

**CONSOLIDATED JOINT COASTAL PERMIT SOVEREIGN
SUBMERGED LANDS AUTHORIZATION**

PERMITTEE:

Broward County Board of County
Commissioners
Eric Myers, Natural Resource Administrator
115 South Andrews Avenue
Fort Lauderdale, FL 33301

AGENT:

Christopher G. Creed, P.E.
Olsen Associates, Inc.
2618 Herschel Street
Jacksonville, FL 32204

PERMIT INFORMATION:

Permit Number: 0314535-001-JC

Project Name: Broward County Segment II
Beach Nourishment and Restoration

County: Broward

Issuance Date: January 31, 2014

Expiration Date: January 31, 2029

REGULATORY AUTHORIZATION:

This permit is issued under the authority of Chapter 161 and Part IV of Chapter 373, Florida Statutes (F.S.), and Title 62, Florida Administrative Code (F.A.C.). Pursuant to Operating Agreements executed between the Department of Environmental Protection (Department) and the water management districts, as referenced in Chapter 62-113, F.A.C., the Department is responsible for reviewing and taking final agency action on this activity. **This permit supersedes Permit 0163435-005-JC, as previously modified.**

PROJECT DESCRIPTION:

The project involves the placement of beach-compatible sand along 4.9 miles of the Broward County coastline, between Hillsboro Inlet and Port Everglades. This includes beach nourishment at Pompano Beach and Lauderdale-by-the-Sea; beach restoration at northern Fort Lauderdale; dune construction within the Lauderdale-by-the-Sea and Fort Lauderdale segments; and construction of 6.8 acres of artificial reef as mitigation for direct impacts to 4.9 acres of nearshore hardbottom. The width of the construction template (measured as the seaward distance from the range monuments) for the Pompano Beach segment varies from 203 to 270 feet, the width for the Lauderdale-by-the-Sea segment varies from 153 to 188 feet, and the width for the Fort Lauderdale segment varies from 71 to 244 feet. The dune will have a crest width of 10 feet, a crest height of +11 feet (NAVD) and side slopes of 1:2 (vertical:horizontal). Beach-compatible fill material will be obtained from the following upland borrow areas: E.R. Jahna Ortona Mine, Stewart Immokalee Mine, Vulcan Witherspoon Mine and Cemex Davenport Mine. The sand will be transported to the proposed locations via truck-haul or railcar.

PROJECT LOCATION:

The beach nourishment sites are located within Pompano Beach (from DEP monument R-36 to R-41.3) and Lauderdale-By-The-Sea (from R-51 to R-53). The beach restoration site is located within Fort Lauderdale (from R-53 to R-72). The artificial reef will be located in the nearshore, approximately between R-44 and R-46. The north reach, in Pompano Beach, is located in Section 5, Township 49 South, and Range 43 East. The south reach, in Lauderdale-By-The-Sea and Fort Lauderdale, is located in Sections 6, 18, 19, 30 and 31, Townships 49 and 50 South, Ranges 42 and 43 East. Both reaches and the artificial reef are located in Broward County and extend into the Atlantic Ocean, Class III Waters, not in Outstanding Florida Waters.

PROPRIETARY AUTHORIZATION:

This activity also requires a proprietary authorization, as the activity is located on sovereign submerged lands held in trust by the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees), pursuant to Article X, Section 11 of the Florida Constitution, and Sections 253.002 and 253.77, F.S. The activity is not exempt from the need to obtain a proprietary authorization. The Board of Trustees delegated, to the Department, the responsibility to review and take final action on this request for proprietary authorization in accordance with Section 18-21.0051, F.A.C., and the Operating Agreements executed between the Department and the water management districts, as referenced in Chapter 62-113, F.A.C. This proprietary authorization has been reviewed in accordance with Chapter 253, F.A.C., and the policies of the Board of Trustees.

As staff to the Board of Trustees, the Department has reviewed the project described above, and has determined that the beach restoration and artificial reef activities qualify for a Letter of Consent to use sovereign, submerged lands, as long as the work performed is located within the boundaries as described herein and is consistent with the terms and conditions herein. Therefore, consent is hereby granted, pursuant to Chapter 253.77, F.S., to perform the activity on the specified sovereign submerged lands.

COASTAL ZONE MANAGEMENT:

This permit constitutes a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Zone Management Act.

WATER QUALITY CERTIFICATION:

This permit constitutes certification of compliance with state water quality standards pursuant to Section 401 of the Clean Water Act, 33 U.S.C. 1341.

OTHER PERMITS:

Authorization from the Department does not relieve you from the responsibility of obtaining other permits (Federal, State or local) that may be required for the project. When the Department received your permit application, a copy was sent to the U.S. Army Corps of Engineers (Corps) for review. The Corps will issue their authorization directly to you, or contact you if additional information is needed. If you have not heard from the Corps by now, we

recommend that you contact the nearest Corps regulatory office for status and further information. Failure to obtain Corps authorization prior to construction could subject you to federal enforcement action by that agency.

AGENCY ACTION:

The above named Permittee is hereby authorized to construct the work outlined in the project description and project location of this permit and shown on the approved permit drawings, plans and other documents attached hereto. This agency action is based on the information submitted to the Department as part of the permit application, and adherence with the final details of that proposal shall be a requirement of the permit. **This permit and authorization to use sovereign submerged lands are subject to the General Conditions and Specific Conditions, which are a binding part of this permit and authorization.** Both the Permittee and their Contractor are responsible for reading and understanding this permit (including the permit conditions and the approved permit drawings) prior to commencing the authorized activities, and for ensuring that the work is conducted in conformance with all the terms, conditions and drawings.

GENERAL CONDITIONS:

1. All activities authorized by this permit shall be implemented as set forth in the plans and specifications approved as a part of this permit, and all conditions and requirements of this permit. The permittee shall notify the Department in writing of any anticipated deviation from the permit prior to implementation so that the Department can determine whether a modification of the permit is required pursuant to section 62B-49.008, Florida Administrative Code.
2. If, for any reason, the permittee does not comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Bureau of Beaches and Coastal Systems and the appropriate District office of the Department with a written report containing the following information: a description of and cause of noncompliance; and the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.
3. This permit does not eliminate the necessity to obtain any other applicable licenses or permits that may be required by federal, state, local, special district laws and regulations. This permit is not a waiver or approval of any other Department permit or authorization that may be required for other aspects of the total project that are not addressed in this permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of sovereignty land of Florida seaward of the mean high-water line, or, if established, the erosion control line, unless herein provided and the necessary title, lease, easement, or other form of consent authorizing the proposed use has been obtained from the State. The permittee is

responsible for obtaining any necessary authorizations from the Board of Trustees of the Internal Improvement Trust Fund prior to commencing activity on sovereign lands or other state-owned lands.

5. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered specifically approved unless a specific condition of this permit or a formal determination under section 373.421(2), F.S., provides otherwise.
6. This permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee. The issuance of this permit does not convey any vested rights or any exclusive privileges.
7. This permit or a copy thereof, complete with all conditions, attachments, plans and specifications, modifications, and time extensions shall be kept at the work site of the permitted activity. The permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.
8. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel with proper identification and at reasonable times, access to the premises where the permitted activity is located or conducted for the purpose of ascertaining compliance with the terms of the permit and with the rules of the Department and to have access to and copy any records that must be kept under conditions of the permit; to inspect the facility, equipment, practices, or operations regulated or required under this permit; and to sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules. Reasonable time may depend on the nature of the concern being investigated.
9. At least forty-eight (48) hours prior to commencement of activity authorized by this permit, the permittee shall submit to the Bureau of Beaches and Coastal Systems (JCP Compliance Officer) and the appropriate District office of the Department a written notice of commencement of construction indicating the actual start date and the expected completion date and an affirmative statement that the permittee and the contractor, if one is to be used, have read the general and specific conditions of the permit and understand them.
10. If historic or archaeological artifacts, such as, but not limited to, Indian canoes, arrow heads, pottery or physical remains, are discovered at any time on the project site, the permittee shall immediately stop all activities in the immediate area that disturb the soil in the immediate locale and notify the State Historic Preservation Officer and the Bureau of Beaches and Coastal Systems (JCP Compliance Officer). In the event that unmarked human remains are encountered during permitted activities, all work shall stop in the

immediate area and the proper authorities notified in accordance with Section 872.02, F.S.

11. Within 30 days after completion of construction or completion of a subsequent maintenance event authorized by this permit, the permittee shall submit to the Bureau of Beaches and Coastal Systems (JCP Compliance Officer) and the appropriate District office of the Department a written statement of completion and certification by a registered professional engineer. This certification shall state that all locations and elevations specified by the permit have been verified; the activities authorized by the permit have been performed in compliance with the plans and specifications approved as a part of the permit, and all conditions of the permit; or shall describe any deviations from the plans and specifications, and all conditions of the permit. When the completed activity differs substantially from the permitted plans, any substantial deviations shall be noted and explained on two paper copies and one electronic copy of as-built drawings submitted to the Bureau of Beaches and Coastal Systems (JCP Compliance Officer).

SPECIFIC CONDITIONS:

1. Pursuant to Chapter 161.141, F.S., prior to construction of the beach restoration, the Board of Trustees must establish the line of mean high water for any area affected by this project that does not already have an Erosion Control Line (ECL). This is required to establish the boundary line between sovereignty lands of the state bordering on the Atlantic Ocean and the upland properties between R-53 and R-72. No work shall commence until the Erosion Control Line has been executed to the satisfaction of the Department.
2. All reports or notices relating to this permit shall be sent to the Department's JCP Compliance Officer (e-mail address: JCP.Compliance@dep.state.fl.us), unless otherwise specified in the specific conditions.
3. The Permittee shall not store or stockpile tools, equipment, materials, etc., within littoral zones or elsewhere within surface waters of the state without prior written approval from the Department. Storage, stockpiling or access of equipment on, in, over or through hardbottom, seagrass (or other aquatic vegetation) beds or wetlands is prohibited unless within a work area or ingress/egress corridor specifically approved by this permit. Anchoring or spudding of vessels and barges within beds of aquatic vegetation or over hardbottom areas is also prohibited.
4. The Permittee shall not conduct project operations or store project-related equipment in, on or over dunes, or otherwise impact dune vegetation, outside the approved staging, beach access and dune restoration areas designated in the permit drawings.
5. No work shall be conducted under this permit until the Permittee has received a written Notice to Proceed from the Department. At least 30 days prior to the requested date of

issuance of the notice to proceed, the Permittee shall submit a written request for a Notice to Proceed, along with the following items for review and approval by the Department:

- a. Final plans and specifications that are consistent with the project description in this permit and the approved permit drawings. Both the estimated direct and secondary impacts, fill volume, and associated project construction dimensions will be updated to reflect the most current pre-construction conditions;
 - b. Documentation that the Erosion Control Line has been executed and recorded in the County Records;
 - c. Turbidity monitoring qualifications;
 - d. Biological monitoring qualifications;
 - e. Department approved biological monitoring plan.
 - f. Mitigation plan to include coral transplantation.
6. **Comprehensive Review of the Restoration:** After the beach at Fort Lauderdale (R-53 through R-72) is restored, it will be necessary to evaluate its performance before it is subsequently nourished. Prior to the first nourishment event at Fort Lauderdale (following the initial restoration), the Permittee shall submit a report in accordance with the approved physical and biological monitoring plans to the Department to assess the effects of the project. If the beach restoration did not meet the design expectations or if the adverse impacts exceeded expectations, revisions to the design may be required. Work may not commence on subsequent nourishment activities until after the Permittee receives a written Notice to Proceed, which may require modification of the permit.
7. **Pre-Construction Conference.** The Permittee shall conduct a pre-construction conference to review the specific conditions and monitoring requirements of this permit with Permittee's contractors, the engineer of record, and the JCP Compliance Officer (or designated alternate). In order to ensure that appropriate representatives are available, at least twenty-one (21) days prior to the intended commencement date for the permitted construction, the Permittee is advised to contact the Department, and the other agency representatives listed below:

JCP Compliance Officer
e-mail: JCP.Compliance@dep.state.fl.us

DEP District Office
Submerged Lands & Environmental Resources
400 North Congress Avenue, Suite 200

West Palm Beach, FL 33401-2913
(561) 681-6600

The Permittee is also advised to schedule the pre-construction conference at least a week prior to the intended commencement date. At least seven (7) days in advance of the pre-construction conference, the Permittee shall provide written notification, advising the participants (listed above) of the **agreed-upon** date, time and location of the meeting, and also provide a meeting agenda and a teleconference number.

The Permittee may wish to combine this Pre-Construction Conference with the marine turtle Pre-Construction Meeting (see Specific Condition 10).

8. Sediment quality control and quality assurance procedures shall be conducted in accordance with the Sediment Quality Control\Quality Assurance Plan dated September 17, 2012, incorporated by reference as a specific condition for approval. The use of one or more of the following mines is approved as a sand source for construction: Stewart Immokalee Mine, Vulcan Witherspoon Mine, Jahna Ortona Mine and Cemex Davenport Mine.

Marine Turtle Nesting Beach Protection

9. All derelict concrete, metal, and coastal armoring material and other debris shall be removed from the beach prior to any material placement to the maximum extent practicable. If debris removal activities will take place during shorebird breeding or sea turtle nesting seasons, the work shall be conducted during daylight hours only and shall not commence until completion of daily seabird, shorebird or sea turtle surveys each day. All excavations and temporary alterations of the beach topography shall be filled or leveled to the natural beach profile prior to 9 p.m. each day unless otherwise authorized.
10. **Pre-Construction Meeting:** A meeting between representatives of the contractor, the FWS, the FWC, the permitted sea turtle surveyor and other species surveyors as appropriate, shall be held prior to commencement of work on projects. Advance notice of at least 10 business days shall be provided prior to conducting this meeting. The meeting will provide an opportunity for explanation and/or clarification of the protection measures, as well as additional guidelines when construction occurs during nesting season, such as staging equipment and reporting within the work area, as well as follow up meetings during construction.
11. Beach nourishment and restoration shall be started after October 31 and be completed before May 1.
12. Construction-related activities are authorized to occur on the nesting beach (seaward of existing coastal armoring structures or the dune crest) at the beginning and end of the sea

turtle nesting season (March 1 through April 30 and November 1 through November 30) under the following conditions:

- a. A daily marine turtle nest survey of the nesting beach in the vicinity of the project (including areas of beach access) shall be conducted starting March 1 and continue through November 30 during the years of construction. In other years, daily surveys shall begin March 1 and continue through October 15. Surveys shall be conducted daily between sunrise and 9 a.m. and shall continue until the last marked nest has hatched to assess hatching success.
- b. For sand placement projects that occur during the period from March 1 through April 30 or November 1 through November 30, daily early morning surveys (before 9 a.m.) shall be conducted for sea turtle nests and eggs shall be relocated per the following requirements:
 - i. Only those nests on the nourished beach that may be affected by the construction activities shall be relocated. Nests requiring relocation shall be moved no later than 9 a.m. the morning following deposition to a nearby self-release beach site in a secure setting, where artificial lighting will not interfere with hatchling orientation and that has been approved by FWC. Relocated nests shall not be placed in organized groupings. Relocated nests shall be randomly staggered along the length and width of the beach, in settings that are not expected to experience daily inundation by high tides or known to routinely experience severe erosion and egg loss, or that are subject to artificial lighting. Nest relocations in association with construction activities shall cease when sand placement activities no longer threaten nests.
 - ii. Nests deposited within areas where construction activities have ceased or will not occur for 65 days, or nests laid in the nourished berm prior to tilling, shall be marked and left in place unless other factors threaten the success of the nest. The turtle permit holder shall install an on-beach marker at the nest site and/or a secondary marker at a point as far landward as possible to assure that future location of the nest will be possible should the on-beach marker be lost. No activity shall occur within this area, nor shall any activities occur that could result in impacts to the nest. Nest sites shall be inspected daily to assure nest markers remain in place and the nest has not been disturbed by the project activity.
- c. No construction activity may commence until the marine turtle survey has been completed for the active and upcoming construction area each day and cleared by the permitted sea turtle surveyor present on site.

13. It is the responsibility of the Permittee to ensure that the project area and access sites are surveyed for marine turtle nesting activity. Nesting surveys and egg relocations shall only be conducted by persons with prior experience and training in these activities and who are duly authorized to conduct such activities through a valid permit issued by FWC, pursuant to F.A.C 68E-1. Please contact FWC's Marine Turtle Management Program in Tequesta at MTP@myfwc.com for information on the permit holder in the project area.
14. During the sea turtle nesting season, the contractor shall not extend the beach fill more than 500 feet along the shoreline between dusk and the following day until the daily nesting survey has been completed and the beach cleared for fill advancement. An exception to this may occur if there is permitted sea turtle surveyor present on-site to ensure no nesting and hatching sea turtles are present within the extended work area. If the 500 feet is not feasible for the project, the Permittee may submit a request for an alternate distance to FWC, and FWC will decide if that distance is acceptable during the preconstruction meeting. Once the beach has been cleared and the necessary nest relocations have been completed, the contractor will be allowed to proceed with the placement of fill during daylight hours until dusk, at which time the 500-foot length limitation shall apply.
15. During the period from March 1 through April 30, daytime surveys shall be conducted for leatherback sea turtle nests beginning March 1. Nighttime surveys for leatherback sea turtles shall begin when the first leatherback crawl is recorded within the project or adjacent beach area through April 30, or until completion of the project (whichever is earliest). Nightly nesting surveys shall be conducted from 9 p.m. until 6 a.m. The project area shall be surveyed at 1-hour intervals (since leatherbacks require at least 1.5 hours to complete nesting, this will ensure all nesting leatherbacks are encountered) and eggs shall be relocated per the preceding requirements.
16. Sand compaction shall be monitored in the area of sand placement immediately after completion of the project, and prior to March 1st, for three (3) subsequent years. Compaction shall be monitored in accordance with a protocol agreed to by the FWS, FWC and the Permittee. The requirement for compaction monitoring can be eliminated if the decision is made to till regardless of post-construction compaction levels. Out-year compaction monitoring and remediation are not required if placed material no longer remains on the beach.

At a minimum, the protocol below shall be followed. If the average value for any depth exceeds 500 pounds per square inch (psi) for any two or more adjacent stations, then that area shall be tilled immediately prior to the following date listed above. If values exceeding 500 psi are distributed throughout the project area, but in no case do those values exist at two adjacent stations at the same depth, then consultation with the FWC or FWS will be required to determine if tilling is required. If a few values exceeding 500 psi are present randomly within the project area, tilling will not be required.

- a. Compaction sampling stations shall be located at 500-foot intervals along the project area. One station shall be at the seaward edge of the dune/bulkhead line (when material is placed in this area), and one station shall be midway between the dune line and the high water line (normal wrack line).
 - b. At each station, the cone penetrometer shall be pushed to a depth of 6, 12 and 18 inches, three times at each depth (three replicates). Material may be removed from the hole if necessary to ensure accurate readings of successive levels of sediment. The penetrometer may need to be reset between pushes, especially if sediment layering exists. Layers of highly compact material may lie over less compact layers. Replicates shall be located as close to each other as possible, without interacting with the previous hole and/or disturbed sediments. The three replicate compaction values for each depth shall be averaged to produce final values for each depth at each station. Reports shall include all 18 values for each transect line, and the final 6 averaged compaction values.
 - c. No compaction sampling shall occur within 300 feet of any shorebird nest.
 - d. Any vehicles operated on the beach in association with compaction surveys shall operate in accordance with the FWC's Best Management Practices for Operating Vehicles on the Beach (<http://myfwc.com/conservation/you-protect/conservation/wildlife/beach-driving/>).
17. If tilling is required as specified above, the area shall be tilled to a depth of 36 inches. All tilling activity shall be completed prior to the marine turtle nesting season. If tilling occurs during shorebird nesting season, shorebird surveys prior to tilling shall be required per the Shorebird Conditions included within this document. It is the responsibility of the contractors to avoid tilling, scarp removal, or dune vegetation planting in areas where nesting birds are present. Each pass of the tilling equipment shall be overlapped to allow thorough and even tilling. If the project is completed during the marine turtle nesting season, tilling shall not be performed in areas where nests have been left in place or relocated. If compaction measurements are taken, a report on the results of the compaction monitoring shall be submitted electronically to FWC at marineturtle@myfwc.com prior to any tilling actions being taken.
- a. No tilling shall occur within 300 feet of any shorebird nest.
 - b. If flightless shorebird young are observed within the work zone or equipment travel corridor, a Shorebird Monitor shall be present during the operation to ensure that equipment does not operate within 300 feet of the flightless young.
 - c. A relatively even surface, with no deep ruts or furrows, shall be created during tilling. To do this, chain-linked fencing or other material shall be dragged over those areas as necessary after tilling.

