Atlantic and can be found throughout the Caribbean, Bahamas and the Flower Garden Banks. It has been reported at depths from 0.5 m to 20 m (Szmant et al., 1997).

3.3.6.2.2.2 Mountainous Star Coral (Montastraea faveolata)

Colonies of *Montastrea faveoltata* grow in heads or sheets with skirting edgeds and may be smooth or have cone-like bumps arranged in vertical rows (Veron, 2000; Humann 2002). The septa are raised and the skeleton is much less dense than the other two *Montastrea* species. This species occurs throughout the Caribbean, Bahamas, Flower Garden Banks, and Bermuda (Brainard et al., 2011). *Montastrea faveolata* inhabits most reef environments from 0.5 to 40 m (Carpenter, et al., 2008), and is often one of the most abundant corals between 10 and 20 m (Brainard et al., 2011).

3.3.6.2.2.3 Star Coral (Montastraea franksi)

Montastrea franksi grows in knobby, irregular mounds with large, unevenly-arrayed polyps. Small clusters of polyps are without zooxanthellae (Humann, 2002). Similar to *M. faveolata*, *M. franksi* occurs throughout the Caribbean, the Bahamas, Bermuda and the Flower Garden Banks. This species occupies most reef environments and has been reported from 5 m to 50 m. Growth rates are relavtively slow, and spawning occurs about 1 hour earlier than the other *Montastrea* species (Szmant et al., 1997).

3.3.6.2.3 Rough Cactus Coral (Mycetophyllia ferox)

Mycetophyllia ferox colonies form encrusting plates with interconnecting sinuous valleys. The species characteristic "lattic-like" appearance results from a ridge bordering the colony growing inward and crisscrossing the surface. Ridges and polyp mouths are light in color, while the rest of the colony is commonly darker greys or browns with valleys and walls of contrasting color. This species is restricted to the west Atlantic and occurs throughout most of the Caribbean (Veron, 2000; Humann, 2002). *Mycetophyllia ferox* inhabit shallow or mid-range reefs with strong water flow, and reported depths range from 5 – 30 m (Carpenter et al., 2008). This species is hermaphroditic and a brooder and reproduction begins at sizes > 100 cm^2 (Szmant, 1986), however recruitment is reportedly low (Dustan, 1997).

3.3.6.2.4 Lamarck's Sheet Coral (Agaricia lamarcki)

Agaricia lamarcki has a flat, unifacial or encrusting platy morphology and colonies are commonly arranged in whorls, spirals or bowls. The corellites are in concentric valleys with centers that are widely spaced, and very thin septa run between the polyp mouths (Humann, 2002). Colonies are usually brown or tan in color with pale margins, while the polyp mouths are characteristically star-shaped and white (Veron, 2000). The underside of the colonies have no polyps and are smooth (Humann, 2002). *Agaricia lamarcki* is restricted to the west Atlantic where it is found throughout the Caribbean with the exception of Bermuda (IUCN, 2010). This species is found in Florida, Puerto Rico, the U.S. Virgin Islands and the Flower Garden Banks in the Gulf of Mexico (IUCN, 2010). It can be found in shallow reef environments, though it most commonly occurs on walls or deep reefs (Veron, 2000; Humann, 2002). The reproductive strategy of this species is not known, although it appears to have low recruitment rates (Brainard et al., 2011). It is considered long-lived, with some colonies living more than a

century, but experiences high partial mortality rates (Hughes and Jackson, 1985). Colonies can reaches sizes up to approximately 2 m (Humann, 2002).

3.3.6.2.5 Elliptical Star Coral (Dichocoenia stokesi)

Colonies of *Dichocoenia stokesi* can be massive, rounded heads, domes, or flattened plates. The corallites are evenly spaced and are usually elliptical or sometimes y-shaped. Colonies are usually yellow to brown, though can be green, with white septae. This species is common throughout the Bahamas, Caribbean, the Gulf of Mexico and Bermuda. It is found in most reef environments, from 2 to 72 meters (Carpenter et al., 2008). Although usually uncommon elsewhere, it is the ninth most abundance coral on south Florida reefs, with about 1.6 colonies per 10 m^2 (Wagner et al., 2010). Substantial population declines have been noted for Curacao (Debrot et al., 1998) and the upper Florida Keys (Richardson and Voss, 2005) due to disease. Based on a histological study in southeast Florida this species is a gonochoric spawner, although some hermaphroditic colonies have been found within the southeast Florida population (Hoke, 2007). Minimum colony size at reproduction was 160 cm^2 and it is believe to spawn biannually. This coral has been documented offshore of the proposed project area, see Section 4.3.6.2 for more details.

3.4 FISH AND WILDLIFE RESOURCES

In addition to the federally listed species discussed above, there are flora and fauna that use the beach/ dune environment. Dunes are vegetated mounds of unconsolidated sediments that lie landward of the active beach. Dune formation occurs when winds carrying beach sediments encounter resistance from vegetation, thereby causing the wind to deposit this material. Dunes are comprised of finer sands, while those in the berm and beachface are coarser (Rogers and Nash, 2003). Dunes are dynamic geologic features that continually accrete and erode from factors such as seasonal fluctuations in wave height and storm activity (Rogers and Nash, 2003). The beach and dune community in the south Florida region is limited since most of the coastline is receding due to urban development and beach erosion (Johnson *et al.*, 1992), as well as sea level rise (Leatherman *et al*., 2000)

3.4.1 FLORA

Dune vegetation is essential to maintaining dune structure, and generally consists of hearty plants tolerant of extreme conditions such as sea oats, beach elder, trailing grasses and forbes (Duever, 1983; Johnson et al., 1992). In south Florida the typical beach vegetation community consists of sea rocket (*Cakile edentula*), beach morning glory (*Ipomoea pes-caprae*), beach elder (*Iva imbricate*), and sea purslane (*Sesuvium portulacastrum*) (Koch, 1992). A review of studies covering Florida dune vegetation concluded that 31 species of plants are commonly found in the beach and dune environment (Koch, 1992). The fore dune typically begins with sea oats (*Uniola paniculata*) and ends with sea grape (*Cocoloba uvifera*) at the dune crest (Koch et al. 1992).

Refer to section 3.2.1 of the GRR/EIS for further discussion of the flora associated with beach and dune communities in southeast Florida (USACE, 2004).

3.4.2 FAUNA

Few animals utilize the beach and dunes in the project area due to intense coastal development. The exposed environment of southeast Florida beaches leads to low diversity of organisms that can survive in the high-energy environment. Refer to section 3.5.1. of the GRR/EIS for a discussion of the faunal communities (i.e. shorebirds and infaunal organisms) associated with beach and dune environments in Southeast Florida (USACE, 2004).

3.5 ESSENTIAL FISH HABITAT

Sections 3.6 of the GRR/EIS defines Essential Fish Habitat (EFH) and discusses how EFH should be addressed for projects that may impact it (USACE, 2004). The South Atlantic Fishery Management Council identified various estuarine and marine areas as EFH, listed in Table 3. Lists of managed species that occur throughout the waters of the South Atlantic region are listed in Table 4.

Table 3. List of estuarine and marine EFH areas designated by the SAFMC. (SAFMC, 1998; NMFS, 2010)

ESTUARINE AREAS	MARINE AREAS
Estuarine emergent wetlands	Live/Hard bottoms
Estuarine scrub/shrub mangroves	Coral & coral reefs
Submerged aquatic vegetation	Artificial/manmade reefs
Oyster reefs & shell banks	Sargassum
Intertidal flats	Water Column
Palustrine emergent & forested wetlands	Unconsolidated bottom (soft sediments)
Aquatic beds	
Estuarine water column	

Table 4. Fishery Management Plans and managed species for the South Atlantic (NMFS, 2010).

Fishery Management Plans and Managed Species for the South Atlantic	
Shrimp Fishery Mgmt Plan brown shrimp – *Farfantepenaeus aztecus* pink shrimp – *F. duorarum* rock shrimp – *Sicvonia brevirostris* royal shrimp – *Pleoticus robustus* white shrimp – *Litopenaeus setiferus*	**Coastal Migratory Pelagic Fishery Mgmt Plan** cobia – *Rachycentron canadum* king mackerel – *Scomberomorus cavalla* spanish mackerel – *S. maculatus*
	Golden Crab Fishery Mgmt Plan golden crab – *Chaceon fenneri*
	Spiny Lobster Fishery Mgmt Plan caribbean spiny lobster – *Panulirus argus*
Snapper Grouper Fishery Mgmt Plan blackfin snapper – *Lutjanus buccanella* blueline tilefish – *C. microps* goliath grouper - *Epinephelus itajara* gray snapper - *L. griseus* greater amberjack - *Seriola dumerili* mutton snapper - *L. analis* red porgy - *Pagrus pagrus* red snapper - *L. campechanus* scamp - *Mycteroperca phenax* silk snapper - *L. vivanus* snowy grouper - *E. niveatus* speckled hind - *E. drummondhayi* vermilion snapper - *Rhomboplites aurorubens* yellowedge grouper - *E. flavolimbatus* warsaw grouper - *E. nigritus* white grunt - *Haemulon plumieri* wreckfish - *Polyprion americanus*	**Coral and Coral Reef Mgmt Plan** varied coral species and coral reef communites
	Calico Scallop Fishery Management Plan calico scallop - *Argopecten gibbus*
	Dolphin-Wahoo Fishery Management Plan common dolphin - *Coryphaena hippurus* pompano dolphin – *C. equiselis* wahoo - *Acanthocybium solanderi*
	Sargassum Fishery Management Plan sargassum - *Sargassum sp.*
	Red Drum Fishery Management Plan* red drum – *Sciaenops ocellatus*

***The Red Drum FMP is now managed by the Atlantic States Marine Fisheries Commission. All other FMPS are managed by SAFMC.

3.6 COASTAL BARRIER RESOURCES

Section 3.7 of the GRR/EIS has a detailed discussion of the Coastal Barrier Resources within Segment II of the Broward County SPP. There are two “otherwise protected areas” (Hugh Birch State Park (FL-19P) and John U Lloyd State Park (FL-20P)) and one CBRA unit (North Beach, P-14A). All of these areas are south of the proposed project area.

3.7 WATER QUALITY

Southeast Florida – including Miami-Dade, Broward, and Palm Beach Counties - is one of the more heavily urbanized areas in the State of Florida. In 1990, the total population of the three counties combined was approximately 4.06 million (1.26 million in Broward County). In 2000, the total combined population was approximately 5.01 million (1.62 million in Broward County).

By 2010, the population in Broward County increased 7.7% to 1.75 million, and the overall tri-county population reached 5.6 million (U.S. Census, 2012). The rapid population growth is a suspected contributor to the degradation of water quality along the coast, mainly through the discharge of nutrient-laden sewage and stormwater runoff into canals (FDEP, 2003).

Drainage of Broward County is facilitated by more than 266 miles of natural and dredged canals that traverse the county's urban corridor (Broward County Planning Council 1989). Overall, the hydrology of Broward County is highly manipulated by these water control structures, which have altered the natural hydroperiods and flows of the South Florida watershed. The primary drainage system is managed by the South Florida Water Management District (SFWMD) and consists of nine major canals and their corresponding drainage basins. These nine major canals, along with secondary and tertiary canals, eventually drain to the estuarine areas (e.g., Intracoastal Waterway, ICW). From the ICW, inlets provide discharge access to the Atlantic Ocean. Runoff can carry bacteria, viruses, oil and grease, toxic metals, and pesticides (FDEP, 2003). In addition to contributions from canals, nutrients and coliform bacteria can be introduced via septic tanks and disposal well discharges on Florida's east coast (USGS, 1992). The waters off the coast of Broward County are listed as Class III waters by the State of Florida. Class III category waters are suitable for recreation and propagation by fish and wildlife.

As part of the State's Healthy Beaches Program, biweekly water samples are collected at fifteen public beaches in Broward County for *enterococci* bacteria. In order to reduce the potential spread of disease, infections, or rashes, health advisories or warnings are issued by the Florida Department of Health when concentrations are elevated (FDH, 2012). Within Broward County, four (4) sample locations were issued an advisory due to elevated enterococcus levels on February 9, 2012 (FDH, 2012).

Turbidity is also one of the major factors affecting coastal water quality in South Florida, and is influenced by both natural (e.g. wave action) and human activity. Turbidity is a measure of the cloudiness of water- the cloudier the water, the greater the turbidity. Turbidity is caused by suspended matter such as clay, silt, and organic matter as well as plankton and other microscopic organisms, which interfere with the passage of light through the water. Expressed in Nephelometric Turbidity Units (NTU), turbidity can be quantified by measuring the light-scattering properties of the water. However, the properties of the material suspended in the water column that create turbid conditions are not reflected when measuring turbidity. The two reported major sources of turbidity in coastal areas are very fine organic particulate matter, and sand-sized sediments that are re-suspended around the seabed by local waves and currents (Dompe, 1993). Turbidity values are generally lowest in the summer months and higher in the fall, winter and spring, which correlate with storm events and elevated wave heights (CPE, 1989; Dompe, 1993). Heavy rainfall events can also lead to increased turbidity levels due to the associated release of large amounts of freshwater from the inlets into nearby coastal waters (CPE, 1989).

3.8 HAZARDOUS, TOXIC AND RADIOACTIVE WASTE

Section 3.9 of the GRR/EIS has a detailed discussion of Hazardous, Toxic and Radioactive Waste associated with Segment II of the Broward County SPP. The probability of contamination by hazardous wastes in the project area has been judges to be negligible. There are currently no hazardous, toxic and radioactive waste producers adjacent to the project site that discharge effluents near the Broward County shoreline.

3.9 AIR QUALITY

Refer to section 3.10 of the GRR/EIS (USACE, 2004) for a discussion on air quality within the proposed project area.

3.10 NOISE

Ambient noise levels in Broward County are low to moderate and are typical of recreational environments. The major noise producers include the breaking surf, adjacent commercial and residential areas, and traffic (boat, vehicular, and airplane).

3.11 AESTHETIC RESOURCES

The project area is comprised of 11.3 miles of Atlantic coastline that includes sporadic dune communities and an extensive dry beach community. The shoreline along Broward County has been highly developed by residential and commercial interests, and much of the shoreline is hardened. Derelict or nonfunctional outfall pipes and shoreline stabilization structures are intermittently spaced along the Broward County shoreline. Virtually all the upland areas surrounding Hillsboro Inlet in the northern part of Segment II have undergone extensive urban development. The man-made Port Everglades inlet was developed in 1927-1928. Much of the dune vegetation was cleared or reduced for the development of Port Everglades and adjacent urban areas.

3.12 RECREATION RESOURCES

Broward County boasts 24 miles of oceanfront shoreline that provides access to millions of residents and visitors each year. Beaches within Segment II include Hillsboro Beach, Pompano Beach, Lauderdale-by-the-Sea and Fort Lauderdale Beach. No Florida State or national wildlife refuges or management areas, forest, wilderness areas, trails, estuarine or research reserves exist along coastal Broward County (State of Florida, Division of Recreation and Parks, 1994d). The only official national or state recreational resource documented in the coastal areas of Segment II in Broward County is the Hugh Taylor Birch State Park. Also, North Beach in Broward County was acquired by the State of Florida under the “Save Our Coast Program” and is now a protected, lightly developed, public recreational beach (USACE, 1996). The 2000 Safe Parks and Land Preservation Bond Referendum authorized $400 million toward preserving and reclaiming remaining natural lands, as well as restoring the aging park system. That system includes 18 regional parks and nature centers and 21 natural area sites at various stages of completion, for a total of nearly 6,500 acres, run with an annual operating budget of more than $40 million and hosting an estimated five million visitors per year. In addition, the county also manages five

campgrounds and four water parks (Broward County, 2012a). Refer to section 3.13 of the GRR/EIS(USACE, 2004) for a discussion of recreational use of Broward County beaches.

3.13 CULTURAL RESOURCES

Potential cultural resources that may exist near the project area include archaeological resources or historic structures located in or near the project area or sand sources. As such, it is necessary to determine if any cultural resources exist within the project area and if they are eligible for listing on the National Register of Historic Places. The federal statutes associated with these actions include Section 106 of the National Historic Preservation Act of 1966, as amended (PL 89-665); the National Environmental Policy Act of 1969; the Archaeological Resources Protection Act of 1987; the Advisory Council on Historic Preservation Procedures for the Protection of Historic and Cultural Properties (36 CFR Part 800); and the Abandoned Shipwreck Act of 1987.

For construction of a truck-haul project, it is possible that historical resources located near the project area may be impacted. There is one land-based historical structure along the Segment II shoreline, south of the proposed project boundaries. The Bonnet House is a historic home in Fort Lauderdale, located at 900 Birch Road. Early settler Hugh Taylor Birch purchased the site on which the house now sits in 1895, although it has been suggested that there had been human activity at the site since 2000 B.C. After purchasing the property, Birch gifted it to his daughter and her husband whom began constructing the plantation-style house in 1920. The Bonnet House was eventually given to the Florida Trust for Historic Preservation in 1983. The house was listed in the National Register of Historic Places in 1984 and declared a historic landmark by the City of Fort Lauderdale in 2002. The encroachment of nearby development prompted the National Trust and the Florida Trust for Historic Preservation to list the Bonnet House as one of America's 11 most endangered sites in 2008 (National Register of Historic Places, 2013). Archaeological resources may also be present in or near the upland sand-mines, and may be deleteriously impacted during mining operations.

3.14 INVASIVE SPECIES

A survey of plants throughout the entire Segment II footprint dune habitat in 2011 located four species of invasive or exotic plants: beach naupaka, crowsfoot grass, Casuarina and Oleander.

4 ENVIRONMENTAL EFFECTS

This section is the scientific and analytic basis for the comparisons of the alternatives. See table 1 in section 2.0 Alternatives, for summary of impacts. The following includes anticipated changes to the existing environment including direct, indirect, and cumulative effects.

4.1 GENERAL ENVIRONMENTAL EFFECTS

Beach nourishment affects the infrastructural and economic aspects of the human environment. Beach nourishment can have considerable biological impacts, positive and negative, to the several components of the beach ecosystem including terrestrial arthropods, marine zoobenthos, microphytobentos, shorebirds, vascular plants, nesting sea turtles, and swimming marine fauna. Negative impacts dominate in short term, while long term impacts depend on the ecological recovery of the system, which is influenced by the project timing, project size and location, techniques employed, sand quality and quantity, and conditions prior to nourishment (Speybroeck et al., 2006). Positive impacts include protection of upland structures and infrastructure, restoration of eroded beach and dune habitat for wildlife nesting and roosting, as well as potential benefits to local economies due to increased use for recreation. The following sections describe the negative and positive impacts anticipated for the human environment as well as the abiotic and biotic components of the coastal system for each of the alternatives.

