March 27, 2017

U.S. Army Corps of Engineers
Planning and Policy Division
Environmental Branch
P.O. Box 4970
Jacksonville, FL 32232-0019
CESAJ-PortEverglades@usace.army.mil

Terri Jordan-Sellers, Regional Technical Specialist
U.S. Army Corps of Engineers
Jacksonville District
701 San Marco Boulevard
Jacksonville, FL 32207
terri.jordan-sellers@usace.army.mil

Via E-mail

Re: Supplemental NEPA Document for the Port Everglades Navigation Improvements Project, Broward County, Florida, 82 Fed. Reg. 8515 (Jan. 26, 2017)

Dear Ms. Jordan Sellers,

Thank you for the opportunity to submit scoping comments on the supplemental National Environmental Policy Act ("NEPA") document that the U.S. Army Corps of Engineers ("Corps") is preparing in order to evaluate the full impacts of the Port Everglades Navigation Improvements Project ("Port Everglades Project") in Fort Lauderdale, Florida.[1] The Port Everglades Project will dredge and deepen the channels in and around Port Everglades, directly adjacent to or on top of the Florida reef tract and its thriving population of coral colonies. The area's corals are vital to the well-being of the Florida reef tract and the nation's marine resources, as well as nearby residential communities, recreational diving operations, the

[1] We delivered copies of references cited in this letter on a separate CD to the Corps via Fed Ex Express.

commercial and recreational fishing industry, and numerous tourism-related businesses. The Port Everglades Project is anticipated to take place over a period of up to five years. Due to the risks the project presents to nearby coral reefs and recent events that transpired during the Miami Harbor expansion project, we have serious concerns about this project. The expansion of Port Everglades has the potential for widespread and significant impacts on the ecological and economic resources of Fort Lauderdale and nearby coral reef ecosystems. Therefore, we ask the Corps to fully consider all potential impacts, utilize best available science, employ the latest monitoring technology and mandatory regulations, and apply lessons learned from the recent Port of Miami expansion project to protect nearby resources during this project, as detailed below.

There is a substantial amount of evidence demonstrating that the proposed project may have significant negative impacts on coral reef communities, hardbottom reef habitat, and the marine ecosystem that depends on healthy coral reef communities. During a similar dredging project at the Port of Miami, completed by the Corps in 2015, the dredging produced fine-grained sediment that impacted an area stretching over 750 meters from the channel, potentially killed tens of thousands of coral reef colonies, and devastated over 250 acres of coral reef habitat.[2] The expert agency on marine resources, the National Marine Fisheries Service ("NMFS"), concluded that approximately 95% of the area surveyed on the northern middle reef (beyond 700m from the channel) is no longer suitable habitat to support coral after dredging-related sedimentation impacts, and that parts of the surveyed reef (over 6 acres) would never recover naturally.[3]

While construction during the Miami project took two years to complete, the construction for the Port Everglades Project is estimated to take four to five years, producing similar impacts for more than double the period of time in Miami.[4] With similar resources at risk and double the expected project time, as well as the likely need for blasting, the Port Everglades Project could prove to be even more harmful to the reef ecosystem in Fort Lauderdale than even the Port of Miami project was to Miami's reefs. Thus, it is critical that the Corps fully and accurately consider the extensive harm that the Port Everglades Project presents for Fort Lauderdale's reefs, economy, and industries.

---

[2] Dial Cordy and Associates, Inc. (Aug. 2015), Delineation of Potential Sedimentation Effect Area within Middle and Outer Reef Habitats Port of Miami Phase III Federal Channel Expansion Project, FDEP Permit #0305721-001-BI, at 22 (Ex. QQ to Reef Guard Statement of Material Facts).

[3] NMFS (April 2016), Examination of Sedimentation Impacts to Coral Reef along the Port of Miami Entrance Channel, December 2015, Final Report, at 1, 47, 51 (Ex. UU to Reef Guard Statement of Material Facts) (categorizing impacts to 6.6 acres as "very severe" and stating, "Hardbottom in the area characterized as very severe is not functioning as recruitment habitat for corals, including staghorn corals.") (finding low to very severe impacts on 158.5 acres of reef out of a total of 167 acres surveyed (158.5/167 = ~95%) (Table 7)).

[4] In the prior Final EIS (May 2015) for this project, the Corps stated (page 194):

> [The Corps] expects turbidity and sedimentation effects associated with the Port Everglades Navigation Project Recommended Plan to be similar to those seen at the ongoing Miami Harbor expansion project.

And again (on page 199):

> The material disposed in the Port of Miami project is the same type of material being dredged at Port Everglades (hard limestone) and should result in similar conditions regarding associated sedimentation and turbidity generated by the material.

To date, however, the Corps has refused to admit, or even acknowledge, the damage that its dredging caused in Miami. Instead, the Corps continues to present false information to the public about the potential risks of the project, including during the February 22nd public scoping meeting held under NEPA.[5] Furthermore, many of the comments that we provided on the Final EIS (in March 2015) were insufficiently addressed or not answered by the Corps. Instead, the Corps seemed to defer analysis until some unspecified later date on issues that must be considered during a NEPA process (e.g. monitoring plans, avoidance and minimization measures, lessons learned, significant cost changes, best available science, consistency determinations, adaptive management plans). Finally, we are concerned that the interpretation of peer-reviewed literature included in the last FEIS and other recent Corps documents regarding the Port of Miami dredging are inappropriate and misleading.

On behalf of our organizations and our millions of members and supporters from around the country, all of whom have a longstanding interest in the protection and wise stewardship of Florida's marine resources and coast, we urge the Corps to:

1) Produce a full, supplemental environmental impact statement to analyze the significant new information and alternatives.
2) Consider a proper baseline analysis that includes coral surveys that extend beyond 1,000 meters from the channel in both directions, and that are conducted before dredging beings, but not more than one year before construction and which are comparable to mid-project monitoring sites.
3) Take a hard look at the impacts, including:

    - Recognizing the mistakes made during the dredging at the Port of Miami and fully evaluating and incorporating fixes;
    - Considering an indirect impact zone that extends at least 1,000 meters from the channel;
    - Conducting modeling that has been verified with field data;
    - Considering the links between dredging and coral disease and employing ways to minimize disease risk;
    - Avoiding the use of storms as proxies for estimating dredging impacts;
    - Including a flooding and flushing model in the supplemental EIS to analyze impacts; and
    - Analyzing potential for reproductive disruption for the area's seasonal spawners or any nearby spawning aggregations.

4) Evaluate cumulative effects on coral, including the cumulative impacts of climate change and other actions affecting coral.
5) Analyze all reasonable alternatives, including:

    - Stopping dredging before and during coral spawning season;
    - Stopping dredging (and blasting) before and during snook aggregation and breeding season;

[5] *See* Letter from Miami Waterkeeper to Col. Jason A. Kirk (Corps), dated March 1, 2017.

- Eliminating or reducing overflow and dewatering from scows near reefs; and
- Filling scows away from reef areas.
- Eliminating scow leakage.

6) Include adequate mitigation measures that fully account for predicted and unpredicted reef impacts.
7) Include an adequate monitoring plan that is designed to capture the full extent of dredging-induced impacts to reef habitat, fisheries, corals, and to non-scleractinian reef organisms.
8) Update turbidity limits to protect reefs.
9) Utilize all available technologies to prevent harm to reefs during dredging.
10) Utilize technologies to improve monitoring, communication, and adaptive management.
11) Avoid ambiguous adaptive management methods with vague interpretations and slow communication, and instead require mandatory dredging shutdowns when impacts are observed.
12) Rely upon best available science in determining project-related impacts, protections, reporting, and mitigation, and employ an improved interpretation of potential biological impacts from scientific literature.
13) Include a revised cost/benefit analysis that fully incorporates necessary monitoring, mitigation, and adaptive management mechanisms that does not just rely on the possible use of "contingency funds " to cover potentially significant project scope changes.
14) Fully consider impacts to other marine organisms in the vicinity of the project (e.g., seagrass habitats and mangrove wetlands).

Each of these points is discussed in more detail below.

I. DREDGING PROJECTS IMPACT CORAL, HARMING ECOSYSTEMS AND THE ECONOMY

A. Coral communities are important to ecosystems and the economy.

Coral reefs and the marine communities they support are invaluable to Florida. The coral reef system in Florida, known as the Florida Reef Tract, is a barrier reef that stretches over 220 miles, extending from the Dry Tortugas Islands to the St. Lucie Inlet in Martin County. It is the only nearshore coral reef in the continental United States. Southeast Florida's reefs, including those near Port Everglades, are extremely valuable to the nation, providing storm protection, habitat for fish and invertebrate species, and recreational use that results in billions of dollars in economic return to South Florida each year.[6] Most of Florida's sport fish species, and many commercially and recreationally valuable marine animals, spend significant parts of their lives in and around coral reefs.

[6] Johns, G.M. et al. (Oct. 19, 2001), Socioeconomic Study of Reefs in Southeast Florida – Final Report.

B. The coral reef communities in Florida are already in crisis.

Coral reefs around the world are in a state of emergency. They are dying and disappearing due to rising ocean temperatures, ocean acidification, disease, and other threats. From 2015-16, record temperatures produced the largest mass bleaching event for corals worldwide.[7] An estimated 22% of corals died from this bleaching event in the Great Barrier Reef alone, the worst coral die-off in history.[8] An estimated 70% of corals worldwide are expected to be effected by global warming, even in the best case projections.[9]

The Florida Reef Tract and Caribbean corals have been particularly hard-hit with precipitous declines over the last several decades. Notably, coral cover has declined by over 80% since the 1970s.[10] These corals are subject to a number of stressors including, but not limited to, increasingly frequent hurricanes and storms; high sea surface temperatures; ocean acidification; macroalgae overgrowth; disease; offshore and onshore construction, (*i.e.*, beach renourishment, dredging, and pipeline construction); ship anchorings and groundings; declining water quality from sewage, fertilizers, and other land-based sources of run-off that lead to nutrient loading; and unsustainable or destructive fishing practices.[11] Some of these stressors act synergistically, meaning that the combined effect of those stressors is greater than the sum of the individual effects.[12]

Recently, Florida's corals have experienced back-to-back bleaching years, as well as subsequent disease outbreaks associated with bleaching, and possibly dredging, that spread across the region.[13] In addition, scientists from the University of Miami reported last year that the northern end of the Florida Reef Tract, including the area encompassing Port Everglades, is actually experiencing dissolution as a result of ocean acidification.[14]

In response to a petition by Center for Biological Diversity, NMFS listed elkhorn (*Acropora palmata*) and staghorn corals as threatened species under the Endangered Species Act ("ESA") in 2006.[15] Staghorn coral colonies are present near Port Everglades.[16] Elkhorn coral

---

[7] Hughes, T.P., et al. (March 16, 2017), Global Warming and recurrent mass bleaching of corals, Nature, 543:373-77; U.S. Coral Reef Task Force Strategy, FY2016-2021.

[8] Earthjustice (March 2017), World Heritage and Climate Change: The Legal Responsibility of States to Reduce their Contributions to Climate Change, A Great Barrier Reef Case Study.

[9] *Id*.

[10] Gardener, et al. (Aug, 15, 2003), Long-term Region-wide Declines in Caribbean Corals, Science, 301(5635): 958-960.

[11] 2014 BiOp at 59.

[12] *Id*. at 54.

[13] Precht, W.F., et al. (2016), Unprecedented Disease-Related Coral Mortality in Southeastern Florida, Scientific Reports 3:31374, DOI: 10.1038/srep31374.

[14] Muehllehner, N., et al. (May 14, 2016) Dynamics of carbonate chemistry, production, and calcification of the Florida Reef Tract (2009-2010): Evidence for seasonal dissolution, Global Biogeochemical Cycles, Vol. 30, Issue 5, pp. 661-688.

[15] 71 Fed. Reg. 26,852 (May 9, 2006).

[16] D'Antonio, N.L. et al. (2016), Investigating the spatial distribution and effects of nearshore topography on *Acropora cervicornis* abundance in Southeast Florida, PeerJ 4:e2473; DOI 10.7717/peerj.2473; Gilliam, D.S. and N. D'Antonio (Sept. 2014), Colony-based monitoring of Acropora palmata and Acropora cervicornis between Port Everglades and Hillsboro Inlets, Broward County, Florida: 2014 Annual Report, prepared for the Broward County Board of Commissioners. *See also* scoping comments submitted by Justin Tuttle, dated March 27, 2017.

colonies may also be present near the port.[17] NMFS designated critical habitat for elkhorn and staghorn corals in 2008.[18] All of the offshore area in and around Port Everglades has been designated under the ESA as critical habitat for staghorn and elkhorn coral, and thus is deserving of special protections and is crucial for the recovery of the species.[19]

Scientists recently identified staghorn corals in extensive thickets off the coast of Broward County, which used to be the dominant coral formation in Florida and the Caribbean pre-1970's.[20] However, up to 98% of this corals' population has declined since the 1970's, and thicket formations have become rare.[21] These newly-discovered thickets are in close proximity to Port Everglades and are one of the largest-known remaining thickets of staghorn corals in Florida – possibly the last of its kind.[22] Staghorns, and the thickets that they form, provide particularly key habitat for fisheries.

In 2014, in response to another petition from Center for Biological Diversity, NMFS listed five additional coral species that occur in South Florida as "threatened" under the ESA: pillar coral (*Dendrogyra cylindrus*), rough cactus coral (*Mycetophyllia ferox*), lobed/star coral (*Orbicella annularis*), mountainous star coral (*Orbicella faveolata*), and boulder star coral (*Orbicella franksi*).[23] Similar to elkhorn and staghorn corals, all five newly-listed coral species are hard corals that are reef-building species. They all also suffer from a low relative recruitment rate, likely a result of population declines and habitat limitation, making them particularly susceptible to both natural and man-made threats. All five of the newly-listed species of threatened coral have been documented near Port Everglades.

Out of the five newly-listed species, pillar coral is especially imperiled. It is the only member of its genus, and is particularly rare along the Florida Reef Tract. This coral has experienced alarming declines in the last year due to elevated ocean temperatures and disease.[24] In the northern part of the reef tract, including near Port Everglades, pillar coral experienced a 95% decline in living coral tissue and an 85% colony loss since 2015.[25] In April 2015, 65 pillar coral colonies were known to be living north of Biscayne National Park. By April 2016, only ten were still living, four of which have less than 4% living tissue.[26] Scientists now believe that pillar corals have not reproduced in Florida in over 50 years and conservation of this species is particularly critical.[27]

---

[17] *Id*.
[18] 73 Fed. Reg. 72,210 (Nov. 26, 2008).
[19] Southeast Regional Office, Protected Resources Division, NMFS (March 7, 2014), Biological Opinion for Dredging and Expansion of Port Everglades, Broward County, Florida (hereinafter "2014 BiOp"), at 66.
[20] Southeast Regional Office, Protected Resources Division, NMFS (March 3, 2015), Recovery Plan for Elkhorn Coral (*Acropora palmata*) and Staghorn Coral (*A. cervicornis*), at I-6; Vargas-Ángel, B., J.D. Thomas, and S.M. Hoke (2003), High-latitude Acropora cervicornis thickets off Fort Lauderdale, Florida, USA, Coral Reefs 22: 465-473.
[21] *Id*. at I-4, I-15.
[22] 2014 BiOp at 43.
[23] 79 Fed. Reg. 53,852 (Sept. 10, 2014).
[24] Neely, K.L., Pillar coral (*Dendrogyra cylindrus*) fragment rescue for preservation of genetic diversity
[25] *Id*.
[26] *Id*.
[27] *Id*; *see also* Florida Fish and Wildlife Conservation Commission (Nov. 1, 2013), A Species Action Plan for the Pillar Coral Dendrogyra cylindrus.

One of the major challenges to recovery of these species is the Allee effect – or a sharp decline in successful sexual reproduction below a certain population threshold. If populations drop below this critical threshold, potential for extinction risk dramatically increases. As a result, NMFS determined that the "key conservation objective" for critical habitat of elkhorn and staghorn coral is to facilitate reproduction.[28] In addition, the loss of "stepping stone" coral populations, even if the loss appears to be to a small area, could further hinder sexual reproduction and these corals' recovery.

C. Dredging causes numerous problems for coral colonies and the marine environment.

Dredging causes both direct and indirect impacts to corals and coral habitat. Removal of the rock and substrate during dredging can directly harm and kill corals that are in the area as well as destroy critical habitat. Excavating habitat through dredging causes complete and permanent removal of the area, including living organisms.[29] The removal of such areas can also affect local flows, tidal currents, hydrology, larval transport, and sediment transport patterns, especially in shallow coastal and estuarine locations.[30] Such changes can be permanent and significant on a local scale.[31]

In addition, dredging activities produce large amounts of suspended fine-grained sediment, which lingers in the water column and produces "turbidity" or milky-colored water that blocks sunlight from reaching the reef. The suspended sediment eventually settles on the ocean floor where it can smother existing coral colonies and impact habitat by making exposed hardbottom too silty for coral larvae or fragments to attach and propagate. Because dredging sediments are often fine-grained, they have a particularly harmful impact on the reef, creating anoxic conditions quickly as interstitial spaces hold little oxygen. Furthermore, these sediments have a "sticky" or "clay-like" consistency, which can be difficult to remove naturally.[32] Distinct from natural sediment suspension events that cause turbidity, such as storms, dredging sediments deposit additional sediment to the reefscape, and therefore may fill-in interstitial spaces that provide habitat for reef organisms. Dredging-related sediment can also release contaminants and nutrients occurring from other natural and man-made sources.[33] The fine-grained sediments can be resuspended later by wind, currents, and tides even after they have settled on the ocean bottom, continuing to cause impacts.[34] Deposited sediment has the potential for ongoing, long-term resuspension, which can affect sediment levels, turbidity, and expose area corals to chronic sediment stress for many years.[35]

---

[28] 73 Fed. Reg. at 72,210.
[29] Synthesis of current knowledge of the biophysical impacts of dredging and disposal on the Great Barrier Reef, Report of an Independent Panel of Experts (March 2015), at 16.
[30] *Id*.
[31] *Id*.
[32] NMFS (Feb. 13, 2015), Port of Miami *Acropora cervicornis* Relocation Report – Final Report (Ex. GG to Statement of Material Facts); Field Notes on Impact Assessment in Miami Harbor Phase III Federal Channel Expansion Permit # 0305721-001-BI, executed Sept. 23, 2014 (Ex. T to Statement of Material Facts).
[33] Synthesis of current knowledge of the biophysical impacts of dredging and disposal on the Great Barrier Reef, Report of an Independent Panel of Experts (March 2015), at 17.
[34] *Id*.
[35] *Id*. at 18.

