APPENDIX C
PORT EVERGLADES HARBOR IMPROVEMENT AND MAINTENANCE DREDGING
FLORIDA COASTAL ZONE CONSISTENCY PROGRAM
FEDERAL CONSISTENCY EVALUATION PROCEDURE

1. Chapter 161, Beach and Shore Preservation. The intent of the coastal construction permit program established by this chapter is to regulate construction projects located seaward of the line of mean high water and which might have an effect on natural shoreline processes.

Consistency Statement: The purpose of the proposed action is to improve and maintain safe navigation depths in Port Everglades Harbor, Broward County, Florida. Information will be submitted to the State for a permit in compliance with this chapter.

2. Chapters 186 and 187, State and Regional Planning. These chapters establish the State Comprehensive Plan, which sets goals that articulate a strategic vision of the State's future. It's purpose is to define in a broad sense, goals, and policies that provide decision-makers directions for the future and provide long-range guidance for an orderly social, economic and physical growth.

Consistency Statement: The work has been coordinated with the State without objection.

3. Chapter 252, Disaster Preparation, Response and Mitigation. This chapter creates a state emergency management agency, with the authority to provide for the common defense; to protect the public peace, health and safety; and to preserve the lives and property of the people of Florida.

Consistency Statement: This chapter does not apply.

4. Chapter 253, State Lands. This chapter governs the management of submerged state lands and resources within state lands. This includes archeological and historical resources; water resources; fish and wildlife resources; beaches and dunes; submerged grass beds and other benthic communities; swamps, marshes and other wetlands; mineral resources; unique natural features; submerged lands; spoil islands; and artificial reefs.

Consistency Statement: The proposed activity will be coordinated with the State and appropriate State permits will be obtained. The proposed action will be consistent with the intent of this chapter.

5. Chapters 253, 259, 260, and 375, Land Acquisition. This chapter authorizes the state to acquire land to protect environmentally sensitive areas.

Consistency Statement: As the property is already in public ownership, these chapters do not apply.

6. Chapter 258, State Parks and Aquatic Preserves. This chapter authorizes the state to manage state parks and preserves. Consistency with this statute would include consideration of projects that would directly or indirectly adversely impact park property, natural resources, park programs, management or operations.

Consistency Statement: The proposed action will remove 1.19 acres of mangrove habitat and 0.9 acres of uplands within John Lloyd SRA. These losses will be mitigated.

7. Chapter 267, Historic Preservation. This chapter establishes the procedures for implementing the Florida Historic Resources Act responsibilities.

Consistency Statement: The proposed action was coordinated with the State Historic Preservation Officer (SHPO) and is consistent with the intent of this chapter.

8. Chapter 288, Economic Development and Tourism. This chapter directs the state to provide guidance and promotion of beneficial development through encouraging economic diversification and promoting tourism.

Consistency Statement: The proposed improvements and maintenance therof is consistent with the goals of this chapter.

9. Chapters 334 and 339, Public Transportation. This chapter authorizes the planning and development of a safe balanced and efficient transportation system.

Consistency Statement: The proposed action will not adversely affect public transportation.

10. Chapter 373, Water Resources. This chapter provides the authority to regulate the withdrawal, diversion, storage, and consumption of water.

Consistency Statement: This work does not involve water resources as described in this chapter.

11. Chapter 376, Pollutant Spill Prevention and Control. This chapter regulates the transfer, storage, and transportation of pollutants and the cleanup of pollutant discharges.

Consistency Statement: This work 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 action will comply with this chapter.

12. Chapter 377, Oil and Gas Exploration and Production. This chapter authorizes the regulation of all phases of exploration, drilling, and production of oil, gas, and other petroleum products.

Consistency Statement: The proposed action does not involve the exploration, drilling or production of oil, gas or other petroleum products; therefore this chapter does not apply.

13. 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.

Consistency Statement: Marine crustacean, shell and andromous fishery resources will be temporarily impacted. Temporary and permanent impacts will occur within the marine and estuarine environment. Impacts to significant benthic invertebrate resources (e.g species found in coral and hardbottom habitats) will be mitigated. The work in the port will be consistent with the goals of this chapter.

14. Chapter 380, Environmental Land and Water Management. This chapter establishes criteria and procedures to assure that local land development decisions consider the regional impact nature of proposed large-scale development.

Consistency Statement: The proposed action is consistent with the intent of this chapter.

15. Chapter 388, Arthropod Control. This chapter provides for a comprehensive approach for abatement or suppression of mosquitoes and other pest arthropods within the state.

Consistency Statement: The proposed action will be consistent with the goals of this chapter.

16. Chapter 403, Environmental Control. This chapter authorizes the regulation of pollution of the air and waters of the state by the Florida Department of Environmental Regulation (now a part of the Florida Department of Environmental Protection).

Consistency Statement: Appropriate State permits will be obtained for this project.

17. Chapter 582, Soil and Water Conservation. This chapter establishes policy for the conservation of the state soil and water through the Department of Agriculture. Land use policies will be evaluated in terms of their tendency to cause or contribute to soil erosion or to conserve, develop, and utilize soil and water resources both onsite or in adjoining properties affected by the project. Particular attention will be given to projects on or near agricultural lands.

Consistency Statement: The proposed action is not located near agricultural lands; therefore, this chapter does not apply.

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

MAR 2 7 2014

Jeff Littlejohn, P.E.
Deputy Secretary for Regulatory Programs
Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Dear Mr. Littlejohn

Thank you for providing a draft copy of the State of Florida's Coastal Zone Management review letter dated October 1, 2013 regarding the Port Everglades Harbor Modification Project for the Corps to review and respond to. We greatly appreciate your collaborative approach and the opportunity to provide additional information and clarifications addressing the Department of Environmental Protection's concerns.

Attached please find detailed responses to the questions/comments contained in your draft letter. Please contact me at 904-232-1517, e-mail Eric.L.Bush@usace.army.mil or project biologist Ms. Terri Jordan-Sellers, telephone 904-232-1817, e-mail Terri.Jordan-Sellers@usace.army.mil if you have questions or would like to discuss these issues further.

Sincerely,

Eric L Bush
Chief, Planning and Policy Division

Enclosure

Port Everglades Harbor Modification Project
Coastal Zone Management Review
Questions/Comments and Responses

1. **Structural Analysis** – Structural activities including relocation of the U.S. Coast Guard boat basin to accommodate the proposed channel expansion, construction of an “environmentally friendly bulkhead” along the west side of John U Lloyd Beach State Park, construction of a roll-on/roll-off ramp and bulkhead along the west side of the turning notch, and the relocation of the Nova Southeastern University breakwater were mentioned in the draft feasibility report, but are not included in the overall project description, not included in the permit modification application. Please clarify if these structural activities are included as part of the expansion project.

The Corps has withdrawn the permit modification referenced in the draft letter. Replacement of existing rip-rap along the western side of JUL park; as well as along the western shore of the Intracoastal Waterway and along the northern shoreline of the Turning Notch were detailed in Section 2.9.5 of the EIS and are included in the project description. Relocation of the US Coast Guard Basin is included in the description of the Tentatively Selected Plan (TSP) included on Page 2 of the Feasibility Study; as well as Sections 4.6.2 (page 79) and 7.0 (page 121) and in the Engineering Appendix A and B that was included on the DVD sent with each copy of the Report and EIS. Additionally, Section 4.15 of the EIS provides information concerning the project’s effects on the Coast Guard Station.

2. **Sediment Data** (inside port harbor) – The report does not include an analysis of sediments inside the port harbor. This information will be used to determine the likelihood that the sediments may contain containments that will warrant the need for additional chemical and biological analysis. Please provide information on the sediment quality of the material to be dredged.

Sections 2.2.12 and 4.6.2 of the Feasibility Study, Section 3.7 of the Engineering Appendix and Sections 3.4, 3.10, 4.8 and Appendix J of the EIS all provide information concerning sediment analysis and the potential for containments to be present. Specifically, Section 3.10 of the DEIS provides a summary of the results of the Tier 1 analysis conducted for the project, the entire Tier 1 is located in Appendix J.

Additionally, as part of the Operations and Maintenance dredging that was completed in the Port between Jan-April 2013, the Corps was required by regulation to test the material to be dredged under the EPA "Green Book" - this testing included physical and biological testing of the material to be dredged to ensure that it met the criteria for disposal in the ODMDS. There was significant overlap in the areas of the 2013 project and the expansion project. The expansion project will also undergo this same level of testing in the PED phase of the project. Additionally, three previous dredging events underwent the same required testing, and all material tested passed the EPA requirements under the ocean disposal criteria in 40 CFR §227.6(c)(3) and §227.27(b):

- A Tier III evaluation of the MTB and NTB was conducted in 1998.
- A Tier III evaluation of the MTB and NTB was conducted in 2004 and a MPRSA Section 103 concurrence was provided for the Port Everglades Harbor in 2005.

In summary - The liquid phase (elutriate) of the material was evaluated for compliance with Sections 227.6(c)(1) and 227.27(a) and analyzed for the contaminants of concern (COC) in marine waters. The concentration of COCs was compared to the EPA National Recommended Water Quality Criteria (WQC) Acute Concentration Levels (Criterion Maximum Concentration (CMC)).

---In the Port Everglades elutriate chemistry assays, only one COC (copper) in one sample that exceeded the EPA WQC. It exceeded the WQC by 0.14 ug/L and was shown in the STFATE model to be sufficiently diluted at the disposal site so as not to exceed the WQC post disposal.

The suspended particulate phase of the material was evaluated for compliance with Sections 227.6(c)(2) and 227.27(b). Bioassay testing of the suspended particulate phase of the material was conducted using three appropriate sensitive marine organisms: Americamysis bahia and Menidia beryllina, in a 96 hour acute toxicity assay; and gametes of Mytilus galloprovincialis, in a 48 hour development assay.

---In the Port Everglades suspended particulate phase toxicology assays, one sample was found to have statistically significantly different larval development from the control. Likewise, it was shown in the STFATE model to be sufficiently diluted at the disposal site so as not to exceed the Limiting Permissible Concentration (LPC) post disposal.

Ten-day whole sediment toxicity tests were conducted on project materials using the polychaete, Neanthes arenaceodentata and the amphipod, Ampelisca abdita. All test species are appropriate sensitive benthic marine organisms and as such, are good predictors of adverse effects to benthic marine communities.

-- In the Port Everglades whole sediment toxicology assays, none of the samples showed organism mortality statistically significantly greater than reference nor did they exceed the reference mortality by more than required amount.

Bioaccumulation potential of contaminants in sediments were evaluated through a 28-day solid phase test using representative species Macoma nasuta and Neanthes virens. Tissues were evaluated for target analytes including metals, butyltins, PAHs, and PCBs.

--In the Port Everglades bioaccumulation assays, tissues tested did not exceed the FDA action limits for any compound for either organism. Concentrations in tissues were compared to tissues exposed to harbor sediments from the Port Everglades reference sample locations. Tissue samples with contaminants statistically greater than the reference sample were further evaluated. The magnitude and number of contaminants in these tissues were assessed using Ecological Non-Specific Effects Thresholds, the EPA Region 4 Eastern Florida Background

Concentrations, and other factors to assess LPC compliance. Based on the results of the evaluation, there was no indication that the project sediments will cause significant bioaccumulation or toxicological effects.

The Port Everglades Final EIS has been updated to include this information in its analysis.

3. **Hyrdodynamic Model** – The RMA-2 Hydrodynamic Model of Port Everglades was not calibrated to field-measures parameters such as velocities, flows and heads. However, reasonable assurance is required to show that the project will not cause violations of water quality standards based on circulation –patterns and flushing characteristics of the project site and surrounding waters. Therefore, a hydrodynamic model that has been calibrated to field-measures parameters will need to be provided.

Unlike riverine ports/waterways (Jacksonville, Savannah, Sabine Neches, etc…), ports that lie directly on the coast, and are directly exposed to the open ocean, are not susceptible to significant environmental changes due to deepening and/or widening on the scale that is seen in the Port Everglades TSP. RMA-2 modeling was conducted in a way which showed the relative differences between with and without project conditions. This type of application is a “first look” to determine if detailed, field calibrated modeling is required. At Port Everglades, the initial RMA-2 modeling reaffirmed that there would be no appreciable change in conditions due to the deepening and/or widening of Federal channels. This is not unexpected as (1) Port Everglades has direct exposure to the open ocean and (2) any other inflow comes from upland canals and is seasonally variable, depending entirely on unpredictable conditions such as drought and storm frequency/intensity. Had the relative modeling effort indicated a significant change in conditions, a detailed modeling effort would have been initiated.

4. **Flooding and Flushing Model** – Deepening the entrance channel, which essentially would increase the cross-sectional flow area, could affect the tidal hydraulics within the confined interior tidal body at a distance from the entrance channel. Should the propagation of the tide through the inlet have the properties of a shallow water wave the tide range should not be reduced. The celerity of the tide wave would increase where deepened and the timing of the peak current and slack tide would occur earlier away from the entrance channel. Reasonable assurance is required to show that the project will not cause flooding of properties within the confined interior water body. Therefore, provide a flooding model and analysis to evaluate potential inland flooding impacts associated with deepening the channel. On the ebb tide, water is advected seaward through the entrance channel that contains higher concentrations of nutrients and other containments compared to levels in open coast waters. Enlargement of the channel brings the possibility of increasing the flux of these substances out of the inlet and into the coastal waters. Furthermore, the vertical velocity and density structures of tidal flows may be stratified and dependent on the tidal phase. The RMA-2 id a depth averaged mode not intended to resolve the vertical features of the channel water column. The field-measurements requested above necessary to validate the applicability of the RMA-2 model as well as calibrate the model.

Flood modeling is not required at Port Everglades due to the location and physical layout of the harbor. Unlike riverine ports/waterways (Jacksonville, Savannah, Sabine Neches, etc…), ports that lie directly on the coast, and are directly exposed to the open ocean, are not susceptible to significant environmental changes due to deepening and/or widening on the scale that is seen in the Port Everglades TSP. This was confirmed at Palm Beach Harbor, where a storm surge evaluation was incorporated into existing CMS modeling of the inlet. Results indicated that channel deepening of the coastal lying port did not appreciably impact storm surge (which is a on a much greater scale than tidal flow). This is further supported by the RMA-2 modeling conducted as part of the Port Everglades study, which indicates a change of flow between with and with-out project conditions of 0.4%. Without a significant change in flow, there cannot be a significant change in surge/flooding. Based on previous experience and coastal physics, flood modeling has not been included as a separate modeling effort for additional projects involving direct access to the open ocean (such as Miami and Port Everglades). While the deepening of the entrance channel will likely alter the rate at which tides/surges enter the harbor (insignificantly at Port Everglades), it will not change the overall volume, level, or extent of the tide/surge. In South Florida, and at Port Everglades in particular, flooding will most likely occur due to upland freshwater releases from Lake Okeechobee and related canals.

In addition to a lack of significant change to the tidal flow, as shown with the RMA-2 modeling, there will not be an increase in the overall amount of nutrients or other contaminants leaving the inlet as the inlet channel, being within yards of the open ocean, experiences a complete flushing during the tidal cycle. Unlike riverine ports, there is not a steady freshwater “stream” passing through the Port and out of the inlet that will be impacted by a change in channel dimension. Inflows into Port everglades are a function of upstream freshwater releases that vary annually and seasonally bring in variable levels of nutrients and contaminants. Deepening will only change the rate at wchih materials are evacuated (insignificantly in the case of Port Everglades), but will not increase or decrease the overall amount (which is a function of upstream variables not controlled by project features) since the proximity of the inlet channels to the open ocean results in complete (rather than partial) flushing. Nutrients and contaminants will flush free of the inlet at a slightly faster rate, but at a slower velocity and over a lesser extent (due to the lower velocities).