4.2 VEGETATION

4.2.1 PROPOSED ACTION, ALTERNATIVE 1 – FCCE-ONLY RENOURISHMENT ADDED INTO THE PROJECT LIFECYCLE

Much of the dune community along the Segment II shoreline has been lost due to a combination of development and erosion. Placement of sand on the beach would raise the beach and may contribute to development of a stable dune habitat for many plant and animal species through natural dune building processes. Stands of vegetation >25 square feet in area will be avoided. Less than 25 square feet in area will be replanted. Also, impacts at access areas (many are pedestrian access that will need to be widened. During construction, impacts to extant dune vegetation will be minimal, as operations will avoid placing sand directly onto the vegetation and construction vehicles will utilize already-existing access corridors.

4.2.2 ALTERNATIVE 2 – FCCE PLACEMENT CONGRUENT WITH RENOURISHMENT OF THE FULL CONSTRUCTION TEMPLATE

The impacts of this Alternative are similar to Alternative #1, but the beach would be widened seaward.

4.2.3 NO ACTION ALTERNATIVE (STATUS QUO)

A barrier island is a dynamic feature that naturally undergoes erosion of the beach and dune from the seaward side and accretion on the backside of the island. In this way, the island

essentially “moves” with changing sea states. It is this ability to adapt that allows these features to persist. However, heavy development along the Segment II shoreline prevents this natural erosion/accretion cycle from occurring, therefore sand will be progressively lost but not replenished naturally. The No Action alternative would allow for continued erosion of Broward County’s beaches. This may result in progressive loss and possible elimination of the remaining beach and dune habitat and the invaluable ecological services these areas provide. Most notably, loss of beach would threaten the continued nesting of threatened and endangered sea turtles that nest on Broward County beaches each year. It would also result in a reduction in foraging and nesting grounds for the many shorebirds and seabirds that frequent the Broward County shoreline.

Additionally, armoring measures that would likely be undertaken by property owners in the absence of nourishment would further reduce the dune habitat and result in negative impacts to the biological communities.

4.3 THREATENED AND ENDANGERED SPECIES

4.3.1 SEA TURTLES

4.3.1.1 Proposed Action Alternative 1 – FCCE-Only Renourishment Added into the Project LifeCycle

Placement of sand on an eroding beach has the potential to provide additional habitat to nesting sea turtles. If engineered properly, a severely eroded beach may become larger and more stable, thereby benefitting nesting and hatchling sea turtles. While nourishment can be beneficial in restoring nesting 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). Beach nourishment can cause physical alterations of nesting habitat that deter nesting, at least in the short term. Sand color is an important factor with the potential for impacts. Hatchlings exhibit temperature-dependent sex determination, therefore sand that is not the color typical of native beach will incubate the nest to an atypical temperature and hence change the sex ratio (Hays et al., 2001). Construction equipment on the beach, if present during nesting season, can cause avoidance by pregnant females or hatchling disorientation from lighting if construction is performed at night. However, this project will only be constructed during daylight hours. Negative impacts such as false crawls may occur if the sediment is too compacted or forms scarps. Since sand compaction is generally associated with hydraulic placement of sand due to water drainage after placement, this impact will be minimized by mechanical placement of the sand. Nonetheless, the effects of increased sand compaction and scarp formation can be greatly reduced or eliminated through compaction monitoring, mechanical tilling, and beach grading. Compaction monitoring is a state and federal permit requirement immediately following nourishment activities, prior to the nesting season commencement, and for at least two years following project completion. Tilling may eliminate the need for compaction monitoring but will be required if compaction monitoring is conducted and exceeds the 500 PSI

threshold. As per the USFWS SPBO, escarpments greater than 18 inches in height or 100 feet in length must be leveled prior to nesting season commencement.

There have been mixed results reported in studies measuring sea turtle hatchling success for nourished versus non-nourished beaches. Some studies have reported non-differences in hatching and emergence success of sea turtles between nourished versus non-nourished beaches in Florida, while others found substantial negative impacts to nesting, hatchling and emergence success. Section 4.3.1.1 of the GRR/EIS provides a review of some studies and analysis of other positive and negative impacts to sea turtles (USACE, 2004). Despite the greater availability of nesting habitat after a beach nourishment project, there are several important impacts that may occur within the first year post-construction that are mostly likely due to the changes in physical properties of the beach (Ernest and Martin, 1999; 78 FR 17999 18082). In comparison to natural beaches, there is a greater proportion of false crawls, and for those females that do nest, there is an increase in the time needed to excavate an egg chamber in compacted, un-tilled sand on engineered beaches. Additionally, there are more washouts that occur as a result of the more seaward nest placement that occurs on a wider, engineered beach than a more steeper-sloped natural beach. This problem may persist into the second year post-construction (78 FR 17999 18082).

Studies have shown that within two years of a nourishment event, however, nesting rates return to, or exceed pre-nourished levels (USFWS, 2012). The USACE has determined that the project is likely to adversely affect nesting sea turtles. Because a truck-haul project would not require use of dredges or other vessels, it is not likely that offshore sea turtle habitat would be impacted. A truck-haul approach minimizes the use of in-water vessels and the potential for entanglement, entrainment or strikes.

4.3.1.2 Alternative 2 – FCCE placement congruent with renourishment of the full construction template

The effects of Alternative #2 are the same as Alternative #1 for nesting sea turtles, however there are additional impacts associated with placement of material below the MHW line. This, along with burial of nearshore hardbottom as the beach profile reaches the estimated toe of fill (ETOF) may adversely impact nearshore sea turtle habitat. The nearshore hardbottom is especially important habitat for the green sea turtle foraging and juvenile development habitat. Algal species that are known food sources for green turtles have been documented in the nearshore environment, including *Gelidium, Dictyota, Dasya, Gracilaria, Hypnea* and *Bryothamnion* (Wershoven and Wershoven, 1988; 1992; Makowski et al., 2006). The project is expected to result in impacts to 0.19% of the available shallow colonized pavement and ridge feature within the boundaries of Segment II, that make up the nearshore hardbottom habitat that support these resources. This assessment was determined by dividing the area of the impact by the total mapped habitat within Segment II. Possible secondary impacts to macroalgae communities that serve as important foraging habitat include decreased photosynthetic rates due to turbidity and possible burial due to sedimentation. A more indepth discussion of green sea turtle utilization of the nearshore hardbottom habitat in Broward

County, as well as potential impacts from project construction can be found in section 4.3.1.1(c) of the GRR/EIS (USACE, 2004).

4.3.1.3 No Action Alternative (Status Quo)

The No Action Alternative will result in increased erosion and may result in partial or total loss of suitable nesting habitat, and reduced hatchling success. As 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 nourishment, 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). Additionally, the Segment II shoreline already is already characterized by hard armoring (seawalls) in some areas. No Action would cause these walls to become exposed, thus leading to loss of beach in front of these areas.

4.3.2 FLORIDA MANATEE

4.3.2.1 Proposed Action Alternative 1 – FCCE-Only Renourishment Added into the Project LifeCycle

The project will only be placing material above the Mean High Water mark, and as a result will have no effect on Florida manatees.

4.3.2.2 Alternative 2 – FCCE placement congruent with renourishment of the full construction template

Manatees are most likely to be impacted by support boats moving from dock areas through channels to the dredge vehicles (USACE, 1996). No manatee fatalities have ever occurred from dredge operations or nourishment operations of the District. No significant adverse impacts to manatees are anticipated with proper mitigative precautions that generally include the standard manatee protection construction conditions included in the project specifications and outlined in Section 4.28 Environmental Commitments.

4.3.2.3 No Action Alternative (Status Quo)

The No Action Alternative should have no effect on manatees.

4.3.3 SMALLTOOTH SAWFISH

4.3.3.1 Proposed Action Alternative 1 – FCCE-Only Renourishment Added into the Project LifeCycle

The project will only be placing material above the Mean High Water mark, and as a result will have no effect on smalltooth sawfish.

4.3.3.2 Alternative 2 – FCCE placement congruent with renourishment of the full construction template

Based on the low probability that smalltooth sawfish will enter the project area, and the use of a truck-haul approach instead of a dredge-and-fill approach, it is determined that the project may affect, but is not likely to adversely affect these species. The USACE determined that the unlikelihood of encountering these species deems the possibility of impact discountable.

4.3.3.3 No Action Alternative (Status Quo)

The No Action Alternative should have no effect on smalltooth sawfish.

4.3.4 PIPING PLOVER

4.3.4.1 Proposed Action Alternative 1 – FCCE-Only Renourishment Added into the Project LifeCycle

The project will result in the creation of additional resting/foraging habitat for the overwintering population. It is expected that birds in the area during construction will avoid the project site due to the presence of noise and heavy machinery.

4.3.4.2 Alternative 2 - FCCE Placement Congruent with Renourishment of the Full Construction Template

The impacts of this alternative are the same as Alternative #1.

4.3.4.3 No Action Alternative (Status Quo)

The No Action Alternative will result in continued erosion, loss of foraging and potential nesting habitat for the species.

4.3.5 BEACH JACQUEMONTIA

4.3.5.1 Proposed Action Alternative 1 – FCCE-Only Renourishment Added into the Project LifeCycle

Beach nourishment may impart both negative and positive impacts on the endangered dune plant *Jacquemontia reclinata*. In the short term, presence of construction equipment may mechanically damage any existing plants, while sand placement, if done improperly, may bury extant plants. However, 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 USACE determines the project will have no effect on this species.

4.3.5.2 Alternative 2 - FCCE Placement Congruent with Renourishment of the Full Construction Template

The impacts of this alternative are the same as Alternative #1.

4.3.5.3 No Action Alternative (Status Quo)

The No Action Alternative will result in on-going erosion, which will reduce habitat for beach Jacquemontia. It may also result in increased armoring, which would lead to permanent loss of beach habitat for the species. Due to the highly developed nature of the Segment II beaches, continued erosion may lead to the eventual degradation of what dune areas remain. Although only a few plants are known to exist within Segment II, the dune community still serves as potential habitat for the species. Major threats to survival of this species include highly fragmented habitat due to coastal development, and associated reproductive isolation that hinders genetic variability and reproduction (USFWS, 2007). Therefore, loss or reduction in the dune habitat would further threaten the survival of this listed species.

4.3.6 CORAL SPECIES

4.3.6.1 Proposed Action Alternative 1 – FCCE-Only Renourishment Added into the Project LifeCycle

The project will only be placing material above MHW, and as a result will have no effect on listed and proposed coral species.

4.3.6.2 Alternative 2 - FCCE Placement Congruent with Renourishment of the Full Construction Template

Section 4.6.4 and 4.6.5 of the EA for the Complete Segment II (UACE 2013b) project has a detailed analysis of the effects of the project on listed and proposed coral species in the project area. In summary, the Alternative would impact up to 15 colonies of *Acropora cervicornis* found in the project footprint. Of the seven coral species proposed for listing only *Dichocoenia stokesi* has been documented in the project footprint. Twenty-seven colonies were located during 2012 surveys. It is expected that the project will be required to relocate these colonies out of the project footprint and a genetic sample be taken from each relocated coral, as required as a condition of the NMFS biological opinion.

4.3.6.3 No Action Alternative (Status Quo)

The No Action Alternative will result in no increased impacts to *Acropora* species offshore of Broward County. It is possible that as erosion continues, more hardbottom habitat will become exposed creating additional habitat for *Acropora*. The No Action Alternative will also not impact the seven proposed coral species.

4.4 FISH AND WILDLIFE RESOURCES

4.4.1 PROPOSED ACTION ALTERNATIVE 1 – FCCE-ONLY RENOURISHMENT ADDED INTO THE PROJECT LIFECYCLE

Construction also would negatively impact the biological community that forage on and inhabit the beach, including macrofauna, infauna and shorebirds. Although no studies yet exist, it is possible that compaction caused by heavy construction equipment may result in smothering or crushing of infauna. Noise disturbance created by heavy machinery may drive birds from their

foraging or nesting activities (Speybroek et al., 2006). Section 4.5.1 of the GRR/EIS analyzes potential impacts to infaunal and shorebird species (USACE, 2004).

4.4.2 ALTERNATIVE 2 - FCCE PLACEMENT CONGRUENT WITH RENOURISHMENT OF THE FULL CONSTRUCTION TEMPLATE

Impacts to the beach and dune habitats will be the same as Alternative #1. The proposed project is expected to directly impact approximately 4.8 and 2.7 acres of hardbottom and unvegetated habitat, respectively by placement of fill below MHW. These impacts will be offset with in-kind mitigation in accordance with 33 CFR 332 based on results of a Uniform Mitigation Assessment Method analysis. Mitigation will consist of construction of a nearshore artificial reef composed of prefabricated habitat replication units scoped and sized according to the characteristics of the hardbottom habitat expected to be impacted.

4.4.3 NO ACTION ALTERNATIVE (STATUS QUO)

The No Action Alternative will result in increased erosion and may result in partial or total loss of suitable nesting, resting and foraging habitat. Additionally, the Segment II shoreline already is already characterized by hard armoring (seawalls) in some areas. No Action would cause these walls to become exposed, thus leading to loss of beach in front of these areas and may result in increased efforts for additional armoring to protect structures. This additional armoring would further remove habitat for fish and wildlife resources.

4.5 ESSENTIAL FISH HABITAT

4.5.1 PROPOSED ACTION ALTERNATIVE 1 – FCCE-ONLY RENOURISHMENT ADDED INTO THE PROJECT LIFECYCLE

The project will only be placing material above MHW, and as a result will have no effect on essential fish habitat.

4.5.2 ALTERNATIVE 2 - FCCE PLACEMENT CONGRUENT WITH RENOURISHMENT OF THE FULL CONSTRUCTION TEMPLATE

The proposed project will include fill activities which will impact Essential Fish Habitat. Categories of EFH that will be impacted include marine water column, live hardbottom, coral, coral reefs, and unconsolidated sediment (softbottom). The project will impact 4.9 acres of hardbottom identified as EFH. The water column from Dry Tortugas to Cape Hatteras serves as habitat for many marine fish and shellfish. Most marine fish and shellfish broadcast-spawn pelagic eggs and, thus, most species utilize the water column during some portion of their early life history (e.g. egg, larvae, and juvenile stages). Larvae of shrimp, lobsters, crabs, and larvae of reef, demersal and pelagic fishes are found in the water column (SAFMC, 1998). According to the SAFMC, nearshore shelf/oceanic waters provide EFH for the spiny lobster FMP (SAFMC, 2010). Although not listed as EFH in the South Atlantic region (SAFMC, 1998; Walsh et al., 2006), unconsolidated bottom (soft sediments) is included in descriptions of essential fish habitat for spiny lobster and snapper-grouper FMP's; the project area does include unconsolidated bottom habitat. The offshore hardbottom resources and marine water column

provide EFH for the snapper-grouper FMP; however, these resources are located outside the project area. No habitat areas of particular concern (HAPC) are located within the project area (NMFS, 2010). There is also designated EFH within the project area for several shark species (managed as HMS), including, but not limited to, great hammerhead, nurse shark, Caribbean reef shark and tiger shark.

Alternative 2 will not have any significant or long-term adverse impacts on EFH or managed species listed. There will be some short-term turbidity associated with fill placement, but these impacts will be limited to the duration of project construction and will not have long-term effects on water quality. Spiny lobster, snapper and grouper are motile species and may leave the project area during construction, returning upon completion of the project. There will be direct and indirect impacts to the nearshore hardbottom resources. These impacts will be offset by the appropriate compensatory mitigation. Standard construction Best Management Practices will be implemented to avoid undue turbidity reaching these sensitive habitats.

4.5.3 NO ACTION ALTERNATIVE (STATUS QUO)

Continuation of the status quo is not expected to result in any adverse impacts to EFH. As stated in the GRR/EIS (section 4.4.5), "…it is probable that maintenance of status-quo conditions would result in increased exposure of nearshore rock outcrops as the shoreline continues to erode at its present rate."(USACE, 2004). This, in turn, could potentially serve as additional EFH.

4.6 HISTORIC PROPERTIES

Potential impacts for upland fill material placement are the same for both alternatives. Cultural resources may be present in or near the upland sand mine(s) that will be providing fill material. Each of the mines being considered for the truck-haul alternative received full clearance from the Division of Historical Resources (DHR) and the State Historic Preservation Officer (SHPO) before construction of the mine. Letters from the Division of Historical Resources stating findings of no significant archaeological or historical resources at each mine can be found in Appendix B. Section 4.7 of USACE 2013b has a detailed discussion of potential impacts associated with implantation of Alternative #2. No impacts are associated with the No Action Alternative.

4.7 SOCIO-ECONOMIC

Section 4.8 of USACE 2013b and Section 4.8 of the 2004 GRR/EIS have detailed discussions of the socio-economic impacts associated with placement of sand on the Broward County Segment II beachfront. Both of those analyses are germane to this project and are incorporated by reference. The No Action Alternative would result in continued erosion along Segment II, resulting in damages to infrastructure including roads that could lead to millions of dollars of repair costs that would be borne by the local sponsor. Additionally, the loss of highway A1A could impede efforts to evacuate residents and visitors from the area during storm preparation efforts.

4.8 AESTHETICS

The No Action Alternative would result in decreased aesthetic value due to the narrowing of the beach and the potential for increased armoring. Both Alternatives would result in improved aesthetic value of the beach due to the taller or wider beach without erosional scarps. There may be temporary auditory and visual disturbance during construction activities.

4.9 RECREATION

The No Action Alternative would result in the loss of beach available for recreational activities and beachgoers may opt to visit other beaches. Both Alternatives result in increased beach space for recreational activities. There may be temporary disruption of recreational/fishing activities in active construction areas.

4.10 COASTAL BARRIER RESOURCES

There are no designated coastal barrier resources in the project area that would be affected by this project.

4.11 WATER QUALITY

4.11.1 PROPOSED ACTION ALTERNATIVE 1 – FCCE-ONLY RENOURISHMENT ADDED INTO THE PROJECT LIFECYCLE

The proposed alternative is not expected to result in water quality impacts because material is being placed above MHW, and will be completely on the dry beach. The submerged portion of the beach is already in equilibrium and as a result will not result in impacts associated with getting to an equilibrium state.