Sedimentation stress to coral colonies and their habitat causes numerous adverse effects, including: partial or total mortality, reduced energy reserves, reduced sexual reproduction, reduced fertilization, interference with larval settlement, increased vulnerability to disease, and lowered survivorship of larval recruits.[36] While corals can use their tentacles to sweep away a limited amount of sediment, this is an energy-intensive process that can drain a coral colony's energy supply.[37] If sedimentation continues, corals quickly get overwhelmed and sediment becomes piled up at the edges of the colony, causing a signature mortality pattern known as a "ring of death" or a mortality "halo."

Early life history stages of corals are particularly sensitive to the impacts from sedimentation.[38] Corals require clean, hard, consolidated surface for their larvae to settle and grow. In order to be suitable substrate, the surface must be free of sediment cover, which makes dredging a particular risk for corals and their habitat.[39] Impacts from sedimentation and turbidity during dredging could affect these vital areas. Furthermore, recent reports of over 100 colonies of staghorn coral within 500-700 meters north of the Port Everglades shipping channel call for special provisions to ensure that these corals and their critical habitat, as well as the six other listed corals in the area and non-listed corals are protected.[40]

Turbidity in the water column also reduces the amount of light reaching the ocean floor, resulting in "shading" and less available energy for corals and their photosynthetic algae.[41] Stress from sedimentation magnifies harm from other threats.[42] Staghorn coral are known to be especially sensitive to sediment shading, [43] and elkhorn coral, in particular, have a poor capacity to remove sediment, which can rapidly result in lethal effects and compromise the health and survival of these species.

D. <u>A similar dredging project at the Port of Miami caused wide-spread harm to protected corals.</u>

The Port of Miami is approximately 30 miles south of Port Everglades. Similar to Port Everglades, the Miami entrance channel bisects the Florida Reef Tract, including staghorn and elkhorn coral critical habitat. Physical dredging of the Port of Miami occurred between November 2013 and September 2015. According to the Corps, the type of material being dredged at both the Port of Miami and Port Everglades is the same (hard limestone) and should result in similar conditions with regard to sedimentation and turbidity.[44] In Miami, the Corps

[36] 2014 BiOp at 57.
[37] *Id*.
[38] Synthesis of current knowledge of the biophysical impacts of dredging and disposal on the Great Barrier Reef, Report of an Independent Panel of Experts (March 2015), at 47.
[39] 2014 BiOp at 57, 64.
[40] *See* scoping comment letter from Justin Tuttle, dated March 27, 2017.
[41] 2014 BiOp at 57.
[42] *Id*.
[43] *Id*. at 60
[44] See note 3, *supra*.

underestimated the amount of protected resources in the area and the extent and severity of dredging-related impacts from sedimentation on those colonies and the marine environment.[45]

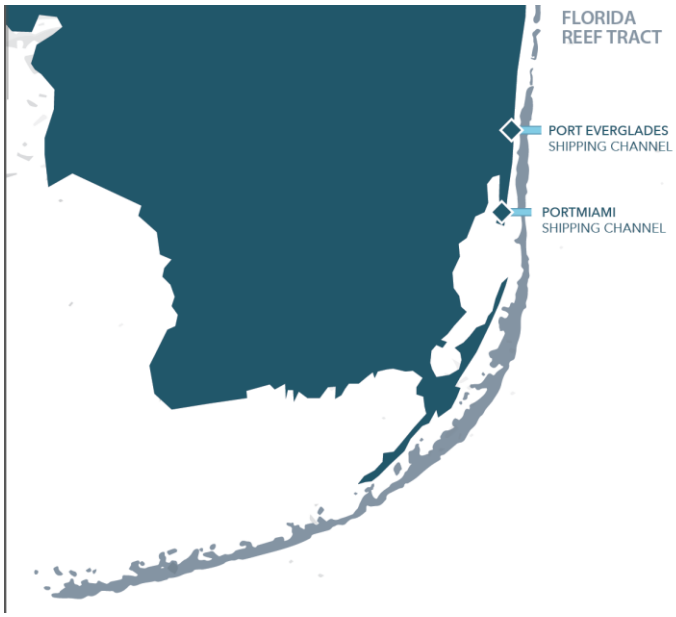

Figure 1: An artist rendering of the Florida Reef Tract and the approximate locations of the Port of Miami and Port Everglades shipping channels.

In Miami, the Corps contracted with Dial Cordy and Associates Inc. ("Dial Cordy") in 2010 to survey the impact zone surrounding the Miami Harbor entrance channel to determine whether corals were present, but only surveyed areas within 150 meters north and south of the then-existing Port of Miami entrance channel (which it termed the direct and indirect impact zones).[46] The Corps predicted only temporary and insignificant impacts to corals due to sedimentation, and impacts only within 150 meters adjacent to the then-existing channel.[47]

Based on the survey, the Corps presented a biological assessment to NMFS that estimated there were only 31 colonies of staghorn coral within the predicted impact area that would be affected.[48] The Corps also predicted that the impact of dredge-related sediments on the critical habitat would be "temporary," "localized" and "insignificant," and forecasted that sedimentation levels would be "expected to return" to background levels upon project completion.[49]

---

[45] *See* the Miami-Dade Reef-Guard Association's Statement of Material Facts in Support of Motion for Partial Summary Judgment Regarding Defendant's Liability under the Endangered Species Act, Doc. 130 (Sept. 30, 2016) from ongoing litigation regarding the Corp's dredging in the Port of Miami (Case No. 1:14-cv-23632-FAM) (hereinafter "Statement of Material Facts"), along with related Exhibits A through WW, for a full description of all the impacts and events that occurred during the dredging at the Port of Miami.

[46] Dial Cordy and Associates, Inc. (May 2010) Miami Harbor *Acropora* Coral Survey Final Report (Ex. D to Statement of Material Facts).

[47] Corps (Jan. 2011), Reinitiation of Consultation under Section 7 of the ESA, at 5, 25, 36; Corps (Feb. 2004), Final General Reevaluation Report and EIS for Miami Harbor, Miami-Dade County, Florida, Navigation Study, at v, 66, 80.

[48] Southeast Regional Office, Protected Resources Division, NMFS (Sept. 8, 2011) Biological Opinion for Dredging and Expansion of Miami Harbor, Miami-Dade County, Florida, at 10 (see Ex. E to Statement of Material Facts).

[49] Corps (Feb. 2004), Final General Reevaluation Report and EIS for Miami Harbor, Miami-Dade County, Florida, Navigation Study, at 80.

One month before the planned commencement of dredging, different contractors resurveyed the direct and indirect impact areas and found that the Corps had underestimated the numbers of corals present by at least eight times.[50] Because construction was scheduled to begin shortly, the Corps only relocated a total of 38 coral colonies out of the 243 colonies that were found in the later survey.[51]

After the Corps commenced construction in Miami, there were almost immediate signs of increased sediment and significant stress events for coral colonies.[52] State agencies reported turbid water and sediment plumes extending 1,500 meters in length.[53] In July 2014, state agencies sent a team of biologists to dive the Miami Channel and evaluate the condition of the corals and hardbottom habitat.[54] They found areas of the reef heavily covered with dredge-related sediments, as well as dead and dying corals.[55]

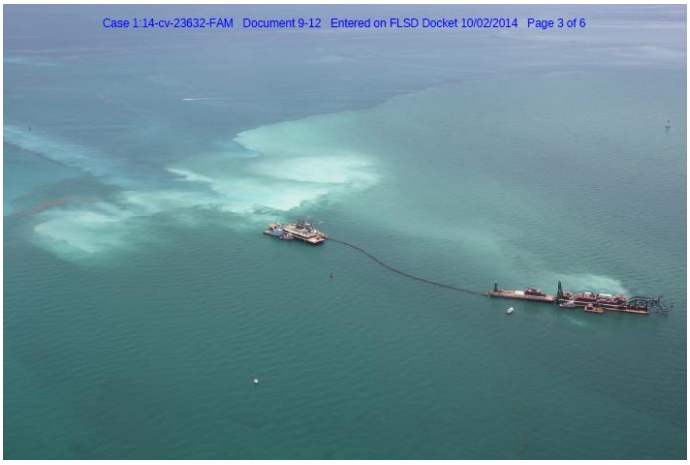

Figure 2: Exhibit from the Port of Miami litigation showing aerial view of dredging operations and sediment plumes, as well as a sediment trail leaking from transport scows.

Later surveys conducted by the Corps revealed that stress on staghorn corals was twice as high near the channel as at control sites.[56] They further revealed that staghorn corals were being

[50] Email from Terri Jordan-Sellers (Army Corps) to Kelly Logan (NMFS) re. Acropora re-initiation for Miami Harbor (Ex. G to Statement of Material Facts), dated Oct. 21, 2013.
[51] Memorandum from Chris Pomfret at Great Lakes Dredge and Dock Co. to Anne McCarthy at CSA Ocean Science re. Final Report for the 30-Day Post-Relocation Monitoring Survey for Acropora cervicornis associated with the Miami Harbor Construction Dredging (Phase 3) Project, dated Feb. 25, 2014, at 2, 14 (Ex. H to the Statement of Material Facts).
[52] *See* Statement of Material Facts at 6.
[53] Department of Environmental Protection (Sept. 2014), Field Notes on Impact Assessment in Miami Harbor Phase III Federal Channel Expansion Permit # 0305721-001-BI. (Ex. T to Statement of Material Facts).
[54] *See* Statement of Material Facts at 7.
[55] Miami-Dade Department of Regulatory and Economic Resources, Department of Environmental Resources Management (July 2014), Report on Hardbottom/Reef Inspections (Ex. S to Statement of Material Facts); Department of Environmental Protection (Sept. 2014), Field Notes on Impact Assessment in Miami Harbor Phase III Federal Channel Expansion Permit # 0305721-001-BI (Ex. T to Statement of Material Facts).
[56] *See, e.g.*, Email from Terri Jordan-Sellers (Corps) to NMFS re. August 2014 Entrance Channel & Control *Acropora cervicornis* Survey, dated Aug. 27, 2014, and attached survey (Ex. CC to Statement of Material Facts).

buried in sediment and dying.[57] The sedimentation was found to be so significant and the harm to ESA-listed staghorn corals so severe that on September 10, 2014, NMFS issued a document, entitled "Port of Miami Emergency Remediation Recommendations," which stated that "accumulation and resuspension of sediments in the project area will continue to affect extant colonies and designated critical habitat as long as the sediments are present. Therefore, emergency relocation of living staghorn colonies should be undertaken immediately and further mitigation . . . considered."[58]

Out of the 38 colonies that the Corps did relocate from the "150-meter impact zone," the Corps transplanted 17 colonies to a location 261 meters north of the channel.[59] Unfortunately, the dredging produced sediment-related impacts beyond 750 meters from the channel. As a result, the relocated corals, particularly on the north side of the channel, were also severely and adversely impacted by dredging sediments.[60] Staghorn corals both in the entire impact area within 150 meters and farther than 150 meters from the channel also experienced adverse effects, as described below. However, a staghorn coral survey of the 150-meter area on the north side of the channel has still never been completed. Staghorn corals outside of the 150-meter area, but within the impact area, have also still never been survey or monitored.

Exhibit 3: An image from September 2014 surveys of staghorn corals in the Port of Miami area, showing staghorn corals buried in sediment and partially dead, found near the dredging.

During the Miami dredging, adaptive management was vague and communication was slow. The Corps' contractor, Dial Cordy, subsequently acknowledged, "After months of implementing adaptive management strategies for the dredging operations, corals at channel-side

[57] *Id.*
[58] NMFS, (Sept. 10, 2014), Port of Miami Emergency Remediation Recommendations from NMFS PRD (Ex. DD to Statement of Material Facts).
[59] Memorandum from Chris Pomfret at Great Lakes Dredge and Dock Co. to Anne McCarthy at CSA Ocean Science re. Final Report for the 30-Day Post-Relocation Monitoring Survey for Acropora cervicornis associated with the Miami Harbor Construction Dredging (Phase 3) Project, dated Feb. 25, 2014, at p. 1 (Ex. H to the Statement of Material Facts).
[60] Coastal Systems, International, Inc. (Feb. 2015), Acropora cervicornis One Year Post-relocation Monitoring Report for the Miami Harbor Phase III Federal Channel Expansion Contract No. E12-SEA-03/Project No. 1999-027, prepared for PortMiami, at 21 (Ex. J to the Statement of Material Facts).

sites were still exhibiting 'stress above normal' as defined by the [state] permit."[61] Corals near the dredging exhibited higher stress than control corals for every week of the project after week 11.[62]

In the fall of 2014, NMFS divers engaged in a Corps-funded rescue of the remaining staghorn corals. However, the Corps defiantly refused to relocate the dredge ship to allow NMFS divers to safely access the corals and complete the rescue and to survey the northern edge of the 150m indirect impact area.[63] NMFS issued a report stating that they were able to locate less than three-quarters of the 211 previously-tagged staghorn coral colonies during emergency rescue operations. Of those that they did find, 48 staghorn coral colonies were either completely dead, did not have enough living tissue remaining to be salvaged for relocation, or only the numbered coral tag was found but the coral itself was gone.[64] In addition, 67% of the colonies NMFS could locate showed some sign of stress.[65] NMFS reported that sedimentation impacts showed no sign of abating at 200 meters from the channel.[66] NMFS also could not complete a survey for the staghorn corals beyond 150 meters.

In February 2015, state scientists returned to the channel for an inspection, as did divers from NMFS in May and December 2015. In their findings, each agency reported that sediments were continuing to cause coral stress and mortality.[67] Despite all the evidence, the Corps refused to acknowledge the extent or even existence of these impacts. In March 2015, NMFS sent an email to the Corps, stating:

> We are concerned by the continued lack of acknowledgment by the Corps that the impacts that have actually occurred to listed corals and their habitats, are vastly different than those that were predicted and authorized in the 2011 biological opinion. The biological opinion and the Corps' EIS for the project predicted only "temporary," "minimal," and "insignificant" impacts to corals and coral habitats from the dredging project. The only adverse effects (take) predicted in the biological opinion were the potential mortalities of a percentage of relocated coral colonies, no adverse effects of any kind were predicted from sedimentation. The adverse impacts that have resulted thus far from the dredging project are anything but the "temporary" and "insignificant" effects predicted, including widespread coral injury and mortality, and burying of coral habitats to an extent that will result in further

[61] Dial Cordy and Associates, Inc. (Aug. 2015), Delineation of Potential Sedimentation Effect Area Within Middle and Outer Reef Habitats Port of Miami III Federal Channel Expansion Project, FDEP Permit #0305721-001-BI, at 3 (Ex. QQ to Statement of Material Facts).
[62] Weekly offshore coral stress compliance reports.
[63] *See* emails in Ex. FF to Statement of Material Facts.
[64] NMFS (Feb. 13, 2015), Port of Miami *Acropora cervicornis* Relocation Report – Final Report, at 5 (Ex. GG to Statement of Material Facts).
[65] *Id*.
[66] *Id*. at 7.
[67] *See, e.g.*, Florida Department of Environmental Protection (Feb. 9, 2015), Report on sites visit in Port of Miami Expansion Project (Ex. KK to Statement of Material Facts).