5. **Mixing Zone** – What is the size of the requested mixing zone? If a mixing zone is greater than 150 meters in radius is requested, a variance request must be submitted that addresses the elements of § 403.201 F.S. Please identify any natural communities that may be encompassed by the requested mixing zone under § 373.414(1), F.S. The variance request may be approved after practical construction alternatives to avoid and minimize turbidity have been approved.

The permit modification application has been withdrawn and a mixing zone is not being requested as this time.

6. **Hardbottom Impacts** – The Draft EIS does not clearly describe how the hardbottom impacts were determined. The Draft EIS states states that Dial Cordy mapped the area using towed video cameras and benthic assessments; however, no mapping protocols were provided to determine how the mapping was performed. Please provide the estimated acreage of all potential direct and secondary hardbottom impact areas (including the estimated acreage of hardbottom present on the west side slope of the second reef and the east and west side slopes of the third reef) using updated cartographic data *(i.e.,* LADS survey of 2009). Please also provide a formal description of each potential direct and secondary hardbottom impact area with quantitative data on each major functional group *(e.g.,* macroalgae, turf algae, sponges, corals, etc.) and species-indicators *(e.g.,* scleractinian corals, octocorals, etc.), including cover, density, size class distribution, etc., and description of methods used to obtain these data. [§§ 373.414(1) and 403.93345, F.S.]

Project Footprint

The current working project footprint was received from the U.S. Army Corps of Engineers (ACOE) in Oct-2010 and was developed by ACOE Geotechnical and Coastal Engineers to account for appropriate side-slope based on depth and substrate. This footprint has been used to determine current project impact estimates for the 48+1+1+7 NED project as well as incremental impact analysis for 1ft increments of 50-59 feet in Feb-2011 and May-2012 and 55-59 feet in Sept-2013 and Feb-2014.

Hardbottom and Reef

Hardbottom and reef resources are currently based on the "SE FL Benthic Habitats" data modified to include previously unmapped resources per Nova Southeastern University (NSU). This data was provide to the ACOE by NSU on 30-Aug13 and has become the accepted representation of hardbottom and reef resources for the Port Everglades project area.

Vertical Datum

The surface model currently being used to establish the depth of hardbottom and reef resources is the Broward County 2008 LADS (NAVD88) data. The previous surface model was developed from the Broward County 2001 LADS (NGVD29). A vertical datum transformation was performed on the native NAVD88 2008 LADS data in order to have the potential impacts remain in the same vertical datum as previous iterations of impact calculations. The datum transformation was performed using VDatum (v3.2) from NOAA to translate the native NAVD88 to NGVD29.

Detailed data regarding direct and secondary hardbottom impact area with quantitative data on each major functional group *(e.g.,* macroalgae, turf algae, sponges, corals, etc.) and species-indicators *(e.g.,* scleractinian corals, octocorals, etc.), including cover, density, size class distribution, etc., and description of methods used to obtain these data is located in Appendix D-2 of the EIS, "Benthic and Fish Community Assessment At Port Everglades Harbor Entrance Channel" in association with the updated impact assessment provided to FLDEP via two emails to Ms. Danielle Irwin from Terri Jordan-Sellers on February 5, 2014 entitled "Port Everglades – Follow up to this morning's call" with an impact assessment Excel spreadsheet and FW: Port Everglades mitigation interagency briefing" with a PDF file titled

"PortEvergladesAgencyBriefing_4Dec2013-FINAL.pdf" as well as an email dated February 10, 2014 in an email entitled "Re: Port Everglades Mitigation Interagency Briefing" with two Excel Spreadsheets attached.

7. **Mangrove/Seagrass Impacts –** A map depicting the mangrove and seagrass impact areas was provided in the Draft EIS (Figure 71); however, these areas are difficult to view and evaluate because the scale is small. Please provide a graphic representation of the mangrove and seagrass impact areas with a larger scale. Please show the boundaries of the project in relation to the mangrove and seagrass impact areas on the map.

   Please provide a detailed description of each mangrove impact area that accurately characterizes the ecological values of the area and functions provided including: types of mangroves, coverage of each type of mangrove, height, general health of the mangroves, coverage and density of nuisance or invasive exotic plant species, wildlife utilization and type of use, and whether any portion of the assessment area has been used as mitigation for a previously-issued permit.

   Please provide a detailed description of each seagrass impact area that accurately characterizes the ecological values of the area and functions provided including seagrass species, and the coverage and spatial distribution of each species. Please provide the methodology used to characterize the seagrass areas.

   Secondary Impacts – Identify any secondary impact areas where mangroves and seagrass are in close proximity to the project boundaries. If none are expected, provide an explanation as to how the secondary impacts to these communities will be prevented. [§§ 373.414(1) and 403.9328, F.S.]

Seagrass

Seagrass impacts have been estimated using a submerged aquatic vegetation (SAV) survey conducted 27-July thru 3-Aug 2009 that comprised the Inner Entrance Channel (IEC), the Widener (WID), an area extending approximately 1,000 feet north of the Main Turning Basin (MTB), the South Access Channel (SAC), the Dania Cut-off Canal (DCC) and an area extending approximately 1,500 feet south of the DCC. This 2009 survey has been supplemented over the past 4 years with new SAV bed coverage as it has become available in an effort to best represent the extent of SAV during each iteration of impact assessment.

Figure 71 is available as a PDF on the DVD included with the hard copy of the EIS which allows for zooming in on each area. The Corps does not plan to create separate graphics for each seagrass impact area during the Feasibility Phase of the Study. The boundaries of the project in relation to each impact area are included on Figure 71.

An assessment of the ecological functions of the seagrasses in the project was prepared by NMFS (Appendix H of the EIS) and is summarized in Section 3.6.1.2 of the EIS. Detailed data for each of these seagrass areas is provided in Appendix D of the EIS – Specifically the Baseline Report, 2006 seagrass report and 2009 seagrass report. Data includes species composition of each bed, species density, frequency of occurrence and Abundance.

Mangrove

The current estimate of mangrove wetlands was initially developed using a combination of aerial photo interpretation of 1ft resolution natural color photography from USGS (Fall 2005) and ground-truthing by scientists equipped with sub-meter GPS. The extent of mangrove wetlands has continued to updated and refined since the initial layer was developed as new photography and additional data sources have become available.

In addition to the information provided in Sections 3.5.2 and 4.3.2 of the EIS, an assessment of the mangrove areas including the types of mangroves, height, general health or the mangroves, coverage and density of nuisance of invasive exotic plant species was prepared by FLDEP-JUL park staff for this response to comments and USACE defers to the expertise of the park staff regarding these issues:

"1. Types of mangroves: There is a narrow strip of mangroves throughout the impacted area. As such, it is dominated by red mangroves, with a few widely scattered, isolated occurrences of black, white and buttonwood.

2. Coverage of each type of mangrove: Red Mangroves make up over 95% of the mangroves within this 1.15 acre strip of coastline. Black and white mangroves represent about 3%, while buttonwood are at no more than 1% coverage.

3. Height: The heights of these trees vary greatly along the shoreline. There are emergent red mangroves that are less than 2 feet at the edges, with larger specimens of all species farther from the shore and within the areas planted as part of a previous mitigation for port expansion in 1991. These larger trees are from 16 to 30 feet in height.

4. General health: These mangroves represent is a generally healthy natural community. The only impacts to the ecosystem are "minimal" exotic plant species (continually being treated by park staff) and isolated areas of shoreline erosion likely caused by the wave action created by the movement of large vessels within the port channel. There is a large area of erosion that is located directly across from the Dania turnaround cut. The landward edge of this area of erosion is now within approximately 10 feet of the park drive.

5. Coverage: With the exception of access points along the channel that allow staff and visitors to get to the water and the aforementioned points of erosion, the vegetation coverage along the channel is at 100%.

6. Density of nuisance or invasive exotic plant species: As previously indicated in Number 4 above, the exotic plant species within this 1.15 acres is minimal. Park staff have been treating these areas of the park as needed to remove exotics. Estimated coverage of exotics is less than 5%.

Assessment of secondary impacts to mangrove habitats was included in Section 4.3.2 (pages 173 and 174) of the EIS and to seagrass habitats in Section 4.4.1.2 of the EIS (pages 176-177).

8. **Biological Monitoring Plan –** A detailed Biological Monitoring Plan will need to be provided and, if separate, a Sedimentation and Turbidity Monitoring Plan that measures the biological stress at fixed stations within seagrass and hardbottom resource areas adjacent to the proposed work sites that may experience significant amounts of impact due to turbidity, sedimentation, sloughing or direct physical effects (e.g., anchor or spud placement). [§ 373.414(1), F.S.].

A Biological Monitoring plan was included in the Draft EIS as appendix E-5. This plan addresses monitoring for the biological effects of the project at fixed stations on hardbottom resources adjacent to the proposed work sites due to sedimentation, channelside sloughing or direct physical effects. There are no indirect effects to seagrass beds expected to occur per Section 4.4.1.2 of the DEIS.

9. **Minimization of Impacts to Hardbottom and Coral Reef –** DWRM acknowledges that scleractinian corals greater than 10cm in height or diameter will be transplanted prior to dredging to minimize direct effects. Corals of a size class 10 cm to 25 cm are the major reproduction pool, as they have achieved a stage of puberty, and they are two orders of magnitude greater in number than corals of a class >25 cm, and an order of more diversity (number of species). To minimize the direct impacts to the greatest extent practicable, DWRM staff recommends that, in addition to transplanting all scleractinian corals greater than 10 cm in height or diameter, at least 2,000 octocorals greater than 15 cm in eight at least 300 sponges (*Xestospongia muta, Geodia neptuni, Sphesiospngia vesparium* and *Ircina strobilina*), which includes at least 200 sponges greater than 25 cm in diameter and at least 100 sponges greater than 40 cm in diameter, be transplanted as well [§§ 373.414(1) and 403.93345, F.S.].

Based on a review of the artificial reef at Miami Harbor built in 1997 and first surveyed in 2004 (7 years after bare rock was placed at the site), the transplantation of octocorals from the project is not proposed at this time. The artificial reef at Miami had extensive coverage of octocorals in a short period of time, which demonstrates these species are able to quickly colonize an area. The Corps has reviewed the baseline hardbottom report (Appendix D of the EIS) and three of the fours species of sponges referenced in your letter are present, however “The density of barrel sponges was highly variable because of the relatively low number of individuals found.”

Based on this statement and data from the baseline report, the Corps cannot commit to relocating a specific number of barrel sponges of the three species found in the project area referenced in your comment. We can commit to collecting additional information during the PED phase of the project and coordinate in the future regarding potentially relocating some of the barrel sponges either to the five-acre artificial reef discussed in the mitigation plan, or to adjacent natural areas.

10. **Mitigation-** The Draft EIS described two potential mitigation options to offset direct impacts to hardbottom. One mitigation option (preferred by the USACE) involves creation of an artificial reef. The other mitigation option (preferred by the National Marine Fisheries Service) involves coral propagation. Please provide a mitigation plan that offsets direct impacts to hardbottom as well as secondary impacts due to turbidity and sedimentation.

    The mitigation plan needs to include functional offsets based on the Uniform Mitigation Assessment Method (UMAM) for both direct and secondary impacts. Although UMAM will be conducted by the Department, the correct estimates of direct and secondary hardbottom impacts must be provided beforehand.

    Degradation to natural communities adjacent to the project area is likely, due to turbidity and sedimentation. The DWRM recommends that the USACE consider upfront mitigation for degradation of a defined area adjacent to the excavation areas. Such a strategy would avoid any additional mitigation associated with time lag related to the post-construction monitoring period, and possibly avoid the additional costs of remobilization to create additional mitigation in the future.

    The Draft EIS states that one mangrove functional unit will be created at West Lake Park to offset 1.16 acres of mangrove impacts, and three seagrass functional units will be created at West Lake Park to offset 4.01 acres of seagrass impacts. Please indicate how the amount of functional units was determined through the UMAM. Also indicate how many acres of mitigation will be provided by one mangrove functional unit and three seagrass functional units. Please provide a letter from either the South Florida Water Management District or Broward County authorizing the proposed mitigation at West Lake Park, and a statement that the proposed mitigation is consistent with the overall mitigation plan for West Lake Park. Please provide a detailed mitigation plan for both mangrove and seagrass impacts including maintenance, monitoring and construction sequence and techniques. Staff requires this information to conduct UMAM for each type of impact.[§§ 373.414(1), 403.9328 and 403.93345, F.S.]

A joint mitigation plan, developed by USACE and NMFS is attached to this correspondence. This mitigation plan is undergoing final internal technical and policy review. The Corps has included upfront mitigation for a total of 2% loss of function of hardbottom habitats within 150m of the entire project footprint. Additional mitigation beyond this 2% would be based on pre- and post-construction monitoring. The number of available credits in West Lake Park was determined by the South Florida Water Management District during their permitting process. FLDEP staff should coordinate with your counterparts in SFWMD to determine the details of how those UMAM assessments were conducted. The maintenance, monitoring and construction of the West Lake Park project is being conducted solely by Broward County parks vision per the requirements of their permits. The permits include requirements for monitoring, maintenance and construction. Both the SWFWD and the USACE-RD permit were included in the EIS in Appendix E of the DEIS.

11. **John U. Lloyd Beach State Park Impacts:**

Bulkhead Design – With regard to the park marina entrance/exit, there are no details of how the "environmentally friendly bulkhead" will be designed or configured to accommodate the visitor boat access to the park marina. Will the bulkhead design restrict boaters from utilizing the existing marina? Please provide additional information on bulkhead design and the maximum boat draft that will be able to pass over the bulkhead. Due to increased demand for recreational boating, an expansion of the marina on the north side of Whiskey Creek is also planned. Also consider and document the potential impacts of the bulkhead to the submerged fauna, flora, and natural processes of the area.

Just north of Whiskey Creek is a "U"-shaped canal that was created as a manatee sanctuary as mitigation for previous port upgrades. Please provide assurances that the proposed bulkhead will not impede the hydrologic functions of the sanctuary or the use of the area by manatee and kayaking park visitors.

The preferred alternative indicates that the submerged bulkhead would be installed on the east side of the channel. Based on the maps provided, the bulkhead appears to be recommended in a location that would cut across the park's office/shop area. The proposed location would be quite close to several park staff residences and the ground solar array in that same area. If the bulkhead cannot be redesigned to avoid disturbance to these facilities, appropriate mitigation, including relocation of displaced facilities, should be provided.

On Figure A-78 in Appendix A-Engineering, the height ofthe toe wall is shown as 34 feet (-31.0 to -65.0 MLLW) with a penetration of 10 feet below the improved grade. Please provide the basis for the toe wall design (tip elevation of -65.0 MLLW).

Natural Resources – According to GIS maps provided by the USACE, the expansion of Port Everglades will directly impact approximately 4.45 acres of the park. The natural communities affected by this project include seagrass (0.05 acres), unconsolidated substrate (2.82 acres), mangrove swamp (1.15 acres), and developed (0.43 acres). The mangrove area that would be affected is located along the east shore of the Intracoastal Waterway and was planted as mitigation for a previous Port Everglades project – appropriate compensation must be provided. Every effort should be applied to minimize impacts to the park's natural resources. Additionally, provide a conceptual mitigation plan that would offset the remaining losses.