4.11.2 ALTERNATIVE 2 - FCCE PLACEMENT CONGRUENT WITH RENOURISHMENT OF THE FULL CONSTRUCTION TEMPLATE

For both Alternatives, construction will involve the direct, mechanical placement of sand above the MLW line to complete the construction berm. It is anticipated that project construction will not require a variance to the standard mixing zone of 150 m due to the planned use of high quality sand from an upland source. Turbidity may also be increased in the nearshore environment as the newly constructed beach adjusts to conditions and reaches the ETOF. However, turbidity will be minimized through preventative measures and monitoring efforts. The project will be constructed by mechanical placement of sand from trucks to the beach rather than hydraulic pumping of slurry onto the beach. The project will use high-quality processed sand from upland sand mines from which most fine material will have been removed, thereby reducing the extend of turbidity. In a recently completed truck-haul project, the 2011 Collier County Beach Nourishment, no turbidity violations were reported during construction (CPE, 2011a).

For Alternative 2, detailed in USACE 2013b, turbidity measurements may not accurately reflect the amount of sedimentation and siltation that occurs on adjacent reef communities. There is no direct correlation between turbidity and sedimentation rates, or between turbidity and total

suspended solids that can be uniformly applied across differing projects (Davies-Colley and Smith, 2001; Clarke and Wilber, 2008). The effects of sedimentation are a dose-response relationship, and the results of that relationship specific to dredging projects in SE Florida, has been previously reported. The effects of sedimentation, with proper *in situ* monitoring, showed no adverse effect on coral species in general. Section 4.25.2 of the GRR/EIS discusses turbidity recordings and sedimentation monitoring for various nourishment projects (USACE, 2004).

4.12 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

There are no known hazardous, toxic or radioactive wastes in the project areas that would be affected by the chosen alternative actions. There is a potential for hydrocarbon spills with dredging and construction equipment in the area, but accident and spill prevention plans delineated in the contract specifications should prevent most spills. The no-action alternative would not create situations to cause these potential impacts.

4.13 AIR QUALITY

The short-term impact from emissions by the construction equipment associated with the project will not significantly impact air quality. Exhaust emissions of the construction equipment would have a temporary effect on the air quality, but no permanent impacts are expected. The no-action alternative would have no impact upon air quality.

4.14 NOISE

Section 4.15 of the GRR/EIS very briefly discusses general noise affects (USACE, 2004). There are many sources of noise associated with the highly developed, urban setting of Segment II and the surrounding area. In-water noise is produced by engine or generator operation as commercial vessels enter and exit Port Everglades and anchor offshore. Recreational vessels also frequently traverse the area and enter and exit both Port Everglades and Hillsboro Inlet. Above the water, the greatest contributor to noise is air traffic associated with the Fort Lauderdale/Hollywood International Airport. Under the No Action Alternative, there will be no additional noise produced and therefore no impacts to the ambient noise levels on the beach.

Both alternatives will result in temporary elevation of ambient noise levels due to the heavy machinery involved with a truck haul project. Noise levels will be affected along the roads and bridges traversed by dump trucks, at the beach access points and staging areas where sand transfer will occur, and at the section of beach being filled. Construction equipment would be properly maintained to minimize these effects in compliance with local laws. Also, it is assumed that sand delivery and placement would be limited to daylight hours only due to safety and noise concerns (OAI, 2012). It is not expected that there will be any permanent or lasting impacts to above water noise levels. Although there will be some in-water work associated with sand placement below the MLW line with Alternative 2, no dredging equipment will be involved. Therefore, it is not anticipated that any significant noise impacts will result from this portion of the project. Small boats will be present throughout the duration of the project for the purposes of turbidity monitoring; however, noise generated by these vessels will be temporary and is not expected to significantly impact the marine environment.

4.15 REUSE AND CONSERVATION POTENTIAL

There is no potential for reuse associated with the proposed project activities; therefore this is not applicable to the proposed renourishment project. Energy requirements for the proposed alternatives would be confined to fuel for the dredge, labor transportation, and other construction equipment. The energy conservation potential of the use of sand from the proposed borrow areas is greater (requires less energy expenditure) than obtaining sand from any other distant sources.

4.16 URBAN QUALITY

No direct permanent impacts related to urban quality are expected as a result of the proposed project. Implementation of the proposed project would indirectly positively impact urban quality by restoration of lost land due to shoreline recession and an increase in the capacity for recreational beach activity, which would then lead to an increase in tax revenue and tourism commerce. The commercial business and residential properties along State Road A-1-A would benefit from the storm protection afforded by the project and incur less risk of property damage. The presence of construction equipment would temporarily detract from the aesthetics of the environment, thereby possibly temporarily affecting the visual aesthetics associated with urban quality in the Broward County metropolitan area. The no-action alternative would assume continued shoreline erosion and reduction of storm protection, and continued loss of recreational beach area with repercussions to storm damage reduction, tax revenue and tourism commerce.

4.17 SOLID WASTE

No impacts related to solid waste are expected as a result of this project. Precautionary measures will be included in the contract specifications for proper disposal of solid wastes. These precautionary measures included proper containment and avoidance of overflow conditions by emptying containers on a regular schedule. Disposal of any solid waste material into Atlantic waters will not be permitted.

4.18 DRINKING WATER

No municipal or private water supplies are located in or near the project site, therefore drinking water supplies will not be impacted by the implementation of the proposed project.

4.19 INVASIVE SPECIES

With the No Action Alternative, the invasive and exotic species are expected to stay in the dune habitats of the project area, potentially crowding out native species. By increasing the available habitat thought sand placement, both alternatives have the potential to allow the spread of invasive species.

4.20 CUMULATIVE IMPACTS

Cumulative impact is the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future

actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Table 22 of the GRR/EIS summarizes the impact of such cumulative actions by identifying the past, present, and reasonably foreseeable future condition of the various resources which are directly or indirectly impacted by the proposed action and its alternatives. The table also illustrates the with-project and without-project condition (the difference being the incremental impact of the project). Also illustrated is the future condition with any reasonable alternatives (or range of alternatives). The Section 4.25 of the 2004 GRR/EIS and Section 4.9 of the 2013 Segment II EA (USACE 2013b) include detailed Cumulative effects analysis and those analyses are incorporated by reference into this EA. Issues and effects identified in those documents remain pertinent to this nourishment.

The proposed action, in addition to past projects and any future actions, primarily impacts the beach and dune communities. Additionally for larger scale renourishments in the past and in the future nearshore hardbottom epibenthic and fish communities, and the offshore sand borrow areas and adjacent reef epibenthic communities would also be affected. The beach will continue to be maintained as an area suitable for shoreline protection, recreation, and wildlife habitat. Utilization of upland sources for future renourishment use may also involve natural resource impacts to habitats adjacent to the sand mines, such as xeric sand pine and scrub oak habitats adjacent to the Lake Wales Ridge. Repeated placement of pipeline with periodic renourishment, may have a direct negative impact on nearshore hardbottom communities depending on how the placement is designed and the area where the placement will occur. Future nourishment actions will be evaluated separately with respect to the present impact analyses and monitoring of the initial nourishment project. Broward County's creation of a GIS tool to document preproject conditions significantly reduces the effort needed to analyze the effects of future projects by overlaying data layers from post-construction monitoring events for comparison to the baseline data set.

The no-action alternative will allow for continued erosion of beaches, increasing the potential for storm related property damage and decreasing property values. No adverse environmental impacts to nearshore and offshore hardbottom habitats and fish communities are anticipated due to the no-action alternative. An increased exposure of nearshore hardbottom due to continued beach erosion is probable which, in turn, could provide increased habitat for surf zone fishes. Continued erosion of the beach could threaten the existence of the remaining dune vegetation and adjacent scrub habitat in Broward County, potential decreasing available habitat for birds and dune species. Continued shoreline recession would also reduce the amount of dry beach available for sea turtle nesting and may result in poor site selection by nesting females.

4.21 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

4.21.1 IRREVERSIBLE

An irreversible commitment of resources is one in which the ability to use and/or enjoy the resource is lost forever. One example of an irreversible commitment might be the mining of a mineral resource. Irreversible impacts here might include a sea turtle deciding not to nest on

this beach due to equipment on the beach during construction. This should change as soon as construction was complete. An additional irreversible commitment is the removal of beach fill material from the upland sand source. The removal of this material would constitute an irreversible act. The energy and fuel used during construction would also be an irreversible commitment of resources.

4.21.2 IRRETRIEVABLE

An irretrievable commitment of resources is one in which, due to decisions to manage the resource for another purpose, opportunities to use or enjoy the resource as they presently exist are lost for a period of time. An example of an irretrievable loss might be where a type of vegetation is lost due to road construction. Impacts from the placement of the sand on the beach which are temporary (benthic invertebrates, etc.), would be an irretrievable loss of that resource for the period of time it takes to recover.

4.22 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Those species that are not able to escape the construction area are expected to recolonize after project completion.

4.23 LOCAL SHORT-TERM USES AND MAINTENANCE/ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Shoreline protection using beach fill with periodic renourishment is an ongoing effort. Beach renourishment projects have a temporary and short-term impact on local offshore and nearshore biological resources. Most motile organisms in the beach habitat areas should be able to escape these areas during construction. Some less-motile individuals that are unable to escape from construction will be lost, but are expected to recolonize after project completion. There are expected to be short-term reductions in primary productivity and reproductive and feeding success of invertebrate species living in the fill area. The sustainability of these populations should not be negatively affected provided the creation of suitable replacement habitat prior to project impacts.

4.24 INDIRECT EFFECTS

A 1995 study for the U.S. Army Corps of Engineers Institute for Water Resources found no evidence that beach nourishment projects induce development along the protected shoreline (Cordes and Yezer, 1995). Pilkey and Dixon (1996) state that beach replenishment frequently leads to more development in greater density within shorefront communities, necessitating future replenishment or more drastic stabilization measures.

Dean (1999) also notes that the very existence of a beach nourishment project can encourage more development in coastal areas. Following completion of a 1982 Miami Beach shore protection project, investment in new and updated facilities substantially increased tourism (National Research Council, 1995). Increased building density immediately adjacent to the beach often resulted as older buildings were replaced by much larger ones that accommodated more beach users. Overall, shoreline management creates an upward spiral of initial protective

measures resulting in more expensive development which leads to the need for more and larger protective measures. Increased shoreline development may adversely affect sea turtle nesting success. Greater development may support larger populations of mammalian predators, such as foxes and raccoons (National Research Council, 1990a), and can also result in greater adverse effects due to artificial lighting.

4.25 COMPATIBILITY WITH FEDERAL, STATE, AND LOCAL OBJECTIVES

The Federal objective is to contribute to national economic development consistent with protecting the nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. Federal planning concerns other than economic include environmental protection and enhancement, human safety, social well being, and cultural and historical resources.

Federal and County objectives include (1) the reduction of expected storm damages through beach nourishment and other project alternatives; (2) maintaining beaches as suitable recreational areas; (3) maintaining suitable beach habitat for nesting sea turtles, invertebrate species, and shorebirds; and (4) maintaining commerce associated with beach recreation in Broward County. The proposed Broward County Shore Protection Project is consistent with Federal and Local objectives and with the State's Coastal Zone Management Plan.

4.26 CONFLICTS AND CONTROVERSY

In recent years, resource agencies, scientists and some environmental organizations have expressed concern about the impact of beach restoration and maintenance activities on species that use the beach as nesting and foraging habitats.

In response to this controversy, the Corps has subjected the regulatory compliance determination for the Broward County Shore Protection Project, to full review under the National Environmental Policy Act (NEPA). While public concern for impacts to beach and dune habitats cannot be fully alleviated simply by analysis in an EA, the issues of concern will be more closely examined and the sufficiency of measures to avoid, minimize, and mitigate for impacts to resources can be better examined.

4.27 UNCERTAIN, UNIQUE, OR UNKNOWN RISKS

The proposed Broward County Shore Protection Project does not involve any activities that have not been previously utilized during past renourishment activities performed in Broward County or along the south Florida Atlantic Coast shoreline. Precautionary measures will be included in the contract specifications to ensure that there are no impacts related to hazardous, toxic or solid waste; and necessary corrective measures will be undertaken as required by the permits and law in the unlikely event that any unacceptable impacts occur.

4.28 PRECEDENT AND PRINCIPLE FOR FUTURE ACTIONS

As stated above, the proposed Broward County Shore Protection Project does not involve any activities that have not been previously utilized during past renourishment activities performed

in Broward County. These beach nourishment projects include Hollywood/Hallandale (1971, 1979, 1991); John U. Lloyd State Park (1976/77, 1989); Pompano Beach (1970); Pompano Beach/Lauderdale-By-The-Sea (1983) or along the south Florida Atlantic coast shoreline (Palm Beach through Miami-Dade Counties).

4.29 ENVIRONMENTAL COMMITMENTS

The U.S. Army Corps of Engineers and contractors commit to avoiding, minimizing or mitigating for adverse effects during construction activities by including the following commitments in the contract specifications:

Protection of Sea Turtles
The reasonable and prudent measures and terms and conditions of the August 22, 2011 Statewide Programmatic Biological Opinion are incorporated by reference and the Corps will incorporate them into the project plans and specifications and will require the contractor to abide by those requirements.

Protection of Piping Plover
The applicable reasonable and prudent measures and terms and conditions of the May 22, 2013 Piping Plover Programmatic Biological Opinion are incorporated by reference and the Corps will incorporate them into the project plans and specifications and will require the contractor to abide by those requirements.

Protection of Migratory Birds
The Corps will incorporate the standard migratory bird protection protocols into the project plans and specifications and will require the contractor to abide by those requirements.

Protection of Manatees
When in-water vessels are used to monitor turbidity during construction, the standard manatee construction protection protocols will be implemented as required in the Corps' project specifications.

4.30 COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

4.30.1 NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

Environmental information on the project has been compiled and this Environmental Assessment has been prepared. The project is in compliance with the National Environmental Policy Act.

4.30.2 ENDANGERED SPECIES ACT OF 1973

Because no material is being placed below Mean High Water, USACE has made a "No Affect" determination for ESA species under NMFS' jurisdiction. Consultation was initiated with USFWS on February 26, 2013, and completed on May 9, 2013 under the Statewide Programmatic Biological Opinion and again on May 20, 2013 under the Statewide Programmatic and the

Programmatic Piping Plover Biological Opinion (Appendix B). This project was fully coordinated under the Endangered Species Act and is therefore, in full compliance with the Act.

4.30.3 NATIONAL HISTORIC PRESERVATION ACT OF 1966 (INTER ALIA)

The Corps determined that the proposed action will not affect historic properties included in or eligible for inclusion in the National Register of Historic places. Such properties are not located in the affected area. Consultation with the Florida State Historic Preservation Officer (SHPO) and appropriate federally recognized tribes was initiated in accordance with the National Historic Preservation Act of 1966, as amended, and as part of the requirements and consultation processes contained within the NHPA implementing regulations of 36 CFR 800. Copies of these letters have been placed in Appendix B.

The proposed activity is also in compliance with the following:

-Archeological Resources Protection Act (96-95)
-American Indian Religious Freedom Act (PL 95-341)
-Executive Order 11593 (Protection and Enhancement of the Cultural Environment)
-Executive Order 13007 (Indian Sacred Sites)
-Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments)
-Presidential Memo of 1994 on Government to Government Relations with Native American Tribal Governments

4.30.4 CLEAN WATER ACT OF 1972

The project is in compliance with this Act. No material is being placed below MHW and as a result, a Section 401 water quality certification from the State of Florida is not required. All State water quality standards would be met. A Section 404(b) evaluation is not required because material is not being placed below MHW.

4.30.5 CLEAN AIR ACT OF 1972

The short-term impacts from construction equipment associated with the project would not significantly impact air quality. No air quality permits would be required for this project. Broward County is designated as an attainment area for federal air quality standards under the Clean Air Act. Because the project is located within an attainment area, USEPA's General Conformity Rule to implement Section 176(c) of the Clean Air Act does not apply and a conformity determination is not required.

4.30.6 COASTAL ZONE MANAGEMENT ACT OF 1972

A federal consistency determination in accordance with 15 CFR 930 Subpart C was provided to the state of Florida under separate letter dated June 6, 2013 and is included in this report in Appendix B. The State has determined that, at this stage, the project is conditionally consistent with the Florida Coastal Zone Management Program (see email dated June 26, 2013 from Roxanne Dow of FLDEP concurring with our consistency determination in Appendix B).

4.30.7 FARMLAND PROTECTION POLICY ACT OF 1981

No prime or unique farmland would be impacted by implementation of this project. This act is not applicable.

4.30.8 WILD AND SCENIC RIVER ACT OF 1968

No designated Wild and Scenic river reaches would be affected by project related activities. This act is not applicable.

4.30.9 MARINE MAMMAL PROTECTION ACT OF 1972

The project will not place material below MHW, and as a result, will not impact marine mammals. As a result, the Act does not apply.

4.30.10 ESTUARY PROTECTION ACT OF 1968

No designated estuary would be affected by project activities. This act is not applicable.

4.30.11 FEDERAL WATER PROJECT RECREATION ACT

The principles of the Federal Water Project Recreation Act, (Public Law 89-72) as amended, have been fulfilled by complying with the recreation cost sharing criteria as outlined in Section 2 (a), paragraph (2). Another area of compliance includes the public beach access requirement on which the renourishment project hinges (Section 1, (b)).

4.30.12 SUBMERGED LANDS ACT OF 1953

The project would occur on submerged lands of the State of Florida. The project has been coordinated with the State and is in compliance with the act.

4.30.13 COASTAL BARRIER RESOURCES ACT AND COASTAL BARRIER IMPROVEMENT ACT OF 1990

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

4.30.14 RIVERS AND HARBORS ACT OF 1899

The proposed work would not obstruct navigable waters of the United States. The proposed action has been subject to the public notice, public hearing, and other evaluations normally conducted for activities subject to the act. The project is in full compliance.

4.30.15 ANADROMOUS FISH CONSERVATION ACT

Anadromous fish species would not be affected. The project has been coordinated with the National Marine Fisheries Service and is in compliance with the act.

4.30.16 MIGRATORY BIRD TREATY ACT AND MIGRATORY BIRD CONSERVATION ACT

No migratory birds would be affected by project activities. The project is in compliance with these acts.

4.30.17 MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT

The term "dumping" as defined in the Act (3[33 U.S.C. 1402](f)) does not apply to the disposal of material for beach nourishment or to the placement of material for a purpose other than disposal (i.e. placement of rock material as an artificial reef or the construction of artificial reefs as mitigation). Therefore, the Marine Protection, Research and Sanctuaries Act does not apply to this project. The disposal activities addressed in this EA have been evaluated under Section 404 of the Clean Water Act.