> mortality, and interference with settlement, recruitment and recovery.[68]

In addition to the unanticipated sediment impacts within the impact area 150 meters adjacent to the channel, impacts from dredge-related sediments were found to extend much farther. According to NMFS, the impact zone was "significantly larger than the 150 meters . . . ranging well over 400 meters and potentially up to 1,000 meters or more [nearly a half mile]" from the channel.[69] NMFS later emphasized, "NMFS unequivocally reiterates that the sedimentation actually experienced at the Port of Miami greatly exceeds the amount that we predicted . . . both in area affected and environmental consequences."[70]

In January 2016, the Corps stated in a biological assessment that up to 290 colonies of staghorn coral located within an area 150 meters adjacent to the channel suffered sediment accumulation.[71] The assessment also concluded that there were dredging-related impacts to at least 250 acres of critical habitat from sedimentation.[72]

In April of 2016, NMFS issued a damage assessment report based on the agency's own investigation by its coral damage assessment specialist team.[73] The report presented results from its December 2015 survey of one portion of the impacted reef area, the north middle reef from the channel out to 700 meters north. In the report, NMFS found that 95% of the reef area surveyed was no longer suitable habitat for supporting coral.[74] It also concluded that 4% of the reef area surveyed (6.6 acres) was permanently lost as coral reef habitat.[75] Divers observed sedimentation impacts, including the "accumulation of fine white sediments, partial mortality of [hard] corals, [and] burial of [soft coral] holdfasts" at all survey sites in the middle reef.[76] Although the NMFS team did not survey beyond 700 meters from the channel, they did not see signs that they had reached the extent of the sediment-impacted reef area.[77] NMFS concluded that the "disproportionate decline in . . . coral species richness" was not consistent with the Corps' theory that region-wide disease, independent of dredging activities, could account for the coral mortality.[78] NMFS found sediment deposition from dredging activities was the most plausible explanation for impacts.[79] NMFS also reported that out of the ten other survey reports

[68] Email from Kelly Logan (NMFS) to Eric P. Summa (Corps), dated March 17, 2015 (Ex. F to Statement of Material Facts).
[69] Letter from David Bernhart (NMFS) to Jason Spinning (Corps), dated May 14, 2015 (Ex. OO to Statement of Material Facts).
[70] *Id*.
[71] Corps (Jan. 27, 2016), Supplemental Biological Assessment for the Reinitiation of Consultation under Section 7 of the ESA – PortMiami Navigation Project, at 4 (Ex. K to Statement of Material Facts).
[72] *Id*.
[73] NMFS (April 2016), Examination of Sedimentation Impacts to Coral Reef along the Port of Miami Entrance Channel, December 2015, Final Report, (Ex. UU to Reef Guard Statement of Material Facts).
[74] *Id*. at 51.
[75] *Id*. (Table 7 demonstrate that 6.6 acres out of a total 167 acres suffered very severe impacts, or 4%)
[76] *Id*. at 8
[77] *Id*. at 8.
[78] *Id*. at 35.
[79] *Id*.

from the north middle reef, including those by the Corps' contractors, Dial Cordy, sediment accumulation was consistently described as recent and distinguishable from natural sediment.[80]

II. THE CORPS MUST PRODUCE A SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT CONSISTENT WITH THE NATIONAL ENVIRONMENTAL POLICY ACT

A. NEPA Requirements.

Enacted by Congress in 1969, NEPA establishes a national policy to "encourage productive and enjoyable harmony between man and his environment" and "promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man."[81] In order to achieve its broad goals, NEPA mandates that "to the fullest extent possible" the "policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with [NEPA]."[82] Central to NEPA is its requirement that, before any federal action that "*may* significantly degrade some human environmental factor" can be undertaken, agencies must prepare an environmental impact statement.[83]

NEPA and the Council on Environmental Quality ("CEQ") regulations implementing NEPA are meant to ensure that environmental considerations are "infused into the ongoing programs and actions of the Federal Government."[84] In order to achieve this, environmental review must be prepared "at the earliest possible time to insure that planning and decisions reflect environmental values."[85]

To comply with NEPA, an EIS must *inter alia* include a "full and fair discussion" of direct and indirect environmental impacts – take a "hard look" at the impacts (40 C.F.R. § 1502.1), consider the cumulative effects of reasonably foreseeable activities in combination with the proposed action (*id.* § 1508.7), analyze all reasonable alternatives that would avoid or minimize the action's adverse impacts (*id.* § 1502.1), address measures to mitigate those adverse effects (*id.* § 1502.14(f)), and incorporate its environmental analysis into its decision-making process (*id.* §§ 1500.1, 1502.1). We offer the following comments to ensure the Corps' compliance with these important mandates.

B. The Port Everglades Project will have significant effects that require the Corps to produce a supplemental environmental impact statement.

The Corps is required to produce a supplemental environmental impact statement ("EIS") rather than a supplemental environmental assessment ("EA") because the Corps produced a Final EIS to first evaluate the Port Everglades Project, and because there is new information that

[80] *Id.* at 37-43; A recent article confirms and expands on the results from NMFS's 2015 survey: Miller, M.W., et al. (November 17, 2016), Detecting sedimentation impacts to coral reefs resulting from dredging the Port of Miami, Florida USA, PeerJ 4:e2711;DOI 10.7717/peerj.2711 (attached as Ex. 1 to this letter).
[81] 42 U.S.C. § 4321.
[82] 42 U.S.C. § 4332.
[83] *Steamboaters v. F.E.R.C.*, 759 F.2d 1382, 1392 (9th Cir. 1985) (emphasis in original).
[84] *Marsh v. Or. Natural Resources Council,* 490 U.S. 360, 371 n. 14 (1989) (internal quotation and citation omitted).
[85] *Metcalf v. Daley,* 214 F.3d 1135, 1142 (quoting *Andrus v. Sierra Club,* 442 U.S. 347, 351 (1979)).

demonstrates the Port Everglades Project will have a significant impact on the environment. NEPA requires federal agencies to prepare an EIS for all "major Federal actions significantly affecting the quality of the human environment."[86] Under certain circumstances, the agency can prepare an EA that provides "sufficient evidence and analysis for determining whether to prepare" an EIS and that contributes to the agency's compliance with NEPA.[87] In determining whether an action "significantly" affects the environment, the agency must analyze significance in several contexts "such as society as a whole (human, national), the affected region, the affected interests, and the locality."[88] Determining the significance of an action also requires the agency to consider the intensity of the impact by evaluating factors enumerated at 40 C.F.R. § 1508.27(b).

Federal agencies cannot segment or manipulate the scope of their actions in order to avoid a finding of significance and evade the full environmental impact study NEPA demands.[89] Rather, when determining the scope of its environmental review under NEPA, an agency must consider "connected, cumulative, and similar actions" together to prevent an agency from "dividing a project into multiple 'actions,' each of which individually has an insignificant environmental impact, but which collectively have a substantial impact."[90]

The decision whether to prepare a supplemental EIS is similar to the decision about whether to prepare an EIS in the first instance: "If there remains "major Federal actio[n]" to occur, and if the new information is sufficient to show that the remaining action will 'affec[t] the quality of the human environment' in a significant manner or to a significant extent not already considered, a supplemental EIS must be prepared."[91]

NEPA regulations mandate that an agency must prepare a supplement to an environmental review "in the same fashion (exclusive of scoping) as a draft and final statement."[92] The Corps' own regulations implementing NEPA mirror this requirement and indicate that a supplement to a final EIS should be produced using the same format and procedure as the final EIS. The regulations indicate supplements to a final EIS should be prepared, filed, and circulated in the same manner as the original final EIS and a final record of decision should be made to support a supplement.[93] In other words, a supplemental EA is not sufficient to supplement a Final EIS.

1. The new information was not considered in the Final EIS and is sufficient to show that the Port Everglades Project will have significant effects.

[86] 42 U.S.C. § 4332(2)(C); 40 C.F.R. § 1501.4.
[87] 40 C.F.R. §§ 1508.9, 1501.4.
[88] 40 C.F.R. § 1508.27(a).
[89] 40 C.F.R. § 1508.27(b)(7) ("Significance cannot be avoided by . . . breaking [an action] down into small component parts.").
[90] 40 C.F.R. § 1508.25; *see, e.g.*, *Earth Island Inst. v. U.S. Forest Serv*., 351 F.3d 1291, 1305 (9th Cir. 2003).
[91] *Marsh*, 490 U.S. at 374; *see also Sierra Club v. Flowers*, 423 F. Supp. 2d 1273, 1348 (S.D. Fla. 2006) ("[T]he Eleventh Circuit directs that even where post-EIS changes are entirely beneficial, "if they are significant, they require [a supplementary EIS].").
[92] 40 C.F.R. § 1502.9(c)(4). *See also* 40 C.F.R. § 1503.1(a)(4); 40 C.F.R. § 1506.10.
[93] *See* 33 C.F.R. § 230.13(b).

The Corps has stated it will produce a supplemental NEPA document to evaluate updated resource surveys, new sediment transport modeling, evidence and information from Miami, and additional alternatives to mitigate and minimize environmental impacts.[94] We agree that a supplemental NEPA document is necessary and urge the Corps to prepare a supplemental EIS, in accordance with NEPA and its implementing regulations. The Corps completed a Final EIS (not a Final EA) for the Port Everglades Project in May 2015 ("FEIS" or "2015 FEIS") in order to evaluate the environmental effects.[95] Because the Corps initially prepared an EIS to evaluate the effects of the Port Everglades Project, it is obligated to supplement that document using the same format and procedures, and produce a supplemental EIS rather than a supplemental EA.

Further, the Corps must prepare a supplemental EIS to reflect consideration of the significant new circumstances and relevant information that is currently being collected for the Port of Miami that establishes reasonably foreseeable significant adverse effects pursuant to 40 CFR §1502.22, and other significant new information that was not previously evaluated in the 2015 FEIS. For example, in the FEIS, the Corps entirely failed to consider any of the impacts that dredging had on coral communities in Miami. Instead, the Corps only evaluated minor potential impacts to corals from the Port Everglades Project. The Corps stated it "acknowledges . . . the possibility of temporary, uncontrolled, incidental resuspension of material during dredging operations," but assumed that the "effects of this turbidity/sedimentation should be temporary."[96]

In the FEIS, the Corps noted there is a "paucity" of data concerning sedimentation effects on corals in Florida.[97] It relied on results from four older dredging projects to inform its analysis of impacts: an expansion project in Port Everglades that took place in 1980, a shore protection project conducted in Broward County in 2005, and two dredging projects in Key West Harbor from 2004-2007.[98] These projects are not good proxies in terms of project scope, similarity of habitat, similarity of current flow, or reliable, available monitoring data. These same projects were not accurate in predicting impacts to reefs at the Port of Miami either. Much more relevant is the information from the recent Port of Miami expansion for predicting impacts during the Port Everglades Project, which the Corps did not consider at all in the FEIS.

In the 2015 FEIS, the Corps erroneously reported that monitoring from the Miami project demonstrated that after the dredging was complete in an area, the sediment "worked into the system's existing sediment budget and is no longer discernible from the background sediment."[99] The Corps also erroneously stated that the sediment "abate[d] in Miami" in a short period of time after dredging ended in an area, after three to six months.[100] These statements are demonstrably false.[101]

---

[94] Scoping Letter from Gina P. Ralph (Corps) to the Public, dated Sept. 27, 2016; 82 Fed. Reg. 8515 (Jan. 26, 2017).
[95] Corps (March 2015 (Rev May 2015)), Final EIS for the Port Everglades Harbor Navigation Study, Broward County, Florida (hereinafter "2015 FEIS").
[96] 2015 FEIS at 200.
[97] *Id*. at 233.
[98] *Id*. at 234.
[99] *Id*. at 196.
[100] *Id*.
[101] *See, e.g.*, NMFS (April 2016), Examination of Sedimentation Impacts to Coral Reef along the Port of Miami Entrance Channel, December 2015, Final Report, (Ex. UU to Reef Guard Statement of Material Facts); Miller,

Further, in the FEIS, the Corps based its monitoring and mitigation plan directly on its flawed estimation of impacts, relying on the erroneous assumption that monitoring and mitigation are only needed in a narrow, 150-meter, indirect impact area, reflecting an erroneously set "mixing zone."[102] The Corps also failed to fully account for the cumulative impacts to coral colonies in addition to the impacts from dredging, including but not limited to impacts from ocean warming, acidification, coastal development, agricultural and land use practices, disease, reef fishing, aquarium trade, physical damage from boats and anchors, marine debris, competition from algae, and invasive species.[103] In particular, and as described more fully below, recent studies demonstrate that corals exposed to chronic dredging sediments are twice as likely to develop disease.[104] A massive white plague disease outbreak appears to have originated close to the Port of Miami dredging operation in the fall of 2014 and to have spread outward along the reef tract from there.[105] Other listed species, such as mountainous star coral and pillar coral were particular hard-hit in the disease events of the last two years.

New information from Miami that the Corps failed to consider in the FEIS demonstrates that dredging-related impacts on reefs will not be "insignificant and temporary," as the Corps assumed. Reports from Miami demonstrate that sediment traveled much farther than the 150-meter area the Corps predicted and likely beyond 750 meters from the channel.[106] The new reports also show that the effects from sedimentation are discernible and can last several years, in some cases having permanent impacts.[107] This new information was either erroneously omitted in the FEIS or is newly available since May 2015. It is sufficient to show that the Port Everglades Project will affect the environment in a significant manner, necessitating the completion of a supplemental EIS.

C. The Corps must consider a proper baseline using updated surveys that extend at least 1,000 meters from the channel.

Currently, the Corps is relying on outdated coral surveys that only extend 150 meters away from the channel at Port Everglades in order to evaluate baseline conditions for the Port Everglades Project, and which are now over 6 years old. In order to comply with NEPA and establish a proper baseline for its analysis, the Corps must conduct new surveys for coral species that extend beyond 1,000 meters in both directions from the channel. We encourage the Corps to

---

M.W., et al. (November 17, 2016), Detecting sedimentation impacts to coral reefs resulting from dredging the Port of Miami, Florida USA, PeerJ 4:e2711;DOI 10.7717/peerj.2711.

[102] 2015 FEIS at 239.

[103] *See id*. at 263-73.

[104] Pollock, F.J., et al. (2014), Sediment and Turbidity Associated with Offshore Dredging Increase Coral Disease Prevalence on Nearby Reefs. PloS ONE 9(7): e102498. Doi:10.1371/journal.pone.0102498.

[105] Precht, W.F., et al. (2016), Unprecedented Disease-Related Coral Mortality in Southeastern Florida, Scientific Reports 3:31374, DOI: 10.1038/srep31374.

[106] Dial Cordy and Associates, Inc. (Aug. 2015), Delineation of Potential Sedimentation Effect Area Within Middle and Outer Reef Habitats Port of Miami III Federal Channel Expansion Project, FDEP Permit #0305721-001-BI, at 3 (Ex. QQ to Statement of Material Facts).

[107] NMFS (April 2016), Examination of Sedimentation Impacts to Coral Reef along the Port of Miami Entrance Channel, December 2015, Final Report, (Ex. UU to Reef Guard Statement of Material Facts); Miller, M.W., et al. (November 17, 2016), Detecting sedimentation impacts to coral reefs resulting from dredging the Port of Miami, Florida USA, PeerJ 4:e2711;DOI 10.7717/peerj.2711.

complete these surveys entirely before dredging begins, and no more than one year before the start of dredging.

1. NEPA Mandates that agencies use a proper baseline.

In order to properly evaluate environmental impacts, it is imperative that an agency establishes what the baseline conditions are in the vicinity of a project.[108] NEPA requires that an EIS "succinctly describe the environment of the area(s) to be affected."[109] An assessment of baseline conditions must be "based on accurate information and defensible reasoning."[110]

2. The Corps must conduct new coral surveys that go out to at least 1,000 meters before the dredging takes place that accurately account for coral in the area.

Establishing a proper baseline about the amount and condition of coral in the area of Port Everglades is particularly important because impacts to coral are one of the most significant environmental concerns associated with the Port Everglades Project. In the FEIS, the Corps relied on outdated and truncated surveys, conducted by its contractor, Dial Cordy, in 2010 to evaluate resources in the area of the Port Everglades Project. That survey is now over 6 years old, and extends only 150 meters from the channel.[111]

At the Port of Miami, Dial Cordy's 2010 staghorn survey reported only 31 corals in the 150-meter indirect impact area, but contractors found hundreds of colonies in 2013 just before dredging began. It is not entirely clear what caused this vast underestimation of corals, although possibilities include the use of different survey methodologies, inaccurate extrapolations from the survey to full coverage, or a "bloom" of staghorn corals in the last few years.[112] Regardless, the small area near Port Everglades surveyed in 2010 and the possibility for a significant change in coral abundance over the last 6 years (and what will be closer to a decade by the time dredging is set to begin) warrants new, expanded, surveys with updated methodologies. The FEIS for Port Everglades states that, according to Dial Cordy's 2010 surveys of the area, no threatened corals are within 150 meters of the channel.[113] As described below, surveying corals only out to 150 meters is inappropriate, given evidence from Miami that demonstrates the sediment has the potential to travel more than 1,000 meters from the dredging site. Potential recruitment of corals to this area and newly listed species must also be included. Any new baseline surveys must extend to at least 1,000 meters from the channel and impacts must be reevaluated, and mitigation for these corals must be updated prior to approval of the supplemental EIS.

---

[108] *Great Basin Resource Watch v. Bureau of Land Management*, 844 F.3d 1095, 1101 (9th Cir. 2016) ("Establishing appropriate baseline conditions is critical to any NEPA analysis."); *Half Moon Bay Fishermans' Mktg. Ass'n v. Carlucci*, 857 F.3d 505, 510 (9th Cir. 1988) ("Without establishing the baseline conditions which exist . . . before [a project] begins, there is simply no way to determine what effect the [project] will have on the environment and, consequently, no way to comply with NEPA.").

[109] 40 C.F.R. § 1502.15.

[110] *Great Basin Resource Watch*, 844 F.3d at 1101 (quoting *Or. Nat. Desert Ass'n v. Jewell*, 840 F.3d 562, 570 (9th Cir. 2016).

[111] Dial Cordy (Oct. 2010), Port Everglades Feasibility Study Acropora Coral Survey, Final Report, at 1.

[112] Corps (Sept. 14, 2014), Revised Section 7a(2)/7d Evaluation/Supplemental Biological Assessment for Miami Harbor Navigation Project (deepening to 50 ft.), at p. 4 (Ex. H to Statement of Material Facts).

[113] 2015 FEIS at 144.