If blasting is required during the dredging process or for the placement of sheet pile bulkhead, impacts to imperiled species, fragile submerged habitats, park resources and facilities, and the park visitor experience could occur. Please provide information on how these impacts will be avoided or minimized. If these impacts cannot be avoided or minimized, please provide information on mitigating the impacts.

Boat Launch Area- The extension of Berth 27 will result in ships docking closer to the marina exit at John U. Lloyd Beach State Park. During periods such as Fleet Week, the park has been required to close the boat launch area for security purposes. Historically, these closures have been for a period of up to a week, hampering public use of the park. The proposed expansion will allow ships to berth even closer to the mouth of the creek, creating additional security concerns and potential disruptions to public access.

Board of Trustees Authorization – As noted in the Draft EIS, impacts to the state park must meet the Board of Trustees' 1988 POLICY FOR INCOMPATIBLE USE OF NATURAL REsouRCE LANDS. If the parties involved in the proposed disposition of state lands *(i.e.,* Board of Trustees, Division of Recreation and Parks, Broward County, and USACE) agree that Broward County should obtain fee-simple titled ownership of the affected bulkhead area, the County would apply to the Department's Division of State Lands to have the area designated as surplus and sold/deeded to Broward County.

> If it is determined that the Board of Trustees will retain fee-simple ownership, the County would either: apply for a lease from the Board of Trustees for the bulkhead area, apply
> for a sublease from the Division of Recreation and Parks, or apply for an easement from the Board of Trustees with the Division of Recreation and Parks' consent.
>
> Any application to use state land which would result in significant adverse impact to state land or associated resources shall not be approved unless the applicant demonstrates there is no other alternative and proposes compensation or mitigation acceptable to the Board of Trustees under § 18-2.018(2)(i), *Florida Administrative Code* (F.A.C.). Any requested use of state land which has been acquired for a specific purpose, such as conservation and recreation lands, shall be consistent with the original specified purpose for acquiring such land in accordance with§ 18-2.018(2)(c), F.A.C. Applicants applying for a lease or easement across state land which is managed for the conservation and protection of natural resources shall be required to provide net positive benefit as defined in§ 18-2.017(38), F.A.C., if the proposed lease or easement is approved. [§§ 253.03, 253.034 and 253.04, F.S.]

The EFB bulkheads will not restrict boaters from utilizing the existing marina. The Feasibility report shows the conceptual locations of the EFBs, indicating where stabilization will be required. During the design phase of the project, care will be taken to ensure that bulkheads will not adversely impact existing public access points, such as marina's and boat ramps.

A key element of the "environmentally friendly bulkhead" is to minimize adverse impacts to the greatest extent possible. In addition to being submerged with a permeable riprap cap to maintain current levels of flushing to local mangroves, placement of the bulkheads will be such that no existing access points to sanctuaries or conservation areas will be obstructed. The potential also exists, during the design phase, to incorporate further design features to enhance/improve existing conditions for local flora/fauna adjacent to impacted channels.

While it is not possible to alter the location of the SAC EFBs, due to requirements of the S-class design vessel, any disturbance to facilities will be mitigated for. The location of the EFB's, as of 2011 site surveys, were not in conflict with any existing structures or facilities. However, additional site surveys will be made prior to final design. If any conflicts are identified proper mitigation, including reimbursement/relocation with be included.

Figure A-78 is a conceptual bulkhead cross-section suitable for Feasibility level planning and costs. This design was developed based on currently available geotechnical information and maximum possible project depths. A more detailed design, with supporting documentation, will be produced during the PED (design) phase of the project. Design will be based on updated, detailed geotechnical analyses and will be adjusted as necessary to accommodate site specific conditions throughout the project area.

With regard to the mangrove impacts, every effort to date has been made to reduce and avoid these impacts to the maximum extent practicable through design and ship simulation as detailed in Section 2.5.5 of the EIS. Any remaining mangrove impacts are to be mitigated for as part of the West Lake Park restoration project already permitted and in construction. Permits for that plan were included in Appendix E of the EIS.

As detailed in Section 2.9.3.2 the EIS, confined blasting as a rock pre-treatment technique is assumed to be requires for Port Everglades based on the available geotechnical information and previous history of dredging in the port. Protective measures for protected species is included in the EIS and detailed in Section 2.9.3.2.3 and for structures in Section 2.9.3.2.4. Impacts to park visitors should be minimal as the maximum number of blasts per day is two; each lasting for less than 5 seconds each. Measures to ensure public awareness of blasting as a pre-treatment technique includes Notice to Mariners and public workshops prior to blasting operations beginning. The Park's staff will be on the list of agencies and individuals to coordinate with during the preparation and operations phases of blasting activities.

Lastly, the Corps has no role in operations at the Port during Fleet Week, and recommends that the Park coordinate directly with the Port and the security staff for issues regarding closures of park boat ramps during those periods in time.

FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION
MARJORY STONEMAN DOUGLAS BUILDING
3900 COMMONWEALTH BOULEVARD
TALLAHASSEE, FLORIDA 32399-3000

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

June 13, 2014

Mr. Eric P. Summa, Chief
Environmental Branch, Jacksonville District
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, FL 32232-0019

RE: Department of the Army, Jacksonville District Corps of Engineers
Draft Feasibility Report and Environmental Impact Statement, Navigation Study for Port Everglades Harbor – Fort Lauderdale, Broward County, Florida.
SAI # FL201306266640C

Dear Mr. Summa:

The Florida State Clearinghouse has coordinated the state's review of the referenced U.S. Army Corps of Engineers' (USACE) June 2013 Draft Feasibility Report and Environmental Impact Statement (EIS), March 2014 supplemental mitigation information, and subsequent communication and presentations both by the USACE and the National Marine Fisheries Service (NMFS) under the following authorities: Presidential Executive Order 12372; Section 403.061(42), *Florida Statutes* (F.S.); the Coastal Zone Management Act (16 U.S.C. §§ 1451 *et seq*., as amended); and the National Environmental Policy Act (42 U.S.C. §§ 4321-4347, as amended).

Based on the findings of the Florida Department of Environmental Protection (Department), and the provisions of 15 C.F.R. 930, Subpart C, the Department hereby notifies the USACE that the proposed federal action is conditionally consistent with the enforceable policies of the Florida Coastal Management Program (FCMP) provided the conditions listed below are satisfied.

The feasibility studies provided as part of the Draft EIS review represent approximately 30% design effort, and staff believes that more detail is needed for the state to meet its water quality certification obligations under the Clean Water Act and Florida Statutes, which will also be subject to federal consistency requirements as a separate federal action than this review of the Draft EIS. Based upon the in-depth review of the proposed impacts and updated mitigation plan by our federal partners at the NMFS, we are confident the USACE will be able to provide the necessary documentation during the permitting phase of the project, however, should that not occur, this *conditional concurrence* will be treated per the provisions of 15 C.F.R. § 930.4(b) as a finding that this proposed federal action is inconsistent with enforceable policies of the FCMP, specifically §§ 373.414(1), 161.041(4), 253.03, 253.034 and 253.04, F.S.

The state's concurrence with the determination of consistency is conditioned on the USACE's providing the following items for further review, which must support the Department finding that reasonable assurance has been provided that state water quality standards will not be violated (§ 373.414(1), F.S.), the activity is not contrary to the public interest (§ 373.414(1), F.S.), adequate mitigation and biological monitoring are provided (§ 161.041(4), F.S.), and the use of sovereignty submerged lands and state-owned natural resource lands will meet the requirements for authorization by the Board of Trustees of the Internal Improvement Trust Fund (§§ 253.03, 253.034 and 253.04, F.S.):

1. **Flooding and Flushing Model** – Demonstration that the project will not cause flooding of properties within the confined interior water body. [§ 373.414(1), F.S.]

2. **Hardbottom Impacts** – Data in sufficient detail to perform a Uniform Mitigation Assessment Method (UMAM) analysis. [§ 373.414(1), F.S.]

3. **Mangrove/Seagrass Impacts** – Identification of any potential secondary impact areas where mangroves and seagrasses are in close proximity to the project boundaries. [§ 373.414(1), F.S.]

4. **Monitoring and Mitigation Plans** – Mitigation plans that quantify and adequately offset both the direct and secondary impacts from construction and resulting sedimentation and within seagrass, hardbottom and mangrove resource areas adjacent to the proposed work sites. [§§ 373.414(1) and 161.041(4), F.S.]

5. **John U. Lloyd Beach State Park Impacts** – Details on avoidance and minimization, offset any impacts to the park and necessary authorization to use state lands. [§§ 253.03, 253.034 and 253.04, F.S.]

The Department looks forward to continued coordination with USACE staff to resolve the foregoing issues and offers its assistance in amending the proposal to ensure consistency with Chapters 161, 253 and 373, F.S. We are committed to continued collaboration with the Jacksonville District on understanding the effects of the proposed project on the state's resources. The Department is hopeful that the effects can be appropriately and adequately mitigated and monitored. As the Jacksonville District moves forward into design and eventual permit application for water quality certification with the state, the issues outlined above will need to be further addressed in construction level detail by our respective staffs.

In accordance with 15 C.F.R. § 930.4, if the federal action is not altered in accordance with the conditions stated above, this conditional concurrence shall be treated by all parties as an objection. The USACE shall not proceed with the objectionable portion of the proposed project unless: it has concluded that consistency with the enforceable policies of the FCMP is prohibited by existing federal law applicable to USACE, in which case, the USACE must

clearly describe, in writing to the Department, the legal impediments to full consistency; or the USACE concludes its proposal is fully consistent with the enforceable policies of the FCMP despite this objection.

Pursuant to 15 C.F.R. § 930.43, a federal agency deciding to proceed with an activity over a state's objection or to follow an alternative suggested by the state must notify the state of its decision prior to commencement. In accordance with 15 C.F.R. § 930.43(c), a copy of this letter has been sent to the Director of the NOAA Office of Ocean and Coastal Resource Management. Mediation by the Secretary of the U.S. Department of Commerce may be sought pursuant to 15 C.F.R. 930, Subpart G, for serious disagreements between a state and federal agency with regard to direct federal action as contemplated by 15 C.F.R. 930, Subpart C.

Thank you for the opportunity to review the Draft EIS and subsequent submittals. For additional information, please contact Ms. Lauren Milligan, Coordinator of the Florida State Clearinghouse, at Lauren.Milligan@dep.state.fl.us, (850) 245-2170, or Ms. Kelly Samek, Administrator of the Florida Coastal Management Program, at Kelly.Samek@dep.state.fl.us, (850) 245-2177.

Sincerely,

Mark Thomasson, P.E.
Director, Division of Water Resource Management

Enclosures

cc: Mr. Paul Scholz, NOAA OCRM Acting Director
Ms. Terri Jordan-Sellers, USACE-SAJ
Mr. Steven Cernak, Broward County Port Everglades Department
Ms. Danielle Irwin, DEP Division of Water Resource Management
Dr. Lainie Edwards, DEP Beaches, Mining and ERP Support Program
Mr. Martin Seeling, DEP Beaches, Inlets and Ports Program
Mr. Kevin Claridge, DEP Florida Coastal Office
Ms. Kelly Samek, DEP Florida Coastal Office
Ms. Joanna Walczak, DEP Florida Coastal Office
Mr. Parks Small, DEP Bureau of Natural and Cultural Resources
Mr. Lewis Scruggs, DEP Office of Park Planning
Mr. Paul Rice, DEP Bureau of Parks District 5
Ms. Lauren Milligan, DEP Office of Intergovernmental Programs
Mr. Scott Sanders, FWC Conservation Planning Services

Florida Fish and Wildlife Conservation Commission

Commissioners
Richard A. Corbett
Chairman
Tampa

Brian S. Yablonski
Vice Chairman
Tallahassee

Ronald M. Bergeron
Fort Lauderdale

Aliese P. "Liesa" Priddy
Immokalee

Bo Rivard
Panama City

Charles W. Roberts III
Tallahassee

Kenneth W. Wright
Winter Park

Executive Staff
Nick Wiley
Executive Director

Greg Holder
Assistant Executive Director

Karen Ventimiglia
Chief of Staff

Office of the Executive Director
Nick Wiley
Executive Director

(850) 487-3796
(850) 921-5786 FAX

Managing fish and wildlife resources for their long-term well-being and the benefit of people.

620 South Meridian Street
Tallahassee, Florida
32399-1600
Voice: (850) 488-4676

Hearing/speech-impaired:
(800) 955-8771 (T)
(800) 955-8770 (V)

MyFWC.com

August 7, 2013

RECEIVED
AUG 12 2013
DEP Office of Intergovt'l Programs

Ms. Lauren Milligan
Office of Intergovernmental Programs
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, FL 32399-3000
Lauren.Milligan@dep.state.fl.us

RE: SAI #FL201306266640C – Department of the Army, Jacksonville District Corps of Engineers – Draft Feasibility Report and Environmental Impact Statement, Navigation Study for Port Everglades Harbor – Fort Lauderdale, Broward County, Florida

Dear Ms. Milligan:

Florida Fish and Wildlife Conservation Commission (FWC) staffs have reviewed the Draft Feasibility Study (DFS) and Environmental Impact Statement (DEIS) for Navigation Improvements in Port Everglades Harbor. The FWC is providing comments and recommendations pursuant to the National Environmental Policy Act and the Coastal Zone Management Act/Florida Coastal Management Program.

In 2001, the United States Army Corps of Engineers (USACE) initiated a Feasibility Study for navigation improvements to Port Everglades in coordination with a non-federal sponsor, Broward County Department of Port Everglades. Since 2001, there have been two interim DEIS' (in 2008 and 2011) that have been provided to the FWC for review and comment. The current document submitted to the State of Florida for review is a complete DFS and DEIS. The navigation improvements proposed in the DFS/DEIS are as follows:

- Deepen the Outer Entrance Channel (OEC) to an authorized depth of 48 feet (i.e., -48 feet Mean Low Low Water; actual depth of 57 feet);
- Widen the OEC to 800 feet on the seaward end, and extend it 2,200 feet seaward;
- Deepen the Inner Entrance Channel (IEC) to 48 feet (50-foot actual);
- Deepen the Main Turning Basin (MTB) to 48 feet (50-foot actual);
- Widen the rectangular shoal region to the southeast of the MTB by about 300 feet and deepen to 48 feet (50-foot actual);
- Widen the Southport Access Channel (SAC) in the proximity of berths 23 to 26 by about 250 feet and relocate the USCG facility to the east;
- Shift the existing 400-foot wide SAC about 65 feet to the east from approximately berth 26 to the south end of berth 29 to provide a transition back to the existing federal channel limits;
- Deepen the SAC from about berth 23 to the south end of berth 32 to 48 feet (50-foot actual);
- Deepen the Turning Notch (TN) to 48 feet (50-foot actual) with an additional 100-foot north-south widening parallel to the SAC on the eastern edge of the SAC over a length of about 1,845 feet; and

- Widen the western edge of the SAC for access to the TN from the existing federal channel edge near the south end of berth 29 to a width of about 130 feet at the north edge of the TN.

We do not find this project inconsistent with our authorities under Chapter 379, Florida Statutes. We would, however, like to provide the USACE information regarding fish and wildlife resources ahead of finalization of the DFS/DIES. Our comments and recommendations in this regard are enclosed.