4.30.18 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

Material is not being placed below MHW, and a result, the project will have no effect on designated Essential Fish Habitat.

4.30.19 UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT OF 1970.

The purpose of PL 91-646 is to ensure that owners of real property to be acquired for Federal and Federally assisted projects are treated fairly and consistently and that persons displaced as a direct result of such acquisition will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. The project does not involve real property acquisition and/or displacement of property of property owners or tenants.

4.30.20 E.O. 11990, PROTECTION OF WETLANDS

No wetlands would be affected by project activities. This project is in compliance with the goals of this Executive Order.

4.30.21 E.O. 11988, FLOOD PLAIN MANAGEMENT

The project is in the base flood plain (100-year flood) and has been evaluated in accordance with this Executive Order. Project is in compliance.

4.30.22 E.O. 12898, ENVIRONMENTAL JUSTICE

The project will not result in adverse human health of environmental impacts, and will not disproportionately impact any minority of low-income populations. The activity will not impact subsistence consumption of fish and wildlife.

4.30.23 E.O. 13089, CORAL REEF PROTECTION

The proposed project will not place material below Mean High Water, and as a result, will not impact species, habitats of other natural resources associated with coral reefs of Broward County. The project was specifically designed to prevent placement of material that otherwise would have impacted species, habitats and other natural resources associated with coral reefs. The project is in compliance with this Executive Order.

4.30.24 E.O. 13112, INVASIVE SPECIES

The project will not affect the status of invasive species, negatively or positively. The plans and specifications include requirements for the contractor to inspect equipment and clean equipment to prevent spread of existing invasive species.

4.30.25 E.O. 13186, MIGRATORY BIRDS.

This Executive Order requires, among other things, a Memorandum of Understanding (MOU) between the Federal Agency and the U.S. Fish and Wildlife Service 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 non-Federal sponsor. Control and ownership of the project lands remain with a non-Federal interest. Measures to avoid the destruction of migratory birds and their eggs or hatchlings are described in a section above on the Migratory Bird Treaty Act.

4.30.26 E.O. 13045, PROTECTION OF CHILDREN

Under this Executive Order, each federal agency (a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

The proposed placement of sand on Broward SPP Segment II for the FCCE project will not result in environmental health risks or safety risks that may have a disproportionate affect on children. Children may be present on the beach, north and south of the construction area during construction operations; however, safety exclusion zones will be in place and safety barriers will prevent the public and children from entering the construction zone. As a result, none of the construction activities should have an impact on children in the vicinity.

5 LIST OF PREPARERS

5.1 PREPARERS

Name	Discipline	Affiliation	Role
Terri Jordan-Sellers	Biologist	USACE-SAJ	Environmental Assessment and Appendices

5.2 REVIEWERS

Name	Affiliation	Role
Kenneth Dugger	USACE	NEPA Review
Angela Dunn	USACE	
Jason Spinning	USACE	
Geoff Klug	USACE	Water Quality and Permitting

6 PUBLIC INVOLVEMENT

6.1

A Notice of Availability of the final FONSI/EA will be prepared and sent to interested parties and stakeholders without a 30-day comment period.

6.2 AGENCY COORDINATION

Any agency coordination letters are in Appendix B. Coordination for this project was conducted under the multi-agency FCCE working group with multiple federal and state agencies participating in bi-weekly meetings.

6.3 LIST OF RECIPIENTS

Copies of the final FONSI and Notice of Availability were mailed to the mailing list is in Appendix C.

REFERENCES

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APPENDIX A - COASTAL ZONE MANAGEMENT CONSISTENCY

From: Dunn, Angela E SAJ
To: Jordan-Sellers, Terri SAJ
Subject: FW: Federal Consistency Determination and CZM Transmittal-Broward II FCCE Truck Haul (UNCLASSIFIED)
Date: Thursday, June 27, 2013 7:58:47 AM

Classification: UNCLASSIFIED
Caveats: NONE

Angie Dunn
PPD-ES
x2108
(BB) 904.563.6775

-----Original Message-----
From: Dow, Roxane [mailto:Roxane.Dow@dep.state.fl.us]
Sent: Tuesday, June 25, 2013 4:50 PM
To: Dunn, Angela E SAJ
Cc: Milligan, Lauren
Subject: RE: Federal Consistency Determination and CZM Transmittal-Broward II FCCE Truck Haul (UNCLASSIFIED)

We will be calling this 'conditionally consistent" pending all the requirements of the regular permitting requirements required under Chapter 161, Florida Statutes, per the CFR.

[16 CFR 930.39
(e) State permit requirements. Federal law, other than the CZMA, may require a Federal agency to obtain a State permit. Even when Federal agencies are not required to obtain State permits, Federal agencies shall still be consistent to the maximum extent practicable with the enforceable policies that are contained in such State permit programs that are part of a management program.]

As noted in the pre-application conference, we are concerned about ponding and scarping in placement design, and one cross section isn't enough. We will need concurrence from the local government as to compliance with zoning and setbacks. There may be other issues, as it is in review by a number of folks.

We are also concerned about the reaction of the local government and citizens, but I don't know how to approach that yet. Will keep you posted.

Roxane R. Dow
Environmental Specialist III
Beaches, Mines and ERP Support Program
Divison of Water Resource Management
Florida Department of Environmental Protection
3900 Commonwealth Boulevard Mail Station 300
Tallahassee, Florida 32399-3000
Telephone: 850-922-7852
Mobile: 850-322-5773
roxane.dow@dep.state.fl.us

-----Original Message-----
From: Dunn, Angela E SAJ [mailto:Angela.E.Dunn@usace.army.mil]
Sent: Tuesday, June 25, 2013 4:31 PM
To: Dow, Roxane
Cc: Milligan, Lauren

Subject: RE: Federal Consistency Determination and CZM Transmittal-Broward II FCCE Truck Haul (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Roxane,

Wanted to check in to see if anything came out of your internal meeting last week concerning Federal CZM Consistency Determination provided to Clearinghouse on 6/7/13. Please let me know if you, or other DEP staff, need any additional information to facilitate your review.

Angie Dunn
PPD-ES
x2108
(BB) 904.563.6775

-----Original Message-----
From: Milligan, Lauren [mailto:Lauren.Milligan@dep.state.fl.us]
Sent: Friday, June 07, 2013 11:49 AM
To: Klug, Geoffrey SAJ
Cc: Jordan-Sellers, Terri SAJ; Dunn, Angela E SAJ
Subject: RE: Federal Consistency Determination and CZM Transmittal-Broward II FCCE Truck Haul

Thanks, Geoffrey:

RE: Department of the Army, Jacksonville District Corps of Engineers - Consistency Determination - Broward County Segment II Flood Control and Coastal Emergency Act (FCCE Act) Truck Haul Beach Renourishment Project, South of Hillsboro Inlet - Broward County, Florida.

SAI # FL201306076613C

Clearinghouse Letter Due: 7/22/2013

Got it - will send to DEP, FWC and SHPO staffs for review. Though this project may not require a separate WQC from the Department, would this upland beach renourishment activity be covered by the attached JCP Modification No. 0163435-014-JN time extension or eventually be covered under the pending JCP Application No. 0314535-001-JC? If so, I don't think you'd need to get separate CZM approval through our review process.

Lauren

Lauren P. Milligan, Environmental Manager

Florida State Clearinghouse

Florida Department of Environmental Protection

3900 Commonwealth Blvd, M.S. 47

Tallahassee, FL 32399-3000

ph. (850) 245-2170

fax (850) 245-2190

Please take a few minutes to share your comments on the service you received from the department by clicking on this link DEP Customer Survey <http://survey.dep.state.fl.us/?refemail=Lauren.Milligan@dep.state.fl.us> .

From: Klug, Geoffrey SAJ [mailto:Geoffrey.M.Klug@usace.army.mil]
Sent: Thursday, June 06, 2013 4:14 PM
To: Milligan, Lauren
Cc: Jordan-Sellers, Terri SAJ; Dunn, Angela E SAJ
Subject: Federal Consistency Determination and CZM Transmittal-Broward II FCCE Truck Haul

Ms. Milligan:

The attached documents are being provided by the U.S. Army Corps of Engineers, Jacksonville District for review under the Coastal Zone Management Act. The Federal Consistency Determination is included. The proposed project, Broward County Segment II Flood Control and Coastal Emergency Act Truck Haul, would place material above the Mean High Water as described in the attached documents. Therefore, a water quality certificate pursuant to Section 401 of the Clean Water Act is not required.

Hard copies of the attached documents are being mailed to you as well. Any questions concerning the project or the Federal Consistency Determination should be directed to Ms. Terri Jordan-Sellers by telephone at 904-232-1817 or by email at Terri.Jordan-Sellers@usace.army.mil <mailto:Terri.Jordan-Sellers@usace.army.mil> or Mr. Geoffrey Klug at 904-232-3608 or Geoffrey.m.klug@usace.army.mil <mailto:Geoffrey.m.klug@usace.army.mil> .

Respectfully,

Geoffrey Klug, EI

U.S Army Corps of Engineers

Jacksonville District

(904) 232-3608

Geoffrey.m.klug@usace.army.mil <mailto:Geoffrey.m.klug@usace.army.mil>

Classification: UNCLASSIFIED
Caveats: NONE

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning and Policy Division
Environmental Branch

JUN 06 2013

Ms. Lauren P. Milligan
Florida Department of Environmental Protection
State Clearinghouse
3900 Commonwealth Boulevard, MS 47
Tallahassee, Florida 23299-3000

Dear Ms. Milligan,

The following information is being provided by the U.S. Army Corps of Engineers, Jacksonville District (Corps) for review under the Coastal Zone Management Act. The Federal Consistency Determination (CD) has been included with this letter as well. The proposed project, Broward County Segment II Flood Control and Coastal Emergency Act (FCCE) Truck Haul, would place material above the Mean High Water (MHW) as described below. Therefore, a water quality certificate pursuant to Section 401 of the Clean Water Act is not required.

The activity entails the renourishment of 5.1 miles of critically eroded shoreline immediately south of Hillsboro Inlet, between Florida Department of Environmental Protection (FDEP) Range Monuments R-26 to R-53 (map provided in Enclosure 1). The design beach has a berm elevation of +8.4 feet, NAVD88. The total volume of fill placed along the project will be roughly 115,000 cubic yards. As this work is authorized under the FCCE Act, it is notable that only the volume of material determined to be lost due to the disaster (primarily Hurricane Sandy) will be placed. The width of the restored beach is controlled by the pre-project MHW and will not be extended seaward by the project. Placement of fill landward of the ECL will not be allowed in locations where easements have not been obtained. (An example cross-section is provided in Enclosure 1).

The sand for the proposed project will be from an upland source, truck hauled to the project location. The upland source will be selected by the Corps' contractor and shall meet the physical criteria required in the contract specifications (example contract language is provided in Enclosure 2).

Multiple measures will be taken to preserve and protect the environmental resources in the project area. With respect to marine turtles, the activity will be undertaken in accordance with the Statewide Programmatic Biological Opinion (SPBO) for beach placement of sand issued by the U.S. Fish and Wildlife Service (FWS). All the binding terms and conditions of the SPBO will be applied to this project. Notably, all construction activity on the beach will take place outside of the main part of turtle nesting season. The FWS coordination letters will be provided.

Protection of existing vegetation is an important requirement of the project. Stands of dune/beach vegetation with a minimum contiguous area of 25 square feet will be avoided. If encountered, fill may be placed at vegetated areas of lesser extent, however comparable vegetation will be replanted. It is also acknowledged that vegetation may be impacted at the construction access areas. The contractor will be required to submit a Vegetation Protection Plan identifying protection measures to be implemented, plants to be impacted and revegetation plans for the Contracting Officer's approval.

Furthermore, the decision to only place fill above the mean high water line was based on avoiding impacts to the hardbottom and coral resources in the vicinity of the project. Given the very small fill density (~4cy/ft avg), placement above mean high water and sediment characteristics, no effects to benthic resources are anticipated.

The Corps has determined the proposed project, implemented under the FCCE Act, is consistent with the goals of the Florida Coastal Management Program. Concurrence on this Federal CD is requested within 45 days of receipt of this letter and attached documentation. Any questions concerning the project or the Federal Consistency Determination should be directed to Ms. Terri Jordan-Sellers by telephone at 904-232-1817 or by email at Terri.Jordan-Sellers@usace.army.mil or Mr. Geoffrey Klug by telephone at 904-232-3608 or by email at Geoffrey.Klug@usace.army.mil ..

Sincerely,

Eric Summa
Chief, Environmental Branch

Enclosures

COASTAL ZONE MANAGEMENT CONSISTENCY

FLORIDA COASTAL ZONE MANAGEMENT PROGRAM
FEDERAL CONSISTENCY DETERMINATION

BROWARD COUNTY SEGMENT II FCCE PROJECT
BROWARD COUNTY, FLORIDA

Enforceable Policy. Florida State Statues considered "enforceable policy" under the Coastal Zone Management Act (www.dep.state.fl.us/cmp/federal/24_statutes.htm).

Applicability of the Coastal Zone Management Act. The following table summarizes the process and procedures under the Coastal Zone Management Act for Federal Actions and for non-Federal Applicants*.

Item	Non Federal Applicant (15 CFR 930, subpart D)	Federal Action (15 CFR 930, subpart C)
Enforceable Policies	Reviewed and approved by NOAA (in FL www.dep.state.fl.us/cmp/federal/24_statutes.htm)	Same
Effects Test	Direct, Indirect (cumulative, secondary), adverse or beneficial	Same
Review Time	6 months from state receipt of Consistency Certification (30-days for completeness notice) Can be altered by written agreement between State and applicant	60 Days, extendable (or contractible) by mutual agreement
Consistency	Must be Fully Consistent	To Maximum Extent Practicable**
Procedure Initiation	Applicant provides Consistency Certification to State	Federal Agency provides "Consistency Statement" to State
Appealable	Yes, applicant can appeal to Secretary (NOAA)	No (NOAA can "mediate")
Activities	Listed activities with their geographic location (State can request additional listing within 30 days)	Listed or Unlisted Activities in State Program
Activities in Another State	Must have approval for interstate reviews from NOAA	Interstate review approval NOT required
Activities in Federal Waters	Yes, if activity affects state waters	Same

* There are separate requirements for activities on the Outer Continental Shelf (subpart E) and for "assistance to an applicant agency" (subpart F).
** Must be fully consistent except for items prohibited by applicable law (generally does not count lack of funding as prohibited by law, 15 CFR 930.32).

COASTAL ZONE CONSISTENCY STATEMENT BY STATUTE/ENFORCEABLE POLICY

1.1 CHAPTER 161, F.S., BEACH AND SHORE PRESERVATION

Coastal areas are among the state's most valuable natural, aesthetic, and economic resources; and they provide habitat for a variety of plant and animal life. The state is required to protect coastal areas from imprudent activities that could jeopardize the stability of the beach-dune system, accelerate erosion, provide inadequate protection to upland structures, endanger adjacent properties, or interfere with public beach access. Coastal areas used, or likely to be used, by sea turtles are designated for nesting, and the removal of vegetative cover that binds sand is prohibited. This statute provides policy for the regulation of construction, reconstruction, and other physical activities related to the beaches and shores of the state. Additionally, this statute requires the restoration and maintenance of critically eroding beaches.

Response: *The proposed plans and information will be submitted to the state in compliance with this chapter. The purpose of the proposed project is to restore a portion of Broward County Beaches damaged by Hurricane Sandy.*

1.2 CHAPTER 163, PART II, F.S., INTERGOVERNMENTAL PROGRAMS: GROWTH POLICY, COUNTY AND MUNICIPAL PLANNING: LAND DEVELOPMENT REGULATION

The purpose of this statute is to provide for the implementation of comprehensive planning programs to guide and control future development in the state. The comprehensive planning process encourages units of local government to preserve, promote, protect, and improve the public health, safety, comfort, good order, appearance, convenience, law enforcement and fire prevention, and general welfare; prevent the overcrowding of land and avoid undue concentration of population; facilitate the adequate and efficient provision of public facilities and services; and conserve, develop, utilize, and protect natural resources within their jurisdictions.

Response: The proposed project meets the primary goal of the State Comprehensive Plan through preservation and protection of the shorefront development and infrastructure including beach and dune systems.

1.3 CHAPTER 186, F.S., STATE AND REGIONAL PLANNING

The state comprehensive plan provides basic policy direction to all levels of government regarding the orderly social, economic, and physical growth of the state. The goals, objectives, and policies of the state comprehensive plan are statewide in scope and are consistent and compatible with each other. The statute provides direction for the delivery of governmental services, a means for defining and achieving the specific goals of the state, and a method for evaluating the accomplishment of those goals.

Response: The proposed project meets the primary goal of the State Comprehensive Plan through preservation and protection of the shorefront development and infrastructure through renourishment of the beach system.

1.4 CHAPTER 252, F.S., EMERGENCY MANAGEMENT

The state of Florida is vulnerable to a wide range of emergencies, including natural, technological, and manmade disasters and this vulnerability is exacerbated by the tremendous growth in the state's population, especially the growth in the number of persons residing in coastal areas, in the elderly population, in the number of seasonal vacationers, and in the number of persons with special needs. This statute directs the state to reduce the vulnerability of its people and property to natural and manmade disasters; prepare for, respond to and reduce the impacts of disasters; and decrease the time and resources needed to recover from disasters. Disaster mitigation is necessary to ensure the common defense of Floridians' lives and to protect the public peace, health, and safety. The policies provide the means to assist in the prevention or mitigation of emergencies that may be caused or aggravated by the inadequate planning or regulation of facilities and land uses. State agencies are directed to keep land uses and facility construction under continuing study and identify areas that are particularly susceptible to natural or manmade catastrophic occurrences.

Response: The proposed project involves the placing of beach compatible material onto an eroding beach as a protective means for residents, development, and infrastructure in response to damage inflicted by Hurricane Sandy. Therefore, this project would be consistent with the efforts of Division of Emergency Management.

1.5 CHAPTER 253, F.S., STATE LANDS

The Board of Trustees of the Internal Improvement Trust Fund (Trustees) is vested and charged with the acquisition, administration, management, control, supervision, conservation, protection, and disposition of all lands owned by the state. Lands acquired for preservation, conservation and recreation serve the public interest by contributing to the public health, welfare and economy. In carrying out the requirements of this statute, the Trustees are directed to take necessary action to fully: conserve and protect state lands; maintain natural conditions; protect and enhance natural areas and ecosystems; prevent damage and depredation; and preserve archaeological and historical resources. All submerged lands are considered single-use lands to be maintained in natural condition for the propagation of fish and wildlife and public recreation. Where multiple-uses are permitted, ecosystem integrity, recreational benefits and wildlife values are conserved and protected.