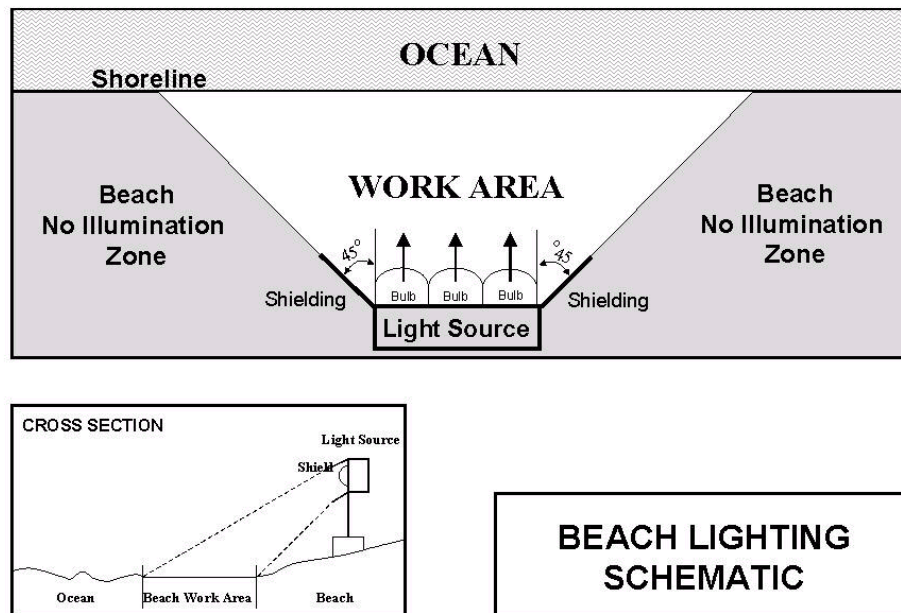
- d. Tilling shall occur landward of the wrack line and avoid all vegetated areas 3 square feet or greater with a 3-foot buffer around the vegetated areas. The slope between the mean high water line and the mean low water line shall be maintained in such a manner as to approximate natural slopes.
 - e. Any vehicles operated on the beach in association with tilling shall operate in accordance with the FWC's Best Management Practices for Operating Vehicles on the Beach (<http://myfwc.com/conservation/you-conserve/wildlife/beach-driving/>).
18. Weekly visual surveys for escarpments along the project area shall be made immediately after completion of the sand placement and prior to February 1st for three (3) subsequent years if sand from the project still remains on the beach. Weekly reports shall be submitted by Friday each week to marineturtle@myfwc.com.

Escarpments that interfere with sea turtle nesting or that exceed 18 inches in height for a distance of at least 100 feet shall be leveled and the beach profile shall be reconfigured to minimize scarp formation by March 1st. Any escarpment removal shall be reported by location to FWC. If the project is completed during the sea turtle nesting and hatching season, escarpments may be required to be leveled immediately, while protecting nests that have been relocated or left in place. If, during the nesting and hatching season, there is any subsequent reformation of escarpments that interfere with sea turtle nesting or that exceed 18 inches in height for a distance of 100 feet, the Permittee shall immediately contact FWC to determine the appropriate action to be taken. If it is determined that escarpment leveling is required during the nesting or hatching season, the FWS or FWC will provide a brief written authorization that describes methods to be used to reduce the likelihood of impacting existing nests. An annual summary of escarpment surveys and actions taken shall be submitted electronically to marineturtle@myfwc.com along with the annual summary as described below. If escarpment removal occurs during shorebird breeding season, shorebirds surveys shall be required prior to removal per the *Shorebird Conditions* included within this document. (NOTE: Out-year escarpment monitoring and remediation are not required if placed material no longer remains on the dry beach).

- a. No heavy equipment shall operate within 300 feet of any shorebird nest.
- b. If flightless shorebird young are observed within the work zone or equipment travel corridor, a Shorebird Monitor shall be present during the operation to ensure that equipment does not operate within 300 feet of the flightless young.
- c. Any vehicles operated on the beach in association with escarpment surveys or removal shall operate in accordance with the FWC's Best Management Practices for Operating Vehicles on the Beach (<http://myfwc.com/conservation/you-conserve/wildlife/beach-driving/>).

- d. All Terms and Conditions in the FWS Programmatic Piping Plover Biological Opinion, dated May 22, 2013, shall be met as required in that document.
- e. Staging areas for construction equipment shall be located off the beach from March 1 through April 30 and November 1 through November 30, if off-beach staging areas are available. Nighttime storage of construction equipment not in use shall be off the beach to minimize disturbance to sea turtle nesting and hatching activities.

Figure 1.



Construction activities shall be limited to daylight hours only: therefore, no direct lighting of the beach and nearshore waters shall occur during construction. If lighting of onshore equipment becomes necessary, lighting shall be minimized through reduction, shielding, lowering, and appropriate placement to avoid excessive illumination of the water's surface and nesting beach while meeting all Coast Guard, EM 385-1-1, and OSHA requirements. Light intensity of lighting equipment shall be reduced to the minimum standard required by OSHA for General Construction areas, in order not to misdirect sea turtles. Shields shall be affixed to the light housing and be large enough to block light from all lamps from being transmitted outside the construction area (**Figure 1**).

19. In the event a sea turtle nest is excavated during construction activities, the permitted person responsible for egg relocation for the project shall be notified immediately so the eggs can be moved to a suitable relocation site.
20. Upon locating a dead or injured sea turtle adult, hatchling, or egg that may have been harmed or destroyed as a direct or indirect result of the project, the Permittee shall be responsible for notifying the Sea Turtle Stranding and Salvage Network (STSSN) at SeaTurtleStranding@myfwc.com. Care shall be taken in handling injured sea turtles or eggs to ensure effective treatment or disposition, and in handling dead specimens to preserve biological materials in the best possible state for later analysis.

Nesting Seabird and Shorebird Protection Conditions

21. Nesting seabird and shorebird (i.e. shorebird) surveys should be conducted by trained individuals (Bird Monitor) with proven shorebird identification skills and avian survey experience. In the event that a suitable individual cannot be found, the Permittee shall contact the FWC Regional Species Biologist (Figure 2) for further direction. A qualified Bird Monitor(s), with their contact information, summary of qualifications, including bird identification skills, and avian survey experience, shall be provided to FWC prior to any construction or hiring for shorebird surveys and consultation. Bird Monitors shall use the following survey protocols:
 - a. Bird Monitors shall review and become familiar with the general information, employ the data collection protocol, and implement data entry procedures outlined on the FWC's Florida Shorebird Database (FSD) website (www.FLShorebirdDatabase.org). An outline of data to be collected, including downloadable field data sheets, is available on the website.
 - b. Breeding season varies by species. Most species have completed the breeding cycle by September 1, but flightless young may be present through September. The following dates are based on the best available information regarding ranges and habitat use by species around the state:

Broward County	1 April through 1 September
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Breeding season surveys shall begin on the first day of the breeding season, or 10 days prior to project commencement (including surveying activities and other pre-construction presence on the beach), whichever is later. During construction related activities, surveys shall be conducted through August 31st or until all breeding activity has concluded.

- c. Breeding season surveys shall be conducted in all potential beach-nesting bird habitats within the project boundaries that may be impacted by construction or

pre-construction activities. Areas that do not include project-related activities may be excluded from surveys. One or more shorebird survey routes shall be established in the FSD website to cover these areas.

- d. During the pre-construction and construction phases of the project, surveys for detecting breeding activity and the presence of flightless chicks shall be completed on a daily basis prior to movement of equipment, operation of vehicles, or other activities that could potentially disrupt breeding behavior or cause harm to the birds or their eggs or young.
- e. Surveys shall be conducted by walking the length of the project area and visually surveying for the presence of shorebirds exhibiting breeding behavior, shorebird/seabird chicks or shorebird/seabird juveniles, as outlined in the FSD *Breeding Bird Protocol for Shorebirds and Seabirds*. Use of binoculars is required.

If an ATV or other vehicle is needed to cover large project areas, operators shall adhere to the FWC's Best Management Practices for Operating Vehicles on the Beach (<http://myfwc.com/conservation/you-serve/wildlife/beach-driving/>). Specifically, the vehicle shall be operated at a speed <6 mph and run at or below the high-tide line. The Bird Monitor shall stop at no greater than 200 meter intervals to visually inspect for breeding activity.