The FWC appreciates the opportunity to review the DFS/DEIS for Navigation Improvements in Port Everglades Harbor and remains committed to assisting the expansion of this port with minimal impacts to the state's fish and wildlife resources. Should you require additional assistance regarding our comments, please contact Jane Chabre at (850) 410-5367 or by email at FWCConservationPlanningServices@MyFWC.com.

Sincerely,

Scott Sanders, Director
Office of Conservation Planning Services

ss/jdg/lg
ENV 1-3-2
Port Everglades Harbor Draft Feasibility Report and EIS_17763_080713
Enclosure

FWC Comments
Port Everglades Harbor
Draft Feasibility Report (DFR) and Environmental Impact Statement (DEIS)

DEIS Statement, pages ii and v; Section 4.4.1.2 Alternative 2E (TSP), page 176

The DEIS identifies that 4.01 acres of seagrass will sustain direct impacts. This acreage was derived from the 2009 Dial Cordy and Associates (DC&A 2009b) seagrass survey, which did not include a survey of the Outer Entrance Channel. Seagrass surveys performed prior to and including the DC&A 2009b survey establish that seagrass growth fluctuates and the overall area viable for seagrass growth is greater than the 4.01 acres identified in the DEIS. As supported by DEIS Section 3.6.1.2 "Seagrass Species Biology and Ecology" (pages 103-104), seagrass habitats include continuous vegetated beds as well as patchy environments with unvegetated areas between the patches. Distribution and abundance of all seagrass species naturally fluctuate temporally and spatially for a variety of reasons (e.g., changes in water quality, current flow, etc.), especially in patchy seagrass habitats. The absence of seagrass in a particular location during a single survey event does not indicate that the location is not viable seagrass habitat. For this reason, impact assessment should consider the broader seagrass habitat established by multiple surveys and not just the most currently surveyed vegetated portions. Not using this method may result in an inaccurate reflection of actual seagrass impacts and thus an inaccurate mitigation calculation. The FWC recommends that seagrass impact acreage should be adjusted to include the cumulative acreage of all viable seagrass habitat. This cumulative area approach to seagrass impact assessment was previously recommended in FWC Second Interim IDEIS Comments, dated May 31, 2011 (comment #38), and remains the recommended method for accurate impact assessment.

Section 2.7.2 Fish, Wildlife, and Invertebrates, page 46

The DEIS states that as an avoidance and minimization measure, scleractinian corals over 10 cm in diameter or height will be removed from the direct impact area and transplanted directly to the mitigation sites, or to coral nursery areas until the mitigation sites are constructed. The DEIS states that all listed Acroporid coral species within the project footprint will be relocated, as will the 716 corals that are 25 cm and larger within the footprint. However, the DEIS does not address relocation of corals others than those identified above and does not address relocation of octocoral species.

Species listed as Proposed Species under the Endangered Species Act (ESA) are Candidate species that were found to warrant listing as either threatened or endangered. These species were proposed as either endangered or threatened in a *Federal Register* notice after the completion of a status review and consideration of other protective conservation measures. The proposed minimum size of 25 cm for relocation would preclude many viable specimens of ESA Proposed Species, adult colonies (defined as colonies 5 cm in diameter or greater) , and fertile colonies of relatively small species that will not likely reach 25 cm such as *Favia fragum, Siderastrea radians,* and *Porites astreoides* (Soong 1993). Colonies greater than 5 cm are generally considered to be adults (Bak and Engel 1979) (Miller et al. 2000), based on average growth rates (Vaughn 1915) and estimated age of sexual maturity (Connell 1973). Corals greater than or equal to 5 cm in diameter can be successfully relocated. Brownlee (2010) successfully transplanted small coral (*Siderastrea siderea,*

Dichocoenia stokesii, and *Porites porites*) with greater than 80 percent survivorship after 13 months. Monty et al. (2006) successfully transplanted 250 corals (14 species) ranging from 5 to 40 cm in diameter with a high rate of survivorship. These corals were monitored for 13 months. Eight species had 100 percent survivorship, including 78 *Siderastrea siderea*. Thornton et al. (2000) transplanted 271 corals from an outfall pipe in Broward County to an articulated concrete mat. *Siderastrea siderea* comprised 90 percent of the corals <1 to 100 cm^2 in size. After 27 months, 266 of the corals had survived (87 percent), as compared to 83 percent survival for corals on the nearby natural substrate. In addition, Stephens (2007) salvaged from a coastal construction impact site in Broward County and 92 to 100% of the transplants survived after 18 to 24 months. As such, the FWC recommends relocation of all ESA Listed and Proposed Species regardless of size, and adult corals (those 5 cm or greater) within the footprint. In the event that all corals 5 cm in size or greater will not be relocated, we have provided a prioritized list of coral species for relocation. These coral species were prioritized based on a high conservation value (i.e., listing status, rare, slow-growing, slow to recover, sensitive to stress, poor-recruiter, high post-settlement mortality), and are as follows:

1) *Acropora cervicornis* and *A. palmata* (ESA listed as Threatened; Proposed Endangered species)
2) *Dendrogyra cylindrus* (ESA Proposed Endangered species)
3) *Montastrea annularis* (ESA Proposed Endangered species)
4) *Montastrea faveolata* (ESA Proposed Endangered species)
5) *Montastrea franksi* (ESA Proposed Endangered species)
6) *Mycetophyllia ferox* (ESA Proposed Endangered species)
7) *Agaricia lamarcki* (ESA Proposed Threatened species)
8) *Dichocoenia stokesii* (ESA Proposed Threatened species)
9) *Montastraea cavernosa*
10) *Colpophyllia natans*
11) *Diploria* spp.
12) *Mycetophyllia* spp.
13) *Agaricia* spp.
14) *Eusmilia fastigiata*
15) *Porites porites*
16) *Meandrina meandrites*
17) *Solenastrea hyades*
18) *Solenastrea bournoni*
19) *Madracis* spp.
20) *Oculina diffusa*
21) *Porites astreoides*

The least amount of effort should be attributed to:

1) *Siderastrea siderea*
2) *Stephanocoenia intersepta*
3) *Siderastrea radians*

The following species are rare, but some individuals (not colonies) may be encountered. We would not recommend expending resources to locate them as we are not sure if they are amenable to relocation:

1) *Scolymia* spp.
2) *Phyllangia* spp.
3) *Cladocora arbuscula*

The FWC also recommends relocation of all *Gorgonia* octocorals within the footprint, and other octocoral species 10 cm in height or greater based on the prioritized list below. These octocoral species were also prioritized based on a high conservation value [i.e., state prohibited species, conservation need, local (SE FL) abundance/density, growth rates, transplant success, and ability to recover naturally]. In general, more robust rod species are slow growing and have low recruitment, but transplant well and seem to recover quickly from being transplanted (e.g., growing a new holdfast over attachment material). Plumes are low on the list because they recruit very quickly after a disturbance and have high growth rates so their potential for natural recovery is greater. Additionally, more delicate plume species have less tissue (thinner tissues = less potential/resources for healing after clipping) and are inferior transplant candidates. However, plumes can be transplanted successfully. The minimum height of 10 cm was determined based on the results presented in the Port Everglades Reef Report (2009). Octocorals of this height and greater are representatives of the octocoral community to be impacted. The FWC can provide underwater identification cards for the prioritized octocoral genera to assist with colony selection. The prioritized list is as follows:

1) *Gorgonia* [state prohibited species as defined under 68B-8.002(20)]
2) *Eunicea*
3) *Plexaurella*
4) *Pseudoplexaura*
5) *Pterogorgia*
6) *Muriceopsis*
7) *Muricea*
8) *Plexaura*
9) *Leptogorgia*
10) *Pseudopterogorgia*

In addition to the species listed above, the following are priority genera if deeper relocation sites are targeted (60'+):

1) *Iciliogorgia*
2) *Eunicella*
3) *Swiftia*

Section 2.9.2.1 Mechanical Dredging and 2.9.2.2 Hydraulic Dredging

1) The Draft Feasibility Report (DFR) and the DEIS states that the USACE will adhere to the 2011 version of the Standard Manatee Construction Conditions along with other manatee protections addressed in the DFR/DEIS. The scope of the project includes

activities that may not be addressed in the standard manatee conditions and have not been addressed in the DFR/DEIS. For this reason, the FWC recommends that the dredging measures outlined for manatees in the USACE Port Everglades maintenance dredging permit 0220509-001-JC and modifications 0220509-005-JN and 0220509-006-JN of that permit also be followed for this project. This includes dredge observer specifications, and manatee considerations in the area defined as an important manatee area, and a smaller, defined area around the power plant discharge area where no clamshell dredging will occur during the wintertime. We also recommend inclusion of additional conservation measures from the Miami Harbor Phase III project (permit 0305721-001-BI); specifically specifications for marine species as an element of the USACE environmental plan, keeping a marine species sighting log and submitting a report, and gravity release of clamshell buckets at the water's surface.

2) The FWC recommends the dredge selected and any equipment used for beach placement of dredged material should be required to clearly specify the types of lights on the equipment, the purpose for the lighting, and appropriate shielding to ensure that sea turtle protections are met during any project activity that occurs between March 1 and October 31. All permanent exterior lighting fixtures associated with the project should utilize long wavelength lighting to the degree possible, avoid full-spectrum light such as metal halide and white LED, be mounted as close to the surface to be illuminated as practicable, be full cutoff, and be shielded. In addition, long-term local agreements should be arranged to ensure appropriate surveys and protective measures are in place to address escarpment, tilling, and lighting compliance requirements after the initial year of construction.

3) As recognized by the USACE, impacts to swimming sea turtles may also occur during project activities. The USACE has indicated that, in the event a hopper dredge is utilized, the Terms and Conditions of the applicable NMFS Regional Biological Opinion for Hopper Dredging would be followed. The following recommendations are provided for further protection and will facilitate FWC's assistance to USACE staff in handling sea turtle injury: Contact Dr. Allen Foley, the Sea Turtle Stranding and Salvage Network (STSSN) Coordinator at Allen.Foley@myfwc.com at the start-up and completion of hopper dredging operation; report any collisions with and/or injury to a sea turtle shall be reported to the STSSN at 1-888-404-FWCC (3922).

In addition, it is not clear from the DEIS as to whether or not relocation trawling or non-capture trawling will be implemented. Any activity involving the use of nets to harass and/or to capture and handle sea turtles in Florida waters requires a Marine Turtle Permit from FWC as well as reporting of all trawling activity.

Section 2.9.3.2 Confined Underwater Blasting

The USACE commits to implement the confined underwater blasting protective measures developed for the Miami Harbor Phase III Federal Channel Expansion project for both construction and test blasting within the Port Everglades project area. The FWC notes that language regarding blasting for the Miami Harbor Phase III (permit 0305721-001-BI) has been revised and improved. We recommend use of the revised language, particularly for

protected species observer qualifications, which is a critical part of a successful monitoring plan.

Additionally, the USACE has committed to conducting caged fish studies to help inform development of avoidance and minimization measures for marine fish species for confined blasting activities. There is potential for USACE to conduct such caged fish studies during the Miami Harbor Phase III Expansion project. Information resulting from these Miami Harbor studies or other projects in which the USACE may be using confined underwater blasting would be useful in development of Best Management Practices (BMPs) for Confined Underwater Blasting and Marine Fisheries Resources. BMPs developed as a result of these studies should be incorporated into this project.

Section 2.9.3.2.4 Vibration and Pressure Monitoring

This section includes discussion of potential impacts to commercial properties, utilities and residential communities caused by vibrations from blasting. Because vibrations from blasting have the potential to affect the structural integrity of nearby properties, it is possible that these vibrations may also affect the structural integrity of adjacent hardbottom habitat or sessile organisms attached to hardbottom habitat. A project of this size including the proposed amounts of blasting has not been conducted in Florida, so the potential effects to the structural integrity of surrounding areas and attached species are not known. The FWC requests the current discussion in this section be expanded to identify and address potential impacts from blasting vibrations to the structural integrity of hardbottom habitat and sessile organisms attached to hardbottom habitat adjacent to the project impact area.

Section 2.9.4 Disposal of Removed Materials

The USACE Tentatively Selected Plan (TSP) involves channel dredging and disposal of significant amounts of material that will be generated from dredging. The DFR/DEIS states that material to be dredged is not beach-compatible. However, at the same time as publication of the DFR/DEIS, the USACE had submitted JCP Application No. 0220509-007-JM. This application has since been withdrawn, but the USACE recognizes that beach placement may be used as a disposal method. The beach placement area that is currently approved in the existing maintenance dredge permit (Segment III limits of the Broward County shore protection project) may be suitable once the overburden material located in the entrance channels has been screened. If disposal of material on or near that beach placement area occurs, impacts to nesting and hatchling sea turtles could occur. Therefore, it is important that mechanisms are in place to ensure that only beach-quality material is placed on the beach. Methods for beach and nearshore placement including placement areas, proposed beach profiles, construction and design templates, any pipeline placement, equipment needed, and travel corridors must be designed to minimize impacts to sea turtles, their nests, and nesting habitat. Additionally, beach placement of dredged material may affect nesting shorebirds and seabirds. Standard protection measures for shorebirds and seabirds should be incorporated into the project evaluation and should include measures that:

1. Ensure personnel associated with the project are aware of the potential presence and the need to avoid take of these protected species.

2. Use observers to monitor for beach-nesting bird activity, establish buffer zones and travel corridors, and assist personnel in conducting work in a manner that avoids take.
3. Ensure equipment storage and placement does not result in take.
4. Ensure that any tilling or mechanical beach-raking is conducted in a manner that does not result in take.

Sections 2.9.2 - 2.9.4

These sections discuss material removal, disposal, and rock pre-treatment, but absent from the DEIS is any discussion of reef/seafloor structural repair or rubble stabilization. Repair and stabilization will be necessary post-construction due either to blasting vibrations (see Section 2.9.3.2.4 comments above), or dredging activities. Impacts from dredging have been well documented and it has been shown that deterioration of the reef can continue for several years after the cessation of dredging because of continual resuspension and movement of dredged materials (Rogers 1979). Rubble has also been shown to cause high mortality rates of coral recruits (Edwards and Gomez 2007), and rubble at injury sites has been documented to reduce the numbers of stony coral species, percent cover, density, and largest colony size (Gilliam and Moulding 2012). The 2006 Dial Cordy and Associates (DC&A 2006) report indicated that stabilizing the seafloor following dredging may be one of the most significant measures that could minimize post-construction impacts to surrounding reef communities. The FWC recommends inclusion of another section in the DEIS that discusses actions that will be taken to repair structural damage and stabilize rubble attributed to construction activities. Potential alternatives for rubble stabilization can be found in Edwards and Gomez (2007) and Collier et al. (2007). If structural damage is not repaired and rubble will not be stabilized, the repeated impacts to nearby reefs from unstabilized rubble should be incorporated into impact and compensatory mitigation assessment.

Section 3.6.1.3 Spatial and Temporal Patterns of Study-Area Seagrass Beds, page 105

This section of the DEIS states that the 2001 Dial Cordy and Associates (DC&A 2001) survey documented 1.04 acres of *Halophila decipiens* seagrass in the Outer Entrance Channel. It further states that the presence of this same seagrass bed could not be confirmed by the 2010 Dial Cordy and Associates (DC&A 2010) videographic survey. The DC&A 2010 videographic surveys were conducted for Acroporid corals, and there is no mention of seagrasses in the DC&A 2010 report for these surveys. Even if DC&A were looking for seagrasses during the course of Acroporid coral surveys, the videographic survey methodology that was used in DC&A 2010 for Acroporid corals is not an appropriate survey methodology for seagrasses. Videographic surveys are likely unable to confirm the presence/absence of *Halophila decipiens*, especially due to potentially poor visibility in the Outer Entrance Channel and the patchy distribution of Halophilas. No seagrass surveys have been conducted in the Outer Entrance Channel since DC&A 2001, when the 1.04 acre seagrass bed was originally documented.