Response: The proposed beach nourishment would improve the recreational beach and maintain potential sea turtle nesting habitat. No submerged resources are located within the area proposed to receive fill as proposed fill is landward of the MHW. The proposed project would comply with the intent of this chapter.

1.6 CHAPTER 258, F.S., STATE PARKS AND PRESERVES

The statute addresses the state's administration of state parks, aquatic preserves, and recreation areas, which are acquired to emblemize the state's natural values and to ensure that these values are conserved for all time. Parks and preserves are managed for the non-depleting use, enjoyment, and benefit of Floridians and visitors and to contribute to the state's tourist appeal. Aquatic Preserves are recognized as having exceptional biological, aesthetic, and scientific value

and are set aside for the benefit of future generations. Disruptive physical activities and polluting discharges are highly restricted in aquatic preserves. State managed wild and scenic rivers possess exceptionally remarkable and unique ecological, fish and wildlife, and recreational values and are designated for permanent preservation and enhancement for both the present and future.

Response: The proposed project will not impact any State parks or preserves. This chapter is not applicable.

1.7 CHAPTERS 259, F.S., LAND ACQUISITION FOR CONSERVATION OR RECREATION

The statute addresses public ownership of natural areas for purposes of maintaining the state's unique natural resources; protecting air, land, and water quality; promoting water resource development to meet the needs of natural systems and citizens of this state; promoting restoration activities on public lands; and providing lands for natural resource based recreation. Lands are managed to protect or restore their natural resource values, and provide the greatest benefit, including public access, to the citizens of this state.

Response: The proposed project will not permanently impact public access to beaches within Broward County. Temporary closures during construction would occur. The proposed project is consistent with the goals of this chapter.

1.8 CHAPTERS 260, F.S., FLORIDA GREENWAYS AND TRAILS ACT

A statewide system of greenways and trails is established in order to conserve, develop, and use the natural resources of Florida for healthful and recreational purposes. These greenways and trails provide open space benefiting environmentally sensitive lands and wildlife and provide people with access to healthful outdoor activities. The greenways and trails serve to implement the concepts of ecosystem management while providing, where appropriate, recreational opportunities such as horseback riding, hiking, bicycling, canoeing, jogging, and historical and archaeological interpretation.

Response: The proposed project will not impact Florida greenways or trails. This chapter is not applicable.

1.9 CHAPTER 267, F.S., HISTORICAL RESOURCES

The management and preservation of the state's archaeological and historical resources are addressed by this statute. This statute recognizes the state's rich and unique heritage of historic resources and directs the state to locate, acquire, protect, preserve, operate and interpret historic and archeological resources for the benefit of current and future generations of Floridians. Objects or artifacts with intrinsic historic or archeological value located on, or abandoned on, state-owned lands or state-owned submerged lands belong to the citizens of the state. The state historic preservation program operates in conjunction with the National Historic Preservation Act of 1966 to require state and federal agencies to consider the effect of their direct or indirect actions on [significant] historic and archeological resources. These resources cannot be destroyed or altered unless no prudent alternative exists. Unavoidable impacts must be mitigated.

Response: State Historic Preservation Officer (SHPO) and Tribal coordination is being initiated and will be ongoing until the project is completed. The actions are consistent with the intent of this chapter.

1.10 CHAPTER 288, F.S., COMMERCIAL DEVELOPMENT AND CAPITAL IMPROVEMENTS

The framework to promote and develop general business, trade, and tourism components of the state economy are established in this statute. The statute includes requirements to protect and promote the natural, coastal, historical, and cultural tourism assets of the state; foster the development of nature-based tourism and recreation; and upgrade the image of Florida as a quality destination. Natural resource-based tourism and recreational activities are critical sectors of Florida's economy. The needs of the environment must be balanced with the need for growth and economic development.

Response: The proposed beach nourishment would help maintain the space for recreation and provide protection of recreational facilities along the receiving beach. This would be compatible with tourism for this area and therefore, is consistent with the goals of this chapter.

1.11 CHAPTER 334, F.S., TRANSPORTATION ADMINISTRATION

The statute addresses the state's policy concerning transportation administration. It establishes the responsibilities of the state, the counties, and the municipalities in the planning and development of the transportation systems serving the people of the state and to assure the development of an integrated, balanced statewide transportation system. This is necessary for the protection of public safety and general welfare and for the preservation of all transportation facilities in the state.

Response: The proposed project would not adversely affect public transportation and therefore, is consistent with the goals of this chapter.

1.12 CHAPTER 339, F.S., TRANSPORTATION FINANCE AND PLANNING

The statute addresses the finance and planning needs of the state's transportation system.

Response: The proposed project would not adversely affect public transportation and therefore, is consistent with the goals of this chapter.

1.13 CHAPTER 373, F.S., WATER RESOURCES

The waters in the state of Florida are managed and protected to conserve and preserve water resources, water quality, and environmental quality. This statute addresses sustainable water management; the conservation of surface and ground waters for full beneficial use; the preservation of natural resources, fish, and wildlife; protecting public land; and promoting the health and general welfare of Floridians. The state manages and conserves water and related natural resources by determining whether activities will unreasonably consume water; degrade water quality; or adversely affect environmental values such as protected species habitat, recreational pursuits, and marine productivity.

Specifically, under Part IV of Chapter 373, the Department of Environmental Protection, water management districts, and delegated local governments review and take agency action on wetland resource, environmental resource, and stormwater permit applications, which address the construction, alteration, operation, maintenance, abandonment, and removal of any stormwater management system, dam, impoundment, reservoir, or appurtenant work or works, including dredging, filling and construction activities in, on, and over wetlands and other surface waters.

Response: The proposed beach nourishment does not involve water resources as described in this chapter. Therefore, this chapter is not applicable.

1.14 CHAPTER 375, F.S., OUTDOOR RECREATION AND CONSERVATION LANDS

The statute addresses the development of a comprehensive multipurpose outdoor recreation plan. The purpose of the plan is to document recreational supply and demand, describe current recreational opportunities, estimate the need for additional recreational opportunities, and propose the means to meet the identified needs.

Response: The proposed beach nourishment would help maintain the recreational beach and provide protection of recreational facilities along the receiving beach. This would be compatible with tourism for this area and therefore, is consistent with the goals of this chapter.

1.15 CHAPTER 376, F.S., POLLUTANT DISCHARGE PREVENTION AND REMOVAL

Regulating the transfer, storage, and transportation of pollutants, and the cleanup of pollutant discharges is essential for maintaining the coastal waters, estuaries, tidal flats, beaches, and public lands adjoining the seacoast in as close to a pristine condition as possible. The preservation of the seacoast as a source of public and private recreation and the preservation of water and certain lands are matters of the highest urgency and priority. This statute provides a framework for the protection of the state's coastline from spills, discharges, and releases of pollutants as a result of the transfer, storage, and transportation of such products. The discharge of pollutants into or upon any coastal waters, estuaries, tidal flats, beaches, and lands adjoining the seacoast of the state is prohibited. The statute provides for hazards and threats of danger and damages resulting from any pollutant discharge to be evaluated; requires the prompt containment and removal of pollution; provides penalties for violations; and ensures the prompt payment of reasonable damages from a discharge. Portions of Chapter 376, F.S., serve as a complement to the national contingency plan portions of the federal Water Pollution Control Act.

Response: The proposed beach nourishment does not involve the transportation or discharge of pollutants. Conditions will be placed in the contract to handle inadvertent spills of pollutants such as vehicle fuels. The proposed project will comply with this chapter.

1.16 CHAPTER 377, F.S., ENERGY RESOURCES

The statute addresses the regulation, planning, and development of the energy resources of the state. The statute provides policy to conserve and control the oil and gas resources in the state, including products made therefrom and to safeguard the health, property and welfare of

Floridians. The Department of Environmental Protection (DEP) is authorized to regulate all phases of exploration, drilling, and production of oil, gas, and other petroleum products in the state. The statute describes the permitting requirements and criteria necessary to drill and develop for oil and gas. DEP rules ensure that all precautions are taken to prevent the spillage of oil or any other pollutant in all phases of extraction and transportation. The state explicitly prohibits pollution resulting from drilling and production activities. No person drilling for or producing oil, gas, or other petroleum products may pollute land or water; damage aquatic or marine life, wildlife, birds, or public or private property; or allow any extraneous matter to enter or damage any mineral or freshwater-bearing formation. Penalties for violations of any provisions of this chapter are detailed.

Response: The project does not involve the development of energy resources of the state, and contract specifications will require the contractor to handle all fuels, oils, and hazardous materials in accordance with all state and federal laws. A spill prevention plan will be required.

1.17 CHAPTER 379, F.S., FISH AND WILDLIFE CONSERVATION

The framework for the management and protection of the state of Florida's wide diversity of fish and wildlife resources are established in this statute. It is the policy of the state to conserve and wisely manage these resources. Particular attention is given to those species defined as being endangered or threatened. This includes the acquisition or management of lands important to the conservation of fish and wildlife. This statute contains specific provisions for the conservation and management of marine fisheries resources. These conservation and management measures permit reasonable means and quantities of annual harvest, consistent with maximum practicable sustainable stock abundance, as well as ensure the proper quality control of marine resources that enter commerce.

Additionally, this statute supports and promotes hunting, fishing and the taking of game opportunities in the State. Hunting, fishing, and the taking of game are considered an important part in the state's economy and in the conservation, preservation, and management of the state's natural areas and resources.

Response: The proposed beach fill may represent a temporary short-term impact to infaunal invertebrates by burying these organisms. However, these organisms are highly adapted to the periodic burial by sand in the intertidal zone. These organisms are highly fecund and are expected to return to pre-construction levels within six months to one year after construction. Nourishment activities would not be performed during the main part of the sea turtle nesting season or is not located on a high nesting density beach. It is not expected that sea turtles would be significantly impacted by this project. In addition, the project will have no effect on aquatic life or wild animal life. Based on the overall impacts of the project, the project is consistent with the goals of this chapter.

1.18 CHAPTER 380, F.S., LAND AND WATER MANAGEMENT

Land and water management policies are established to protect natural resources and the environment; and to guide and coordinate local decisions relating to growth and development. The statute provides that state land and water management policies, to the maximum possible extent, be implemented by local governments through existing processes for the guidance of growth and development and that all the existing rights of private property be preserved in

accord with constitutions of this state and of the United States. The chapter establishes the Areas of Critical State Concern designation, the Florida Communities Trust as well as the Florida Coastal Management Act. The Florida Coastal Management Act provides the basis for the Florida Coastal Management Program which seeks to protect the natural, commercial, recreational, ecological, industrial, and aesthetic resources of Florida's coast.

Response: The proposed beach nourishment is consistent with the goals of this chapter.

1.19 CHAPTER 381, F.S., PUBLIC HEALTH: GENERAL PROVISIONS

The statute establishes public policy concerning the state's public health system, which is designated to promote, protect, and improve the health of all people in the state.

Response: The proposed beach nourishment is consistent with the goals of this chapter.

1.20 CHAPTER 388, F.S., MOSQUITO CONTROL

Mosquito control efforts of the state are to achieve and maintain such levels of arthropod control as will protect human health and safety and foster the quality of life of the people, promote the economic development of the state, and facilitate the enjoyment of its natural attractions by reducing the number of pestiferous and disease-carrying arthropods. It is the policy of the state to conduct arthropod control in a manner consistent with protection of the environmental and ecological integrity of all lands and waters throughout the state.

Response: The proposed project will not further the propagation of mosquitoes or other pest arthropods.

1.21 CHAPTER 403, F.S., ENVIRONMENTAL CONTROL

Environmental control policies conserve state waters; protect and improve water quality for consumption and for the propagation of fish and wildlife; and maintain air quality to protect human health and plant and animal life. This statute provides wide-ranging authority to address various environmental control concerns, including air and water pollution; electrical power plant and transmission line siting; the Interstate Environmental Control Compact; resource recovery and management; solid and hazardous waste management; drinking water protection; pollution prevention; ecosystem management; and natural gas transmission pipeline siting.

Response: Environmental protection measures will be implemented to ensure that no lasting adverse effects on water quality, air quality, or other environmental resources will occur. Water Quality Certification is not required due to placement of material above MHW. The project complies with the intent of this chapter.

1.22 CHAPTER 553, F.S., BUILDING AND CONSTRUCTION STANDARDS

The statute addresses building construction standards and provides for a unified Florida Building Code.

Response: The proposed work does not involve building construction; therefore, this chapter does not apply.

1.23 CHAPTER 582, F.S., SOIL AND WATER CONSERVATION

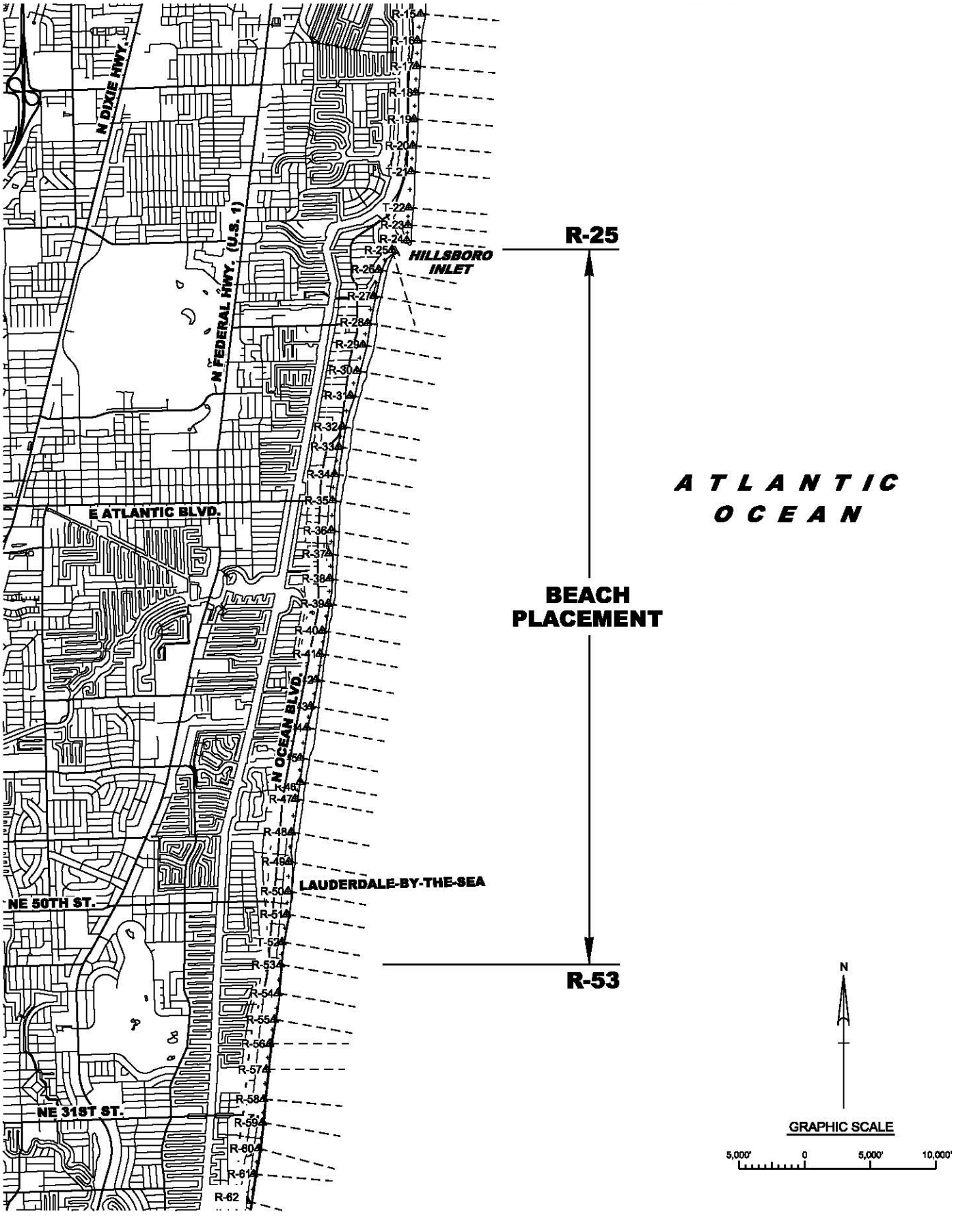
It is the state's policy to preserve natural resources; control and prevent soil erosion, prevent floodwater and sediment damages and to further the conservation, development and use of soil and water resources, and the disposal of water. Farm, forest, and grazing lands are among the basic assets of the state; and the preservation of these lands is necessary to protect and promote the health, safety, and general welfare of its people. These measures help to preserve state and private lands, control floods, maintain water quality, prevent impairment of dams and reservoirs, assist in maintaining the navigability of rivers and harbors, preserve wildlife and protect wildlife habitat, protect the tax base, protect public lands, and protect and promote the health, safety, and general welfare of the people of this state.

Response: The proposed project is not located near or on agricultural lands; therefore, this chapter does not apply.