- f. Once breeding is confirmed by the presence of a scrape, eggs or young, the Bird Monitor shall notify the FWC Regional Species Conservation Biologist (**Figure 2**) within 24 hours. All breeding activity shall be reported to the FSD website within one week of data collection.

Figure 2.
 Florida Fish and Wildlife Conservation Commission
 Regional Species Biologist - Contacts for Shorebird Issues

Northwest Region

Dr. John Himes
 FL Fish and Wildlife
 Conservation Commission
 3911 Highway 2321
 Panama City, FL 32409-1658
 (850) 265-3676

North Central Region

Dr. Terry Doonan
 FL Fish and Wildlife
 Conservation Commission
 P.O. Box 177
 Olustee, FL 32072
 (386) 758-0525

Northeast Region

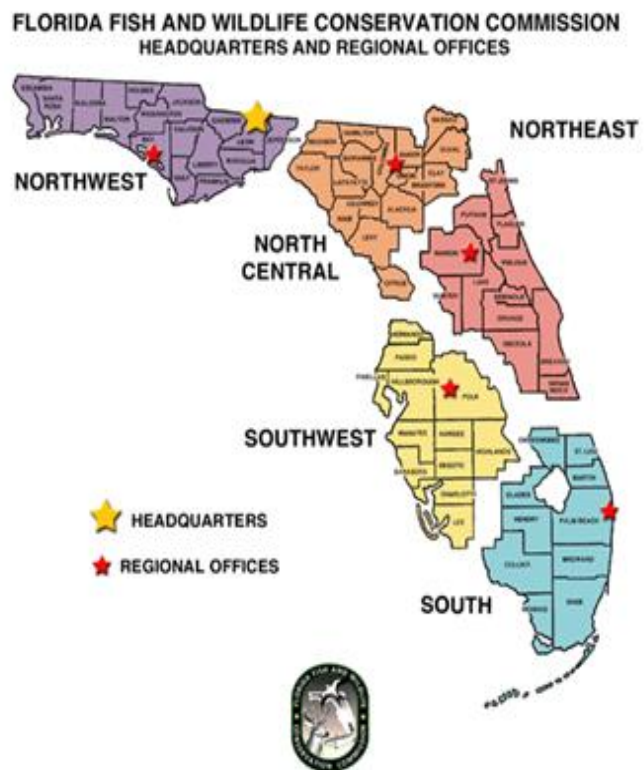
Mr. Alex Kropp
 FL Fish and Wildlife
 Conservation Commission
 1239 S.W. 10th Street
 Ocala, FL 34474-2797
 (352) 732-1225

Southwest Region

Ms. Nancy Douglass
 FL Fish and Wildlife
 Conservation Commission
 3900 Drane Field Road
 Lakeland, FL 33811-1299
 (863) 648-3205

South Region

Mr. Ricardo Zambrano
 FL Fish and Wildlife
 Conservation Commission
 8535 Northlake Boulevard
 West Palm Beach, FL 33412
 (561) 625-5122



22. **Seabird and Shorebird Buffer Zones and Travel Corridors:** Within the project area, the Permittee shall establish a disturbance-free buffer zone around any location where shorebirds have been engaged in breeding behavior, including territory defense. A 300 foot-wide buffer is considered adequate based on published studies. However, a smaller, site-specific buffer may be implemented upon approval by the FWC Regional Species Conservation Biologist (**Figure 2**) as needed. All sources of human disturbance (including pedestrians, pets and vehicles) shall be prohibited in the buffer zone.
- a. The Bird Monitor shall keep breeding sites under sufficient surveillance to determine if birds appear agitated or disturbed by construction or other activities in adjacent areas. If birds do appear to be agitated or disturbed by these activities, then the width of the buffer zone shall be increased immediately to a sufficient size to protect breeding birds.
 - b. Reasonable and traditional pedestrian access should not be blocked where breeding birds will tolerate pedestrian traffic. This is generally the case with lateral movement of beach-goers walking parallel to the beach at or below the highest tide line. Pedestrian traffic may also be tolerated when breeding was initiated within 300 feet of an established beach access pathway. The Permittee shall work with the FWC Regional Species Biologist to determine if pedestrian access can be accommodated without compromising nesting success.
 - c. Designated buffer zones shall be marked with posts, twine and signs stating “Do Not Enter, Important Nesting Area” or similar language around the perimeter that includes the name and a phone number of the entity responsible for posting. Posts should not exceed 3 feet in height once installed. Symbolic fencing (twine, string or rope) should be placed between all posts at least 2.5 feet above the ground and rendered clearly visible to pedestrians. If pedestrian pathways are approved by the FWC Regional Species Conservation Biologist within the 300foot buffer zone, these should be clearly marked. The posting shall be maintained in good repair until breeding is completed or terminated. Although solitary nesters may leave the buffer zone with their chicks, the posted area continues to provide a potential refuge for the family until breeding is complete. Breeding is not considered to be completed until all chicks have fledged.
 - d. No construction activities, pedestrians, movement of vehicles or stockpiling of equipment shall be allowed within the buffer area.
 - e. Travel corridors shall be designated and marked outside the buffer areas so as not to cause disturbance to breeding birds. Heavy equipment, other vehicles or pedestrians may transit past breeding areas in these corridors. However, other

activities such as stopping or turning shall be prohibited within the designated travel corridors adjacent to the breeding site. When flightless chicks are present within or adjacent to travel corridors, movement of vehicles shall be accompanied by the Bird Monitor who will ensure no chicks are in the path of the moving vehicle and no tracks capable of trapping flightless chicks result.

- f. To discourage nesting within the travel corridor, it is recommended that the Permittee should maintain some activity within these corridors on a daily basis, without disturbing any nesting shorebirds documented on site or interfering with sea turtle nesting, especially when those corridors are established prior to commencement of construction.
23. **Notification.** If shorebird breeding occurs during construction activities, a bulletin board shall be placed and maintained in the construction staging area with the location map of the construction site showing the bird breeding areas and a warning, clearly visible, stating that “NESTING BIRDS ARE PROTECTED BY LAW INCLUDING THE FLORIDA ENDANGERED AND THREATENED SPECIES ACT AND THE STATE and FEDERAL MIGRATORY BIRD ACTS”.

Post-construction Monitoring and Reporting Marine Turtle Protection Conditions:

24. Reports on all marine turtle nesting activity shall be provided for the initial marine turtle nesting and hatching season (March 1 through November 15) and for up to three additional nesting seasons as follows:
- a. For the initial nesting season and the following year, the number and type of emergences (nests or false crawls) shall be reported per species in accordance with **Table 1**. An additional year of nesting surveys may be required if nesting success for any species on the nourished beach is less than 40%.
 - b. For the initial nesting season, reproductive success shall be reported per species in accordance with **Table 1**. Reproductive success shall be reported for all sea turtle nests if possible. Otherwise a statistically significant number of nests for each species shall be reported.
 - c. In the event that the reproductive success documented by species meets or exceeds required criteria in accordance with **Table 1**, monitoring for reproductive success shall be recommended, but not required for the second year post-construction.
 - d. Monitoring of nesting activity in the seasons following construction shall include daily surveys and any additional measures authorized by the FWC. Summaries shall include all crawl activity, nesting success rates, hatching success of all relocated nests, hatching success of a representative sampling of nests left in place

(if any) by species, project name, applicable project permit numbers and dates of construction.