New studies of the area around Port Everglades further indicate that 150 meters is an inappropriate indirect impact area. Olsen engineering, for example, concluded, "[A] 150-m mixing zone would not be feasible given hydrodynamic environment and expected turbidity and sedimentation associated with planned construction."[114] Attachments of images of prior dredging plumes presented to the Interagency Working Group find similar conclusions.[115]

Obtaining accurate baseline data about the pre-dredge habitat conditions in Port Everglades is critical to understanding project impacts. At the Port of Miami, the Corps collected immediate pre-dredge baseline data that turned out to be mid-dredge because it was collected after dredging had already begun. This gave the false impression that the reef areas adjacent to the dredging were "naturally" sediment-laden and experienced high turbidity, which is not the case. Therefore, baseline data for Port Everglades must be completed before any dredging begins, including maintenance dredging. This data should be collected no more than one year prior to the start of dredging.

D. The Corps must take a "hard look" at environmental impacts including new information about impacts to corals from the Port of Miami Project.

The FEIS for the Port Everglades Project does not include a complete analysis of impacts. Instead, it contains a number of errors and inaccuracies about the potential effects of the project. Reports from the dredging project at the Port of Miami demonstrate that sedimentation from dredging extended beyond 1,000 meters from the channel, and had a more significant and long-lasting effect on coral reef ecosystems than predicted. Despite numerous studies demonstrating these outcomes, the Corps has failed to recognize these mistaken assumptions and correct them for the Port Everglades Project. In order to take the "hard look" that NEPA requires, the Corps must at least evaluate and address problems from the Port of Miami dredging, consider an indirect impact area that extends at least 1,000 meters from the Port Everglades channel, conduct relevant modeling that is verified with field data, assess the connections between dredging activities and coral disease, and include a flooding and flushing model. In addition, the Corps should not rely on impacts from storms as a proxy for the impacts of dredging.

1. NEPA requires the Corps to take a "hard look" at potential impacts.

The fundamental purpose of NEPA analysis is to force the decision-maker to take a "hard look" at a particular action before the decision to proceed is made. The agency must consider its need for that action, the associated environmental consequences, and the availability of environmentally benign alternatives that may substitute for the action.[116] This "hard look" requires agencies to utilize all high-quality information and accurate scientific analysis, including accurate scientific interpretations of data and studies.[117] If there are not sufficient data available, the agency must follow the requisite procedure for addressing or evaluating the impacts in view

[114] Creed, C.G., et al. (Feb. 3-5, 2016), Powerpoint Presentation for National Conference on Beach Preservation Technology, titled, Development of an Appropriate Mixing Zine and Using Turbidity and Sedimentation Predictions; Port Everglades Sand Bypass Project.
[115] *See* "Pics_Sed Plume beyond 150m" on separate CD of materials.
[116] *See* 40 C.F.R. §§ 1500.1(b), 1502.1; *Baltimore Gas & Electric v. NRDC*, 462 U.S. 87, 97 (1983).
[117] *See* 40 C.F.R. § 1500.1(b).

of incomplete or unavailable information.[118] "General statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided."[119] The law is clear that the environmental analysis must be a pre-decisional, objective, rigorous, and neutral document, not a work of advocacy to justify an outcome that has been foreordained.

Agencies are further required to identify their methodologies, to indicate when necessary information is incomplete or unavailable, to acknowledge scientific disagreement and data gaps, and evaluate indeterminate adverse impacts based upon approaches or methods "generally accepted in the scientific community."[120] Finally, NEPA does not "permit agencies to falsify data or to ignore available information that undermines their environmental impact conclusions."[121] Thus, the Corps' review must be thorough and the agency may not "sweep[] negative evidence under the rug."[122]

2. The Corps must incorporate lessons learned from Miami in the supplemental EIS.

As described above, similar dredging operations at the Port of Miami proved disastrous for coral and the marine environment. The project involved a series of errors and the Corps relied upon a number of faulty estimations in Miami that resulted in wide-spread damage. In addition to failing to complete an accurate survey of the coral in the area before construction began, the Corps mistakenly predicted that impacts would only extend a short distance from the channel – out to 150 meters. Further, the Corps did not have adequate mitigation or monitoring in place in order to address impacts as they occurred. Adaptive management proved to be utterly ineffective at addressing problems in Miami. The Corps completely failed to predict the extent and severity of impacts to coral and its habitat. The scientific analysis of the Corps and its contractors was also deeply flawed. In the supplemental EIS for the Port Everglades Project, the Corps must recognize these mistakes and incorporate changes that will prevent the same mistakes from happening in Fort Lauderdale.

The Corps cited the need to incorporate new information and "lessons learned" from the Port of Miami dredging as one of the reasons for this NEPA supplementary process.[123] However, the Corps still refuses to acknowledge to the public that there are any lessons that need to be learned. This indicates that the Corps is not inclined to correct mistakes. On February 22, 2017, the Corps held a rescoping meeting under NEPA for the Port Everglades Project. The Corps distributed a fact sheet to the public via email before the meeting and the same document was

---

[118] *Id*. § 1502.22.
[119] *Klamath-Siskiyou Wilderness Center v. Bureau of Land Management*, 387 F.3d 989, 994 (9th Cir. 2004) (quoting *Neighbors of Cuddy Mountain v. United States Forest Service*, 137 F.3d 1372, 1380 (9th Cir. 1998)).
[120] 40 C.F.R. §§ 1502.22(2), (4), 1502.24.
[121] *Hoosier Environmental Council v. US Department of Transportation*, 2007 WL 4302642, at *13 (S.D. Ind. Dec. 10, 2007).
[122] *National Audubon Society v. Department of the Navy*, 422 F.3d 174, 194 (4th Cir. 2005).
[123] Scoping Letter from Gina P. Ralph (Corps) to the Public, dated Sept. 27, 2016; 82 Fed. Reg. 8515 (Jan. 26, 2017); FEIS, App. L ("USACE will incorporate the applicable lessons learned from Miami Harbor when the project is complete and the After Action Review of the Miami project is complete.").

distributed in print at the meeting.[124] Unfortunately, this document contained a number of misrepresentations and half-truths about the impacts of dredging in Miami. Perhaps, most poignantly, the FAQ document included a misrepresentation of a purportedly post-construction staghorn coral. The photo, on page 3 of the fact sheet, was captioned:

> Healthy relocated Acropora cervicornis colonies recorded in November 2015 **following construction at Miami Harbor**. (Emphasis added) (See Figure 2).

Inspection of this photo showed that it was taken 30-days after relocation of the colony in January 2014 – before most of the dredging had taken place.[125] Because this photo was taken before the majority of the dredging occurred, it is not an accurate representation of post-dredging conditions or impacts that occurred in Miami.

In addition to the photo, the Corps' FAQ document contained many instances of misleading, incomplete, or false information in the text. For example, in response to the following "question:"

> *I'm concerned about environmental damage caused during the Miami Harbor Deepening Project; will it also occur at Port Everglades?*

The Corps' response was:

> *The Corps carried out the Miami Harbor project according to the terms of the biological opinion (BO) issued by the National Marine Fisheries Services (NMFS). The Corps, together with NMFS, Florida Department of Environmental Protection (FDEP) and the Port of Miami, is currently conducting a definitive survey of the affected area.*

However, the Corps has reinitiated consultation three times with NMFS regarding its Biological Opinion precisely because the effects in Miami exceeded those allowed under the Biological Opinion. For example, on January 16, 2016, the Corps reinitiated consultation with NMFS stating in its cover letter:

> ESA regulations at 50 CFR 402.16 require that an action agency re-initiate consultation when "new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered" and . . . "if a new species is listed . . . that may be affected by the identified action." Both situations have occurred with this project. . . . Since issuance of the 2011 opinion, effects on listed species that were not previously considered under the original consultation and listing of

[124] Corps (Feb. 2017), Port navigates into 21st Century: Port Everglades harbor improvement plans continue through 2017; Port Everglades Frequently Asked Questions.
[125] See Exhibits 2-3, attached to Letter from Rachel Silverstein (Miami Waterkeeper) to Jason A. Kirk (Corps), dated March 1, 2017.

> new species in the project area have occurred.[126]

NMFS concurred, stating in its May 14, 2015, letter to the Corps:

> NMFS unequivocally reiterates that the sedimentation actually experienced at the Port of Miami greatly exceeds the amount that we predicted in our BO, both in area affected and environmental consequences, and that reinitiation of consultation was required to consider these unanticipated sedimentation effects.[127]

Both agencies agree that the effects in Miami exceeded those permitted under the 2011 Biological Opinion, thus necessitating three instances of reinitiation of consultation during and after the project. NMFS did not issue a subsequent Biological Opinion. Therefore, it is incorrect for the Corps to represent to the public that the Port of Miami project was carried out in accordance with the terms and conditions of the Biological Opinion. Furthermore, the Corps is not conducting a survey of the affected area along with NMFS and DEP. Rather, the Corps' contractor, Dial Cordy, is conducting the survey without the help of NMFS or DEP.

A subsequent "Frequently Asked Question" stated:

> *Did the Miami Harbor Deepening Project cause excessive coral or coral reef damage?*

The answer from the Corps:

> *No. Critics of the Miami deepening have made numerous statements that overstate the extent and degree of the project's effects.*

This is a false statement. The expert federal agency, NMFS, and the Corps have both made statements acknowledging the excessive impacts resulting from the Port of Miami dredging. Miami-Dade County, the Florida Department of Environmental Protection ("DEP"), NMFS, and the Corps' own contractors have also reported that excessive coral damage did, in fact, occur as a result of the Miami Harbor expansion project.[128]

Even if there were no prior studies or statements conclusively demonstrating the excessive coral impacts (which is the case), the FAQ document repeatedly pointed out that surveys are still ongoing. Therefore, it was inappropriate for the Corps to conclude that there were "no" coral-related project impacts, while stating that surveys are ongoing (and while ignoring previous findings from its own contractors and NMFS).

---

[126] Letter from Eric P. Summa (Corps) to David Bernhart (NMFS), dated January 27, 2016 and attached Supplemental Biological Assessment for the Reinitiation of Consultation under Section 7 of the ESA – PortMiami Navigation Project (Ex. K to the Statement of Material Facts).

[127] Letter from David Bernhart (NMFS) to Jason Spinning (Corps), dated May 14, 2015 (Ex. OO to Statement of Material Facts).

[128] *See supra* Section I(D).

Furthermore, blaming "project critics" for overstating the project impacts is disingenuous. No evidence of such "overstated claims" has ever been provided. This statement fundamentally ignores that the "project critics" referenced include the expert federal agency for this project, NMFS. The Corps should be deferring to NMFS on questions of scientific findings and determination of impacts, rather than publicly deriding and repeatedly ignoring its findings.

Miami Waterkeeper sent a letter to the Corps pointing out errors with the photo included in the Corps' FAQ document on March 1, 2017.[129] The Corps responded, confirming the mistake it made regarding the picture in a March 10, 2017, letter to Miami Waterkeeper, and stating that the Corps removed the document from its website.[130] On March 24, 2017, the Corps further distributed an "updated fact sheet," which removed the bulk of the misinformation from the original document, but which still denies excessive impacts at the Port of Miami. Although we appreciate that the Corps removed the original document from its website and provided an "updated" FAQ document, the public only just received these updates on March 24, 2017 – one business day before the public comment period for rescoping was scheduled to close. The updated fact sheet and public notice also did not spell out the prior errors for the public or notify them that the updated fact sheet was correcting prior errors. We urge the Corps to exercise more care distributing information to the public in the future, to immediately retract any errors once aware of them, and more promptly notify the public of those errors.

It is not appropriate for the Corps to disseminate inaccurate information to the public and violates the Information Quality Act – a federal statute requiring all federal agencies to "maximize the quality, objectivity, utility, and integrity" of any information released to the public.[131] In order to accurately inform the public and facilitate a meaningful, lawful NEPA process, we hope the Corps will acknowledge impacts from the Miami project, rather than perpetuate the false narrative that impacts are undetermined or insignificant. Further, it is imperative that the Corps fully recognizes its errors and mistaken assumptions as part of the supplemental NEPA process.

3. The Corps must define the indirect impact zone as extending a minimum of 1,000 meters from the channel.

The recent dredging at the Port of Miami is a direct reference for potential impact zones in Port Everglades. Sedimentation and associated lethal impacts to corals definitively occurred out to at least 750 meters of the Port of Miami shipping channel, and likely beyond 1,000 meters from the channel, despite pre-construction assurances that sediment impacts would be minimal. Therefore, the Corps should evaluate impacts of turbidity and sedimentation in a concentrated and routine fashion beyond 150 meters and extending to at least 1,000 meters from the channel, with some additional monitoring extending over 10 kilometers from the site. Including this larger swath would address the full area in which state agencies observed dredging plumes during construction at the Port of Miami. Control sites should be located well outside of this area

[129] Letter from Rachel Silverstein (Miami Waterkeeper) to Jason A. Kirk (Corps), dated March 1, 2017.
[130] Letter from Jason A. Kirk (Corps) to Rachel Silverstein (Miami Waterkeeper), dated March 10, 2017.
[131] Consolidated Appropriations Act, 2001, Pub. L. No. 106-554, § 515, 114 Stat. 2763.

because, at the Port of Miami, many control sites showed signs of also being affected by dredging-related sediment impacts.[132]

The extensive and uncontrolled sedimentation impacts that occurred at the Port of Miami are the center of ongoing litigation,[133] state Water Quality Certification ("WQC") violations,[134] and documented impacts to listed coral species and Essential Fish Habitat.[135] DEP, the Miami-Dade County Division of Environmental Resources Management (DERM), and NMFS each documented impacts well beyond 150 meters at the Port of Miami (Extent of sediment impacts noted by: DEP >200m,[136] DERM ~450 m,[137] NMFS >700m,[138] and Dial Cordy ~750m[139]).

NMFS expressed numerous times that a 150-meter buffer zone is insufficient for the Port Everglades Project. For example, in a letter to the Corps, dated August 12, 2013, NMFS stated:

> [I]ndirect impacts to coral and hardbottom habitat would result within the 150 meter zone around the channel, [but] NMFS does not agree that sedimentation and turbidity impacts would be limited to this zone.[140]

In the FEIS, the Corps only predicted direct impacts to 14.62 acres of coral reefs and hardbottom habitats, and indirect impacts to 0.71 acres of reef.[141] These numbers must be updated to include improved predictions of likely acreage of sediment impact based on new information. In addition, scientists have recently discovered large thickets of staghorn coral in Broward County near Port Everglades.[142] These formations are extremely rare and any potential

---

[132] NMFS (April 2016), Port of Miami Lessons Learned presentation, attached as Ex. 4 to this letter.
[133] *Biscayne Bay Waterkeeper et al., v. U.S. Army Corps of Engineers,* Case No. 14-CV-23632-FAM (S.D. Fla. 2014).
[134] Letter from Mark Thomasson (DEP) to Eric Summa (Corps), dated Aug. 18, 2014 (Ex. Z to Statement of Material Facts).
[135] NMFS (Feb. 13, 2015), Port of Miami *Acropora cervicornis* Relocation Report – Final Report (Ex. GG to Statement of Material Facts).
[136] Field Notes on Impact Assessment in Miami Harbor Phase III Federal Channel Expansion Permit # 0305721-001-BI, executed Sept. 23, 2014 (Ex. T to Statement of Material Facts).
[137] Miami-Dade Department of Regulatory and Economic Resources, Division of Environmental Resources Management (July 2014), US Army Corp [sic] of Engineer's Port of Miami Channel Deepening Project: Report on Opportunistic Hardbottom/Reef Inspections. Miami-Dade County DERM observed "signs of coral 'stress' and excessive sedimentation at the 'Port of Miami Natural Transplant Area'" mitigation reef location approximately 450 meters away from the dredging site dredging (1500 ft.). *Id*. at 1.
[138] NMFS (April 2016), Examination of Sedimentation Impacts to Coral Reef along the Port of Miami Entrance Channel, December 2015, Final Report, at 8 (Ex. UU to Reef Guard Statement of Material Facts); Miller, M.W., et al. (November 17, 2016), Detecting sedimentation impacts to coral reefs resulting from dredging the Port of Miami, Florida USA, PeerJ 4:e2711;DOI 10.7717/peerj.2711, attached as Ex. 1 to this letter; Letter from David Bernhart (NMFS) to Jason Spinning (Corps), dated May 14, 2015 (Ex. OO to Statement of Material Facts).
[139] Dial Cordy and Associates, Inc. (Aug. 2015), Delineation of Potential Sedimentation Effect Area within Middle and Outer Reef Habitats Port of Miami Phase III Federal Channel Expansion Project, FDEP Permit #0305721-001-BI, at 42 (Ex. QQ to Reef Guard Statement of Material Facts).
[140] Letter from Roy E. Crabtree (NMFS) to Col. Alan Dodd (Corps), dated Aug. 12, 2013.
[141] 2015 FEIS at iv, 187.
[142] Southeast Regional Office, Protected Resources Division, NMFS (March 3, 2015), Recovery Plan for Elkhorn Coral (*Acropora palmata*) and Staghorn Coral (*A. cervicornis*), at I-6; Vargas-Ángel, B., J.D. Thomas, and S.M. Hoke (2003), High-latitude Acropora cervicornis thickets off Fort Lauderdale, Florida, USA, Coral Reefs 22: 465-473; 2014 BiOp at 43.

direct or indirect impacts to this unique habitat must also be considered.

In the FEIS, the Corps also considered impacts to essential fish habitat that only occurred within the 150-meter indirect impact zone.[143] The supplemental EIS must take into account potential impacts to Essential Fish Habitat out to at least 1,000 meters from the dredging. Additionally, the cost associated with mitigation and monitoring for impacts up to at least 1,000 meters must be factored into the estimated project cost and the cost/benefit analysis for Port Everglades (see below).