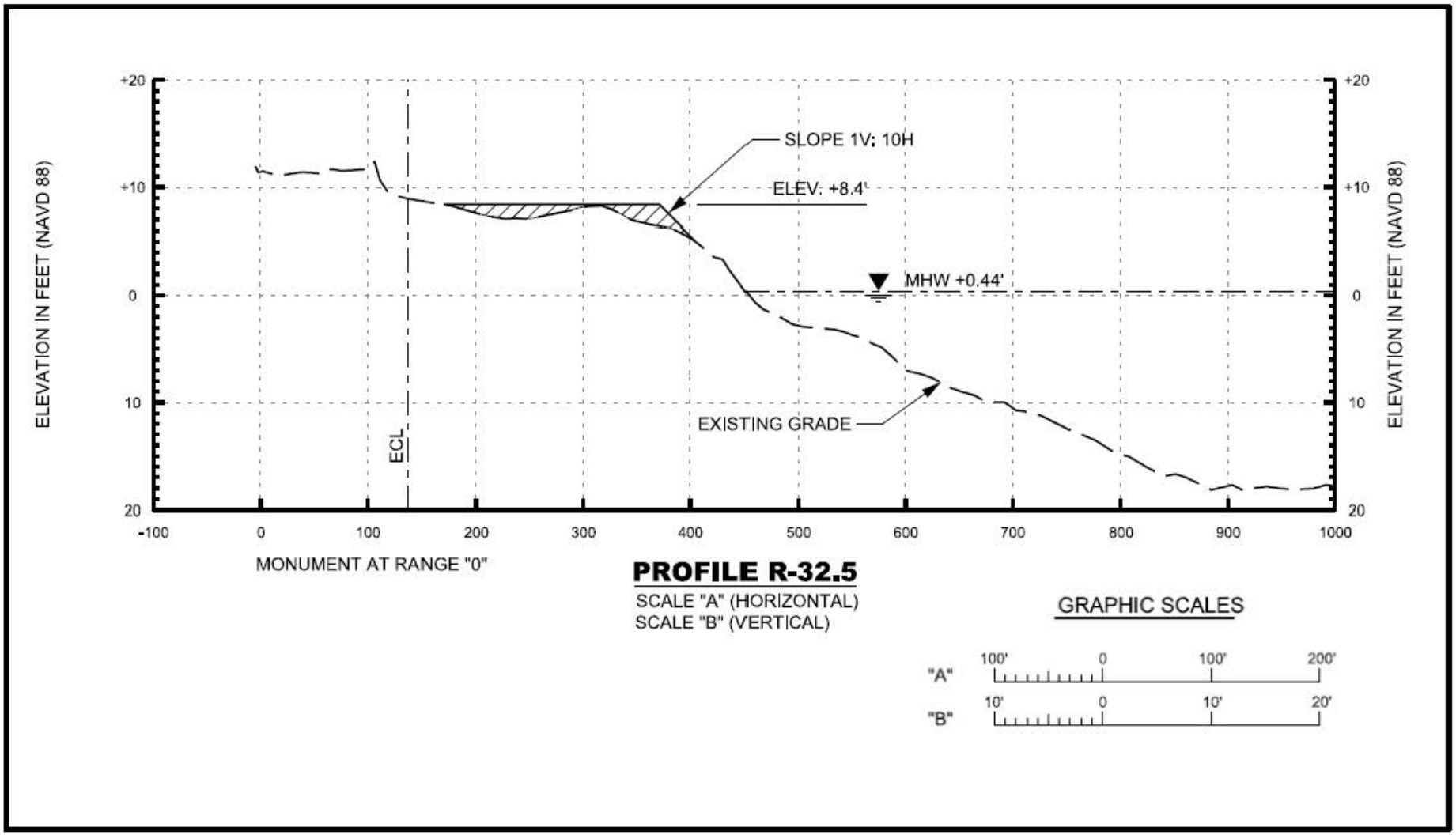
1.24 CHAPTER 597, F.S., AQUACULTURE

The statute establishes public policy concerning the cultivation of aquatic organisms in the state. The intent is to enhance the growth of aquaculture, while protecting Florida's environment. This includes a requirement for a state aquaculture plan which provides for the coordination and prioritization of state aquaculture efforts, the conservation and enhancement of aquatic resources and which provides mechanisms for increasing aquaculture production for the creation of new industries, job opportunities, income for aquaculturists, and other benefits to the state.

Response: The proposed project does not propose aquaculture; therefore, this chapter does not apply.



ENCLOSURE 1.1-VICINITY MAP



ENCLOSURE 1.2-Cross-Section

Example Contract Language

Sediment Quality

Beach Fill

Compliance Criteria for Beach Fill Material

Beach fill material shall meet the requirements of the FDEP approved project QC/QA Sediment Control Plan and shall conform to the compliance values presented in Table 1 (all sieve sizes refer to U.S. Std. sieves) below. The sand shall be similar to the existing beach sediments in color and texture. Beach fill material shall be clean sand from the permitted source and free of unacceptable materials, such as construction debris, asphalt, rocks greater than 3/4 inch, clay balls, and other organics, oil, pollutants and any other foreign materials.

Table 1 - Fill Material Compliance Values

Maximum Silt Content (passing #230 sieve)	2 percent
Maximum Fine Gravel Content (retained on #4 sieve)	5 percent
Maximum Large Shell Content (retained on 3/4 inch sieve)	1 percent
Munsell Color Value (similar or lighter)	6 value
Mean Grain Size Range	0.35 to 0.65 mm
Carbonate Content	10 percent

The compliance values described above refer to the average values assessedover a 10,000 square-foot area of the placed fill material. Material which exceeds the compliance values listed in Table 1 and which exceeds the natural occurance within a 10,000 square-foot area, will be classified as noncompliant.

Example Contract Language

Vegetation Protection

TEMPORARY CONSTRUCTION FACILITIES

Staging and Access Areas

Staging and access areas are shown on the contract drawings that have been identified for the Contractor's use. The staging areas shall not be used for stockpiling of beach fill material. The final limits of the staging and access areas indicated on the drawings shall be field-determined by the Contracting Officer in coordination with the Local Sponsor and the Contractor. It shall be the responsibility of the Contractor to investigate and obtain any additional areas which may be necessary for his/her construction operations. The additional areas will be subject to the approval of the Contracting Officer. Native dune vegetation shall be identified and marked by the Contractor so that no operations impact any areas of native dune vegetation. Impacts to dune vegetation during widening of dune access, as well as any incidental impacts to dune vegetation shall be restored by the Contractor at no additional cost to the Government prior to completion of work. Clearing and grubbing is permitted only in access and staging areas, and shall be performed in accordance with Section 01 55 10 CLEARING AND GRUBBING FOR ACCESS AND STAGING AREAS.

Construction Access

Construction access is provided as shown on the contract drawings. Procurement of additional access routes for ingress and egress to the construction area shall be obtained by and at the expense of the Contractor and shall be approved by the Contracting Officer. At all access sites to be utilized, the Contractor shall:

a. Photo-document the condition of the access location prior to disrupting the site.
b. Limit access width through existing vegetation to 20 feet or less.
c. Replace any fencing, signage or curbing disturbed by the Contractor's activities; and,
d. Restore and revegetate the access route with native dune plants subject to the approval of the Contracting Officer. Revegetation of access and staging areas shall be with sod (non-dune areas) or viable plant units (dune areas) at 18-inch maximum spacing with species and diversity equivalent to preconstruction conditions. Revegetation shall include a survival warranty of 90 percent of the plant material for 90 days. Vegetation shall be installed with fertilization and irrigation, or with initial irrigation, fertilization and approved water-absorbent polymeric gels, at no additional expense to the Government. Shrubs and trees shall be replaced to preconstruction conditions per the requirements of Section 01 57 20 ENVIRONMENTAL PROTECTION.

CLEARING AND GRUBBING FOR ACCESS AND STAGING AREAS

SCOPE

The work covered by this section consists in furnishing all plant, labor, equipment, supplies and material, and in performing all operations in connection with clearing, grubbing, and transporting of material for access and staging only as indicated on the drawings and specified herein. Clearing and grubbing is limited to construction/beach access and staging areas only. Clearing and grubbing beyond access and staging areas is prohibited. Contractor is responsible for obtaining any local construction permits associated with clearing and grubbing the access area (see clause PERMITS AND RESPONSIBILITIES of Section 00700 CONTRACT CLAUSES). The Contractor shall minimize any impact to existing vegetation and/or structures, fencing or other materials. The Contractor shall repair and/or replace any impacts to existing conditions as to the satisfaction of the Contracting Officer.

Clearing Area Plan

A written clearing area plan shall be submitted 15 days prior to the beginning of any clearing and grubbing. Approval of the detailed plan shall be obtained from the Contracting Officer prior to starting the work. If necessary, modify the plan as required to meet field conditions, and the modifications shall be approved prior to use. As a minimum, the plan shall contain the following:

a. The proposed method of clearing and grubbing.
b. Stockpiling plan for transport of unsatisfactory material found during clearing and grubbing operations. Within the plan, include stockpile heights, slopes, limits, and drainage around the stockpile areas.
c. Photographs of each access area showing existing structures and vegetation, and method of protecting existing structures and vegetation.
d. The proposed sequence of work for clearing and grubbing areas with plan views showing starting and final work locations and clearing, and grubbing limits.
e. Methodology on the removal and screening of acceptable material from vegetation and debris material.
f. Beach grading plan for level distribution of satisfactory material brought to rest to the existing lines and grades of the beach corridor used form construction traffic to and from the project area.

BEACH FILL

Scope

Areas of existing vegetation greater than 25 square feet within the Contractor's work area shall not be disturbed. Any vegetation within the fill template shall have fill material sloped at 1V:3H to meet existing grade around vegetation. If berm height surrounding vegetation is significantly higher, then existing vegetation shall be excavated and replanted as necessary.

APPENDIX B - PERTINENT CORRESPONDENCE

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

08 MAY 2013

Mr. Larry Williams
Field Supervisor
U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, FL 32960

Dear Mr. Williams:

This letter initiates the 30-day coordination with your office under the Statewide Programmatic Biological Opinion (SPBO) for beach placement and shore protection activities in Florida. The U.S. Army Corps of Engineers (Corps) proposes sand placement along two stretches of shoreline in Segment II of the Broward County Shore Protection Project: R25 to R53. The project will include the placement of approximately 150,000 cy of sand in the project footprint. The preferred method for beach construction is a truck-haul approach in which fill will be obtained from an upland commercial sand mine(s) and trucked to the Segment II project reaches for beach placement. See the enclosed project maps/drawings and "Project Information Sheet and Screening Checklist" for additional details.

The Corps has determined that the proposed project may affect, but is not likely to adversely affect the Florida manatee, because it will implement the standard manatee protection measures in our plans and specifications for the project.

The project area includes habitat that could be suitable for use by piping plovers (*Charadrius melodus*). The Corps proposes to implement the following measures to ensure the protection of the piping plover during project construction:

a. Adhere to appropriate seasonal windows to the maximum extent possible;

b. Modify pipeline alignment and associated construction activities to reduce impacts to foraging, sheltering, and roosting;

c. Avoid impacts to the primary constituent elements of piping plover critical habitat to the maximum extent possible; and

d. Install predator-proof trash receptacles and maintain them during construction at all beach access points used for the project construction to minimize the potential for attracting predators of piping plovers. Workers shall be briefed on the importance of not littering and keeping the project area trash and debris free.

The Corps does not anticipate any other Civil Works projects to be under construction in the vicinity of this project at the same time that this project will be under construction. Therefore, the Corps has determined that the project is not likely to adversely affect the piping plover with the implementation of the above measures.

Based on the information provided in this letter, we request that you concur with these findings.

If you have any questions, please contact me at (904) 232-1665, or Jason Spinning, who can be reached at (904) 232-1231 or by email at Jason.J.Spinning@usace.army.mil.

Sincerely,

Eric B. Summa
Chief, Environmental Branch

Enclosures

Statewide Programmatic Biological Opinion (SPBO)
Beach Placement and Shore Protection
Coast of Florida
U.S. Fish and Wildlife Service (FWS)

New Record | Save Record | Print Record | Close

Record # 48

Prepared by: Dugger, Kenneth R SAJ

Date Entered: 4/3/2013

Project Name: Broward County, FL

Project Event: Broward County, Segment II, FCCE

Project Number: 113072 Application #:

Sponsor/ Applicant: Broward County

Quantity (CY): NTE 150,000 cy Length (Feet): 27,000

County(ies): Broward Location R-Monuments: R26-R53

Lat °: 26 Lat': 13 Lat" 10.00 Long° -80 Long': 05 Long": 23.86

Borrow or Dredge Site(s): Upland Sand Mine meeting state sand rule criteria and all permitting and NEPA requirements.

Beach Placement from Navigation Dredging: ☐ O and M ☐ Deepen, Widen, or Expand

Beach Nourishment/Shore Protection Project: ☐ Initial Nourishment ☑ Renourishment

Nature of Activity: ☐ Beach Placement ☐ Beach Placement Below MLW

☐ Dune Placement or Planting ☐ Nearshore Placement (material remains below MLW)

☐ Sand Bypassing ☐ Sand Back-Passing ☐ Sand Transfer ☐ Groin Repair or Replacement

☐ Jetty Repair or Replacement ☐ *Other Activity (list in comment Box)

Area with Sea Turtle Window: ☐ SE Florida (Broward through Brevard) ☐ Manasota Key

☐ Gulf Co (St Joe Peninsula St Pk, St. Joe Peninsula, Cape San Blas) ☐ Franklin Co (St George Is)

*Piping Plover Critical Habitat ☑ *Other Piping Plover Habitat ☐ *30-day Coordination Still Pending

PP Crit Hab 1:

PP Crit Hab 2:

☐ *No Pre-Project Survey for Actual or Potential Washover Fan

Beach Mouse Habitat (use drop-down box below) ☐ Other Beach Mouse Habitat (list in comment box)

Beach Mouse Habitat:

☐ *Important Manatee Area ☐ *Beach Jacquemontia Habitat (including pipeline, access, storage, staging, etc.)

☐ *Roseate Term Colon, May-June (Pelican Shoal, Vaca Rock, Truman Annex, Marathon Gov Center)

☐ *Snowy Plover Breeding Area, Mar-Sep (Gulf Coast: Caladesi Is, Fort DeSoto Park, Cayo Costa, isolated peninsulas)

*These items may be outside the scope of the SPBO and/or require additional coordination w/FWS (see next page)

Responsible for Post Construction Monitoring/Corrective Measures (Compaction/Escarpments, 3 yrs post construction

Responsible for Post Contruction Monitoring (Sea Turtle Nesting, 2-yrs post construction)

Responsible for Post Construction Monitoring (2 Beach Lighting Surveys, early May and late July):

☐ *Any Other Term and Condition not Followed

Describe Other TC:

Comment, Habitat: Adjacent to Hillsboro Inlet, Otherwise along highly developed shoreline

Comment, Other:

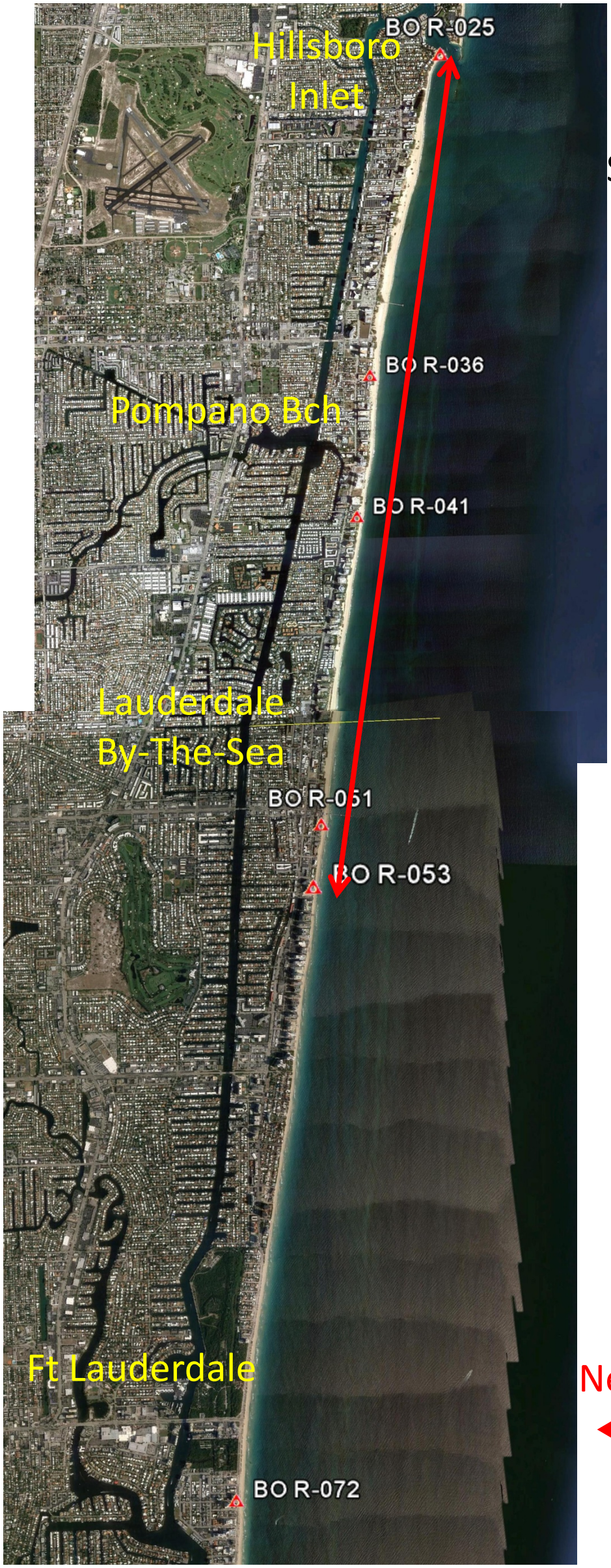
-Instructions-

General: Text fields are limited to 255 characters to accommodate a consolidated report in which the form's data is exported to an Excel spreadsheet. There are 2 "Comment" fields to allow about 500 characters total.
Project Name: Use official project name from P2 for Corps projects.
Project Activity/Event: Identify the dredging or renourishment event (e.g., reach, segment, year, sequence)
Project Number: Use project number from P2 for Corps projects.
Application #: Use Corps permit application number where applicable.
Quantity/Length: Normally use cubic yards and linear feet for beach placement.
Location and R-monuments: Brief phrase for location. Use state R-monuments.
Latitude and Longitude: Enter for approximate center of shoreline project/activity (not for the borrow/dredge site). For example, Jacksonville District Office would be Latitude 30° 19' 04.91" Longitude -81° 39' 36.48".
Borrow or Dredge Sites: Brief phrase or name for borrow area or dredge site.
Piping Plover Critical Habitat: Use the 2 drop-down boxes (only one critical habitat unit per drop-down box).
See PBO or Federal Register of July 10, 2001, pages 36070 to 36073 for additional details on Piping Plover critical habitat.
Other Piping Plover Habitat: List in the comment box any additional critical habitat units and any other important Piping Plover habitat. Refer to SPBO for additional information.

1. For projects located: (a) In piping plover critical habitat, initiation of formal consultation is necessary. (b) In or within one mile of a critical habitat unit, the Corps shall contact the Service with the project description. The Service will aid the Corps in determining potential indirect effects to biological constituent elements within a critical habitat unit. The Service will respond within 30 days. Previous consultations in these areas have ended informally but depending on the latest information, formal consultation may be likely. (c) In or within one mile of an inlet, the Corps shall contact the Service with the project description. The Service will aid the Corps in determining whether there will be any effects to the piping plover. The Service will respond within 30 days. Previous consultations in these areas have resulted in formal consultation. (d) On or adjacent to public lands (county, state, federal, etc), the Corps shall contact the Service with the project description. The Service will aid the Corps in determining whether there will be any effects to the piping plover. The Service will respond within 30 days. Previous consultations in these areas have ended informally but depending on the latest information, formal consultation may be likely.
2. For jetty and groin repairs/replacement project, the Corps shall contact the Service with the project description. The Service will aid the Corps in determining whether there will be any effects to the piping plover. The Service will respond within 30 days. Previous consultations in these areas have resulted in informal consultation.
3. In all other areas, the Corps shall contact the Service with the project description and location. The Service will be the Corps' key source of information to provide technical assistance, including known locations or the latest survey information on piping plovers within 30 days. Previous consultations in these areas have resulted in informal consultation.