Data shall be reported for the nourished areas and shall include number of nests lost to erosion or washed out. Summaries of nesting activity shall be submitted in electronic format (Excel spreadsheets) to the FWC Imperiled Species Management section at MTP@myfwc.com. All summaries shall be submitted by January 15 of the following year. The FWC Excel spreadsheet is available upon request from MTP@myfwc.com.

Table 1. Marine Turtle Monitoring:

Metric	Duration	Variable	Criterion
Nesting Success	Year of construction, one year to two or three years post construction if placed sand remains on beach and variable does not meet criterion based on previous year	Number of nests and non-nesting emergences by day by species	40% or greater
Hatching Success	Year of construction and one to three years post construction if placed sand remains on beach and variable does not meet criterion based on previous year	Number of hatchlings by species to completely escape egg	Average of 60% or greater (data must include washed out nests)
Emergence Success	Year of construction and one to three years post construction if placed sand remains on beach and variable does not meet success criterion based on previous year	Number of hatchlings by species to emerge from nest onto beach	Average must not be significantly different than the average hatching success
Disorientation	Year of construction and one to three years post construction if placed sand remains on beach	Number of nests and individuals that misorient or disorient	
Lighting Surveys	Two surveys the year following construction , one survey between May 1 and May 15 and second survey between July 15 and August 1	Number, location and photographs of lights visible from nourished berm, corrective actions and notifications made	100% reduction in lights visible from nourished berm within one to two month period
Compaction	Not required if the beach is tilled prior to nesting season each year placed sand remains on beach	Shear resistance	Less than 500 psi
Escarpment Surveys	Weekly during nesting season for up to three years each year placed sand remains on the beach	Number of scarps 18 inches or greater extending for more than 100 feet that persist for more than 2 weeks	Successful remediation of all persistent scarps as needed

25. Two lighting surveys shall be conducted of all artificial lighting visible from the nourished berm. The first survey shall be conducted prior to construction, with a second survey conducted immediately post-construction. The survey shall be conducted to include a landward view from the seaward most extent of the new beach profile. The survey should follow standard techniques for such a survey and include number and type of visible lights, location of lights and photo documentation. A report summarizing all lights visible shall be submitted to FWC Imperiled Species Management Section at marineturtle@myfwc.com by the 1st of the month following the survey. A summary report shall be provided, documenting what corrective actions have been taken, and all compliance and enforcement actions shall also be submitted by December 15 of that year. After the annual report is completed, a meeting shall be set up with the Permittee, FWC and the FWS to discuss the survey report, as well as any documented sea turtle disorientations in or adjacent to the project area.

MONITORING REQUIRED:

26. Physical monitoring shall be conducted in accordance with the Physical Monitoring Plan dated May 31, 2013, incorporated by reference as a specific condition for approval.
27. Water Quality - Turbidity shall be monitored as follows:

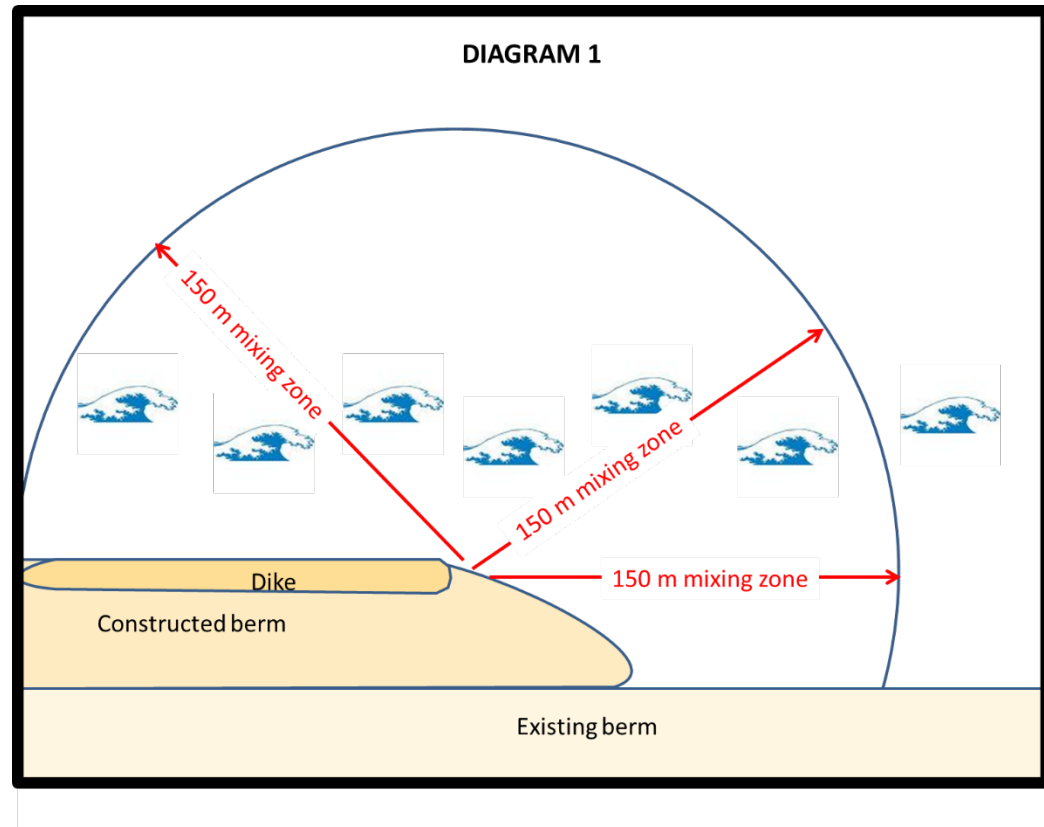
Units: Nephelometric Turbidity Units (NTUs).

Frequency: Three (3) times per day, at least 4 hours apart, during all filling operations. Sampling shall be conducted **while the highest project-related turbidity levels are crossing the edge of the mixing zone.** The compliance samples and the corresponding background samples shall be collected at approximately the same time, i.e., one shall immediately follow the other.

Location: Background: At surface, mid-depth, and (for sites with depths greater than 25 feet) 2 meters above the bottom, clearly outside the influence of any artificially generated turbidity plume or the influence of an outgoing inlet plume. Samples shall be collected at least 300 meters up-current from any portion of the beach that has been, or is being, filled during the current construction event, at the same distances offshore as the associated compliance samples.

Compliance: At surface, mid-depth, and (for sites with depths greater than 25 feet) 2 meters above the bottom. Samples shall be collected in the densest portion of the turbidity plume, where the plume intercepts the nearest edge of hardbottom lying beyond the equilibrium toe of fill (ETOF) or at 150 meters downcurrent from the point of discharge into the Atlantic

Ocean, **whichever is closest**. *Note: If the plume flows parallel to the shoreline, the densest portion of the plume may be close to shore, in shallow water. In that case, it may be necessary to access the sampling location from the shore, in water that is too shallow for a boat. See Diagram 1.*



Calibration: The instruments used to measure turbidity shall be fully calibrated with primary standards within one month of the commencement of the project, and at least once a month throughout the project. Calibration with secondary standards shall be verified each morning prior to use, after each time the instrument is turned on, and after field sampling using two secondary turbidity “standards” that bracket the anticipated turbidity samples. If the post-sampling calibration value deviates more than 8% from the previous calibration value, results shall be reported as estimated and a description of the problem shall be included in the field notes.