This section of the DEIS attributes the presumed absence of the 1.04-acre *Halophila decipiens* seagrass bed in the Outer Entrance Channel (based on the DC&A 2010 Acroporid coral survey) to activities associated with the Broward County Shore Protection Project, in which Broward County dredged the Port Everglades Entrance Channel during November

2005 through February 2006. DEIS Section 3.6.1.2 "Seagrass Species Biology and Ecology" (pages 103-104) provides the more likely explanation for this presumed absence of seagrass in the Outer Entrance Channel by recognizing that distribution and abundance of all seagrass species naturally fluctuate temporally and spatially for a variety of reasons (e.g. changes in water quality, current flow, etc.), especially in patchy seagrass habitats such as Port Everglades.

The FWC maintains that use of the cumulative area approach to seagrass impact assessment as identified in our comments on Section 4.4.1.2 above, would appropriately characterize the seagrass resources in the Outer Entrance Channel and, when done appropriately, would have captured the need to mitigate for the 1.04 acres identified above. With or without using the cumulative area approach, the DC&A 2001 survey stands alone in establishing this 1.04-acre area located in the Outer Entrance Channel as either containing or having the potential to contain a 1.04-acre *Halophila decipiens* seagrass bed. Therefore, this area should be considered as 1.04 acres of viable seagrass habitat. This area was not included in the stated 4.01 acres of seagrass that will be directly impacted by the project, and should be factored in to impact assessment and compensatory mitigation assessment if it is not located within a previously dredged area. Because survey location information was not provided in the DEIS, the FWC requests the USACE provide the coordinates of the DC&A 2001 survey, and supporting documentation that establishes whether or not the survey coordinates fall within a previously dredged area to determine mitigation needs for this area.

Section 4 Environmental Consequences

In numerous places throughout this section, the DEIS refers to Best Management Practices (BMPs) for water quality protection which would be required by the state-issued Water Quality Certification. The DEIS states that secondary impacts (referenced in the DEIS as indirect effects) to seagrasses are not anticipated due to the requirement of BMPs (pages 176 and 191); adverse effects should be negligible to hardbottom habitat because of the use of state-required BMPs (page 179); impacts to the water column (including marine and estuarine species) will be controlled through the use of BMPs (page 184-185); and BMPs will reduce potential impacts to turtle foraging habitat (page 199).

The FWC supports the concept that water quality BMPs could be developed to control and minimize some secondary impacts from project activities (e.g., sloughing, turbidity, sedimentation). Turbidity and sedimentation have been shown to affect coral settlement, growth rates and colony morphology (Rogers 1979; Rogers 1990). For seagrasses, the critical threshold for turbidity and sedimentation, as well as the duration that seagrasses can survive periods of high turbidity or excessive sedimentation vary greatly among species. The extent of damage to seagrasses is not simply a function of the size and scale of the dredging operation alone, but also depends on proximity to the seagrass bed, type and composition of the sediment, the way dredging equipment is used, and mitigating measures applied (Erftemeijer and Lewis 2006).

Secondary impacts can negatively impact FWC-managed species and their habitats, primarily coral reef and seagrass-dependent marine species. The FWC recommends that secondary impacts should be factored in to both project impact assessment and

compensatory mitigation assessment for coral reef and seagrass habitats. FWC staff is available to assist the USACE with determination of secondary impacts.

Section 4.28 Environmental Commitments

The USACE has committed to conducting pre- and post-construction surveys and coordinating further with the resource agencies regarding mitigation analysis and the mitigation plan (page 179). The FWC supports this commitment and FWC staff will coordinate with the USACE and resource agencies beyond the planning-level analysis included in the EIS and mitigation plan.

Appendix C Federal Consistency Determination, #10 and #11

We request the DEIS language be modified to reflect language regarding Florida Statute Chapters 370 and 372 to reflect changes made to combined them into Chapter 379 Fish and Wildlife Conservation, and adopted into Florida's Coastal Management Program in 2009.

Appendix E Port Everglades Navigation Improvements-Draft Comprehensive Mitigation Plan and Incremental Cost Analysis

Section 4.1 Determining Mitigation Needs for Seagrasses

1) Seagrass mitigation requirements were determined using the State of Florida's Uniform Mitigation Assessment Method (UMAM). The full UMAM assessments were not provided in the DEIS for the project seagrass impacts at Port Everglades or for the proposed compensatory mitigating actions in West Lake Park (WLP). As a result, the FWC cannot determine what factors were taken into consideration for determining UMAM scores, associated mitigation needs, and proposed compensatory mitigating actions for seagrass impacts. The full UMAM assessment for both project impacts and proposed WLP mitigating actions (inclusive of Part 1 and full score sheets for Part 2) should be included in the DEIS along with a discussion of seagrass functions that were factored into consideration for determining UMAM scores, mitigation needs, and compensatory mitigating actions in this section. This information is necessary to accurately assess the potential impacts to fish and wildlife resources by the project.

   Since this information was not provided, the FWC provides the following information regarding seagrass functions necessary to consider when determining accurate UMAM scores, determining mitigation needs, and proposing compensatory mitigating actions for seagrass impacts.

   Seagrass located in close proximity to an inlet have been shown to serve specific and irreplaceable ecological functions that seagrass located further away from an inlet do not. These irreplaceable functions are highly valued, and should be reflected as such in both UMAM scoring criteria, identification of mitigation needs, and proposal of appropriate compensatory mitigating actions for seagrass impacts. Documentation of valuable ecological functions of seagrass in close proximity to a coastal inlet include:

- Habitat value during growth to maturity for gray snapper (*Lutjanus griseus*) and bluestriped grunt (*Haemulon sciurus*) is a function of distance from an ocean inlet (Faunce and Serafy 2007).

- The planktonic larvae of gag grouper (*Mycteroperca microlepis*) move into estuaries and settle in the first available habitat, including polyhaline seagrass beds near inlets (Ross and Moser 1995).

- Based on work completed in the Indian River Lagoon, Gilmore (1995) determined that seagrass habitats near ocean inlets offer optimum physical conditions with low variation in temperature and salinity and other physical parameters as well as proximity to ocean spawning sites for reef species. Therefore, seagrass habitats near inlets provide habitat for the most diverse fish communities and seagrass communities away from the inlets become less diverse.

- A faunal transition and fish community change takes place within 5 km (3.1 miles) of the ocean inlet to the lagoon as one proceeds away from the inlet (Gilmore 1995).

- Other studies (e.g., Bushon 2006; Turtora and Schotman 2010) have also linked species distribution and life history stages as a function of proximity to a coastal inlet.

If not already considered in the UMAM scores regarding habitat value, the above information should be factor into scores related to habitat utilization.

2) Paragraph 2 of this section states: "However, because mitigation construction has already been initiated, revised UMAM calculations during the upcoming Preconstruction Engineering and Design (PED) phase of the project will likely indicate that fewer functional units will be required. This is because the time lag factor (time to which mitigation reaches full function) in UMAM will be reduced or nearly eliminated by the time impacts occur." Mitigation construction has not yet been permitted or initiated, thus this statement is premature and does not recognize the full need for mitigation and the functional units required. In order to ensure that mitigation meets full function, particularly with regard to fish and wildlife habitat values, we recommend this statement be eliminated.

Section 4.4 Proposed Mitigation Plan for Seagrasses, page 15

1) A portion (one functional unit) of seagrass mitigation in West Lake Park is credited from establishing a manatee/seagrass protection area (MPA). The mitigating value of this MPA has been in question, and the FWC maintains that protecting existing seagrass resources does not replace the ecological functions of the seagrass resources permanently removed by the project. Additionally, the FWC is not clear by which legal mechanism this zone has been created. The FWC originally identified this issue for the USACE in June of 2008. Subsequently the issue has been identified by FWC staff during a number of project meetings, and was again documented in the FWC Second Interim IDEIS Comments, dated May 31, 2011 (comment #37). At this

time, the FWC recommends an alternative mitigation approach be developed for this one functional unit of mitigation credit.

2) If natural seagrass recruitment does not occur in the proposed seagrass-creation areas, the DEIS states that donor material will be planted based on guidance from Fonseca et al. (1998). This statement is not informative because there are a variety of seagrass transplanting methods (e.g. cores, peat pots, bare root/staple, etc.) described by Fonseca et al. *Halophila decipiens* is the dominant seagrass species at the WLP location, so it would be the best transplant species of choice. However, *H. decipiens* is fragile, and cannot be installed with the bare root/staple technique that is most commonly used for larger species such as *Halodule wrightii*. If *H. decipiens* plants are not carefully installed, their rhizomes will become dislodged from the sediment and the plants will float away because they are very shallowly rooted (i.e., roots barely penetrate the sediment surface). Information regarding the specific transplanting method, the species that will be used, where the donor material will be obtained from, and the planting density proposed is necessary for FWC staff to assist USACE staff in successfully creating a seagrass mitigation area. For instance, if *H. decipiens* is selected, the transplanting method must utilize a procedure where whole plants with sediment are removed and installed or the delicate rhizomes will be destroyed. It should be noted that no long-term, successful *Halophila* transplanting project has been documented in the peer-reviewed literature to date.

Section 4.5 Monitoring and Adaptive Management for Seagrass Mitigation, page 16

1) Paragraph 2 of this section states that forty paired, $1m^2$ quadrats will be randomly placed within the created seagrass habitat during each monitoring event. The small number of monitoring points relative to the large area that must be monitored (40 quadrats distributed over 8 acres = 5 m^2 per acre) may yield inaccurate results, particularly for patchy seagrass species such as *Halophila decipiens* and *Halophila johnsonii*. For this reason, FWC staff recommends that this section further discuss the monitoring methodology and rationale to provide the basis for determining both the number of quadrats and the number of monitoring points.

2) In paragraph 4 of this section, it is unclear what survivorship rates would be assessed in paired 1 m^2 quadrats. It would seem this paragraph intended to reflect that seagrass cover in WLP recruitment areas and natural seagrass beds will be assessed in paired 1 m^2 quadrats divided into 10-cm X 10-cm sections. Survival would only be assessed for transplanted seagrass, so paired quadrats would not be necessary. In addition, seagrass planting unit survival would not be estimated in a 1 m^2 quadrat divided into 10-cm X 10-cm sections – that technique would only be used to assess seagrass cover in the seagrass recruitment zones, natural seagrass beds, or transplanted zones after planting units coalesced. FWC staff recommends the USACE clarify the assessment methods in this section.

Section 4.6 Seagrass Mitigation Success Criteria, page 17

It may be unnecessary for the USACE to use the shoot count metric when determining cover as a success criteria. The FWC requests clarification regarding how target cover goals were determined, and identification of what is the cover of natural seagrass beds in the WLP

region so FWC staff can help ensure the most effective methods are used. If the time-consuming shoot count metric is eliminated, this would enable the number of quadrats monitored for cover to be substantially increased while saving time. Sampling methods should address the monitoring goal, which in this case is achieving natural levels of seagrass cover in created seagrass beds.

Section 5.1 Determining Mitigation Needs for Mangrove Wetlands, page 18, paragraph 2
Paragraph 2 of this section states: "However, because mitigation construction has already been initiated, revised UMAM calculations during the upcoming Preconstruction Engineering and Design (PED) phase of the project will likely indicate that fewer functional units will be required. This is because the time lag factor (time to which mitigation reaches full function) in UMAM will be reduced or nearly eliminated by the time impacts occur." Mitigation construction has not yet been permitted or initiated, thus this statement is premature and does not recognize the full need for mitigation and the functional units required. In order to ensure that mitigation meets full function, particularly with regard to fish and wildlife habitat value, we recommend this statement be eliminated.

Section 5.5 Monitoring and Adaptive Management for Mangrove Wetland Mitigation, page 21

1) The methodology proposed in the DEIS to monitor mangrove recruitment is a 2-m-wide belt transect placed along the long axis of each recruitment zone. It would be more appropriate to monitor recruitment over the entire zone such as proposed for seagrass monitoring (i.e., random points distributed over the entire site so results can be generalized over the entire area). The FWC recommends modifying the monitoring methodology for recruited mangrove trees once they are > 1.5 m tall, to include trees over the entire recruitment zone rather than those within a 2-m-wide belt transect.

2) In order to understand how monitoring will be conducted and assess the success of mitigation to ensure restoration of fish and wildlife habitat value, the FWC requests additional information in this section regarding the following:
   - "Aerial coverage" – what does it refer to, canopy cover or actual tree cover of the sediment surface?
   - What is the duration and frequency of "aerial coverage" measurement?
   - How will the number of sampled trees be determined, how will the particular trees be selected, and how will overall mangrove health be assessed?

Section 5.6 Mangrove Wetland Mitigation Success Criteria
Section 5.5 states that data to be collected during monitoring will include height, spread, and diameter at breast height; however, there is no discussion of how this information will be used. We recommend this section of DEIS more thoroughly address how this information will be used to determine mitigation success.

Literature Cited

Bak, R., and M. Engel. 1979. Distribution, abundance and survival of juvenile hermatypic corals (Scleractinia) and the importance of life history strategies in the parent coral community. Marine Biology 54: 341-352.

Brownlee, A. 2010. Transplantation and parrotfish predation: A study on small *Siderastrea siderea* offshore Broward County, FL USA: NOVA Southeastern University.

Bushon, A.M. 2006. Recruitment, spatial distribution, and fine-scale movement patterns of estuarine-dependent species through major and shallow passes in Texas. M.S. Thesis, Texas A&M University-Corpus Christi, Corpus Christi, Texas.

Collier, C., R. Dodge, D. Gilliam, K. Gracie, L. Gregg, W. Jaap, M. Mastry, and N. Poulos. 2007. Rapid Response and Restoration for Coral Reef Injuries in Southeast Florida: Guidelines and Recommendations. Southeast Florida Coral Reef Initiative. 57 pp.

Connell, J. 1973. Population Ecology of Reef-Building Corals. In: Biology and Geology of Coral Reefs. New York: Academic Press. pp. 205-245.

Dial Cordy and Associates. 2006. Port Everglades Reef Mapping and Assessment. Final report prepared for the Jacksonville District Corps of Engineers. 163 pp.

Edwards, A.J., and E.D. Gomez. 2007. Reef Restoration Concepts and Guidelines: Making Sensible Choices in the Face of Uncertainty. Coral Reef Targeted Research and Capacity Building for Management Programme. St. Lucia, Australia. 38 pp.

Erftemeijer, P.L.A., and R.R.R. Lewis III. 2006. Environmental impacts of dredging on seagrasses: A review. Marine Pollution Bulletin 52: 1553-1572.

Faunce, C.H., and J.E. Serafy. 2007. Nearshore habitat use by gray snapper (Lutjanus griseus) and bluestripted grunt (Haemulon sciurus): environmental gradients and ontogenetic shifts. Bulletin of Marine Science 80: 473-495.

Gilliam, D.S., and A.L. Moulding. 2012. A Study to Evaluate Reef Recovery Following Injury and Mitigation Structures Offshore Southeast Florida: Phase I. Nova Southeastern University Oceanographic Center. Dania Beach, Florida. 60 pp.