4. The Corps must conduct relevant modeling that has been verified with field data.

The Corps has repeatedly stated that it is conducting sediment transport models for Port Everglades.[144] The Corps should employ modeling that uses field data for validation and occurs over an ecologically-relevant time frame. The Corps should ensure that the sediment transport models are not only computer simulations or numerical models, but are also calibrated with field conditions, sediment type, dredged sediment type, overflow material, and other highly-customizable inputs unique to this environment and to dredging-type sediments specifically. All models must go through a rigid verification process with field data. Data from the model (or another model) should not be used to verify the model's outputs, which is self-referential and can lead to errors. A Using single current or flow speed for the entire water column, for example, is inappropriate, as flow changes widely over the water column.

Ultimately, to understand how sediment may impact the benthos, specific current and flow measurements from the surface through the water column must be taken, especially at the bottom of the water column. This is particularly critical near tidal inlets with rapid water flow in and out at different times during the day. Similarly, waves and wave-driven circulation patterns must be incorporated into the model. Even with these considerations, sediment transport models still have vast limitations in predicting sediment plume behavior. Sediment moves in the system in a three-dimensional way, but models typically capture sediment movement in only two dimensions. Over-reliance on models, therefore, will inevitably lead to inaccurate assumptions due to limitations of the model. Incorporation of the extent of sediment-related impacts at the Port of Miami should therefore also be included in designing monitoring and mitigation schemes.

5. The Corps must consider the disease outbreak that occurred in Miami during dredging and links between dredging and disease.

Dredging-related disease impacts on corals should be considered in Port Everglades. Pollock et al. 2014 showed that corals exposed to chronic dredging sediments are twice as likely to develop diseases.[145] Although this study was conducted in Australia, the dominant coral genera in the study (*Acropora*) is the same genera as South Florida's threatened staghorn and elkhorn coral. It is common and well-accepted practice in the field to utilize studies from Pacific

[143] *See* 2015 FEIS, App. H.
[144] *See. e.g.*, Letter from Gina P. Ralph (Corps) to the public, dated Sept. 27, 2016; Letter from Gina P. Ralph (Corps) to David Bernhart (NMFS), dated Sept. 27, 2016.
[145] Pollock, F. J., et al. (2014), Sediment and turbidity associated with offshore dredging increase coral disease prevalence on nearby reefs. PloS ONE, 9(7), e102498.

corals to understand the biological response of Caribbean corals. The Corps' responses to comments regarding this study in the FEIS are erroneous. The Corps incorrectly stated that Pollock et al. 2014 did not examine potential heat-related impacts and a bleaching event. This is incorrect. The article abstract states:

> Multivariate modeling and ordination incorporating sediment exposure level, coral community composition and cover, predation and multiple thermal stress indices provided further confirmation that sediment plume exposure level was the main driver of elevated disease and other compromised coral health indicators.

Bleaching and heat events were therefore incorporated into the findings. Exposure to dredging sediment, for a comparable length of time to the Port of Miami dredging, was still found to be the primary driver of elevated coral disease prevalence. Continuing to ignore and discount this study, therefore, is inappropriate, and does not meet the Corps' obligation under NEPA to use high quality, accurate scientific information.[146]

During the Port of Miami dredging project, scientists observed major outbreaks of white plague disease beginning in the fall of 2014. Precht et al. 2016 concluded that the origin of this region-wide outbreak was the nearest site in their study to the Miami Harbor dredging, just off of Key Biscayne, and the outbreak spread from there.[147] Reports from the DEP correspond closely to Precht's report of the origin of the disease outbreak.[148] Furthermore, Dial Cordy's data distinguishing disease-related mortality from sediment-related mortality at the Port of Miami sites on the northern middle reef show higher disease near the dredging than at the control sites.[149]

Figure 4: DEP maps of coral disease reports along the Florida Reef tract from 2014-2016.

The best available science demonstrates that, at the very least, the region-wide disease outbreak that started in 2014 was highly synchronized with the dredging over space and time and

[146] 40 C.F.R. § 1500.1(b).
[147] Precht, W.F., et al. (2016), Unprecedented Disease-Related Coral Mortality in Southeastern Florida, Scientific Reports 3:31374, DOI: 10.1038/srep31374.
[148] Dial Cordy and Associates, Inc. (Aug. 2015), Delineation of Potential Sedimentation Effect Area within Middle and Outer Reef Habitats Port of Miami Phase III Federal Channel Expansion Project, FDEP Permit #0305721-001-BI, at 54 (Table 5) (Ex. QQ to Reef Guard Statement of Material Facts).
[149] Dial Cordy (Dec. 19, 2014), Monthly Delineation of Potential Sedimentation Effect Area within Nearshore Hardbottom (October 2014).

that the dredging was a contributory cause. Further, it is highly possible that the sedimentation impacts on corals acted synergistically with other impacts such as bleaching and an overall depression of the coral immune response by sediment due to abraded tissue areas and the energetic expense of removing chronic sedimentation from the colony surface. Like an immune-compromised person finally succumbing to pneumonia, the multiple stressors on corals may have led to this "unprecedented" outbreak. This is deeply concerning and could indicate a widespread and long-lasting impact to coral reefs. This possibility must be fully analyzed by the Corps and considered as a part of the mitigation planning for this project in the supplemental EIS.

6. The Corps should not use storms as proxies for dredging impacts.

It is inappropriate to use the impacts of hurricanes and storms as proxies for predicting the potential sedimentation impacts from dredging. The biological impacts of the two events are dramatically different on benthic organisms. First, hurricane and storm impacts last only hours to days, whereas dredging impacts are chronic (e.g., at least 15 months of active dredging, in the case of the Port of Miami). Chronic impacts from sedimentation and turbidity are far more damaging to corals, despite a potentially an equal or greater total volume of sediment being distributed at one time during a storm.[150]

Further differentiating these impacts, hurricanes and storms suspend coarse, natural sediments already present on reef habitat. Dredging, by contrast, releases additional sediment into the system, allowing for more of the benthos to be buried and to overwhelm available interstitial space on the surface. Also, while coarse sediments have interstitial spaces to allow for oxygen flow through the sediment, dredging-related sediments are typically fine in nature and therefore compact, "sticky," and quickly become anoxic.

The Corps inappropriately used hurricanes as proxies in both its FEIS for the Port Everglades Project[151] and in the Supplemental Biological Assessment ("BA") for the Port of Miami project, submitted to NMFS in January 2016.[152] The 2016 Supplemental BA cites Blair et al. 1994, which reported sedimentation after Hurricane Andrew on reefs near Miami.[153] That study showed the sediment dissipating from the reef environment in just two months. However, evidence from the Miami dredging project shows that the dredging sediment has now persisted for at least 15 months post-dredging.[154] This, alone, is further evidence that hurricanes are not appropriate predictors of the severity or duration of sediment-related dredging impacts.

The Corps' 2016 BA goes on to state that, "Barnes et al (2015) propose an impact analysis using hurricanes and tropical storms as a proxy for dredging impacts (similar to the

[150] Pollock, F. J., et al. (2014), Sediment and turbidity associated with offshore dredging increase coral disease prevalence on nearby reefs. PloS ONE, 9(7), e102498; Facts about Dredging Around Coral Reefs (2011), An Information Update from the International Association of Dredging Companies, attached as Ex. 3 to this letter.
[151] 2015 FEIS at 192-94.
[152] Letter from Eric P. Summa (Corps) to David Bernhart (NMFS), dated January 27, 2016 and attached Supplemental Biological Assessment for the Reinitiation of Consultation under Section 7 of the ESA – PortMiami Navigation Project (Ex. K to the Statement of Material Facts).
[153] *Id*. at 36, 52-54.
[154] *See, e.g.*, Dial Cordy (Dec. 19, 2014), Monthly Delineation of Potential Sedimentation Effect Area within Nearshore Hardbottom (October 2014).

analysis [the Corps] performed for the Port Everglades final EIS)."[155] This is not accurate. Miami Waterkeeper Executive Director, Rachel Silverstein, was a co-author on Barnes et al. 2015 and can confirm that Barnes et al. 2015 *does not* propose hurricanes as proxies for dredging impacts, but rather just the opposite.[156] The Corps is misinterpreting a clear finding of Barnes et al. 2015. The Barnes paper's analysis, rather, distinguishes dredging-related sediments from natural turbidity events.[157] While turbidity levels during storms observed via remote sensing may *appear* similar to a dredging plume for an isolated period, dredging projects and their associated plumes, last for much longer periods than storms, and can have much more severe biological consequences for benthic organisms and longer-lasting impacts for the habitat than a hurricane. The Corps quotes Barnes' statement pointing out this fact, but for some reason, ignores the final phrase that distinguishes the man-made from the natural phenomena: "Thus, according to this analysis, impacts from the dredging activity in this particular region were at least on par with that following hurricane landfalls, **but spanning nearly 1.5 years.**"[158]

The 2016 BA also incorrectly cites the paper's figures, quoting from the paper regarding turbidity anomalies shown in Figure 4 of the paper, but presenting an annotated version of Figure 5 in the BA. From this figure, the Corps concludes that "this area, and subsequently the organisms that live in it, are frequently exposed to high levels of sedimentation and have evolved to respond to that stressor."[159] This is an erroneous conclusion for several reasons. First, the data does not support the conclusion that this area is "frequently exposed to high levels of sedimentation." Second, there is no remote sensing data that supports the biological conclusion that "organisms that live in [this area] … have evolved to respond to that stressor." There is also no biological data in the scientific record that supports that corals in this area have "evolved to respond to that stressor." The Corps is not properly utilizing the term "evolve."

The Corps' response to comments on the FEIS are also incorrect, stating, "[s]edimentation impacts have been shown to be temporary at the Port of Miami, where sediments deposited on the hardbottoms adjacent of the channel have been disbursing over time, as was demonstrated by the hurricane deposited sediments in Precht and Precht (2015)."[160] Precht and Precht (2015) is an inappropriate citation for supporting the Corps' statement, and provides no evidence about the disbursement of dredging sediments at the Port of Miami or whether they are "temporary." There remains no available scientific evidence that sediments have dispersed at the Port of Miami. (The Corps' attempt to produce evidence of this in federal court in Miami was false: the photo of a healthy reef and staghorn coral submitted in their pleadings labeled "Oct 2016" "450 m" was discovered to be from the Cayman Islands in 1992 and had to be retracted.)

---

[155] Letter from Eric P. Summa (Corps) to David Bernhart (NMFS), dated January 27, 2016 and attached Supplemental Biological Assessment for the Reinitiation of Consultation under Section 7 of the ESA – PortMiami Navigation Project, at 53 (Ex. K to the Statement of Material Facts).

[156] Barnes, B.A., et al. (2015), Sediment plumes induced by the Port of Miami dredging: Analysis and interpretation using Landsat and MODIS data, Remote Sensing of Environment, http://dx.doi.org/10.1016/j.rse.2015.09.023.

[157] *Id*.

[158] Letter from Eric P. Summa (Corps) to David Bernhart (NMFS), dated January 27, 2016 and attached Supplemental Biological Assessment for the Reinitiation of Consultation under Section 7 of the ESA – PortMiami Navigation Project, at 53 (Ex. K to the Statement of Material Facts) (emphasis added).

[159] *Id*. at 53-54.

[160] 2015 EIS, App. L

In short, naturally occurring, intermittent, and short-lived weather events should not be used as evidence that corals are "evolved" (or, more accurately, "adapted") to withstand man-made dredging impacts with no natural analogy. This analysis should therefore not be included in the supplemental EIS and would not represent the highest quality, accurate science required by NEPA.

7. The Corps must include a flooding and flushing model to analyze impacts.

An accurate model of the alteration in hydrodynamics, a flooding and flushing model, is crucial for this project and should be conducted before the project is permitted to move forward. This is especially so in light of the fact that this region of South Florida faces imminent threats from sea level rise. In an August 12, 2013, letter, NMFS recommend that "the [Corps] provide a detailed hydrographic assessment" for this project.[161] However, such a study has never been completed. Similarly, DEP also called for a flooding and flushing model to be completed as a condition of Coastal Zone Management Act consistency requirements.[162] The State's concern, and the fact that it has not been remedied, underscores that the model and associated costs should be factored into the overall project cost and the cost/benefit analysis. The Corps has yet to complete a flooding and flushing model for the Port Everglades Project. This analysis must be conducted and included in the supplemental EIS.

E. The Corps' supplemental EIS must fully evaluate cumulative effects.

The Corps failed to evaluate all the cumulative effects for coral reefs and other resources and ecosystems in the FEIS for the Port Everglades Project, as NEPA requires. The FEIS only contains a cursory discussion of other beach renourishment, port dredging, port expansion, and port construction projects as they may cumulatively affect resources in the area. The Corps ignored other federal and non-federal actions occurring or projected to occur in the area that affect coral reefs and the surrounding environment, including discharges from sewage and other land-based sources of pollution, fishing, and climate change. NEPA requires the Corps to include a detailed analysis of these other actions and their cumulative impacts to resources in the area.

1. NEPA requires agencies to fully evaluate cumulative effects.

NEPA requires agencies to identify the direct, indirect, and cumulative impacts of a proposed action. Cumulative impacts are impacts from "past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.[163] "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."[164] "Effects" or "impacts" (synonymous) include "ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative."[165]

[161] Letter from Roy E. Crabtree (NMFS) to Col. Alan Dodd (Corps), dated Aug. 12, 2013.
[162] 2015 FEIS, App. C.
[163] 40 C.F.R. § 1508.7.
[164] *Id*.
[165] *Id*. § 1508.8.

An agency is required to take the requisite "hard look" not only at the direct and indirect impacts of a project, but also at the cumulative effects.[166] In a cumulative impact analysis, "general statements about possible effects and some risk do not constitute a hard look. . . . The cumulative impact analysis must be more than perfunctory; it must provide a 'useful analysis of the cumulative impacts of past, present, and future projects."[167] The cumulative impact analysis must also include an assessment of potential interrelated impacts to the natural or physical environment.[168]

2. The Corps must take a "hard look" at all the cumulative effects of the Port Everglades Project, including an analysis of other current threats to Florida's coral reefs.

In the FEIS, the Corps narrowly limited its consideration of cumulative effects by only discussing dredging, beach renourishment, and port expansion and construction projects, most of which appear to be actions conducted or supervised by the Corps.[169] It provided a minimal description of these projects and summarily concluded that there would be no significant impacts to threatened coral colonies or their habitat. The Corps supported this conclusion by relying on its mistaken assumptions that there would be minimal and temporary impacts from sedimentation and that the impact zone only extended to 150 meters.[170] The Corps also relied on its faulty 2010 survey to justify the notion that threatened coral colonies would not be present in the project area.[171] This minimal analysis does not include the detail and quantification necessary to satisfy the "hard look" standard NEPA requires.

For example, the Corps entirely failed to account for all the past, current, and reasonably foreseeable future actions that do now, or will in the future, affect coral reefs. The cumulative impact analysis in the FEIS appears to be limited only to actions undertaken or supervised by the Corps, the Port, and Broward County. NEPA, however, requires the Corps to analyze all actions "regardless of what agency (Federal or non-Federal) or person undertakes such other actions."[172] Other actions that are impacting the coral reef environment near Port Everglades include sewage discharge that is introducing nutrients into the marine environment, leading to increased algae growth and turbidity, commercial and recreational fishing in the area, and boat anchorings directly impacting the hardbottom. In the 2014 Biological Opinion that NMFS prepared for the Port Everglades Project, NMFS noted numerous federal and non-federal actions that are

---

[166] *Florida Wildlife Federation v. U.S. Corps of Engineers*, 401 F. Supp. 2d 1298, 1326 (S.D. Fla. 2005); *see also Soda Mountain Wilderness Council v. Norton*, 424 F. Supp. 2d 1241 (E.D. Cal. 2006) ("[A] cumulative impacts analysis must include 'some quantified or detailed information' since without such information it is not possible for the court or the public to be sure that the agency provided the hard look that is required of its review.").
[167] *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 810 (9th Cir. 1999).
[168] 40 C.F.R. 1508.8; *see e.g., Wyoming v. U.S. Dept. of Agric.*, 661 F.3d 1209, 1251 (10th Cir. 2011) (explaining that a cumulative impacts analysis must consider all of the effects listed at 40 C.F.R. 1508.8); 40 C.F.R. § 1508.14 (when "economic or social and natural or physical environmental are interrelated," then the NEPA analysis must discuss "all of these effects on the human environment.").
[169] 2015 FEIS at 263-67.
[170] *Id*. at 268-73.
[171] Id. at 269 ("[N]o [staghorn or elkhorn] colonies were identified during the surveys conducted for this project.").
[172] 40 C.F.R. § 1508.7.

affecting coral colonies in the project area.[173] In addition, the Florida Senate Appropriations Chair has recently committed $50 million each year for beach renourishment projects which will likely have a negative impact on coral reefs.[174] The Corps must properly and fully include all the other actions affecting coral reefs in the area and consider the impacts the Port Everglades Project will have as compounded by these other stressors.

