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VIA ELECTRONIC MAIL

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Re: Port Everglades Expansion Supplemental Draft Environmental Impact Statement

Dear Ms. Angela Dunn,

Thank you for the opportunity to submit comments on the draft Supplemental Environmental Impact Statement (“DSEIS”) that the U.S. Army Corps of Engineers (“Corps”) is preparing to evaluate the full impacts of the Port Everglades Navigation Improvements Project (“Port Everglades Project” or “Project”) in Fort Lauderdale, Florida. 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 commercial and recreational fishing industry, and numerous tourism-related businesses. The Port Everglades Project will take place over a period of five-six years. Due to the risks the project presents to nearby coral reefs, the fragile status of Florida’s corals, and recent events that transpired during the Miami Harbor (“PortMiami”) 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.

Substantial evidence demonstrates that the Project will have significant negative impacts on coral reef communities, hardbottom reef habitat, and the marine ecosystem that depends on healthy coral reef communities. During the PortMiami dredging, a very similar project that the Corps completed in 2015, the dredging produced fine-grained sediment that affected an area 5-10 km from the channel and killed at least 560,000 corals.¹ After dredging was completed, 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 (out to 700 m from the

¹ Ross Cunning et al., *Extensive coral mortality and critical habitat loss following dredging and their association with remotely-sensed sediment plumes*, 145 MARINE POLLUTION BULLETIN 185 (2019).

channel) was no longer suitable habitat to support coral as a result of sedimentation impacts, and that over six acres of reef would never recover naturally.²

While construction during PortMiami took two years to complete, the construction for the Port Everglades Project is estimated to take five to six years, producing similar impacts for more than double the time.³ With similar resources at risk and a longer expected dredging period, 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 PortMiami 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.

In the original 2015 FEIS that the Corps completed for the Port Everglades Project, the Corps refused to admit, or even acknowledge, the damage that dredging caused in Miami. Although the new 2020 DSEIS is much improved in this regard, the Corps still fails to acknowledge the full scope of the damage that occurred at Miami and the possibility for repetition at Port Everglades.

We recognize and appreciate the Corps for making many crucial improvements to the 2020 DSEIS over the 2015 FEIS. Many of these improvements include a (partial) acknowledgement of the impacts incurred at PortMiami and an attempt to address some of the key lessons learned. The DSEIS also contains improved minimization measures, monitoring, mitigation, and adaptive management. The utilization of scientific resources, data, and analysis of relevant studies is more robust. The acknowledgement of the potential risks to corals from fine dredging sediments, including at various life stages, is a welcome addition to this DSEIS. These and other changes have the potential to offer greater environmental protection for our fragile coral reefs, seagrasses, and mangroves and the species that depend on them. Many of these proposed additions, we hope, will become standard Corps policies for this and future projects.

Despite these improvements, however, there are still a number of gaps in the Corps' analysis and the DSEIS still fails to satisfy NEPA.

On behalf of our organizations 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 fill these gaps by taking the following actions:

² NMFS, *Examination of Sedimentation Impacts to Coral Reef along the Port of Miami Entrance Channel, December 2015, Final Report*, at 1, 47, 51 (April 2016) (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."). *Id.* at Table 7 (finding low to very severe impacts on 158.5 acres of reef out of a total of 167 acres surveyed (158.5/167 = ~95%)).

³ In the 2015 Final EIS 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.

USACE, *Final Environmental Impact Statement, Port Everglades Harbor Navigation Study, Broward County, Florida* 194, 199 (March 2015, Rev. May 2015) [hereinafter 2015 FEIS].

- Re-opening the comment period for the DSEIS to allow full and meaningful public participation.
- Ensuring that the Final Supplemental Environmental Impact Statement fully analyzes the Project’s impacts, by taking a hard look at:
 - The full impact of coral mortality at PortMiami and the potential impact of more local coral extinction events in southeastern Florida;
 - Additional sedimentation from leaking scows;
 - The sedimentation impact from blasting;
 - The sedimentation impacts of dewatering;
 - The possible role of the PortMiami dredging in the Stony Coral Tissue Loss Disease (SCTLD) outbreak;
 - The Project’s impacts to scalloped hammerheads and spawning snook aggregations;
 - The impacts of climate change in relation to the Project;
 - The impacts of sea-level rise on the Project with the inclusion of a flushing or flooding model.
- Considering a proper baseline that relies exclusively on new, current surveys both north and south of the Project site, and includes surveys far beyond the expected area of impact.
- Including a revised cost analysis that fully incorporates the additional monitoring, mitigation, and adaptive management measures proposed into the DSEIS and that does not rely on the possible use of “contingency funds” to cover significant project scope changes.
- Including a revised “benefit” analysis that considers the current needs of shipping channels as well as the close proximity of a second deep-water port nearby (Miami) and the recent dredging (and now proposed re-dredging) occurring there.
- Evaluating cumulative effects on coral, including the cumulative impacts of climate change and other actions affecting coral.
- Including the Turning Notch Expansion as part of the Project and fully analyzing the expansion’s environmental impacts.
- Analyzing and identifying all reasonable alternatives, and implementing adequate mitigation and monitoring, including
 - Relocating all corals expected to be killed at the Project site;
 - Implementing strict turbidity limits and monitoring rules to protect reefs;
 - Improving the monitoring plan;
 - Improving the adaptive management plan, particularly including disease monitoring and “shut down” triggers;
 - Improving the coral mitigation plan, particularly to define a clear mitigation plan for unanticipated impacts;
 - Implementing adequate seagrass mitigation.