Analysis of turbidity samples shall be performed in compliance with DEP-SOP-001/01 FT 1600 Field Measurement of Turbidity:

<http://publicfiles.dep.state.fl.us/dear/sas/sopdoc/2008sops/ft1600.pdf>

If the turbidity monitoring protocol specified above prevents the collection of accurate data, the person in charge of the turbidity monitoring shall contact the JCP Compliance Officer to establish a more appropriate protocol. Once approved in writing by the Department, the new protocol shall be attached to the permit and shall be implemented without the need for a formal permit modification.

28. The **compliance** locations given above shall be considered the limits of the temporary mixing zone for turbidity allowed during construction. If monitoring reveals turbidity levels at the **compliance** sites that are greater than 29 NTUs above the corresponding background turbidity levels, construction activities shall **cease immediately** and not resume until corrective measures have been taken and turbidity has returned to acceptable levels. This turbidity monitoring shall continue every hour until background turbidity levels are achieved or until otherwise directed by the Department. The Permittee shall notify the Department's JCP Compliance Officer via email at JCP.Compliance@dep.state.fl.us of such an event within 24 hours, and send a copy to the Department's Southeast District office. The subject line of the email shall state "TURBIDITY EXCEEDANCE". When reporting a turbidity exceedance, the following information shall also be included:
- a. the Project Name; the Permit Number; location and level (NTUs above background) of the turbidity exceedance;
 - b. the time and date that the exceedance occurred; and
 - c. the time and date that construction ceased.

Prior to re-commencing the construction, a report shall be emailed to the Department with the same information that was included in the "Exceedance Report", plus the following information:

- a. turbidity monitoring data collected during the shutdown documenting the decline in turbidity levels and achievement of acceptable levels;
- b. corrective measures that were taken; and
- c. cause of the exceedance.

TURBIDITY REPORTS

29. Turbidity Reports. All turbidity monitoring data shall be submitted within one week of analysis. The data shall be presented in tabular format, indicating the measured turbidity levels at the compliance sites for each depth, the corresponding background levels at each depth and the number of NTUs over background at each depth. Any exceedances of the turbidity standard (29 NTUs above background) shall be highlighted in the table. In addition to the raw and processed data, the reports shall also contain the following information:

- a. time of day samples were taken;
- b. dates of sampling and analysis;
- c. GPS location of sample
- d. depth of water body;
- e. depth of each sample;
- f. antecedent weather conditions, including wind direction and velocity;
- g. tidal stage and direction of flow;
- h. water temperature;
- i. a map (overlaid on an aerial photograph) indicating the sampling locations, discharge locations, and direction of flow;
- j. a statement describing the methods used in collection, handling, storage and analysis of the samples;
- k. a statement by the individual responsible for implementation of the sampling program concerning the authenticity, precision, limits of detection, calibration of the meter and accuracy of the turbidity and GPS data;
- l. When samples cannot be collected, include an explanation in the report. If unable to collect samples due to severe weather conditions, include a copy of a current report from a reliable, independent source, such as an online weather service.

Monitoring reports shall be submitted by email to the JCP Compliance Officer. In the subject line of the reports, on the cover page to the submittal and at the top of each page, include the Project Name, Permit Number and the dates of the monitoring interval. Failure to submit reports in a timely manner constitutes grounds for revocation of the permit.

Nearshore Hardbottom Monitoring:

30. Monitoring of nearshore hardbottom communities shall be conducted to document any unanticipated impacts from project construction, such as degradation of communities due to burial and/or sedimentation and scouring effect of excessive sediment transport, and shall include monitoring of nearshore hardbottom east (seaward) of the ETOF and the hardbottom adjacent to the construction template in both long shore directions. Monitoring shall be conducted in summer before construction, immediately after construction (immediately after construction survey shall be conducted in early post-

construction summer after initial placement) and then years 1, 2 and 3 post-construction (total of 5 surveys) during summer (May through September).

31. Nearshore monitoring shall include hardbottom edge mapping, monitoring of permanent transects and use of aerial imagery. Monitoring of *Acropora cervicornis* (a listed scleractinian coral) shall be conducted along the project area, in specially designated stations.
 - a. Nearshore hardbottom edge mapping shall be conducted by a diver equipped with a DGPS antenna. Mapping shall include the project extent, 1,000 meters downdrift of the project construction template and 600 meters updrift.
 - b. 150-meter long transects shall be established during the pre-construction survey, starting from the ETOF or nearshore hardbottom edge. The Permittee shall conduct the following: video survey, quadrat sampling, line-intercept records of sand patches (over 0.5 meter long by interception), and 1-meter interval sediment depth measurements along transects.
 - i. Video surveys: A video survey shall be conducted of the entire 150-meter long transect at each location.
 1. Each transect shall be sampled using high-definition digital video. For the 150-meter transect, the diver shall swim at a speed of 20 meters/5 minutes (~4-5 meters/minute) with a constant camera distance of 35 cm. If the diver is moved off the transect by surge, the diver shall return to the point where he/she was disturbed by the wave action, and resume filming at that point. The video transects shall be reviewed during the course of the survey to ensure that there are no gaps in the data due to diver error and that the quality of the video is acceptable for video analysis. Any missing video transect data or poor quality video shall be re-filmed during the course of the event.
 2. Landscape panoramic views shall be recorded with the digital video camera at the start and end of each transect, and at each interruption of the transect by a sand gap/recommencement at the next hardbottom ridge or hardbottom exposure. Additionally, close-up video of the tag marking the eyebolt at these locations or meter mark on the transect line shall be filmed for a frame of reference for the observer viewing the video record. Close-up digital still video and/or photographs shall be obtained of representative benthos along each transect to aid in identification during video analysis. Still photographs shall be obtained using the digital camera to document vertical ledges, large colonies of

scleractinian corals (if observed) along the transect or adjacent to transect (within underwater visibility during transect establishment), and changes in benthic landscape along the transect. Voucher sampling of macroalgae shall be conducted as needed to assist with video/photo identification of macroalgae genera.

3. Each video transect shall be reviewed for qualitative changes in benthic community cover/composition in comparison to the pre-construction surveys, and previous annual surveys. If the qualitative review of the video transect suggests sedimentation impacts or cross-shore transport of sediments over the benthic community along the remaining portions of the transect, and the results of the sedimentation monitoring and quadrat assessments indicate burial of hardbottom communities, additional quantitative analysis of the video transects may be required as directed by the Department to determine the extent of the Project-related impacts.
- ii. Quadrat Sampling: Each transect shall have 1-meter² permanent quadrat sampling stations, with the first one being located along the nearshore hardbottom edge. Quadrats shall not be established in sand gaps between hardbottom ridges or sand patches; however if covered by sand during the monitoring period quadrats remain in the place where they were originally established.
1. Within each quadrat, a visual estimate shall be conducted of the percent cover and genus / species identification (if specified in parenthesis) for following functional groups: macroalgae (identification and percent cover of two dominant species within quadrat), turf algae, cyanobacteria, encrusting calcareous algae, sponges, with a separate assessment of percent cover of boring sponge (*Cliona/Piona* spp), tunicates, zoanthids, hydroids, worm rock (*Phragmatopoma lapidosa*), octocorals (genus level), and scleractinian corals (species level).
 2. Individual counts shall be conducted for all octocorals, scleractinian corals, and sponges (not including *Cliona* spp.) within the quadrat.
 3. Percent cover of exposed hardbottom substrate, coarse unconsolidated substrate (rubble, shell hash, rhodoliths), and sand shall be recorded, in addition to the maximum physical relief of hardbottom from the lowest point to highest point in the quadrat.