Gilmore, R.G. 1995. Environmental and biogeographical factors influencing ichthyofaunal diversity: Indian River Lagoon. Bulletin of Marine Science 57:153-170.

Miller M., E. Weil, and A. Szmant. 2000. Coral recruitment and juvenile mortality as structuring factors for reef benthic communities in Biscayne National Park, USA. Coral Reefs 19: 115-123.

Monty, J., D.S. Gilliam, K. Banks, D. Stout, and R.E. Dodge. 2006. Coral of opportunity survivorship and the use of coral nurseries in coral reef restoration. Proc 10th ICRS: 1665-1673.

Rogers, C.S. 1979. The Effect of Shading on Coral Reef Structure and Function. Journal of Experimental Marine Biology and Ecology 41: 269-288.

Rogers, C.S. 1990. Responses of coral reefs and reef organisms to sedimentation. Marine Ecology Progress Series 62:185-202.

Ross, S.W., and M.L. Moser. 1995. Life history of juvenile gag, Mycteroperca microlepis, in North Carolina estuaries. Bulletin of Marine Science 56:222–237.

Soong, K. 1993. Colony size as a species character in massive reef corals. Coral Reefs. 12(2): 77-83.

Stephens, N.R. 2007. Stony coral transplantation associated with coastal and marine construction activities: Nova Southeastern University.

Thornton, S., R.E. Dodge, D.S. Gilliam, and R. Cook. 2000. Success and growth of corals transplanted to concrete armor mat tiles in southeast Florida: Implications for reef restoration. Proc. 9th ICRS 2: 23-27.

Turtora, M., and E.M. Schotman. 2010. Seasonal and Spatial Distribution Patterns of Finfish and Selected Invertebrates in Coastal Lagoons of Northeastern Florida, 2002-2004. U.S. Geological Survey Scientific Investigations Report 2010-5131. 90 pp.

Vaughn, T. 1915. The geological significance of the growth-rate of the Floridian and Bahaman shoal-water corals. Journal of Washington Academy of Sciences 5: 591-600.

Virnstein, R.W., L.C, Hayek, and L.J. Morris. 2009. Pulsating Patches: A model for the spatial and temporal dynamics of the threatened seagrass species *Halophila johnsonii*. Marine Ecology Progress Series 385: 97-109.

Broward
SCH
2013-02684

COUNTY: BROWARD

DATE: 6/26/2013
COMMENTS DUE DATE: 8/5/2013
CLEARANCE DUE DATE: 8/25/2013
SAI#: FL201306266640C
REFER TO: FL200103150126C

MESSAGE:

STATE AGENCIES
COMMUNITY PLANNING
ENVIRONMENTAL PROTECTION
FISH and WILDLIFE COMMISSION
X STATE
TRANSPORTATION

WATER MNGMNT. DISTRICTS
SOUTH FLORIDA WMD

OPB POLICY UNIT

RPCS & LOC GOVS

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

- _ **Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.**
- X **Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.**
- _ **Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.**
- _ **Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.**

Project Description:

DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT CORPS OF ENGINEERS - DRAFT FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT, NAVIGATION STUDY FOR PORT EVERGLADES HARBOR - FORT LAUDERDALE, BROWARD COUNTY, FLORIDA.

To: Florida State Clearinghouse

AGENCY CONTACT AND COORDINATOR (SCH)
3900 COMMONWEALTH BOULEVARD MS-47
TALLAHASSEE, FLORIDA 32399-3000
TELEPHONE: (850) 245-2161
FAX: (850) 245-2190

EO. 12372/NEPA

- ☑ No Comment
- ☐ Comment Attached
- ☐ Not Applicable

Federal Consistency

- ☑ No Comment/Consistent
- ☐ Consistent/Comments Attached
- ☐ Inconsistent/Comments Attached
- ☐ Not Applicable

From:

Division/Bureau: Historical Resources

Reviewer: Michael Hart DSHPO

Date: 7/2/13

RECEIVED
JUL 11 2013
DEP Office of
Intergov't Programs

2013 JUL 27 P 2:24

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

MARJORY STONEMAN DOUGLAS BUILDING
3900 COMMONWEALTH BOULEVARD
TALLAHASSEE, FLORIDA 32399-3000

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

MEMORANDUM

TO: Lauren Milligan, Florida State Clearinghouse Coordinator
Office of Intergovernmental Programs

FROM: Mark Thomasson, P.E., Director, Division of Water Resource Management

Kevin Claridge, Director, Florida Coastal Office

Parks Small, Chief, Bureau of Natural and Cultural Resources
Division of Recreation and Parks

SUBJECT: Department of the Army, Jacksonville District Corps of Engineers
Draft Feasibility Report and Environmental Impact Statement, Navigation Study for Port Everglades Harbor – Fort Lauderdale, Broward County, Florida.
SAI # FL201306266640C

DATE: June 20, 2014

The *updated* Draft Feasibility Report and Draft Environmental Impact Statement (EIS) and the Biological Opinion for the Port Everglades Harbor Navigation Study have been reviewed by the **Division of Water Resource Management** (DWRM). The DWRM staff has been in communication with the U.S. Army Corps of Engineers (USACE) and the Florida Fish and Wildlife Conservation Commission, as well as the Department's Florida Coastal Office and Division of Recreation and Parks, regarding this project for quite a few years, and the Department agreed to become a Cooperating Agency in November of 2007. To date, our efforts to improve the environmental assessment of impacts and to agree on acceptable minimization and mitigation for those impacts have not been entirely successful. We understand the National Marine Fisheries Service (NMFS) has approved a conceptual mitigation plan and has committed to work with this agency to assist in converting their review and scoring to the state required format; however, that has not yet been done. Completion of that effort may satisfy some of the conditions below.

The USACE applied for a major modification to the existing maintenance dredging permit for Port Everglades to include this expansion on July 1, 2013 and subsequently withdrew the application on July 30, 2013. Staff review and comparison of the Draft EIS, permit modification application, and subsequent responses to the draft conditional concurrence determination have raised a number of issues. Previous comments, italicized below, addressed both federal consistency and permitting issues. However, as the modification was withdrawn, the remaining issues are limited to consistency review on the Draft EIS and Feasibility Report.

Since the proposed activities will require state water quality certification in the form of an Environmental Resource Permit and sovereignty submerged lands authorization from the DWRM, as well as the disposition of state-owned lands by the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees or Governor and Cabinet), the project must meet provisions of Chapters 253, 258, 373 and 403, *Florida Statutes* (F.S.). Should beach placement of sand from the inlet be considered, as proposed in the permit modification application, the provisions of Chapter 161, F.S., shall also apply and a Joint Coastal Permit would be required rather than an Environmental Resource Permit. The DWRM finds the updated Draft EIS and Feasibility Report to be "conditionally consistent" with the Florida Coastal Management Program and makes the following recommendations to provide reasonable assurance that the project will meet state water quality standards, will not be contrary to the public interest, and the use of sovereignty submerged lands and state-owned natural resource lands will meet the requirements for authorization by the Board of Trustees:

1. **Flooding and Flushing Model** – *Deeping the entrance channel, which essentially would increase the cross-sectional flow area, could affect the tidal hydraulics within the confined interior tidal body at a distance from the entrance channel. Should the propagation of the tide through the inlet have the properties of a shallow water wave, the tide range should not be reduced. The celerity of the tide wave would increase where deepened and the timing of the peak current and slack tide would occur earlier away from the entrance channel. Reasonable assurance is required to show that the project will not cause flooding of properties within the confined interior water body. Therefore, provide a flooding model and analysis to evaluate potential inland flooding impacts associated with deepening the channel. On the ebb tide, water is advected seaward through the entrance channel that contains higher concentrations of nutrients and other contaminates compared to levels in the open coast waters. Enlargement of the channel brings the possibility of increasing the flux of these substances out of the inlet and into the coastal waters. Furthermore, the vertical velocity and density structures of tidal flows may be stratified and dependent on the tidal phase. The RMA-2 is a depth averaged model not intended to resolve the vertical features of the channel water column. The field-measurements requested above are necessary to validate the applicability of the RMA-2 model as well as calibrate the model. [§ 373.414(1), F.S.]*

   The USACE responded to the Department's request for flood modeling with a statement that modeling is not required because such modeling for port expansions at Jacksonville, Palm Beach and Miami did not appreciably impact storm surge and, therefore, the USACE concluded that flooding due to port expansion at Port Everglades is not expected. The results of a hydrodynamic model that was not calibrated or verified was referenced as additional support for this expectation of no flooding.

   The DWRM does not agree that this conclusion can be made from the numerical modeling results at these other port projects because the physical site conditions are not similar. The results of the unverified hydrodynamic model are not adequate as

additional support for the USACE conclusion. Similarly, the USACE conclusion regarding the possibility of increasing the flux of nutrients and other contaminants out of the inlet and into the coastal waters is not supported by the hydrodynamic model.

To be consistent, the Department requests hydrodynamic modeling calibrated and verified for Port Everglades that provides adequate engineering data on flooding and flushing. The Department's guidelines for documenting numerical modeling studies can be located on our website, under "Engineering and Reporting Guidelines" at: http://www.dep.state.fl.us/beaches/publications/tech-rpt.htm#Discussion. Data other than numerical models may be considered on a case-by-case basis.

2. **Hardbottom Impacts** – *The Draft EIS does not clearly describe how the hardbottom impact areas were determined. The Draft EIS states that Dial Cordy mapped the area using towed video cameras and benthic assessments; however, no mapping protocols were provided to determine how the mapping was performed. Please provide the estimated acreage of all potential direct and secondary hardbottom impact areas (including the estimated acreage of hardbottom present on the west side slope of the second reef and the east and west side slopes of the third reef) using updated cartographic data (i.e., LADS survey of 2009). Please also provide a formal description of each potential direct and secondary hardbottom impact area with quantitative data on each major functional group (e.g., macroalgae, turf algae, sponges, corals, etc.) and species-indicators (e.g., scleractinian corals, octocorals, etc.), including cover, density, size class distribution, etc., and description of methods used to obtain these data. [§ 373.414(1), F.S.]*

   During permitting, the DWRM will need up-to-date data in sufficient detail for its staff to perform a Uniform Mitigation Assessment Method (UMAM) analysis. The data utilized in the impact assessments, especially in the deeper areas within the channel that were not surveyed (*i.e.*, slopes below -57 ft., and fragments of the third reef within the channel), yet are subject to both direct and indirect impacts, is not sufficient for a UMAM analysis. Although the USACE reports their staff cannot dive in the channel, the state has been to the site and has data showing the high diversity and value of the resources in the channel expansion areas. The impact and mitigation assessment should include these data.

   The applicant will also need to provide a thorough pre-construction survey to accurately classify the habitat and verify the predicted information and potentially adjust mitigation and / or compensatory mitigation allowances.

3. **Mangrove/Seagrass Impacts** – *A map depicting the mangrove and seagrass impact areas was provided in the Draft EIS (Figure 71); however, these areas are difficult to view and evaluate because the scale is small. Please provide a graphic representation of the mangrove and seagrass impact areas with a larger scale. Please show the*

boundaries of the project in relation to the mangrove and seagrass impact areas on the map.

Please provide a detailed description of each mangrove impact area that accurately characterizes the ecological values of the area and functions provided including: types of mangroves, coverage of each type of mangrove, height, general health of the mangroves, coverage and density of nuisance or invasive exotic plant species, wildlife utilization and type of use, and whether any portion of the assessment area has been used as mitigation for a previously-issued permit.

Please provide a detailed description of each seagrass impact area that accurately characterizes the ecological values of the area and functions provided including seagrass species, and the coverage and spatial distribution of each species. Please provide the methodology used to characterize the seagrass areas.

This information was provided in the response, and although the DWRM still has questions and recommendations, these issues could be worked out in the permitting phase.

Secondary Impacts – Identify any secondary impact areas where mangroves and seagrass are in close proximity to the project boundaries. If none are expected, provide an explanation as to how the secondary impacts to these communities will be prevented. [§ 373.414(1), F.S.]

A monitoring plan, designed to measure potential secondary impacts, and an adaptive management plan to cover the associated mitigation, if these impacts should occur, is needed to assure consistency.

4. **Biological Monitoring Plan** – *A detailed Biological Monitoring Plan will need to be provided and, if separate, a Sedimentation and Turbidity Monitoring Plan that measures the biological stress at fixed stations within seagrass and hardbottom resource areas adjacent to the proposed work sites that may experience significant amounts of impact due to turbidity, sedimentation, sloughing or direct physical effects (e.g., anchor or spud placement).*

The provided Miami Harbor monitoring plan is not sufficient to determine potential impacts at Port Everglades. The DWRM worked on and provided a detailed draft of monitoring items needed, including appropriate monitoring locations, appropriate sedimentation monitoring, and appropriate during-construction monitoring to detect potential impacts, including those resulting from excessive turbidity. Our recommendations were not incorporated. A more appropriate monitoring plan which enables accurate detection of project related impacts is required in order to obtain

consistency on this matter. The Department suggests referring to the monitoring plan draft mentioned above. [§§ 373.414(1) and 161.041(4), F.S.]

5. **Minimization of Impacts to Hardbottom and Coral Reef** – *DWRM acknowledges that scleractinian corals greater than 10 cm in height or diameter will be transplanted prior to dredging to minimize direct impacts. Corals of a size class 10 cm to 25 cm are the major reproduction pool, as they have achieved a stage of puberty, and they are two orders of magnitude greater in number than corals of class >25 cm, and an order more in diversity (number of species). To minimize the direct impacts to the greatest extent practicable, DWRM staff recommends that, in addition to transplanting all scleractinian corals greater than 10 cm in height or diameter, at least 2,000 octocorals greater than 15 cm in height and at least 300 sponges (Xestospongia muta, Geodia neptuni, Spheciospongia vesparium and Ircinia strobilina), which includes at least 200 sponges greater than 25 cm in diameter and at least 100 sponges greater than 40 cm in diameter, be transplanted as well. [§ 373.414(1), F.S.]*

   The DWRM documentation on species at the site supports inclusion of additional species in the transplantation plan. The USACE response indicates only transplantation of select coral species and did not include octocorals and sponges which, according to our analysis, does not provide adequate minimization measures for the project. The applicant is required to minimize impacts to natural resources, not exclusively corals. In order to obtain consistency with minimization requirements at the state level, the USACE transplantation plan needs to include corals, octocorals, and sponges of specific size / species.

6. **Mitigation** – *The Draft EIS described two potential mitigation options to offset direct impacts to hardbottom. One mitigation option (preferred by the USACE) involves creation of an artificial reef. The other mitigation option (preferred by the National Marine Fisheries Service) involves coral propagation. To mitigate for hardbottom impacts, DWRM staff prefers a combination of both mitigation plans to offset impacts to reef substrate, and creation of onshore and offshore nurseries for corals, octocorals and sponges to enhance the recruitment in natural hardbottom. Please provide a mitigation plan that incorporates both mitigation options. Please include a section for mitigation that is suitable to address impacts due to turbidity and sedimentation.*

   The mitigation plan needs to include functional offsets based on the Uniform Mitigation Assessment Method (UMAM) for both direct AND secondary impacts. Although UMAM will be conducted by the Department, the correct estimates of direct and secondary hardbottom impacts must be provided beforehand.