Beach Mouse Habitat: Geographic range of species is shown in drop-down box. Note that species is limited to areas of suitable habitat within that range. Refer to the SPBO for additional information.
Important Manatee Areas (IMA): Activities within IMAs are not within the scope of the SPBO and require separate consultation.
Beach Jacquemontia Habitat: Impacts to this species are not within the scope of the SPBO. Within the range of this species a survey and avoidance is required (see SPBO for additional information).
Roseate Tern Nesting Colony, May-June: Activities affecting such colonies during nesting season are not within the scope of the SPBO.
Snowy Plover: In addition to migratory bird protection, is a candidate for listing as threatened. Breeding occurs along Gulf Coast at indicated parks and on isolated coastal peninsulas. If listing is imminent, Section 7 consultation may be appropriate.
Responsible for Post Construction Monitoring and Corrective Measures: The activity is not within the scope of the SPBO if there is no formal acceptance of responsibility for post-construction monitoring and corrective measures. A separate consultation with FWS is required. L:\group\pde\dugger\PBO\ProjInfoSheet4.pdf

Broward County Shore Protection Project Segment II



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning and Policy Division
Environmental Branch

JUN 2 0 2013

Mr. Robert Bendus
Division of Historical Resources
State Historic Preservation Officer
500 South Bronough Street
Tallahassee, Florida 32399-0250

Dear Mr. Bendus:

The U.S. Army Corps of Engineers (Corps), Jacksonville District is renourishing approximately 5 miles (FDEP Range Markers 26 to 53) of critically eroded shoreline located immediately south of Hillsboro Inlet (Segment II) in Broward County from damage sustained by Hurricane Sandy (Figure 1) . Severe erosion was experienced along the entire 5 mile length of the project. The high erosion rate caused from Hurricane Sandy coupled with the already eroded state of the project area will result in severe damage to protected infrastructure during the next storm season if not repaired beforehand.

The Corps is proposing to use an upland sand mine source with transport to the beach by truckhaul for this Flood Control Coastal Emergency (FCCE) project. A particular sand source to be utilized for this project has not been determined at this time, however, the Corps requires that the source must comply with the following criteria:

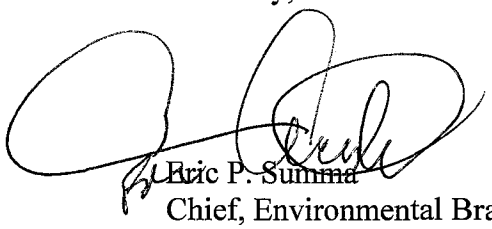
- As part of the Environmental Protection Plan, the Contractor shall submit copies of all cultural resources surveys pertaining to portions of the sand mine that will be utilized as a sand source.
- The contractor shall supply copies of all documents and correspondence with the Florida State Division of Historical Resources to demonstrate that the portions of the sand mine being utilized are in full compliance with Florida Statute 267.
- If compliance letters are not available, the contractor shall obtain copies of them from the Florida Division of Historic Resources Compliance and Review or utilize a different mine where compliance can be demonstrated.

Renourishment will be conducted on the beach. Placement will occur above mean high water (MHW).

The Corps has reviewed this project for any potential to cause any effects to historic properties. As part of this review, the Corps has taken into account previous surveys conducted within the project area. On February 4, 2004, the Division of Historic Resources concurred with the Corp's determination of no historic properties affected for the Broward County Shoreline Protection Project Segments II and III (DHR Project File No. 2003-11839).

Because of the criteria required for the mined sand source, the Corps has determined that both the sand mine source and beach placement location for this FCCE project will have no adverse effect to historic properties. I request your concurrence on my determination of no adverse effect. If there are any questions, please contact Ms. Wendy Weaver at 904-232-2137 or e-mail at wendy.weaver@usace.army.mil.

Sincerely,



Eric P. Summa
Chief, Environmental Branch

Figure 1. Broward County Shore Protection Project, Segment II FCCE Project Location

APPENDIX C – MAILING LIST

NAME_LINE_	NAME_LINE1	ADDRESS_LI	CITY	STATE	ZIP	ZIP4
FLORIDA DEPT OF TRANSPORTATION	OFFICE OF RIGHT OF WAY	3400 W COMMERCIAL BLVD	FORT LAUDERDALE	FL	33309	3421
MILLER,MICHAEL L	MICHAEL L MILLER REV TR ETAL	2308 BAY DR	POMPANO BEACH	FL	33062	
VERDE,FRED H & KATHERINE S	/ AVS MARKETING	2306 BAY DRIVE	POMPANO BEACH	FL	33062	
VERDE,FRED H & KATHERINE S	/ AVS MARKETING	825 CHASE AVE	ELK GROVE VILLAGE	IL	60007	
BLUMBERG,RICHARD &	BLUMBERG,ESTELLE K	2304 BAY DR	POMPANO BEACH	FL	33062	5315
MURRAY,JOHN E	JOHN E MURRAY REV TR	2302 BAY DR	POMPANO BEACH	FL	33069	4501
JOHN E MURRAY REV TR	MURRAY,JOHN E TRSTEE	941 SW 8TH ST	POMPANO BEACH	FL	33069	4501
ACCARDI,EDMUND	ACCARDI,EDMUND	2300 BAY DR	POMPANO BEACH	FL	33062	2915
HILLSBORO SHORES IMP ASSOC INC		BOX 5092	LIGHTHOUSE POINT	FL	33074	5092
RADTKE,JOHN		2208 BAY DR	POMPANO BEACH	FL	33062	2913
ANGELICA PALANK REV TR	PALANK,ANGELICA TRSTEE	70 BAY COLONY LN	FORT LAUDERDALE	FL	33308	
DOCKSWELL,BARRY	BARRY DOCKSWELL REV TR	2204 BAY DR	POMPANO BEACH	FL	33062	
NGUYEN,LONG	DUONG,KIMMY	2202 BAY DR	POMPANO BEACH	FL	33062	
BAGWELL,CHANTAL J		2200 BAY DRIVE	POMPANO BEACH	FL	33026	
BAGWELL,CHANTAL J		6401 HOLLAND DR	CUMMING	GA	30041	
BOUTIN,GEORGES & BARBARA		2102 BAY DR	POMPANO BEACH	FL	33062	2911
MARCOTE,JUAN RAMON		2100 BAY DR	POMPANO BEACH	FL	33062	
HILLMAN,SANDRA		2004 BAY DR	POMPANO BEACH	FL	33062	2909
WERNER,GUENTHER		2002 BAY DR	POMPANO BEACH	FL	33062	
NUDELMAN,JEFF S & LINDA	PASSANELLO & STAIANO	2953 W CYPRESS CREEK RD STE 101	FORT LAUDERDALE	FL	33309	
KULLE,RICHARD J & BARBARA A		1906 BAY DR	POMPANO BEACH	FL	33026	
KULLE,RICHARD J & BARBARA A		12341 STONEBROOK CT	LOS ALTOS	CA	94022	5133
FENTON,WARREN	LEU,HEIDY	1904 BAY DR	POMPANO BEACH	FL	33062	2907
HEAVEN'S USA INC		1902 BAY DR	POMPANO BEACH	FL	33062	2907
HEAVEN'S USA INC		P O BOX 643717	VERO BEACH	FL	32964	
RUSTINE,DAVID A &	RUSTINE,REBECCA L	1900 BAY DR	POMPANO BEACH	FL	33062	
RUSTINE,DAVID A &	RUSTINE,REBECCA L	P O BOX 643717	VERO BEACH	FL	32964	
CONAL DEVELOPMENTS USA INC		1500 HWY #7	CONCORD	ON		
CANADA HOUSE BEACH CLUB EAST	CONDO ASSOCIATION	1704 N OCEAN BLVD	POMPANO BEACH	FL	33062	3420
LANGENDERFER,B,LANGENDERFER,R &	FOSTER,JUANITA R	3439 VOLLMER RD #302	FLOSSMOOR	IL	60422	2020
LANGENDERFER,B,LANGENDERFER,R &	FOSTER,JUANITA R	1600 N OCEAN BOULEVARD	POMPANO BEACH	FL	33062	
TIFFANY GARDENS EAST CONDO		1610 N OCEAN BOULEVARD	POMPANO BEACH	FL	33062	3408
LACOSTA BEACH CLUB	CONDO ASSOCIATION	1504 N OCEAN BLVD RPP	POMPANO BEACH	FL	33026	3427
OCEAN CLUB CONDO	CONDO ASSOCIATION	1500 N OCEAN BOULEVARD	POMPANO BEACH	FL	33062	3445
BROWARD OCEANVIEW PROPERTIES INC	MANAGEMENT AGENT	1406 N OCEAN BLVD	POMPANO BEACH	FL	33026	3425
OCEAN HOLIDAY TIMESHARE	MANAGEMENT AGENT	1350 N OCEAN BOULEVARD	POMPANO BEACH	FL	33026	
CROSSWINDS CO-OP		1300 N OCEAN BOULEVARD	POMPANO BEACH	FL	33026	3430
UH-POMPANO LLC		1208 N OCEAN BOULEVARD	POMPANO BEACH	FL	33026	
UH-POMPANO LLC		4707 ELM ST	BETHESDA	MD	20814	
PRH 1116 NORTH OCEAN LLC		315 S BISCAYNE BLVD	MIAMI	FL	33131	
CENTURY PLAZA ASSOC INC		1012 N OCEAN BLVD	POMPANO BEACH	FL	33062	4056
ATLANTIC TERRACE	CONDO ASSOCIATION	3401 NE 10 STREET	POMPANO BEACH	FL	33026	4001
BEACH VILLAS CONDO	CONDO ASSOCIATION	900 N OCEAN BOULEVARD	POMPANO BEACH	FL	33026	4030
GOLDEN SHORES CONDO	CONDO ASSOCIATION	820 N OCEAN BOULEVARD	POMPANO BEACH	FL	33026	4080
SEAPOINTE OF POMPANO BEACH	CONDO ASSOCIATION	812 N OCEAN BOULEVARD	POMPANO BEACH	FL	33026	4014
730 N OCEAN POMPANO LLC		2295 CORPORATE BLVD #222	BOCA RATON	FL	33431	
ADMIRALTY TOWERS	CONDO ASSOCIATION	750 N OCEAN BOULEVARD	POMPANO BEACH	FL	33026	4618
SEA GARDENS BEACH & TENNIS RESORT		615 N OCEAN BOULEVARD	POMPANO BEACH	FL	33026	
SEA GARDENS BEACH & TENNIS RESORT	4FL TAX DEPT	8427 S PARK CIR	ORLANDO	FL	32819	
THE BREAKERS CONDOMINIUM INC	CONDO ASSOCIATION	710 N OCEAN BLVD	POMPANO BEACH	FL	33062	4643
LUNA OCEAN RESIDENCES		704 N OCEAN BOULEVARD	POMPANO BEACH	FL	33064	
SEA GARDENS BEACH & TENNIS RESORT OCEAN PALMS		615 N OCEAN BOULEVARD	POMPANO BEACH	FL	33062	
SEA GARDENS BEACH & TENNIS RESORT OCEAN PALMS		8427 S PARK CIR	ORLANDO	FL	32819	
BRIG O' DOON CONDO	CONDO ASSOCIATION	600 N OCEAN BOULEVARD	POMPANO BEACH	FL	33062	4605
NEWMAN,ROBERT S		600 N OCEAN BLVD #4A	POMPANO BEACH	FL	33062	
BLUE OCEAN RESORTS LLC		401 E LAS OLAS BLVD #130-311	FORT LAUDERDALE	FL	33301	
OCEAN TOWNHOUSES CONDO	CONDO ASSOCIATION	520 N OCEAN BOULEVARD	POMPANO BEACH	FL	33026	
SILVER THATCH OCEAN CLUB CONDO	CONDO ASSOCIATION	510 N OCEAN BOULEVARD	POMPANO BEACH	FL	33026	
MIEDEL,A F		504 N OCEAN BLVD	POMPANO BEACH	FL	33062	4607
EVER APRIL APTS CO-OP	CONDO ASSOCIATION	8 BRINY AVENUE	POMPANO BEACH	FL	33062	
POMPANO BEACH CLUB ASSOC INC &	POMPANO BCH CLUB NORTH ASSN INC	111 BRINY AVE	POMPANO BEACH	FL	33062	5612
PATEL,GIRISH & HANSA	MADHAV GROUP LLC	17595 S TAMIAMI TRL STE 108-5	FORT MYERS	FL	33908	
212 BRINY AVE CONDO		212 BRINY AVE	POMPANO BEACH	FL	33062	5824
KARAM,KAREN H/E	OROW,NICHOLAS ROBERT	300 BRINY AVE	POMPANO BEACH	FL	33062	
KARAM,KAREN		300 BRINY AVE	POMPANO BEACH	FL	33062	
ANDERSON,MICHAEL &	CONWAY,SUSAN	2637 E ATLANTIC BLVD #172	POMPANO BEACH	FL	33062	
CORAL TIDES CONDO ASSOCIATION	CONDO ASSOCIATION	580 BRINY AVE	POMPANO BEACH	FL	33062	5808
CHRISTOPHER HOUSE CONDO APTS INC		401 BRINY AVE	POMPANO BEACH	FL	33062	5833
PRESTE,PAUL G		404 BRINY AVE	POMPANO BEACH	FL	33062	
HEATH FAM TR		408 BRINY AVE	POMPANO BEACH	FL	33062	
HEATH FAM TR	HEATH,RICHARD E TRSTEE ETAL	140 PEARL ST STE 100	BUFFALO	NY	14202	
RAMOS,CAROL		412 BRINY AVE	POMPANO BEACH	FL	33062	5806
FLORIDA RESORT DEV CORP	SEASIDE BEACH CLUB CONDO ASSOC	501 BRINY AVE	POMPANO BEACH	FL	33062	5807
OCEANVIEW LAND DEVELOPMENTS LLC		700 BRINY AVE	POMPANO BEACH	FL	33062	
OCEANVIEW LAND DEVELOPMENTS LLC		200 BRIDGELAND AVE	NORTH YORK	ON		
BROOKS,DENNIS H & THO THI		PO BOX 1677	DEERFIELD BEACH	FL	33443	1677
ON THE BEACH ENTERPRISES INC		720 BRINY AVE	POMPANO BEACH	FL	33062	
BEACHFRONT ENTERPRISES INC		720 BRINY AVE	POMPANO BEACH	FL	33062	6308
KAGAN,DAVID B &	KAGAN,JULI Z	20816 SUGARLOAF LN	BOCA RATON	FL	33428	1126
SONATA GRAND LLC		801 BRINY AVENUE	POMPANO BEACH	FL	33062	
SONATA GRAND LLC		1717 N BAYSHORE DR #208	MIAMI	FL	33132	
OCEAN HERITAGE CLUB CONDO	CONDO ASSOCIATION	812 BRINY AVE	POMPANO BEACH	FL	33062	
POMPANO ATLANTIS CONDO ASSOC INC		1000 S OCEAN BLVD	POMPANO BEACH	FL	33062	6665
POMPANO AEGEAN CONDO		1010 S OCEAN BLVD	POMPANO BEACH	FL	33062	
POMPANO SURF CLUB CO-OP		3309 SE 10 STREET	POMPANO BEACH	FL	33062	
OCEAN RANCH VACATION GRP		1110 S OCEAN BOULEVARD	POMPANO BEACH	FL	33062	
OCEAN RANCH VACATION GRP	4FL TAX DEPT	8427 S PARK CIR	ORLANDO	FL	32819	
SKY RANCH APTS INC CONDO		3424 SE 12 STREET	POMPANO BEACH	FL	33062	
THE BEACHCOMBER VILLAS INC		1200 S OCEAN BLVD	POMPANO BEACH	FL	33062	6609
THE CRITERION CONDO		1300 S OCEAN BLVD	POMPANO BEACH	FL	33062	
CLARIDGE POMPANO CONDO INC		1340 S OCEAN BLVD	POMPANO BEACH	FL	33062	6904
WH POMPANO LP	/ THOMAS G SHERMAN PA	90 ALMERIA AVE	CORAL GABLES	FL	33134	
RENAISSANCE OF POMPANO BEACH		1360 S OCEAN BLVD	POMPANO BEACH	FL	33062	
RENAISSANCE OF POMPANO BEACH PHASE 2		1370 S OCEAN BLVD	POMPANO BEACH	FL	33062	
BF POMPANO LLC		1001 BRICKELL BAY DR STE 2904	MIAMI	FL	33131	