Furthermore, the Corps must include a discussion of the impacts of climate change on coral reefs. Climate change and associated ocean acidification is killing coral reef communities around the world. Reefs are expected to decrease globally by 70% as a result of climate change, under the best case scenarios. Reefs in Broward County have already started to deteriorate as a result of these conditions.[175]

The CEQ recently released guidance directing agencies how to address climate change in an EA or EIS that an agency produces under NEPA.[176] The guidance is applicable to all federal actions subject to NEPA.[177] The CEQ states that agencies should consider the effects of climate change on a proposed action and its environmental impacts. "[A] NEPA review should consider an action in the context of the future state of the environment."[178] Agencies should focus on aspects of the environment that are impacted both by the proposed action and climate change.[179] The guidance states that it is important for agencies to consider how climate change can make a resource or ecosystem more susceptible to impacts and lessen its resilience.[180] These considerations should inform decisions on whether to proceed, how to design a project, and how to eliminate or mitigate impacts.[181]

In the FEIS, the Corps only included minimal information about the effects of climate change. The Corps briefly discussed the impact of increased emissions from bigger ships as a result of the Port Everglades expansion and also evaluated the potential impacts of sea level rise on its planned seagrass and mangrove mitigation.[182] However, the Corps failed to analyze the impacts, both existing and future, of climate change on the marine environment, in particular the impacts of climate change on coral reef ecosystems. The Corps must include a full discussion of how climate change has affected coral reefs in the Port Everglades area and will continue to affect coral reefs into the future, either as part of a cumulative impacts analysis or as part of its direct or indirect impact analysis. The Corps must also evaluate the impacts of dredging during

[173] 2014 BiOp at 85-86.
[174] Ryan Mills (March 2, 2017), Florida Senate budget chief Latvala proposes overhaul of beach aid programs, Miami Herald, http://www.naplesnews.com/story/news/politics/2017/03/02/senate-leader-proposes-overhaul-state-beach-program/98628928/.
[175] Muehllehner, N., et al. (May 14, 2016), Dynamics of carbonate chemistry, production, and calcification of the Florida Reef Tract (2009-2010): Evidence for seasonal dissolution, Global Biogeochemical Cycles, Vol. 30, Issue 5, 661-688.
[176] CEQ (August 1, 2016), Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews.
[177] *Id*. at 9.
[178] *Id*. at 20. ("In addition, climate change adaption and resilience – defined as adjustments to natural or human systems in response to actual or expected climate change – are important considerations for agencies contemplating and planning actions with effects that will occur both at the time of implementation and into the future.").
[179] *Id*. at 21.
[180] *Id*.
[181] *Id*.
[182] 2015 FEIS at 246, 261-62

the Port Everglades Project in the context of climate change, including whether coral reefs may be impacted to a greater extent from sedimentation and other dredging impacts and whether coral reefs in the area may be less resilient or less likely to recover from any impacts.

Finally, the Corps must also analyze the impacts of increased ship traffic as a result of the Port Everglades expansion, either as part of its indirect impact analysis or cumulative impact analysis. The Port Everglades Project is expected to increase ship traffic which may result in indirect impacts to the marine environment. The Corps must include these related effects as part of its hard look analysis.

F. The supplemental EIS must evaluate a range of reasonable alternatives and fully evaluate monitoring and mitigation measures.

In the FEIS, the Corps stated that its objective is to "provide for increased navigational safety, efficiency, and improved economic conditions while limiting impacts to the environment."[183] Yet, the Corps did not evaluate any alternatives that would minimize impacts to coral reefs. As required by NEPA, the Corps must evaluate all reasonable alternatives, including those that would minimize harm to coral colonies.

In addition, the Corps must amend its mitigation plan to protect downslope reef areas, extend the scope of mitigation out to at least 1,000 meters from the channel, and place control location and relocation sites farther than 1,000 meters from the channel for mitigation and monitoring to protect corals. The Corps should also reduce turbidity limits near dredging areas, amend and finalize its monitoring plan before dredging begins to effectively detect coral stress, and stop dredging when problems arise. Finally, in order to adopt a sufficient monitoring and mitigation plan, the Corps must use third-party oversight.

1. NEPA mandates that agencies evaluate all reasonable alternatives and analyze potential mitigation measures.

The analysis of alternatives "is characterized as 'the heart' of the environmental impact statement."[184] In the environmental analysis, the agency must "[r]igorously explore and objectively evaluate *all* reasonable alternatives" in response to a "specif[ied] . . . purpose and need."[185] Without substantive, comparative environmental impact information regarding other possible courses of action, the ability of the supplement to inform agency deliberation and facilitate public involvement would be greatly degraded.[186] NEPA requires the development of "information sufficient to permit a reasoned choice of alternatives as far as environmental aspects are concerned."[187]

---

[183] 2015 FEIS at iii, 1.

[184] *Colo. Envtl. Coal. v. Dombeck*, 185 F.3d 1162, 1174 (10th Cir. 1999) (quoting 40 C.F.R. § 1502.14).

[185] 40 C.F.R. §§ 1502.13, 1502.14(a) (emphasis added); *see also New Mexico ex rel. Richardson*, 565 F.3d 683, 703(10th Cir. 2009) (stating that "an EIS must 'rigorously explore and objectively evaluate' all reasonable alternatives to a proposed action, in order to compare the environmental impacts of all available courses of action" (quoting 40 C.F.R. § 1502.14)).

[186] *See Baltimore Gas & Elec. Co. v. Natural Res. Defense Council*, 462 U.S. 87, 97 (1983).

[187] *Colo. Envtl Coal.*, 185 F.3d at 1174 (quotations and alteration omitted). *See also New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 708 (10th Cir. 2009).

NEPA's statutory language implicitly charges agencies with mitigating the adverse environmental impacts of their actions.[188] Mitigation measures are also required by NEPA's implementing regulations.[189] The CEQ has stated: "All relevant, reasonable mitigation measures that could improve the project are to be identified, even if they are outside the jurisdiction of the lead agency or the cooperation agencies."[190] According to the CEQ, "[a]ny such measures that are adopted must be explained and committed in the [record of decision]."[191]

"[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the 'action-forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects."[192] A "perfunctory description," of mitigation, without "supporting analytical data" analyzing their efficacy, is inadequate to satisfy NEPA's requirements that an agency take a "hard look" at possible mitigating measures.[193] Moreover, in its final decision documents, an agency must "[s]tate whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not."[194]

The CEQ also recognizes that the consideration of mitigation measures and reasonable alternatives is closely related. For example, CEQ's guidance on mitigation and monitoring states that "agencies may commit to mitigation measures considered as alternatives in an EA or EIS so as to achieve an environmentally preferable outcome."[195]

2. The supplemental EIS must analyze alternatives that reduce or mitigate damage to coral colonies.

In the FEIS, the Corps included as an objective the need to minimize environmental impacts. In order to meet that objective, the Corps should evaluate reasonable alternatives, including the following:

a. <u>The Corps must analyze employing an environmental window (*i.e.*, a dredging restriction) before and during coral spawning and snook spawning periods in order to avoid undue disruption of reproduction for these vital species.</u>

As summarized in NMFS's November 8, 2016, letter to the Corps, pausing dredging before and during coral spawning will avoid disruption of reproduction and recruitment, as well

---

[188] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351-52 (1989); *Holy Cross Wilderness Fund v. Madigan*, 960 F.2d 1515, 1522 (10th Cir. 1992).
[189] 40 C.F.R. §§ 1502.14(f), 1502.16(h).
[190] Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed. Reg. 18,026, 18,031 (March 23, 1981).
[191] *Id*. at 18,036.
[192] *Robertson*, 490 U.S. at 353.
[193] *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1380 (9th Cir. 1998).
[194] 40 C.F.R. § 1505.2(c).
[195] Council on Environmental Quality, Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact (Jan. 14, 2011) at 1; *see also id.* at 6-7 ("When a Federal agency identifies a mitigation alternative in an EA or an EIS, it may commit to implement that mitigation to achieve an environmentally-preferable outcome.").

as allow the habitat to recovery from sedimentation and turbidity stressors during the hottest time of the year, when corals also may be exposed to high temperature stress.[196] This may prevent mortality from bleaching and subsequent disease, and result in improved reproduction and recruitment. Broadcasting corals, such as ESA-listed *Acropora cervicornis* and *palmata*, as well as *Orbicella faveolata*, for example, are particularly vulnerable to stress just before and during their annual spawning periods. Their larvae must traverse the water column to find suitable recruitment habitat. These species are also vulnerable to water quality changes. It is now known that suspended sediment can also reduce sperm and egg viability, egg-sperm encounters, and larval swimming in these coral species. Notably, coral larval settlement and survivorship on sediment-covered surfaces is near zero.

In other parts of the world, cessation of dredging during coral spawning events is commonplace. In Western Australia, for example, environmental windows can be as long as five months. We request that the Corps consider environmental windows of various lengths of time to support coral reproduction.

In addition, the common snook, *Centropomus undecimalis*¸ is one of Florida's most popular inshore game fish and an economically valuable resource to the state. Found in the waters near Port Everglades, these fish grow to 48 inches and have been found up to 38 pounds.[197] Common snook distribution extends from Cape Canaveral on the east coast, around Florida Bay, and along the west coast to Tarpon Springs. Snook spawning occurs in South Florida over the summer from April or May to September or October depending on annual variations in climate and temperature.[198] Snook spawning generally occurs at the mouths of major inlets or coastal rivers – including the channel to Port Everglades.[199] A snook spawning aggregation may contain several hundred fish, which are known to return to the same location each year to spawn.[200] Snook can be (and have been) easily overfished because they reach maturity between the ages of 4 and 6 and may live over 20 years.[201]

Common snook has been listed as a "species of special concern" in the state of Florida due to overfishing, habitat loss, and historic unseasonably cool winters.[202] Notably, the snook's primary habitat – mangrove shoreline – has experienced a precipitous decline in the last century, decreasing by more than half in the area.[203] Snook are an important economic driver for our

[196] Letter from Roy E. Crabtree (NMFS) to Col. Jason A. Kirk (Corps), dated Nov. 8, 2016.
[197] Taylor, R.G. (2000), Management of Common Snook in Florida.
[198] Taylor, R.G., et al. (1998), Spawning rhythms of common snook in Florida, Journal of Fish Biology, 53, 502-520, Article No. jb980721.
[199] Young, J.M., et al. (2016), Spawning Site Fidelity, Catchment, and Dispersal of Common Snook along the East Coast of Florida, Transactions of the American Fisheries Society, 145:2, 400-415, DOI:10.1080/00028487.2015.1131741.
[200] *Id*.
[201] Taylor, R.G. (2000), Management of Common Snook in Florida.
[202] *Id*.
[203] Bruger, G.E., and K.D. Haddad (1986), Management of tarpon, bonefish, and snook in Florida. In R.H. Stroud (ed.) Multi-jurisdictional management of marine fishes: Marine Recreational Fisheries II. Proceedings of the eleventh annual marine recreational fisheries symposium. Tampa, FL. May, 1986. National Coalition for Marine Conservation, Inc.

fishing industry – resulting in over 996,000 angler days per year, over 1,700 jobs, over $100 million in retail sales, over $50 million in income, and over $20 million in tax revenue.[204]

There is a documented snook aggregation alongside the Port Everglades shipping channel. In this particular area, the snook gather near a rock wall along the Outer Entrance Channel. As such, we encourage the Corps to avoid blasting and dredging in this area when the snook aggregation is present, particularly during the summer spawning season. Blasting would result in a catastrophic loss to the snook population in Fort Lauderdale which would impact both the recreational and commercial fishing industries. Dredging during spawning season may also reduce reproductive success and aggregating behavior by decreasing water quality and scaring fish with loud vibrations and dredging activity near their aggregation site. Disruption of this newly-discovered and potentially potent snook aggregation site could affect snook populations for the entire region and along the course of this species' migratory route.

Figure 5: Map of reported snook aggregation site (Credit: Justin Buehler)

Figure 6: Snook aggregation at Port Everglades recorded by Justin Buehler at the location indicated in the map above. (Screen grab of video available at Justin Buehler's You Tube channel via Deep Shot Productions, "Unbelievable Underwater Footage of Snook Spawning Population at Port Everglades."

b. <u>The Corps Must Consider Reasonable Alternatives that Eliminate Discard of Sediment from Scows.</u>

Some of the major impacts at the Port of Miami likely came from dewatering or overflowing the scows directly on top of the reef area.[205] Rock chopping and the use of "green

[204] Fedler, T. (Dec. 2009), The Economic Impact of Recreational Fishing in the Everglades Region, prepared for The Everglades Foundation.

valves" also seemed to have contributed to excessive sedimentation and should be prohibited at Port Everglades. Chronically-leaking scows were a major issue at the Port of Miami and were not remedied. The dredging contractors had no permission to leak dredging sediment en route to the offshore disposal site and were barred from using leaking scows, but this practice still occurred with some routine frequency at the Port of Miami. In their June 5, 2015, letter to the Corps, the EPA identified 125 non-compliance events during the Port of Miami project, including excessive leaking, misplaced materials, open scows, and more.[206] The Corps should undertake an examination of how to reduce or eliminate these practices. The EPA has presented to the Interagency Working Group several considerations that the Corps should fully consider as part of the supplemental EIS to avoid and minimize impacts.[207] One alterative that should be considered is transporting dredging material via pipe directly to the off-shore disposal site in order to avoid using transport barges and scows altogether.

3. The supplemental EIS must include adequate mitigation measures.

The mitigation plan in the FEIS as currently written is inadequate to protect coral colonies and the marine environment.[208] Although the Corps included more mitigation in the current FEIS for the Port Everglades Project than it included for the Port of Miami, the analysis relies on the same flawed data, assumptions, and methodologies that the Corps used in Miami. The planned mitigation for Port Everglades does not account for the likelihood of more severe or widespread sediment-related impacts based on the outcomes in Miami as described in more detail above. The Corps must update its mitigation plan in its supplemental EIS to fully minimize impacts.

In order to determine the mitigation needs for hardbottom habitats, the Corps conducted a Habitat Equivalency Analysis that accounted for anticipated impact acreages and recovery times to calculate the overall loss of habitat function in the FEIS. While we are in support of the use of an HEA to determine the scope of these impacts, the prior mitigation calculation only called for the Corps to consider impacts to habitat out to 150 meters away from the channel as part of the indirect impact area that might be affected by sedimentation.[209] In that analysis, the Corps assumed that only 2% of the coral habitat area within 150 meters would suffer a permanent loss of ecosystem services, defined as "services performed by a resource for the benefit of other resources or the public."[210] In its comments on the FEIS, the EPA noted that the Corps' mitigation may not be sufficient to account for uncertainties about impacts and that available funding may not be available for needed mitigation.[211] NMFS also noted concerns regarding the Corps' mitigation plan.[212]

---

[205] Letter from (EPA) to Eric Summa (Corps), dated Dec. 23, 2014 (Ex. V to Statement of Material Facts).
[206] Letter from James D. Giattina (EPA) to Eric Summa (Corps), dated June 5, 2015. (Ex. II to Statement of Material Facts).
[207] EPA Other Issues of Concern re. Port Everglades Harbor Expansion Project: Port Everglades Interagency Working Group Meeting – Orlando, FL, July 26-27, 2016, attached as Ex. 2 to this letter.
[208] *See* 2015 FEIS, App. E
[209] *Id*.
[210] *Id*.
[211] 2015 FEIS, App. L.
[212] *Id*.

In its response to comments, the Corps stated that it would monitor the area for additional impacts beyond 2%, and mitigate as needed.[213] It also stated that it could fund any additional, needed mitigation through contingency funds.[214] However, outcomes in Miami belie this response. In Miami, the Corps underestimated impacts to such a large extent that monitoring and additional mitigation were insufficient to properly minimize the impacts, as described above. The costs of additional mitigation in Miami will likely be significant and any "contingency funds" are unlikely to be able to cover additional costs at Port Everglades, especially if extensive mitigation is needed. Therefore, a full cost-benefit analysis should be conducted after a scientifically-sound mitigation, monitoring, adaptive management, and impact minimization plan has been devised.

In addition, the Corps must protect downslope reef habitats as part of its mitigation measures. NMFS noted in its comments on the draft EIS:

> Coral reef communities in the channel would be directly impacted through (1) removal by the dredge; (2) coral fragments and dredged material, including rubble and sediments, moving downslope or down current and shearing coral reef organisms from the substrate; and (3) fractures in hardbottom and lithified coral propagating into the reef framework, thereby destabilizing attachment of coral reef organisms. The latter two impacts create an unstable coral reef environment resulting in lower coral abundance and fewer large coral colonies. The steeply sloped, eastward facing spur-and- groove reef habitats are particularly at risk from the downslope movement of sediment and rubble. Stabilizing the seafloor following the dredging at Port Everglades may be the most significant measure that could minimize post-injury impacts on the surrounding reef communities and newly established reef organisms on uncovered substrate (Dial Cordy and Associates 2006).[215]

The Corps' response to this concern is that the Corps will mitigate for any below-dredge-depth impacts to not-previously-impacted hardbottom.[216] However, stabilizing the hardbottom following dredging would *prevent* this damage and avoid future mitigation costs. Furthermore, the Corps' response to previous comments on this topic is simply that it has not done this stabilization in projects before; however, reef stabilization is an established restoration method. Just because the Corps has not undertaken this effort before does not mean that it cannot be done. This response is contrary to the Corps' claims that it purports to be investing into and improving this project by exploring new technologies. The Corps has successfully had divers within channels and has been able to coordinate safely with the Port in past projects.

Because it would constitute an avoidance and minimization measure, reducing potential environmental impacts to reefs, including ESA-listed corals, an examination into the feasibility

[213] *Id*.
[214] *Id*.
[215] 2015 EIS, App. L.
[216] *Id*.

of stabilization should be required as a part of the project scope and requirements and included as part of the mitigation plan in the supplemental EIS.

4. The Corps must reduce the turbidity limits for dredging near reef areas.

The FEIS notes a turbidity limit of 29 NTUs, which is the same as the permit-mandated NTU limit at the Port of Miami.[217] This high turbidity limit proved ineffective in the Port of Miami to protect adjacent reefs from dredging impacts. Because the Corps claims that there have only been a handful of turbidity violations in the Miami project, either the observed sediment damaged must have occurred within this 29 NTU limit or turbidity monitoring was not conducted properly to capture violations. Allowing another project to take place near fragile reefs with this 29 NTU turbidity limit is not prudent.