- ii. Line-intercept measurements of sand patches of greater than 0.5 meter intercepting each transect shall be conducted.
 - iv. Interval sediment depth measurements shall be conducted at each meter mark along the entire length of transect.
- c. The following shall be provided to the Department within 60 days of completion of the survey: all raw data from the hardbottom surveys including data sheets; Excel spreadsheet with all quadrat data, data of interval sediment measurements and line-intercept data; shape file of hardbottom edge survey, videos and photos.
- d. A nearshore hardbottom monitoring report shall be prepared and submitted to the Department for review within 90 days of the completion of each of the following post-construction monitoring events: immediate post-construction, first annual, second annual, and third annual survey. Commencement of annual survey shall be reported the same day, and then monitoring progress shall be reported weekly until the completion of each survey, at which point the JCP Compliance Officer shall be notified that the survey is complete. The immediate post-construction report, and all following reports, shall compare data to pre-construction results and to each previous post-construction report. A final report shall be prepared following the conclusion of the third year of post-construction monitoring and shall summarize and compare data of all reports. Reports shall analyze and discuss any observed burial, sedimentation, or changes to benthic communities based on the monitoring. Data shall be analyzed to determine any unpredicted direct and secondary impacts to hardbottom communities from the Broward County Shore Protection Project Segment II. Each annual report shall also include the results of the annual summer hardbottom delineation and a comparison of exposed hardbottom acreage delineated during all hardbottom investigations.

Annual monitoring reports shall include: 1) A map including the project area and adjacent hardbottom resources and monitoring transects overlaid onto recent, clear aerial photographs (in digital format); 2) Analysis of sedimentation on the transects outside the ETOF (including the updrift and downdrift hardbottom monitoring sites) based on line-intercept data, interval sediment depth measurements and data from quadrats; 3) Multivariate analysis of quantitative data with subsequent analysis of benthic biological components on the transects east of the ETOF (*e.g.*, percent cover and density by corals, octocorals, sponges and algae); 4) A comparison of post-construction monitoring results to pre-construction monitoring results; 5) A figure comparing the most recent annual hardbottom delineation and all previous hardbottom delineations; 6) Calculation of buried and exposed hardbottom acreage and comparison to previous hardbottom acreages; and 7) The report and all data shall be provided in digital format.

Nearshore Hardbottom Mitigation:

32. To further minimize the potential impacts to the hardbottom community, the Permittee shall transplant coral species from the project site to suitable sites that will not be affected by beach nourishment or restoration. Prior to construction, the Permittee shall submit a Coral Transplantation Plan to the Department for review and approval. The Plan shall depict a suitable location, species to be considered and size to be considered for transplantation.
33. Based on the UMAM analysis of impacts performed by the Department, this permit only approves 4.9 acres of impacts to nearshore hardbottom, mitigated by a 6.8-acre artificial reef.
34. Artificial reefs, consisting of modules, shall be constructed as mitigation to offset the impacts to hardbottom. The perimeter of the mitigation site shall encompass an area within 10 acres, and the actual footprint of the artificial reefs shall cover 6.8 acres of the sea floor. The modules shall be placed in single layers at least 2-feet high and no shallower than 8 feet in depth.
35. Immediately following construction of the artificial reef, divers shall conduct a line-intercept survey as part of the as-built survey in order to estimate percent of net reef cover. During the line-intercept survey, divers shall swim the length of each transect and record the presence of artificial reef substrate on the transect line. Based on the data collected along all transects, the percent net module cover and percent sand cover within the artificial reef site shall be calculated and reported. The goal of this is to ensure that the artificial reef reflects a similar hardbottom to sand ratio as the natural hardbottom as determined by the baseline and/or pre-construction survey(s).
36. Within 30 days following construction of the artificial reef, the Permittee shall complete the Florida Fish & Wildlife Conservation Commission's ***FLORIDA ARTIFICIAL REEF MATERIALS PLACEMENT REPORT AND POST-DEPLOYMENT NOTIFICATION*** using the form provided on their web page: <http://myfwc.com/docs/Conservation/FWCArtificialReefMaterialPlacementReport.pdf>. The completed form shall be submitted to the Florida Fish & Wildlife Conservation Commission, Division of Marine Fisheries, Artificial Reef Program, 620 S. Meridian Street, Tallahassee, FL 32399 and a copy e-mailed to the JCP Compliance Officer. In addition to attaching the completed form, please indicate on the e-mail that the information is being submitted for the Broward County Segment II Restoration project, Permit No. 0314535-001-JC.

Mitigation Monitoring and Success Criteria:

37. In order to monitor benthic colonization and succession, the following monitoring protocol shall be followed in accordance with the approved mitigation plan:
- a. The Permittee shall establish random cross-shore monitoring transects on the artificial reef, and shall conduct monitoring using video survey and quadrat sampling as described in Specific Condition 31, above. Monitoring of the artificial reef shall occur annually during summer months for three years following construction.
 - b. Mapping of Artificial Reef. During the final (third) monitoring survey on the Artificial Reef, biologists shall also map the artificial reef in order to determine the total acreage.
 - c. Success criteria. Success would be achieved when the benthic community and colonization of the mitigation reef has been documented to be comparable to the benthic community and species composition documented in the impact area during the preconstruction survey. The criteria for successful mitigation shall be defined by: 1) An obvious trend toward similarity in the benthic community between the artificial reef and the natural hardbottom by the time of the completion of the monitoring period; 2) percent cover by each of the major groups of organisms (functional groups) in the mitigation site shall be no less than it was in the impact site (difference shall be statistically insignificant); and 3) a line-intercept survey shall demonstrate that net amount of reef *versus* sand did not change from the time of construction due to subsidence (not more than 5% buried from results of initial survey).
 - d. Reports. A first (one year after construction), second and third annual artificial reef monitoring report shall be provided within 90 days of the completion of each annual monitoring event, for three years following placement of the artificial reef. Monitoring progress shall be reported weekly until the completion of each survey, at which point the JCP Compliance Officer shall be notified that the survey is complete. Each annual report shall document the colonization of the artificial reef and compare the species composition on this reef to that documented in the impact area during the preconstruction survey.

Annual monitoring reports shall include: 1) A map including the project, adjacent hardbottom resources and monitoring transects, the artificial reef and associated monitoring transects overlaid onto recent, clear aerial photographs; 2) An analysis of quantitative data on benthic biological components on artificial reef monitoring transects (e.g., percent cover by corals, octocorals, sponges, and algae); 3) A comparative analyses of the artificial reef and natural hardbottom communities in the area of impact to determine mitigation success; 4) Current

acreage of artificial reef (for Final report only); and 5) Video and photo documentation; and 6) The Report and all data shall be provided in digital format on external hard drive.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION



Danielle H. Irwin, Deputy Director
Division of Water Resource Management

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section 120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.



01/31/2014

Deputy Clerk

Date

Attachments: Permit Drawings (approved January 31, 2014)
Physical Monitoring Plan (dated May 31, 2013)
QA/QC Plan (dated September 17, 2012)