THE WITTINGTON CONDO		1390 S OCEAN BOULEVARD	POMPANO BEACH	FL	33062	
MALULANI CO-OP		1398 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
EL MAR ASSOC		PO BOX 10163	POMPANO BEACH	FL	33061	
SEA COLONY CO-OP		1400 S OCEAN BLVD	LAUD BY THE SEA	FL	33062	
COASTAL ARMS CO-OP		1410 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
CLOISTERS CO-OP		1420 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
CRISTELLE CAY CONDO		1430 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
PALM CLUB CO-OP		1431 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
CORNICHE CONDO		1440 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
EUROPA BY THE SEA		1460 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
EL DORADO CLUB CO-OP		1470 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
INTERNATIONAL STUDIO APT CONDO		1480 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
LEISURE TOWERS ASSOC INC		1500 S OCEAN BLVD	LAUD BY THE SEA	FL	33062	7400
OCEAN EAST APTS CO-OP		1530 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	7402
AQUAZUL CONDO		1600 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
OCEAN COLONY CONDO		1620 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
CRISTELLE		1700 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
JADE BEACH VILLAS CONDO		1750 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
OCEAN SOUNDS CONDO		1770 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
HAMPTON BEACH CLUB CONDO		1800 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	6313
CRANE CREST APTS CO-OP		1850 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
OCEAN PLACE CONDO		1900 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
NATIVE SUN TIMESHARE		1950 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
ROYAL COAST CONDO		2000 S OCEAN BOULEVARD	LAUD BY THE SEA	FL	33062	
ROYAL COAST CONDO ASSN INC		2000 S OCEAN BLVD	LAUD BY THE SEA	FL	33062	8015
EDMONDSON,JAMES P		6002 N OCEAN BLVD	LAUD BY THE SEA	FL	33308	
EDMONDSON,JAMES P		3345 MONTEREY RD	SAN MARINO	CA	91108	1831
STARLIGHT TOWERS CONDO		6000 N OCEAN BOULEVARD	LAUD BY THE SEA	FL	33308	
ATLANTIC BEACH VILLAS		5450 N OCEAN BOULEVARD	LAUD BY THE SEA	FL	33308	
5400 NORTH OCEAN BLVD CONDO		5400 N OCEAN BOULEVARD	LAUD BY THE SEA	FL	33308	
SEA RANCH LAKES BEACH CLUB INC		1 GATEHOUSE RD	SEA RANCH LAKES	FL	33308	2906
SEA RANCH LAKES NORTH CONDO		5200 N OCEAN BOULEVARD	LAUD BY THE SEA	FL	33308	
SEA RANCH LAKES NORTH INC		5200 N OCEAN BLVD	LAUD BY THE SEA	FL	33308	3037
SEA RANCH CLUB		5100 N OCEAN BOULEVARD	LAUD BY THE SEA	FL	33308	
SEA RANCH CLUB B CONDO		5000 N OCEAN BLVD	LAUD BY THE SEA	FL	33308	
SEA RANCH CLUB C CONDO		4900 N OCEAN BLVD	LAUD BY THE SEA	FL	33308	
TOWN OF LAUDERDALE BY THE SEA		4501 N OCEAN DR	LAUD BY THE SEA	FL	33308	
OCEAN 4660 LLC		6002 N OCEAN BLVD	LAUD BY THE SEA	FL	33308	
OCEAN 4660 LLC		55 E LONG LAKE RD # 204	TROY	MI	48085	4738
A & M RESORTS LLC		4644 EL MAR DR	LAUD BY THE SEA	FL	33308	
RESIDENCE CONDO		4636 EL MAR DR	LAUD BY THE SEA	FL	33308	
BLUE BAY INVESTMENTS LLC		2400 E COMMERCIAL BLVD STE 204	FORT LAUDERDALE	FL	33308	4022
TROPIC SEAS RESORT INC		4616 EL MAR DR	LAUD BY THE SEA	FL	33308	
TROPIC SEAS RESORT INC		10 WILLISON RD	GROSSE PT SHORES	MI	48236	1519
RAVEN ENTERPRISES LTD		270 PINE AVE	LAUD BY THE SEA	FL	33308	2921
TOWN OF LAUDERDALE BY THE SEA		4501 N OCEAN DR	LAUD BY THE SEA	FL	33308	
TROPIC RANCH INC		4560 EL MAR DR	LAUD BY THE SEA	FL	33308	
TROPIC RANCH INC		55 E LONG LAKE RD # 204	TROY	MI	48085	4738
LITTLE ITALY OCEANSIDE	INVESTMENSTS LLC	4546 EL MAR DR	LAUD BY THE SEA	FL	33308	
DAVID L PALMERTON TR	/ LEISURE MAR INC	PO BOX 7503	FORT LAUDERDALE	FL	33338	
SOUTHERN SEAS CONDO		4520 EL MAR DRIVE	LAUD BY THE SEA	FL	33308	
MINTO VILLAS-BY-THE-SEA LLC		4400 W SAMPLE ROAD STE 200	COCONUT CREEK	FL	33073	
VILLAS BY THE SEA 3		4444 EL MAR DRIVE	LAUD BY THE SEA	FL	33308	
DRIFTWOOD BEACH CLUB INC	FAULCOUER,J W MG AGENT	4417 EL MAR DR	LAUD BY THE SEA	FL	33308	3605
EL MAR I LLC		4416 EL MAR DR	LAUD BY THE SEA	FL	33308	
EL MAR II LLC		4432 EL MAR DR	LAUD BY THE SEA	FL	33308	
HIGH NOON APT MOTELS INC		4424 EL MAR DR	LAUD BY THE SEA	FL	33308	
SINIVAD INC		4408 EL MAR DR	LAUD BY THE SEA	FL	33308	3606
DEMKO FAMILY HOLDINGS LTD		811 SE 2 TER	POMPANO BEACH	FL	33060	
ANGLIN FAM TR	DEMKO,M H TRSTEE	4334 E TRADEWINDS AVE	LAUD BY THE SEA	FL	33308	
ORIANA MANAGEMENT LLC		4344 EL MAR DR	LAUD BY THE SEA	FL	33308	
ORIANA MANAGEMENT LLC		1116 PHEASANT LANE	COLLEGEVILLE	PA	19426	
HALIM-ATIA,EMILY		4342 EL MAR DR	LAUD BY THE SEA	FL	33308	
HALIM-ATIA,EMILY		321 MELROSE AVE	KENILWORTH	IL	60043	
JACOBSON,SHARON		4340 EL MAR DR	LAUD BY THE SEA	FL	33308	
SARDO FAMILY RESIDENCE TR	SARDO,JOAN TRSTEE	4338 EL MAR DRIVE	LAUD BY THE SEA	FL	33308	
SARDO FAMILY RESIDENCE TR	SARDO,JOAN TRSTEE	23 BRIDGEND COURT N	WOODBRIDGE	ON		
ORIANA INVESTMENTS LLC		4336 EL MAR DRIVE	LAUD BY THE SEA	FL	33308	
ORIANA INVESTMENTS LLC		2541 RIVER RUN COVE	OWENSBORO	KY	42303	
PIER POINT DEVELOPERS LLC		4316 EL MAR DR APT 201	LAUD BY THE SEA	FL	33308	5141
FERN H KOHN REV TR	KOHN,FERN H TRSTEE	4330 EL MAR DR	LAUD BY THE SEA	FL	33308	
MILLER,HENRY C	HENRY C MILLER TR	4328 EL MAR DR UNIT 7	LAUD BY THE SEA	FL	33308	
CLACK,L SUSAN &	CLACK,RICHARD E	4326 EL MAR DR	LAUD BY THE SEA	FL	33308	
CLACK,L SUSAN &	CLACK,RICHARD E	6679 HIGHLAND DR	WINDSOR	WI	53598	
JEJ INVESTMENTS LLC		PO BOX 263	RUSSELLVILLE	KY	42276	
PINTSOPOULOS,ANTHONY C		4322 EL MAR DR #10	LAUD BY THE SEA	FL	33308	
BUENA VISTA OCEANSIDE LLC		4312 EL MAR DRIVE	LAUD BY THE SEA	FL	33308	
BUENA VISTA OCEANSIDE LLC		375 GOLFSIDE DR	WEXFORD	PA	15090	
OCEAN TREASURE LLC		3208 NE 10 ST	POMPANO BEACH	FL	33062	
WINTER COLONY CO-OP	CONDO ASSOCIATION	4300 EL MAR DR	LAUD BY THE SEA	FL	33308	
GULF EASTERN PROPERTY MANG INC	BOUTIN,R D MG AGENT	4244 EL MAR DR	LAUD BY THE SEA	FL	33308	
EL MAR CONDO		4228 EL MAR DR	LAUD BY THE SEA	FL	33308	
COSTA DEL SOL ASSOC INC		4220 EL MAR DR	LAUD BY THE SEA	FL	33308	
OCEANTIME LLC		3208 NE 10 ST	POMPANO BEACH	FL	33026	
3RM INVESTMENTS LLC		770 PONCE DE LEON BLVD	CORAL GABLES	FL	33134	
GORANA INTERNATIONAL INC		4140 EL MAR DRIVE	LAUD BY THE SEA	FL	33308	
GORANA INTERNATIONAL INC		2835 W HOWARD ST	CHICAGO	IL	60645	
SELLITTI FAM LTD PARTNERSHIP	SELLITTI,TONY P & JOANN W	4128 EL MAR DR	LAUD BY THE SEA	FL	33308	
SELLITTI FAM LTD PARTNERSHIP	SELLITTI,TONY P & JOANN W	367 COUNTRY CLUB BLVD #2400	WEIRTON	WV	26062	4914
WALNUT & VINE PROPERTIES II LLC		4110 EL MAR DRIVE	LAUD BY THE SEA	FL	33308	
WALNUT & VINE PROPERTIES II LLC		999 VANDERBILT BEACH RD	NAPLES	FL	34108	
LAUDERDALE SURF CORP	/ R W ROBERTS	220 IMPERIAL LANE	LAUD BY THE SEA	FL	33308	
CARIBE CO-OP	CONDO ASSOCIATION	4050 N OCEAN DR	LAUD BY THE SEA	FL	33308	
FOUNTAINHEAD CONDO	CONDO ASSOCIATION	3900 N OCEAN DRIVE	LAUD BY THE SEA	FL	33308	
PLAZA EAST CONDO	CONDO ASSOCIATION	4300 N OCEAN BLVD	FORT LAUDERDALE	FL	33308	
PLAZA SOUTH CONDO	CONDO ASSOCIATION	4280 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	6103

GALT TOWERS CONDO	CONDO ASSOCIATION	4250 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
L'AMBIANCE BEACH CONDO	CONDO ASSOCIATION	4240 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
THE GALLEON CONDO	CONDO ASSOCIATION	4100 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
PLAZA BEACH HOTEL CORP	TIDAN CONST INC	4060 GALT OCEAN DRIVE	FORT LAUDERDALE	FL	33308	6502
OCEAN MANOR CONDO	CONDO ASSOCIATION	4040 GALT OCEAN DRIVE	FORT LAUDERDALE	FL	33308	
OCEAN CLUB CONDO	CONDO ASSOCIATION	4020 GALT OCEAN	FORT LAUDERDALE	FL	33308	
OCEAN SUMMIT CONDO	CONDO ASSOCIATION	4010 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
PLAYA DEL MAR	CONDO ASSOCIATION	3900 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
REGENCY TOWER	CONDO ASSOCIATION	3850 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
GALT OCEAN CLUB	CONDO ASSOCIATION	3800 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
REGENCY TOWER SOUTH CONDO	CONDO ASSOCIATION	3750 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
ROYAL AMBASSADOR CONDO	CONDO ASSOCIATION	3700 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
EDGEWATER ARMS CO-OP	CONDO ASSOCIATION	3600 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
RIVIERA CONDO	CONDO ASSOCIATION	3550 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
PLAYA DEL SOL CONDO	CONDO ASSOCIATION	3500 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
THE COMMODORE CONDO	CONDO ASSOCIATION	3430 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
SOUTHPOINT CONDO	CONDO ASSOCIATION	3410 GALT OCEAN DR	FORT LAUDERDALE	FL	33308	
L'HERMITAGE COMMUNITY ASSN INC	CONDO ASSOCIATION	3100 N OCEAN BLVD	FORT LAUDERDALE	FL	33308	
CAMACHO,JORGE S & MIRTHA A		3066 ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	
FHR LLC		3060 401 E LAS OLAS BLVD # 130/380	FORT LAUDERDALE	FL	33301	
FISHER, KENNETH		3056 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	7308
SHINING HILL DEVELOPMENTS		3052 N ATLANTIC BOULEVARD	FORT LAUDERDALE	FL	33308	
SHINING HILL DEVELOPMENTS	ATTN ANGELO DEGASPERIS	1500 HWY NO 7	CONCORD	ON		
CLEMENTI,SANDRO & LILLIAN		3044 N ATLANTIC BOULEVARD	FORT LAUDERDALE	FL	33308	
CLEMENTI,SANDRO & LILLIAN		928 WEST ST	LEOMINSTER	MA	_01453	2063
GORMAN,L D		3040 N ATLANTIC BOULEVARD	FORT LAUDERDALE	FL	33308	
GORMAN,L D		PO BOX 89	HAZARD	KY	41702	_0089
THEOHARIS,GEORGE & BILLIE S		3036 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	7308
RUSH,MICHAEL J & JANICE P		3032 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	7308
KAPP,JACK E & MARY ANN		3030 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	7308
REIMER,W JAMES		3020 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	7308
BEARD,THORA J	THORA J BEARD REV LIV TR	3018 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	7308
MASTRIANA,F RONALD		3012 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	7308
STERN,ELAINE	ELAINE STERN REV TR ETAL	3008 N ATLANTIC BOULEVARD	FORT LAUDERDALE	FL	33308	
FLORENCE ELISA WIGLEY REV TR	ARMSTRONG,GARY GRD	ARMSTRONG,GARY GRD	LIGHTHOUSE POINT	FL	33074	
GLASER,KIMBERLIE L		3000 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	
FISHER,KENNETH		3056 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	
2930 ATLANTIC LLC	KENNETH FISHER	3025 N OCEAN BLVD	FORT LAUDERDALE	FL	33308	
2924 ATLANTIC LLC	KENNETH FISHER	3025 N OCEAN BLVD	FORT LAUDERDALE	FL	33308	
TROMBINO,VERONICA H/E	HUM,MARGARET ETAL	2920 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	
COLLINS,D R & PATRICIA E		2916 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	7512
QUARANTA,MICHAEL A &		2912 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	
QUARANTA,MICHAEL A &		41 W MUNDHANK	BARRINGTON	IL	60010	7113
HINDS,DAVID H & HINDS,BRENDA BRITT		2908 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	7512
JOHNSON,MARTY & THERESA H		2904 N ATLANTIC BOULEVARD	FORT LAUDERDALE	FL	33308	
JOHNSON,MARTY & THERESA H		601 MAIN ST STE	HAZARD	KY	41701	
BESHOURI,PETER		2900 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33305	
SANTINI,ROBERTA H/E	SANTINI,ANN MARIE	2820 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	
WELLS,GREG & NOREEN / OLIVE & ASSOCIATES		2438 E LAS OLAS BLVD	FORT LAUDERDALE	FL	33301	
RHOADS,JEANNE	JEANNE RHOADS TR	2800 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	7574
MATZEL,BRUCE /BRANDYWINE ORGANIZATION		2760 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	
JASNIAK,ALEKSANDRA		2724 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33334	
HECHAVARRIA,SANDRA J	ANTONIO HECHAVARRIA REV LIV TR	2720 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	7510
1429850 ONTARIO LTD	941445 ALBERTA INC	2716 N ATLANTIC BOULEVARD	FORT LAUDERDALE	FL	33308	
1429850 ONTARIO LTD	941445 ALBERTA INC	400 3 ST SW STE 3700	CALGARY	AB		
JAMES E HUGHES LIV TR	JAMES E HUGHES LIV TR	2712 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	
JAMES E HUGHES LIV TR	JAMES E HUGHES LIV TR	4151 W AUGUSTA AVE	PHOENIX	AZ	85051	5747
SANDRA J HECHAVARRIA REV LIV TR	HECHAVARRIA,SANDRA J TRSTEE	5547 W OAKLAND PARK BLVD	LAUDERHILL	FL	33313	
SEA TOWER APTS CO-OP	CONDO ASSOCIATION	2840 N OCEAN BOULEVARD	FORT LAUDERDALE	FL	33308	7547
DEMOISELLE HOLDINGS LTD		2620 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33305	
ZITELLA,SAM N & FRANCES		2618 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	
ELLIS,JAMES F	JAMES ELLIS F REV TR	3020 NE 32 AVE #110	FORT LAUDERDALE	FL	33308	
GORMAN,LAWRENCE D		2600 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	7508
FIFER,ELIZABETH M	ELIZABETH M FIFER REV TR	2520 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33305	1912
MAVROOKAS,PETER &	NOTTE-MAVROOKAS,KIM J	2516 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33305	
ANDERSON,JAY C		2510 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33305	1912
2504 INC		2504 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33305	
JACOBS,STEPHEN F & LISA DAI		2500 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33305	1912
KLEIN,MELVYN N		2424 N ATLANTIC BOULEVARD	FORT LAUDERDALE	FL	33305	
KLEIN,MELVYN N		615 N UPPER BROADWAY STE 1940	CORPUS CHRISTI	TX	78477	
WM RANDALL HOLLOWAY TR	HOLLOWAY,WILLIAM RANDALL TRSTEE	2416 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33305	
CONAL-FLOR HOLDINGS INC		2408 N ATLANTIC BOULEVARD	FORT LAUDERDALE	FL	33305	
CONAL-FLOR HOLDINGS INC		1500 HIGHWAY #7	CONCORD	ON		
CONSTITUENCY CORP		2404 N ATLANTIC BOULEVARD	FORT LAUDERDALE	FL	33305	
CONSTITUENCY CORP		3885 SAINT JAMES WAY	BOCA RATON	FL	33434	3376
SMITH,LYNN FENSTER		2400 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33305	1910
VJS DEV CORP		441 LEXINGTON AVE STE 506	NEW YORK	NY	10017	
FEKE,SAMUEL G &	FEKE,SHERI L	2312 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33305	1908
RUSH, JANICE P		3032 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33308	7514
BERLINER,IRWIN TR		2300 N ATLANTIC BLVD	FORT LAUDERDALE	FL	33305	1908
PRH FAIRWINDS LLC / PEREZ ROSS HOLDINGS		315 S BISCAYNE BLVD	MIAMI	FL	33131	
QUANTUM BLACKSTAR LLC		PO BOX 254	FORT LAUDERDALE	FL	33302	
SUN TOWER INVESTMENTS INC		2030 N ATLANTIC BOULEVARD	FORT LAUDERDALE	FL	33305	
SUN TOWER INVESTMENTS INC		163 W 74TH ST	NEW YORK	NY	10023	2200
URBANA PELICAN GRAND I LLC		2000 N OCEAN BOULEVARD				
URBANA PELICAN GRAND I LLC		1420 PEACHTREE ST NE #250	ATLANTA	GA	30309	
VUE CONDO	CONDO ASSOCIATION	2001 N OCEAN BLVD	FORT LAUDERDALE	FL	33305	
SHORE CLUB CONDO		1905 N OCEAN BOULEVARD	FORT LAUDERDALE	FL	33305	3747
VILLA OCTAGON		1900 N OCEAN BLVD	FORT LAUDERDALE	FL	33305	3736
1200 CLUB CONDO	CONDO ASSOCIATION	1200 N. FORT LAUDERDALE BLVD.	FORT LAUDERDALE	FL	33304	
PARK TOWER CONDOMINIUM	CONDO ASSOCIATION	1151 N FORT LAUDEDALE BLVD.	FORT LAUDERDALE	FL	33304	
TIITF/DNR DIV REC & PARKS	HUGH TAYLOR BIRCH STATE PARK	3900 COMMONWEALTH BLVD	TALLAHASSEE	FL	32399	6575
BONNET HOUSE	KAREN BEARD, CEO	900 NORTH BIRCH ROAD	FORT LAUDERDALE	FL	33304	