Exhibit 7:Landsat image accessed April 24, 2014 showing an immense plume of turbidity at the Port of Miami.

NMFS pointed out in its August 12, 2013, comment letter to the Corps that a 29 NTU limit is "not conservative and should be reevaluated."[218] We urge the Corps to reconsider its limit based on advice from NMFS.

Turbidity from sediment plumes can shade corals, making it difficult for them to obtain energy from sunlight via their symbiotic algae. This results in decreased energy stores for corals, leading to slower growth, reduced reproduction, and greater disease risk. Atlantic *Acropora*, specifically, are known to be reliant on access to sunlight for fulfilling their energetic needs, as they are poor feeders, and are therefore unlikely to be able to compensate for a loss of energy from shading.

Staghorn corals are known to be among the most susceptible Caribbean coral species to turbidity stress.[219] The Corps' response to previous comments about this issue is erroneous. The Corps negates Rogers et al.1979 findings regarding the susceptibility of staghorn corals to

[217] 2015 FEIS at 236.
[218] Letter from Roy E. Crabtree (NMFS) to Col. Alan Dodd (Corps), dated Aug. 12, 2013.
[219] Rogers, C.S. (1990), Responses of coral reefs and reef organisms to sedimentation, Marine Ecology Progress Series 62:185-202.

turbidity by instead calling the impacts only "shading."[220] Rogers et al. 1979, however, clearly states that the intention of the study and the use of artificial shading are to serve as a proxy for "extreme turbidity," experienced during the chronic suspension of sediment as during dredging.[221]

By contrast, the Corps erroneously used Rogers 1983 to understand staghorn corals' ability to deal with chronic addition of dredging sediments.[222] However, the Corps ignored the concluding line of Rogers (1983), which states, "[These] experiments involved transient stress from sediments. **With the chronic introduction of sediments in lethal or sublethal doses, as in dredging, more damage would result**."[223] The FEIS reads, "Additionally, Rogers (1983) tested sedimentation rates on *A. cervicornis*, among other coral species, and determined that daily doses of sediment at a rate of 200 mg/cm2/day had no effect (Rogers 1990)."[224] The Corps also reiterates this error in their response to comments on the FEIS. [225] Ironically, Rogers 1983 makes clear that it should *not* be used as a proxy for chronic sedimentation.[226] By contrast, Rogers 1979 specifically states that the intention of the study is to serve as a proxy for chronic turbidity exposure, such as during dredging.[227]

The Corps responded to comments regarding this issue on the FEIS, stating that DEP, not the Corps, sets turbidity limits. However, because these NTUs are included in the FEIS and because the Corps has scientific information regarding the safety of these limits, the Corps should consider limits that will not be harmful to the reef as part of its mitigation plan and should not wait until the permit process to address this critical issue. Under NEPA, the Corps must divulge the full extent of impacts to the environment according to the most highly accurate scientific information and evaluate all reasonable mitigation measures that could avoid or minimize environmental harm. Moreover, under the ESA, the Corps must avoid jeopardy to listed corals based on the best available science. The Corps cannot hide behind an inadequate turbidity limit set by DEP – it has independent duties to disclose and avoid impacts under the law and must do so in the supplemental EIS.

Barnes et al. (2015) undertook an independent analysis of the dredging plume visible by remote sensing at the Port of Miami and differentiated the visible dredging-related plume from other natural variations, such as storms, runoff, and wind.[228] The paper determined that plumes during dredging were 5 times larger than naturally-occurring plumes and occurred up to 84%

---

[220] 2015 FEIS, App. L.
[221] Rogers, C.S. (1979), The Effect of Shading on Coral Reef Structure and Function, Journal of Experimental Marine Biology and Ecology, 41: 269-288.
[222] 2015 FEIS, App. L.
[223] Rogers, C.S. (1979), The Effect of Shading on Coral Reef Structure and Function, Journal of Experimental Marine Biology and Ecology, 41: 269-288 (emphasis added).
[224] 2015 FEIS at 236.
[225] *Id*. at App. L. The Corps routinely misinterprets or misuses scientific information and should improve its protocols and oversight when citing scientific papers to ensure that they are being properly interpreted and that they are, in fact, relying upon best available science and accurate interpretations of those studies.
[226] Rogers, C.S. (1983), Sublethal and Lethal Effect of Sediments Applied to Common Caribbean Reef Corals in the Field, Marine Pollution Bulletin, 14:10, 378-382.
[227] Rogers, C.S. (1979), The Effect of Shading on Coral Reef Structure and Function, Journal of Experimental Marine Biology and Ecology, 41: 269-288.
[228] Barnes, B.A., et al. (2015), Sediment plumes induced by the Port of Miami dredging: Analysis and interpretation using Landsat and MODIS data, Remote Sensing of Environment, http://dx.doi.org/10.1016/j.rse.2015.09.023.

more frequently than in baseline conditions pre-dredging.[229] These plumes also covered a reef area of up to 4 square miles (or over 11 km^2) after dredging began.[230] By estimating a similar range of sediment impacts and size of the turbidity plume in Port Everglades, the Corps is placing newly-discovered staghorn reefs at risk and those impacts must be included in the supplemental EIS. Furthermore, recently-documented staghorn colonies ~500 meters north of the channel will also be at risk. This information should be accurately incorporated into the supplemental EIS.

The Corps must set a lower, more realistic turbidity limit that will adequately protect reefs in the supplemental EIS. Turbidity monitoring should also utilize modern technology, like satellite imagery, real-time monitoring, and monitoring not just at the surface, but, critically, also at the benthos near the reef habitat. These technologies exist, are employed in dredging projects globally, and should be implemented by the Corps in this project. Perhaps most critically, not only should this monitoring be utilized, but stringent "shut down" criteria must be employed and enforced for the duration of the dredging. These limits should be mandatory, enforceable, and subject to third-party oversight.

5. The Corps should include an updated monitoring plan in the supplemental EIS.

The current Port Everglades FEIS and feasibility study are based upon monitoring plans developed for the Port of Miami project, which largely failed. The biological monitoring plan for Port Everglades has not yet been finalized, and therefore the estimated costs associated with such a plan have not been factored into estimated project costs or the cost/benefit analysis.[231] The Port of Miami monitoring plan has proven to be ineffective with regard to detecting impacts,[232] and will have to be reconsidered as required by the NMFS biological opinion issued for the Port Everglades expansion.[233] The DEP also stated that the monitoring protocol for the Miami Harbor project was not designed to document possible impacts beyond the monitoring stations.[234] For example, the sediment monitoring blocks did not accurately measure sediment, which the Corps acknowledged even before construction began, but, regardless, used ineffectively throughout the project.[235] For Port Everglades, if monitoring systems fail, the Corps should be required to fix them or find an alternate solution before proceeding with dredging.

Furthermore, monitoring should not just focus on scleractinan corals as indicator species. Non-scleractinan corals, such as sponges and gorgonian corals, can be key to understanding and differentiating region-wide natural fluctuations on the reefscape compared to project-related impacts. For example, in Miami, observations of sedimentation and mortality on non-

[229] *Id*.
[230] *Id*.
[231] 2015 FEIS, App. L ("[The Corps] also makes the commitment to revised the Port Everglades monitoring plan based on the lessons learned of the Miami Harbor project when the project is complete.").
[232] Field Notes on Impact Assessment in Miami Harbor Phase III Federal Channel Expansion Permit # 0305721-001-BI, executed Sept. 23, 2014 (Ex. T to Statement of Material Facts).
[233] 2014 BiOp at 102, 130-31.
[234] Memorandum from DEP to Corp Re. Corps Draft EIS for Port Everglades Harbor, dated June 20, 2014, at 10, FEIS, App. C.
[235] Miami Harbor Monthly Inter-Agency Coordination Meeting Minutes, April 3, 2014, at 3.

scleractinian corals were critical to differentiating project-related mortality from disease-related mortality, which primarily impacted scleractinian corals.

The monitoring plan should also consider reef rugosity. Rugosity on a reef, particularly at a small scale, provides vital habitat for reef organisms. At the Port of Miami, many cracks and crevices on the reef were filled in by sedimentation, giving the reef a homogenous "moonscape" appearance. The loss of that reef habitat was not accounted for or recorded in Miami, but should be at Port Everglades. Such habitat loss should also be incorporated into mitigation plans for Port Everglades. The plan should additionally clearly distinguish between "temporary" and "permanent" impacts to reef areas – scaling such impacts from the colony level to the regional level. We support the development of a new biological monitoring plan in a supplemental EIS. Because a new biological monitoring plan will have to be significantly modified to detect impacts, it should be made available for public comment through the draft supplemental EIS. Additional funding will likely be necessary for this more robust biological monitoring plan, and these costs have not been factored into the estimated cost/benefit analysis. We urge the Corps to develop and design a new biological monitoring plan for the Port Everglades Project to indisputably capture project-related impacts, and correct estimated costs and the cost/benefit analysis in the supplemental EIS.

6. The Corps must account for partial coral mortality.

Another issue with the biological monitoring plan at the Port of Miami was that it did not adequately define success criteria of relocated coral. As a result, highly misleading values of over 97% survivorship of staghorn transplants were reported, which did not consider partial mortality.[236] Some of the staghorn corals that were considered "successful" transplants had over 90% mortality, but because it was not 100% mortality, the corals were considered to be "successful" transplants. This is highly misleading. Partial mortality and total tissue survivorship is a critical variable to determine transplantation success. A net gain (or no net loss) of live coral tissue after two years is a more appropriate performance standard that should be employed by the Corps in the Port Everglades Project. Furthermore, corals monitored during the dredging should have a clearly recorded proportion of partial mortality for each colony and must accurately describe the cause of the partial mortality (e.g. predation, sedimentation, disease etc.). Success criteria should be reexamined, and consideration of the use of a "no net loss" of coral tissue should be incorporated.

[236] Coastal Systems, International, Inc. (Feb. 2015), Acropora cervicornis One Year Post-relocation Monitoring Report for the Miami Harbor Phase III Federal Channel Expansion Contract No. E12-SEA-03/Project No. 1999-027, prepared for PortMiami, at 21-22 (Ex. J to the Statement of Material Facts).

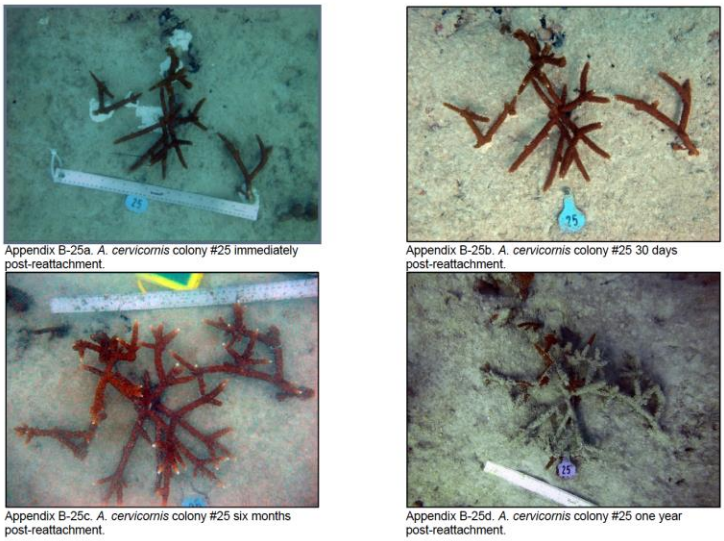

Figure 8: Figures from CSI's one-year Acropora relocation report (February 2015) on the condition of transplanted staghorn coral 25 one year post-relocation. Although after one year this coral is over 90% dead, (see Appendix B-25d), it was considered as a "successful transplant" because it still had a small portion of living tissue.

7. The Corps must consider third-party oversight as part of its monitoring and mitigation.

Many parties have raised serious concerns regarding the independence of the analysis conducted by the environmental compliance contractors during the Port of Miami dredging project. For example, NMFS questioned the veracity of the turbidity analysis being conducted.[237]

Contractors on the project, such as Dial Cordy, repeatedly downplayed the impacts of sedimentation on nearby corals, despite their own data clearly showing these impacts. NMFS also pointed this out in response to Dial Cordy's August 2015 Sediment Delineation report, in a letter to the Corps on September 11, 2015:

> However, in portions of the Executive Summary, Results, and the presentation delivered by [Dial Cordy] on August 24, 2015, NMFS believes coral disease is overemphasized as the singular cause of coral impacts. For example, the fifth paragraph of the Executive Summary presents the relative effects of sedimentation only in terms of total colony mortality as 1.2 percent of colonies; whereas partial (23.5 percent) and full mortality (18.5 percent) from disease is presented. This summary fails to acknowledge that up to 94 percent of colonies have sediment-related partial mortality at some sites (compared to seven percent at the related control site; Table 4). In this way, the report seems to selectively choose certain results to downplay the permanent effects of sedimentation to the

[237] Emails between NMFS and the Corps, dated Oct. 27-30, 2014 (Ex. FF to Statement of Material Facts).

area corals.[238]

In response to these concerns, it is essential that third party oversight of monitoring data and reports occurs during the Port Everglades Project. It does appear that steps are being taken to hire a third party monitoring organization and that the Interagency Working Group will be involved in the project.[239] However, contractors, such as Dial Cordy, are also present at these Interagency meetings. This potentially inhibit the agencies from adequately providing oversight of Dial Cordy's data, and possibly gives one contractor an unfair advantage over others in a future bidding process. These meetings should be open to the public, at least for observation, or should be comprised of agency personnel only.

In addition, for this process to be effective, outside agencies and third parties must not only have a seat at the table, but also have a voice and some control over the project progress if impacts are observed. In Miami, months of interagency calls, warning letters, and strongly worded notices from external agencies did little to nothing to hinder the Corps and its contractors' desire to get the project done without delays, despite the obvious impacts that the dredging was having on the area's reefs.

Environmental monitoring contractors should be required to produce all data in excel format for ease of agency analysis. Additionally, the contractors should produce all data sheets, not just final calculations or field notes, in the interest of improved transparency. Monitoring contractors should not be hired by the dredging contractor, and communications between these groups should be limited (*i.e.*, they should not be co-located in the same office). Another possible solution is to have one contractor collect the data, and another analyze the data and create reports. Agency comments must be considered and incorporated into these reports after raw data is provided to the agencies for review.

8. The Corps and dredging contractor should be liable for the cost of any additional needed mitigation.

At the Port of Miami, the local sponsor agreement placed responsibility for additional mitigation of any unanticipated environmental impacts on Miami-Dade County. This created a disincentive for the dredging contractors to avoid impacts and drove up costs as a result. There was also unwillingness on the part of the Corps to ask the contractors to revise their methodology to avoid environmental impacts. Thus, a moral hazard problem was created in which the parties responsible for the impacts were not the ones doing the work. This situation should be avoided at Port Everglades by 1) placing the liability for unanticipated environmental impacts on the dredging contactor rather than the local sponsor, and 2) including a series of mandatory and unambiguous cut-off limits, and/or 3) including more decision-makers in the adaptive management process besides the Corps, the dredging company, or the local sponsor – with the authority to shut down dredging under certain pre-determined environmental thresholds. This

[238] Letter from Roy E. Crabtree (NMFS) to Col. Jason A. Kirk (Corps), dated Sept. 11, 2015, at 2 (Ex. RR to Statement of Material Facts).
[239] Request for Statements of Interest; South Florida-Caribbean CESU, Number W912HZ-17-SOI-003, Project to be Initiated in Fiscal Year 2017.

would effectively make environmental protection less discretionary language and more mandatory action.

G. The Supplemental EIS must include a revised cost/benefit analysis.

As part of its process to supplement the FEIS, the Corps must also update its cost/benefit analysis and cost information contained in the Final Feasibility Report. Regulations implementing NEPA require that the action agency disclose the direct, indirect, and cumulative effects of actions, including "economic, [and] social" impacts.[240] In addition, regulations require that when an agency prepares such an analysis that it "discuss[es] the relationship between that analysis and any analyses of unquantified environmental impacts, values, and amenities."[241] Federal courts have struck down NEPA documents because economic and socio-economic benefits were not properly quantified.[242] An analysis that overstates the economic benefits of a project fails in its purpose of allowing decisionmakers to balance environmental harms against economic benefits.[243]

Inaccurate economic information may defeat the purpose of an EIS by "impairing the agency's consideration of the adverse environmental effects" and by "skewing the public's evaluation" of the proposed agency action.[244] Similarly, an EIS that relies upon misleading economic information may violate NEPA if the errors subvert NEPA's purpose of providing decisionmakers and the public an accurate assessment upon which to evaluate the proposed project.[245]

In the 2015 FEIS and Feasibility Report, the Corps estimated that costs for the Port Everglades Project under the preferred alternative would total $323 million. Those costs included $53 million for environmental mitigation and monitoring.[246] However, as described above, the mitigation costs do not account for the full extent of impacts that are likely to occur, based on what happened in Miami. Further, the costs do not account for losses in revenue and income that recreational diving industries and other tourism businesses will experience as a result of impacts from sedimentation and turbidity in the area that are likely to occur. The cost/benefit analysis also fails to account for information from a flooding and flushing model and monitoring plan, both of which have yet to be finalized. Further, the costs do not include the additional baseline surveys needed before construction begins or costs associated with the new sediment transport model the Corps plans to complete.