   In response to concerns about an all boulder mitigation plan being utilized, the USACE proposed a blended mitigation plan. Although the DWRM is in agreement with a blended mitigation plan, and acknowledges that the NMFS has reviewed the plan and

scored the plan with their Habitat Equivalency Analysis (HEA), we do not have enough information to show that the plan proposed by the USACE adequately offsets direct and secondary hardbottom impacts. We further understand that NMFS has committed to provide their expertise in assisting the DWRM with converting their HEA scoring analysis to the state required UMAM analysis; however, at this time it has not occurred. To obtain consistency on this matter, the mitigation proposal provided during permitting will have to include sufficient detail and proposed mitigation to adequately offset the project impacts. [§ 373.414(1), F.S.]

Degradation to natural communities adjacent to the project area is likely, due to turbidity and sedimentation. The DWRM recommends that the USACE consider up-front mitigation for degradation of a defined area adjacent to the excavation areas. Such a strategy would avoid any additional mitigation associated with time lag related to the post-construction monitoring period, and possibly avoid the additional costs of remobilization to create additional mitigation in the future.

The USACE addressed mitigation of secondary impacts to 2% of the resources adjacent to the channel and to 10% downslope of the -57 ft. dredge limits. For consistency purposes, an adequate monitoring and adaptive management plan that includes the entire area of secondary impacts will be necessary to assure that the predicted / contingency mitigation is adequate. Without these mitigation issues being fully addressed, the Department is concerned that there is not enough money allocated to mitigation and contingency mitigation to adequately offset the adverse impacts of the project, therefore, the USACE's proposed funding amount for mitigation does not adequately reflect the Department's requirement under Chapter 373, F.S., relating to the public interest.

The Draft EIS states that one mangrove functional unit will be created at West Lake Park to offset 1.16 acres of mangrove impacts, and three seagrass functional units will be created at West Lake Park to offset 4.01 acres of seagrass impacts. Please indicate how the amount of functional units was determined through the UMAM. Also indicate how many acres of mitigation will be provided by one mangrove functional unit and three seagrass functional units. Please provide a letter from either the South Florida Water Management District or Broward County authorizing the proposed mitigation at West Lake Park, and a statement that the proposed mitigation is consistent with the overall mitigation plan for West Lake Park. Please provide a detailed mitigation plan for both mangrove and seagrass impacts including maintenance, monitoring and construction sequence and techniques. Staff requires this information to conduct UMAM for each type of impact. [§ 373.414(1), F.S.]

The USACE has provided further details regarding the mitigation calculations. The DWRM still has questions and concerns on the proposed mitigation at West Lake Park, but can address these issues in the permit phase.

Please be advised that further detailed comments regarding coral and hardbottom impacts, assessment, monitoring and mitigation are provided on Pages 8 through 17 of this memorandum by the Department's Coral Reef Conservation Program.

Thank you for the opportunity to comment. For further information and assistance, please contact Dr. Lainie Edwards, Program Administrator, DWRM, at (850) 245-7617.

The Department's **Division of Recreation and Parks** also appreciates the opportunity to participate in the review of this important project. The following condition (provided by staff of the Bureau of Parks District 5, Office of Park Planning, and Bureau of Natural and Cultural Resources) must also be addressed to ensure compliance with the provisions of Chapters 253 and 258, F.S., regarding impacts to state park lands:

7. **John U. Lloyd Beach State Park Impacts:**

   The preferred alternative indicates that the submerged bulkhead would be installed on the east side of the channel. Based on the maps provided, the bulkhead appears to be recommended in a location that would cut across the park's office/shop area. The proposed location would be quite close to several park staff residences and the ground solar array in that same area. The response provided by the USACE on March 27, 2014, indicates that no further minimization or avoidance of impacts to park lands is possible. However, none of the proposed mitigation would provide on-site improvements to offset the impacts (direct and indirect) to the park. Please contact Division of Recreation and Parks staff to discuss opportunities to mitigate for losses to natural resources, visitor recreation experiences, and potential impacts to park facilities.

   If blasting is required during the dredging process or for the placement of sheet pile bulkhead, impacts to imperiled species, fragile submerged habitats, park resources and facilities, and the park visitor experience could occur. Please provide information on how these impacts will be avoided or minimized. If these impacts cannot be avoided or minimized, please provide information on mitigating the impacts.

   Board of Trustees Authorization – As noted in the Draft EIS, impacts to the state park must meet the Board of Trustees' 1988 POLICY FOR INCOMPATIBLE USE OF NATURAL RESOURCE LANDS. If the parties involved in the proposed disposition of state lands (*i.e.*, Board of Trustees, Division of Recreation and Parks, Broward County, and USACE) agree that Broward County should obtain fee-simple titled ownership of the affected bulkhead area, the County would apply to the Department's Division of State Lands to have the area designated as surplus and sold/deeded to Broward County. If it is determined that the Board of Trustees will retain fee-simple ownership, the County would either: apply for a lease from the Board of Trustees for the bulkhead area, apply for a sublease from the Division of Recreation and Parks, or apply for an easement from the Board of Trustees with the Division of Recreation and Parks' consent.

> Any application to use state land which would result in significant adverse impact to state land or associated resources shall not be approved unless the applicant demonstrates there is no other alternative and proposes compensation or mitigation acceptable to the Board of Trustees under § 18-2.018(2)(i), *Florida Administrative Code* (F.A.C.). Any requested use of state land which has been acquired for a specific purpose, such as conservation and recreation lands, shall be consistent with the original specified purpose for acquiring such land in accordance with § 18-2.018(2)(c), F.A.C. Applicants applying for a lease or easement across state land which is managed for the conservation and protection of natural resources shall be required to provide net positive benefit as defined in § 18-2.017(38), F.A.C., if the proposed lease or easement is approved. [§§ 253.03, 253.034 and 253.04, F.S.]

For further information regarding the above condition requirements, please contact Mr. Gregg Walker in the Division of Recreation and Parks at (850) 245-3104.

The Department's **Florida Coastal Office, Coral Reef Conservation Program** (CRCP) staff advises that the provisions of §§ 253.03 and 253.04, F.S., charge the Board of Trustees with the duty to administer and protect sovereignty submerged lands. Chapter 373, F.S., also contains several provisions relating to the public interest in maintaining fishing and recreational values as well as conserving fish and wildlife resources in surface waters and wetlands of the state [§§ 373.414(1)(a)2, 4 and 7, F.S.]. Rule 68B-42.009, F.A.C., explicitly prohibits the take, destruction or sale of marine corals and sea fans. Section 403.93345, F.S., the *Florida Coral Reef Protection Act*, provides for protection of coral reefs and associated reef resources on sovereignty submerged lands off the coasts of Martin, Palm Beach, Broward, Miami-Dade and Monroe Counties. Under this law, the Department is authorized to protect coral reefs through timely and efficient assessment of damages, including civil penalties, resulting from vessel impacts (*e.g.*, anchoring, cable drags, grounding) to coral reefs.

The CRCP finds the Draft EIS and Feasibility Report to be "conditionally consistent" with the Florida Coastal Management Program and makes the following recommendations:

1. Analysis of Direct and Indirect Impacts.

a. 2006 USACE Reef and Hardbottom Survey: Previously submitted comments regarding the 2006 reef, hardbottom surveys, and channel habitats remain unaddressed. Surveys conducted in the Port Everglades Outer Entrance Channel (OEC) by the Department's DWRM indicate a high species diversity and abundance of scleractinian corals presence in the channel and on the channel walls. Documentation and photos of rich coral community inside the OEC have been provided to the USACE. Without accurate surveys, benthic organism impacts cannot be accurately determined.

The Draft EIS states that, "*Little information has been collected on the biota of the channel and adjacent zones due to the hazard of sampling this area.*" Hazards listed include frequent vessel traffic and substantial currents, both of which could be overcome by a coordinated effort. Communication with the Port, vessel pilots, and U.S. Coast Guard (including topside support from the USCG Auxiliary), could be achieved and would reduce and mitigate vessel traffic issues.

While it is accurate that there are substantial currents in the area, they are frequent and considered to be standard working conditions for the entire region. Additionally, updated *in situ* habitat surveys need to be conducted, including sites that are actually within the Outer Reef direct impact area to accurately quantify the benthic organisms. As this area is not officially in the navigable channel, it is not clear why there are restrictions on USACE contractors being *in situ* to survey this area.

b. **Direct impacts adjacent to and below actual dredging depth:** In June 2008, the USACE informed the NOAA National Marine Fisheries Service (NMFS) that coral reefs located deeper than authorized dredging depth, but still within the proposed expansion to the federal channel would be considered indirect impacts. The Department's CRCP staff respectfully disagree with the USACE conclusion; we believe that coral reefs located within the federal channel that are not dredged but are immediately adjacent to (or below) the dredging depth would be severely and permanently injured through the physical processes of rubble movement and the consistent scouring from vessels transiting the channel. Additionally, these areas will be permanently impacted due to the proposed post-dredging operations and maintenance whereby, "*a drag bar, chain, or other item may be pulled along the channel bottom to smooth down high spots and fill in low spots.*"

These direct impacts are not precisely described in the Draft EIS and should not be included in the discussion of impacts from turbidity and sedimentation, which may be as severe and permanent by occurring through a different mechanism. However, the physical impact to coral reef structure and the biological response to these types of impacts would be different. Each coral reef impact area and type needs to be clearly identified as an impact polygon on a map with a narrative that explains how the impact area was calculated. This detail is needed in the Draft EIS, and similar detail is missing for indirect and direct impacts from anchoring and vessel operations.

The USACE states that the amount of Outer and Middle Reef area to be directly impacted above 57 ft. equates to 15.17 acres. NMFS has determined that impact to the Middle and Outer Reefs, when taking into account the amount of affected reef area below 57 ft., is a total of 21.65 acres – it is requested that this discrepancy in impact acreage be resolved.

c. **Indirect area perimeter and monitoring:** The Draft EIS states that, "*In order to address potential indirect impacts, USACE will monitor a perimeter up to 150 meters away from the dredge footprint (north and south of the channel), and mitigate for apparent effects directly linked to the dredging*." CRCP staff do not agree that 150 meters surrounding the dredge footprint is sufficient in scope for monitoring (and potentially mitigating for) indirect impacts. The PIANC (2010) report states, "*In some cases, the impact may be confined close to the work area, [while] in others the prevailing currents may transport fine sediments over large distances, with documented cases of impacts occurring > 70 km [approx. 43.5 miles] from the work site*." Without monitoring a larger area, it may be difficult/limiting to determine if the project has impacted the surrounding reef community and, accordingly, there would be no mitigation requirement for these impacts.

As a recent example, a 750-meter mixing zone variance was requested for the current Miami Harbor construction. While a mixing zone variance has not yet been requested for this project, CRCP staff suggest that the USACE use a similar mixing zone area to accurately plan monitoring and mitigation for indirect impacts.

The proposed sampling design does not provide enough detail nor does it provide a power analysis that will allow determination of sample size needed to detect significant differences. Additionally, a new study on the tidal velocity and flow of the water through the Port Everglades Inner Entrance Channel (IEC) has revealed a stratified water column – showing that it is possible for the upper part of the water column to flow in an opposite direction from the lower part of the water column (Stamates *et al*. 2013). This has major implications for turbidity and sedimentation transport, as well as impact monitoring, since previous monitoring protocols were likely not correctly designed to be able to detect changes or impacts. These results will need to be integrated fully into any indirect impact monitoring plans created for this project.

d. **Sub-lethal and lethal impacts:** Although healthy coral reef benthic organisms can often tolerate turbidity and sedimentation from short-term events, the coral reefs in the vicinity of Port Everglades are already under significant stress from other threats (*e.g.,* land based sources of pollution). While we support the USACE's effort to reduce these indirect impacts using Best Management Practices (BMPs) developed by the Southeast Florida Coral Reef Initiative (SEFCRI), CRCP staff are concerned that with such a relatively long-term dredging proposed for this project (estimated from 11 months to 3 years) there may be sub-lethal (*i.e.*, reduced growth rate, bleaching, reduced reproduction) and possibly lethal (mortality, change in species composition) impacts associated (PIANC, 2010). Stress monitoring is still evolving due to the intricacies of understanding individual colony and community stress reactions. As shown in Figure 1, scleractinian corals often have sub-lethal stress effects that can't be easily seen. It is recommended that the benthic monitoring plan take into account these impacts.

Additionally, as recommended by the SEFCRI BMPs document cited in the Draft EIS, dredging should be carefully scheduled to avoid sensitive resource periods such as coral spawning events.

2. Coral translocation/transplantation conditions.

While the Draft EIS states that conditions regarding the transplantation of scleractinian corals will be developed during the pre-construction, engineering and design (PED) phase, it is noted that there are inconsistencies in the sizes of the colonies that will be transplanted. We suggest consideration of the NMFS conditions that require the relocation of: all corals from impact areas listed under the Endangered Species Act, regardless of size; a subset of massive corals and all corals proposed to be listed under the Endangered Species Act that are 5 cm in diameter or larger; and all other corals greater than 10 cm diameter.

Additionally, we suggest consideration for transplanting of the dominant species in these habitats, specifically, octocorals and sponges. They both provide many bioservices including water purification, creating 3-dimensional habitat, and support for a multitude of other important organisms. Extensive dredging projects pose an environmental risk to these communities through increasing turbidity, reducing light, and smothering by sedimentation.

3. Habitat Equivalency Analysis (HEA).

One of the most important variables needed to conduct the HEA is an accurate impact area. As mentioned above, there have not yet been accurate direct and indirect impact areas provided by the USACE; therefore, the HEA presented in this Draft EIS cannot be adequately reviewed at this time. Reaching an agreement on impact assessment is crucial to informing compensatory mitigation. Once impact areas are determined, the HEA must be run again and reviewed by Resource Trustees.

CRCP staff has identified concerns regarding the way the current HEA was conducted, including the following:

a. **Inappropriate use of discount rate:** The USACE's decision to use no (or rather a 0%) discount rate is not an appropriate use of this economic model. Published literature on the HEA, specifically regarding coral impacts, supports the use of a 3% discount rate. As the USACE uses a discount rate of 3.75% in their Draft EIS Economic Analysis, it is unclear why it is being inconsistently applied in the 'Modified HEA.'

b. **Recovery rate:** As stated by the USACE, "*For the purpose of the Port Everglades HEA, the method employed by the Corps uses a Landscape HEA with stony corals as the representative proxy for the entire habitat affected. While stony coral coverage is <1% in the project footprint and vicinity (Gilliam et al. 2004, DC&A 2008), we did not use a proportional analysis to calculate the coral impacts. Instead, the losses are*

calculated as the amount of time it would take for the slowest-growing members of the ecosystem, in this case the stony corals, to recover to baseline, for the entire project footprint."

CRCP staff support the use of stony corals as the proxy in this model; however, the USACE's proposal to use a 50-year recovery rate for direct impacts and for the compensatory action (boulders) to reach maturity is likely underestimated given the age of the oldest corals in the vicinity is in excess of 100 years.