---

[240] 40 C.F.R. § 1508.8.
[241] 40 C.F.R. § 1502.23.
[242] *See, e.g., Sierra Club v. Sigler*, 695 F.2d 957 (5th Cir. 1983) (setting aside analysis that presented project benefits but not costs).
[243] *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 446-48 (4th Cir. 1996) (setting aside EIS).
[244] *Id.* at 446; *see also Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 235 F.Supp.2d 1143, 1157 (W.D.Wash.2002) ("An EIS that relies upon misleading economic information may violate NEPA if the errors subvert NEPA's purpose of providing decisionmakers and the public an accurate assessment upon which to evaluate the proposed project."); *Sierra Club v. Flowers*, 423 F. Supp. 2d at 1338 ("Misleading information about economic impacts can defeat the 'hard look' function of an EIS.").
[245] *Oregon Envtl. Council v. Kunzman*, 817 F.2d 484, 492 (9th Cir. 1987).
[246] 2015 Feasibility Report at v, 199.

In the response to comments on the FEIS, the Corps stated that it would utilize "contingency funds" to account for any unexpected impacts. However, the final feasibility report does not make clear the amount of costs reserved for contingencies.[247] The mitigation plan in the FEIS appears to only set aside $2.2 million for monitoring and adaptive management costs associated with coral reefs, of which only $1.6 million is allocated for contingencies or "adaptive management."[248] In the response to comments, the Corps indicated that 26% of total costs have been allocated to "contingency funds," but that does not seem to square with the $1.6 million allocated in the mitigation plan for contingency costs for coral reef mitigation, which is only 3% of mitigation costs and less than 1% of total project costs.

The cost estimates and cost/benefit analysis needs to be reevaluated in the supplemental EIS to include the costs of additional mitigation, monitoring, surveys, and other steps necessary to account for the new information, as described in more detail above. In addition, the environmental impacts considered as part of the cost/benefit analysis need to be updated based on the additional, significant impacts that the Corps must recognize and analyze as part of the supplemental EIS, and as described more fully above. Finally, the Corps must clearly delineate what funds, if any, are available for "contingencies," and fully evaluate whether those contingency funds will be sufficient to pay for potential unexpected impacts, especially considering the size and scope of unexpected impacts that occurred in Miami. The supplemental EIS should fully consider impacts to other marine organisms.

1. Seagrass mitigation must account for all areas that have contained seagrass during any survey.

The FEIS describes seagrass habitat as dynamic, fluctuating between areas that are continuously vegetated ("occupied") and areas that are only intermittently vegetated ("unoccupied").[249] The Florida Fish and Wildlife Conservation Commission ("FWC") comments on the Draft EIS for the Port Everglades Project stressed the importance of the dynamic nature of seagrass habitats, stating:

> [S]eagrass 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.[250]

In its August 12, 2013, letter concerning issues in the DEIS, NMFS states:

> The draft EIS does not describe impacts to areas historically mapped and previously ground-truthed to contain seagrass. These areas represent the available expansion habitat that will no longer

[247] *Id*.
[248] FEIS, App. E at 49.
[249] FEIS at 111.
[250] Attachment to letter from Scott Sanders (FWC) to Lauren Milligan (DEP).dated Aug. 7, 2014. FEIS, App. C.

> be available after the project is constructed. NMFS believes [the Corps] significantly underestimates the amount of seagrass that would be impacted.[251]

NMFS's concerns have not been addressed in the FEIS, and unoccupied seagrass habitat is still not included in the proposed FEIS seagrass mitigation plan.[252] This will significantly underestimate the amount of seagrass that will be impacted by the project. Furthermore, updated seagrass surveys must be included in the supplemental EIS and additional acreage must be accounted for in mitigation planning.

The EPA also noted that NMFS recommended more seagrass mitigation credits than the Corps calculated.[253] The Corps responded to explain the discrepancy, stating, "NMFS is considering seagrasses where there are no seagrasses. This is not consistent with regulatory policies of the State of Florida or [the Corps]."[254] The Corps' assertion that it will not mitigate for unoccupied seagrass is not in agreement with established science, the advice of expert state and federal agencies, or Florida administrative court rulings. For example, Flynn v. Florida Department of Environmental Protection (Case No. 96-4737) found:

> Seagrass beds in general, and *Halophila johnsonii* in particular, move around. They may be in one spot one year and in another (close-by) location the next. Therefore, **although seagrass may not be presently growing in a particular area, that area may be a potential site for such growth**.

The Corps' policy to treat dormant seagrass beds as "sand" does not account for dynamic, and well-established biology of seagrass and ignores consideration of available, "high quality" scientific information is required by NEPA regulations.[255] Neither NMFS, EPA, FWC, nor best available science support the Corps' policy to mitigate only for occupied seagrass habitat and therefore this policy, as well as the application of that policy to this project, must be reconsidered in a supplemental EIS.

The Corps' response to these comments in the Final EIS are incomplete and erroneously assume that, because West Lake Park is "within km" of Port Everglades, that habitat must be suitable replacement habitat for seagrass. This ignores obvious, potentially biologically-significant differences between these habitats, such as light levels, depth, salinity, flow, prey availability, sediment type, and more. Considering areas within five kilometers of Port Everglades as suitable mitigation for lost seagrass habitat is a nonsensical conclusion.

Mitigating for all seagrass habitat, both occupied and unoccupied, also must be factored into the estimated project cost and the cost/benefit analysis for the Port Everglades Project.

---

[251] Letter from Roy E. Crabtree (NMFS) to Col. Alan Dodd (Corps), dated Aug. 12, 2013, at 10.
[252] See 2015 FEIS, App. E.
[253] 2015 FEIS, App. L.
[254] *Id*.
[255] 40 C.F.R. §§ 1500.1, 1502.24.

2. *The Corps must amend its mitigation plan for seagrass in West Lake Park.*

There is also simply not enough room in West Lake Park to accommodate all of the needed seagrass mitigation credits, even with the Corps' current, too-low seagrass mitigation estimate. The FEIS states that the Corps intends to obtain 2.5 seagrass functional units at West Lake Park. However, NMFS rightly observed in its comments on the draft EIS for the Port Everglades Project that there is simply not enough space in West Lake Park for the necessary seagrass mitigation:

> According to the ledger contained in this permit (Attachment 5), there are 2.2 seagrass credits available at West Lake Park. The [Corps] mitigation plan describes the need to use 2.4 seagrass credits. Using the 10 impact estimate that includes 8.45 acres of historically mapped and ground-truthed seagrass habitats and the Unified Mitigation Assessment Method (UMAM) scores applied by the [Corps] (which are in dispute per the section below), over 5 seagrass credits would be needed from West Lake Park. Thus, using either impact assessment, there are not enough seagrass credits available at West Lake Park.[256]

The mitigation plan in the FEIS notes that now 2.9 credits will be utilized in West Lake Park (FEIS page 14), rather than the 2.4 estimated in the draft EIS.[257] However, NMFS's estimation of 5 credits needed has not been addressed in the FEIS. Further, this must be updated to incorporate any new seagrass surveys and potential additional mitigation needs (and possibly unoccupied seagrass habitat).

The seagrass present at West Lake Park also does not provide equivalent critical ecological function as seagrass removed from Port Everglades, which is used as nursery habitat for federally managed, oceanic and estuarine spawners, such as the gray snapper, gag grouper, and blue striped grunt. The FWC and NMFS raised this issue in their comments and the Corps has not adequately addressed this issue in the FEIS. For example, NMFS stated:

> The seagrass habitats at West Lake Park, which is located further away from the inlet and coral reefs, would not provide the same ecological services as the seagrass impacted through the expansion.[258]

The Corps' response to these comments states 1) there is no other available seagrass mitigation area and 2) fish ontogenetic migrations occur over years.[259] Therefore, it makes the inaccurate biological assumption that this is suitable habitat just because these species could, over their lifetimes, swim the distance to West Lake Park. However, the fact that species' migrations may take years is not evidence that species will use West Lake Park as an equivalent habitat or that such migrations will ever occur (see numerous scientific studies cited by NMFS in

[256] Letter from Roy E. Crabtree (NMFS) to Col. Alan Dodd (Corps), dated Aug. 12, 2013, at 10-11.
[257] 2015 FEIS, App. E, at 14.
[258] Letter from Roy E. Crabtree (NMFS) to Col. Alan Dodd (Corps), dated Aug. 12, 2013, at 11.
[259] 2015 FEIS, App. L.

its comment letter.[260] This response does not address possibly biologically-relevant issues with using West Lake Park as mitigation credit, including proximity to planktonic larvae flow, temperature variability, salinity variability, and generally sub-optimal physical conditions of the seagrass compared to Port Everglades. Furthermore, this response does not address NMFS's concerns that the "proposed port modifications would further isolate seagrass beds at West Lake Park from the inlet, limiting their value in larval migrations and settlement."[261]

To support that point, NMFS believes that the Uniform Mitigation Assessment Method ("UMAM") scores for West Lake Park should therefore be lower than what the Corps has provided as a result of this decreased ecological value.[262] The Corps does not adequately address NFMS's concern in the FEIS. Rather, the Corps responds only that NMFS should have commented on that concern during a different Clean Water Act process.[263] The FEIS must, therefore, be updated in a supplemental EIS to fully incorporate NMFS's concerns regarding UMAM scores in West Lake Park.

A complete mitigation plan for seagrass, including occupied and unoccupied seagrass beds where there are enough available mitigation credits and considering the latest surveys, in an area that supports similar physiological, ecological, and biological needs, must be established in the supplemental EIS, and the associated costs factored into the estimated project cost and cost/benefit analysis for Port Everglades.

3. The Corps must include a full accounting of impacts to mangrove wetland ecosystems from the Turning Notch expansion as part of its impact analysis.

In the FEIS, the Corps has improperly segmented part of the Port Everglades Project, the Turning Notch expansion, and thus failed to properly evaluate the impacts from that portion of the project, as NEPA requires. As described above, federal agencies cannot segment or manipulate the scope of their actions in order to avoid a finding of significance and evade the full environmental impact study NEPA demands.[264] Rather, when determining the scope of its environmental review under NEPA, an agency must consider "connected, cumulative, and similar actions" together to prevent an agency from "dividing a project into multiple 'actions,' each of which individually has an insignificant environmental impact, but which collectively have a substantial impact."[265]

NEPA and its implementing regulations require the scope of analysis to include "connected actions" that "automatically trigger other actions," "cannot or will not proceed unless other actions are taken previously," or "are interdependent parts of a larger action and depend on the larger action for their justification."[266] As described above, the Corps must also consider "cumulative actions," which include those that "when viewed with other proposed actions have

[260] Letter from Roy E. Crabtree (NMFS) to Col. Alan Dodd (Corps), dated Aug. 12, 2013.
[261] *Id*. at 12.
[262] 2015 FEIS, App. L.
[263] *Id*.
[264] 40 C.F.R. § 1508.27(b)(7) ("Significance cannot be avoided by … breaking [an action] down into small component parts.").
[265] 40 C.F.R. § 1508.25; *see, e.g.*, *Earth Island Inst. v. U.S. Forest Serv*., 351 F.3d 1291, 1305 (9th Cir. 2003).
[266] 40 C.F.R. § 1508.25.

cumulatively significant impacts," and "similar actions" that "when viewed with other reasonably foreseeable or proposed agency actions have similarities that provide a basis for evaluating their environmental consequences together."[267]

In order to expand Port Everglades to accommodate larger vessels, the Corps originally included an expansion of an area of the port called the Turning Notch.[268] The expansion would eliminate approximately 8.5 acres of red and black mangrove wetlands.[269] The Corps removed this portion of the project before completing the FEIS, however, and the local sponsor, the Port, took over the expansion of this area.[270] Although the local sponsor is now completing the deepening of the Turning Notch, the environmental impacts from this expansion should be considered in the overall analysis of the environmental effects of this project.[271] The Final EIS states, "This component of the project was removed from the federal project for economic reasons."[272] These reasons should be spelled out clearly in the supplemental EIS, and environmental tradeoffs investigated while taking this portion of the construction into account.

NMFS commented on the Draft EIS:

> NMFS believes the impacts of the proposed project, along with project components that have been removed from the federal project but are still being pursued by the Port (i.e., dredging 8.4 acres of mangrove to expand a turning notch), result in more adverse impacts to EFH than what are described in the draft EIS, questioning [the Corps'] conclusion that the project's cumulative impacts are negligible.[273]

The Corps responded that this comment was addressed in the negotiated blended mitigation plan, but it is still not clear in the revised mitigation plan that the Turning Notch expansion is being incorporated into the cumulative impacts or analyzed as part of the direct or indirect impacts, as required by NEPA.[274] The mitigation and monitoring needs must be evaluated to include this Turning Notch expansion and to address all concerns. Furthermore, because the area will also be dredged and just under nine acres of mangrove wetlands will be destroyed, the expansion of the Turning Notch area cannot, therefore, be accounted for as a "significant reduction . . . of impacts" and should not be described in the FEIS as an effort to "preserv[e] important . . . mangrove wetland" or as a component of a reduction of up to 98% of impacts."[275] The expansion of the Turning Notch is an interdependent part of the Port Everglades Project and must be analyzed together with the other interrelated and connected actions for the project. NEPA explicitly prohibits an agency from doing what the Corps did in the FEIS: dividing a project into multiple actions, or "breaking it down into small component parts," in

[267] *Id*.
[268] 2015 FEIS at iv.
[269] *Id*. at 41.
[270] *Id*. at iv.
[271] 40 C.F.R. §§ 1508.25, 1508.741.
[272] 2015 FEIS at 41.
[273] *Id*., App. L.
[274] *Id*.
[275] *Id*. at 45.

order to avoid a determination that "the action is related to other actions with individually insignificant but cumulatively significant impacts."[276]

In the FEIS, the Corps only provided a cursory discussion of the impacts to mangroves that will result from the expansion of the Turning Notch as part of its cumulative impacts analysis.[277] Even if it is appropriate for the Corps to analyze the expansion as a cumulative impact alone, rather than an interconnected impact, the Corps failed to provide the detailed analysis of the impacts that NEPA requires. Instead, the Corps dismissed the impacts associated with the removal of 8.5 acres of mangrove wetlands because the local sponsor is planting approximately 16 acres of mangroves as mitigation.[278] This is not sufficient. Newly planted mangrove trees take several years to grow to maturity and it takes many more years for a full mangrove ecosystem with the fish nurseries that mangroves support to develop. Planting new mangroves will not negate the significant and long-lasting impacts of removing nearly 9 acres of fully-developed mangroves and their habitat.[279] As the Corps noted in the FEIS, mangroves provide invaluable resources to Florida, supporting fish nurseries and other important habitat, but have undergone significant declines.[280] The Corps must fully account for the impacts the Turning Notch expansion will have on mangrove wetlands as part of the supplemental EIS for the Port Everglades Project.

IX. THE CORPS MUST COMPLETE ESA CONSULTATION BEFORE ISSUING THE DRAFT SUPPLEMENTAL EIS AND INCORPORATE INFORMATION FROM THE NEW BIOLOGICAL OPINION

In addition to supplementing its EIS for the Port Everglades Project, the Corps has also reinitiated ESA consultation for the project with NMFS and expects to receive a new biological opinion for the project.[281] The Corps completed the original biological opinion for this project in March 2014 and relied on that biological opinion for much of its impact analysis in its original FEIS.[282] In order to properly evaluate all new information in the FEIS, the Corps wait to complete the Draft Supplemental EIS until after that new biological opinion is completed in order to fully consider the information contained in that new biological opinion from NMFS.

X. CONCLUSION

Thank you for your consideration of these scoping comments. Because of the high level of public interest in this process, and NEPA's emphasis on thorough, up-front review of the environmental effects of proposed actions, we look forward to a Draft Supplemental EIS that

[276] 40 C.F.R. § 1508.27(b)(7).
[277] 2015 FEIS at 263-73.
[278] *Id*. at 271-72.
[279] Gill, A.M., and P.B. Tomlinson (1971), Studies on the Growth of Red Mangrove (*Rhizophora mangle L.*); Phenology of the Shoot, Biotropica, 3(2): 109-124; Ellison, A.M., and E.J. Farnsworth (1996), Spatial and temporal variability in growth of Rhizophora mangle saplings on coral cays: links with variation in insolation, herbivory, and local sedimentation rate, Journal of Ecology, 84: 717-731.
[280] 2015 FEIS at 271.
[281] Letter from Gina P. Ralph (Corps) to David Bernhart (NMFS), dated Sept. 27, 2016; Letter from Roy E. Crabtree (NMFS) to Gina P. Ralph (Corps), dated Nov. 1, 2016.
[282] See, e.g., 2015 FEIS at 229.

provides a high level of detail and rigorous analysis of the full impacts of the Port Everglades Project. We urge the Corps to protect the precious coral and marine resources of Fort Lauderdale and implement the recommendations that are set forth in this letter.

Sincerely,

Rachel Silverstein, Ph.D.
Executive Director and Waterkeeper
Miami Waterkeeper
12568 N. Kendall Dr.
Miami, FL 33186
rachel@miamiwaterkeeper.org

Jaclyn Lopez, Florida Director
Center for Biological Diversity
P.O. Box 2155
St. Petersburg, FL 33731
727-490-9190
jlopez@biologicaldiversity.org

Manley K. Fuller, III, President
Florida Wildlife Federation
2545 Blairstone Pines Dr.
Tallahassee, FL 32301
wildfed@gmail.com

Brettny Hardy
Andrea A. Treece
Earthjustice
50 California St., Suite 500
San Francisco, CA 91411
415-217-2142
415-217-2089
bhardy@earthjustice.org
atreece@earthjustice.org

Tom Ingram
President and CEO
DEMA
3750 Convoy Street STE 310
San Diego, CA 92111