Dr. Richard Dodge, Dean of the NSU NCRI and HEA expert, conducted an independent technical review of the [US]ACE's HEA values and outputs. Notably, he was unable to replicate the HEA based on the input provided by the USACE. Working with NMFS, he used corrected values (*e.g.*, 3% discount rate, more accurate impact areas, etc.) and created an 'Alternate HEA' requiring an additional 32 acres of mitigation than the USACE's 'Modified HEA.' In addition to the same concerns stated above, his analysis found the following:

- "*The HEA inputs and results in Appendix E2 and not the same as those of the Cost Analysis.*
- *Many of the DEIS HEA input parameters used by the ACE are not supported by the best available science.*
- *The inputs chosen by the ACE for their HEAs underestimate amount of mitigation required.*
- *An Alternate HEA has been developed as part of these comments using: corrected direct impact areas for the Outer and Middle Reefs to include the area below 57'; 3% discount rate; and corrected equivalence that boulders upon maturity reach 50% of services of the natural reef.*
- *The ACE DEIS HEA for Scenario 2 in the DEIS Appendix E Cost Analysis requires 32 acres less mitigation than the more correct Alternate HEA.*
- *Accordingly ACE project mitigation costs are significantly underestimated by using the underestimated mitigation amount.*
- *Table 9 of the Cost estimate there is no justification given for using a much small $ amount for cost per acre of boulders with transplants.*
- *The ACE plan lacks input from the ACE's independent technical review performed by Battelle.*"

4. Alternative Mitigation Projects and Cost Estimates (Revised Plan – February 2014).

a. **Repair of grounding sites and subsequent coral installation (transfer from impact sites):** Please revise first sentence as the Southeast Florida Coral Reef Initiative is not related to these grounding sites. The Department's CRCP is the lead resource trustee for un-permitted reef injuries in the southeast Florida region, and is the appropriate entity to cite. Restoration of two of the grounding sites is currently underway. While

restoration efforts at the additional sites may be warranted, CRCP staff feel that 10.6 acres is an over estimate of these areas. Coordination with CRCP will be required if this alternative is selected. Additionally, the stated estimates of 30 years until 'substantial functional productivity' is reached after restoration – and 'shortened to 10-20 years if corals are transplanted' are unsupported. Please provide citations or remove.

b. **Artificial reef creation using of [sic] quarried or dredged rock:** Upon maturity, boulders themselves, even with stony coral transplants attached, may provide similar but not 100% full ecological services as those of the natural reef. In Miami-Dade County, a 20-year monitoring program was developed to assess the efficacy of an artificial reef project as mitigation for natural reef impacts through the evaluation of colonization and succession of assemblages on two types of artificial reef materials, as well as comparisons to the adjacent natural reefs (Sathe *et al.* 2011). The Year 12 Monitoring Report states, "*The similarity between [natural and artificial] sites does not appear to be converging over time, rather maintaining distinct separation after twelve years, and possibly showing divergence in similarity.*" A Department CRCP study conducted by Gilliam (2012) concluded the length of time boulder reefs require to mitigate lost reef resources in southeast Florida, assuming a total loss of the impacted community from events such as dredging, exceeds the age of the oldest boulder reef assessed in this study (17 years).

c. **Blending of components from various mitigation alternatives/"Reef Creation with Coral Outplants":** CRCP staff does not support the use of artificial boulder reefs as the only mitigation option; however, we do support their limited use as part of a suite of mitigation projects. We support this option [formerly the Preferred Reef Mitigation Alternative 2 (NMFS-Developed Plan)] as the primary way to mitigate for the lost ecosystem services of the benthic veneer. This, coupled with limited use of boulders to support the propagation nurseries (to mitigate for the volume of Outer Reef that will be permanently lost), is a more appropriate scale and type of mitigation.

We also support the statement that, "*decisions regarding which species to propagate and outplant (in addition to staghorn coral) and the balance (relative percent-cover, or relative population densities) among all species would be based on findings from the most recent coral restoration studies, historical survey data, and results of ongoing monitoring throughout the project area.*"

5. Construction/Initial Cost per Hardbottom Habitat Functional Unit.

The USACE's proposals underestimate the true cost of replicating the lost habitat which must take into account geological structural loss (*i.e.*, reef framework), biological structural loss (*i.e.*, size and types of benthic organisms), changes in habitat characterization (*e.g.*, depth, light penetration, temperature, etc.), and long-term (20+ years) monitoring to assess success of the project.

In 2014, as part of the Reef Injury Prevention and Response Program, the Department's CRCP awarded a contract for large scale, deep water reef restoration and coral relocation including the actual costs of engineering design, permitting, and construction implementation for primary restoration at two historic Broward County grounding sites – the *Spar Orion* and *Clipper Lasco.* Restoration costs included appropriate biological and habitat characterization surveys, construction of a limestone boulder reef (3 ft. x 3 ft. minimum) including grout, stony coral transplantation (over 5 cm), long-term monitoring, and all associated permitting and reporting requirements. The total costs were $3,254 per square meter ($m^2$) – roughly $12 Million (M) per acre. The value of coral reef resources designated by the Florida Legislature under the 2009 *Florida Coral Reef Protection Act* (§ 403.93345, F.S.) is $1,000 m^2 – approximately $4 M per acre.

The previously reviewed Interim Draft EIS (2012) stated that, "*The total cost of reef/ hardbottom mitigation is projected to be $32.44M.*" This was based on the USACE's 15.32-acre direct impact estimate – equating roughly $2.1 M per acre. However, the current Draft EIS states that the "*total estimated costs for this alternative, which includes the cost of coral translocation, is estimated at $20.13 M.*" Based on the currently proposed 15.17 acres, this effectively reduces the cost per acre to $1.33 M. This is further reduced if the additional 6.48 acres of direct impact below 57 ft. is taken into account.

6. Changes in Hydrology.

Extensive studies on changes to the sediment budget, changes to freshwater and saline water regimes, and hydrographic surveys were completed for the scoping of the feasibility of this project. However, this information was not used to inform the discussions on potential impacts that will occur to larval distribution or sedimentation on reefs and reef resources after project completion. The Draft EIS references how the sediment budget is not likely to have a cumulative adverse effect on the geology or coastal sediment budget/transfer for the area, but does not use this information in discussing the biological components that may potentially be impacted by these permanent changes.

a. **Impacts to nearshore water quality:** The Draft EIS states that, "*Water quality impacts would only be temporary due to construction activities, and the project would not result in any foreseeable future actions that would result in a cumulative effect.*" An independent technical review was conducted by Jack Stamates of NOAA's Atmospheric and Oceanic Meteorological Laboratory and he states the following:

"*On the ebb tide, water is advected seaward through the Port Everglades Inner Entrance Channel (IEC). Several studies have shown that this water contains higher concentrations of nutrients and microbial contaminates compared to levels typically seen in the coastal ocean [Stamates et al. 2013, Fusch et al., 2011]. There is concern that these substances have the potential to degrade the coastal environment.*

Enlargement of the channel brings the possibility of increasing the flux of these substances out of the inlet and into the coastal ocean."

b. **Potential loss of larval transport connectivity:** One such potential change is the transport of larvae. Although larval impacts are discussed within the Blasting impacts section, there doesn't seem to be any review of how the changes in hydrology from this project will impact their distribution and concentration. As the last remaining nearshore mangrove community in Broward County, the West Lake Park Mitigation Area is a nursery for many juvenile species that will eventually inhabit the offshore coral reef community. The seagrass habitats within the Port may act as stepping stones for these juveniles as they make their way offshore. Once the larvae and juveniles make their way into the IEC and OEC, the stratified water column presumably acts as a direct transport to the open reefs. Currently, the lower different layers of the water column are likely dispersed when they reach the Middle and Outer Reefs – allowing the larvae and juveniles to settle the local reef community. However, if wide swaths of Middle and Outer Reef are removed, the hydrology of the OEC will change substantially, and the larvae and juveniles may be washed out to sea.

Please contact Mr. Kevin Claridge, Director of the Florida Coastal Office, at (850) 245-2101 for additional information and assistance.

References and Supporting Documentation:

Collier C., R. Ruzicka, K. Banks, L. Barbieri, J. Beal, D. Bingham, J. Bohnsack, S. Brooke, N. Craig, R. Dodge, L. Fisher, N. Gadbois, D. Gilliam, L. Gregg, T. Kellison, V. Kosmynin, B. Lapointe, E. McDevitt, J. Phipps, N. Poulos, J. Proni, P. Quinn, B. Riegl, R. Spieler, J. Walczak, B. Walker, D. Warrick. 2008. The State of Coral Reef Ecosystems of Southeast Florida. pp. 131-159. In: Waddell J.E. and A.M. Clarke (eds.), The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2008. NOAA Technical Memorandum NOS NCCOS 73. NOAA/NCCOS Center for Coastal Monitoring and Assessment's Biogeography Team. Silver Spring, MD. 569 pp.

Futch, J.C., D.W Griffin, K. Banks, and E.K. Lipp. 2011. Evaluation of sewage source and fate on southeast Florida coral reefs. *Marine Pollution Bulletin*. 62: 2308-2316.

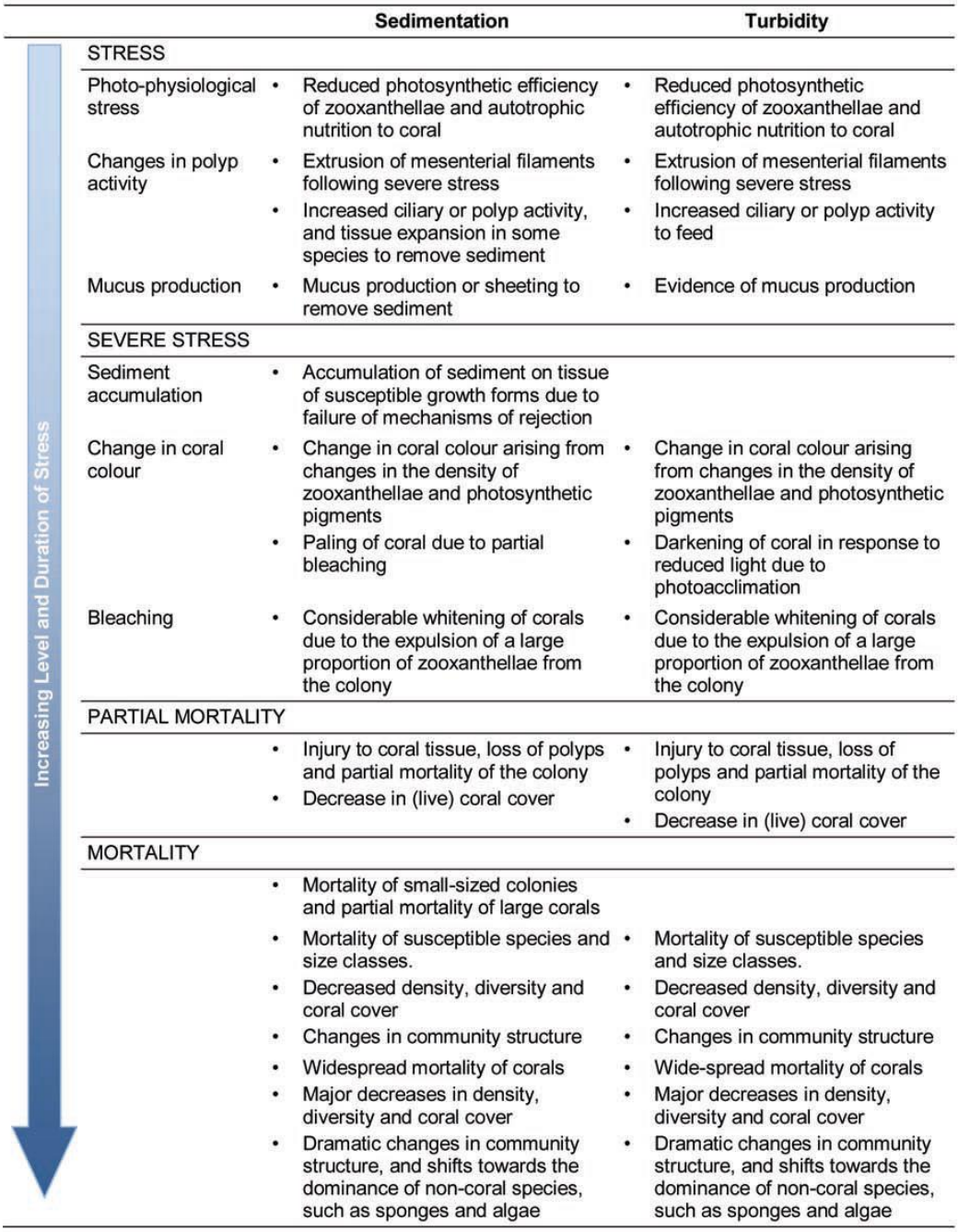
Gilliam, D.S. 2012. A Study to Evaluate Reef Recovery Following Injury and Mitigation Structures Offshore Southeast Florida: Phase II. Nova Southeastern University Oceanographic Center. Dania Beach, Florida. 77 pp.

Nova Southeastern University. 2004. Final Report: Development of GIS Maps for Southeast Florida Coral Reefs.

Permanent International Association of Navigation Congresses (PIANC). 2010. *Dredging and Port Construction Around Coral Reefs*, The World Association for Waterborne Transport Infrastructure.

Stamates, S J, J R Bishop, T P Carsey, J F Craynock, M L Jankulak, C A Lauter, and M M Shoemaker. Port Everglades flow measurement system. NOAA Technical Report, OAR-AOML-42, 2013, 22 pp. PDF

Sathe, M.P. Thanner, S. E., Blair, S.E. 2011. Bal Harbor Mitigation Artificial Reef Monitoring Program Year 12 1999-2011. Progress Report and Summary Miami-Dade County Permitting, Environment and Regulatory Affairs.



	Sedimentation	Turbidity
STRESS		
Photo-physiological stress	• Reduced photosynthetic efficiency of zooxanthellae and autotrophic nutrition to coral	• Reduced photosynthetic efficiency of zooxanthellae and autotrophic nutrition to coral
Changes in polyp activity	• Extrusion of mesenterial filaments following severe stress • Increased ciliary or polyp activity, and tissue expansion in some species to remove sediment	• Extrusion of mesenterial filaments following severe stress • Increased ciliary or polyp activity to feed
Mucus production	• Mucus production or sheeting to remove sediment	• Evidence of mucus production
SEVERE STRESS		
Sediment accumulation	• Accumulation of sediment on tissue of susceptible growth forms due to failure of mechanisms of rejection	
Change in coral colour	• Change in coral colour arising from changes in the density of zooxanthellae and photosynthetic pigments • Paling of coral due to partial bleaching	• Change in coral colour arising from changes in the density of zooxanthellae and photosynthetic pigments • Darkening of coral in response to reduced light due to photoacclimation
Bleaching	• Considerable whitening of corals due to the expulsion of a large proportion of zooxanthellae from the colony	• Considerable whitening of corals due to the expulsion of a large proportion of zooxanthellae from the colony
PARTIAL MORTALITY		
	• Injury to coral tissue, loss of polyps and partial mortality of the colony • Decrease in (live) coral cover	• Injury to coral tissue, loss of polyps and partial mortality of the colony • Decrease in (live) coral cover
MORTALITY		
	• Mortality of small-sized colonies and partial mortality of large corals • Mortality of susceptible species and size classes. • Decreased density, diversity and coral cover • Changes in community structure • Widespread mortality of corals • Major decreases in density, diversity and coral cover • Dramatic changes in community structure, and shifts towards the dominance of non-coral species, such as sponges and algae	• Mortality of susceptible species and size classes. • Decreased density, diversity and coral cover • Changes in community structure • Wide-spread mortality of corals • Major decreases in density, diversity and coral cover • Dramatic changes in community structure, and shifts towards the dominance of non-coral species, such as sponges and algae

Figure 1: Response of corals to increasing levels and durations of sedimentation and turbidity (PIANC 2010).