Below, we discuss these issues in more detail.

I. DREDGING PROJECTS HAVE SEVERE IMPACTS ON CORAL REEFS, HARMING AN ECOSYSTEM ALREADY IN CRISIS AS WELL AS FLORIDA’S ECONOMY

Florida’s reef tract is the only nearshore coral reef in the continental United States, stretching over 330 nautical miles from Martin to Monroe Counties. Coral reefs are some of the most biodiverse habitats on the planet, providing shelter, food, and breeding sites for commercially- and recreationally-valuable fish as well as coastal barriers from storms. Half of all U.S. federally managed fisheries depend on coral reefs.⁴ Florida’s coral reefs can dissipate up to 97% of wave energy from storms and hurricanes, providing approximately \$355 billion in flood protection benefits to the state every year.⁵ Based on a 2001 Hazen and Sawyer study, coral reefs generate \$2.1 billion in Broward County alone, and support 36,000 jobs.⁶

Unfortunately, Florida’s coral reefs are also in acute crisis. Reefs face natural and manmade threats, including climate change, warming oceans, water pollution, ocean acidification, coastal construction, and disease. Coral reefs in Florida have declined by well over 80% since the 1970s, based on 2003 data.⁷ And in the last few years in Florida, this situation has worsened precipitously. We have seen repeated years of coral bleaching between 2014 and 2017, which are now globally recognized as the most prolonged and severe bleaching event ever recorded.⁸ A devastating coral disease outbreak (Stony Coral Tissue Loss Disease (“SCTLD”)) has killed hundreds of millions of corals and the PortMiami dredging killed at least 560,000 corals.⁹

SCTLD was first observed off Miami-Dade County during the PortMiami Phase III expansion project.¹⁰ It was quickly recognized to be extremely lethal to over 20 species of Caribbean coral species, and to have a very high prevalence in the population. No single pathogen has yet been identified, and the disease is widely thought to be a result of combined pressures, including environmental factors.¹¹ About 60% of live coral tissue is estimated to have been lost to SCTLD in just a few years.

The situation became so dire for Florida’s corals that local extirpations occurred, such as pillar coral (*Dendrogyra cylindrus*), which is now thought to be functionally extinct in Florida.¹²

⁴ FLORIDA’S CORAL REEF, www.floridascoralreef.org (last visited Jan. 28, 2021).

⁵ USACE, *Draft Supplemental Environmental Impact Statement, Port Everglades Harbor, Broward County, Florida* 124 (Dec. 2020) [hereinafter DSEIS]; *The Value of US Coral Reefs for Risk Reduction—Florida*, USGS (2019), <https://www.usgs.gov/media/images/value-us-coral-reefs-risk-reduction-florida>.

⁶ NOAA, *Summary Report on the Economic Value of U.S. Coral Reefs* 7 (2011), https://www.ncei.noaa.gov/data/oceans/coris/library/NOAA/CRCP/other/other_crep_publications/Economic_Value_US_Coral_Reefs_Summary_2013.pdf.

⁷ Toby A. Gardner et al., *Long-Term Region-Wide Declines in Caribbean Corals*, 301 SCIENCE 958 (Aug. 15, 2003).

⁸ NOAA Declares Third Ever Global Coral Bleaching Event, NOAA MEDIA RELEASE (Oct. 8, 2015), <https://www.noaa.gov/media-release/noaa-declares-third-ever-global-coral-bleaching-event>.

⁹ Cuning et al., *supra* note 1.

¹⁰ DSEIS at 89.

¹¹ *Florida’s Coral Reef Disease Outbreak: Response*, NOAA, <https://floridakeys.noaa.gov/coral-disease/response.html>.

¹² Karen Neely, *Pillar coral (Dendrogyra cylindrus) fragment rescue for preservation of genetic diversity*, Florida Fish and Wildlife Research Institute (May 2016) (on file with the Florida Fish and Wildlife Conservation Commission).

Since 2014, 99.9% of pillar coral tissue has been lost in southeast Florida.¹³ In 2009 surveys, however, three colonies were identified near the Port Everglades project site,¹⁴ and Miami Waterkeeper also observed a colony just south of the Port Everglades channel in 2016.¹⁵ The disease outbreak was so severe, and every living coral so precious, that the Association of Zoos and Aquariums began a “coral ark” rescue project in 2019, taking still-healthy corals into land-based aquaria to preserve the genetic diversity of Florida’s corals before it was irreparably lost to SCTLD.¹⁶ Partners on the coral rescue project include Florida Fish and Wildlife Conservation Commission (“FWC”), the Florida Department of Environmental Protection (“DEP”), and NOAA.¹⁷ Most startling, perhaps, is that this disease persists in the environment with active disease lesions still found in areas that began to experience the SCTLD outbreak in 2014 and 2015.¹⁸

The PortMiami dredging, spanning from 2013-2015, caused additional stress to the corals of Miami-Dade County. Using a reanalysis of the dredging company’s own environmental contractor’s data, Cuning et al. 2019 reported that over 560,000 corals (likely an underestimate by roughly half) were killed by dredging (not by disease) during the port expansion project.¹⁹ Cuning et al. also found that the reef habitat, in addition to individual corals, were destroyed by the dredging sediment. Using a combined approach of satellite imagery and the dredging company’s environmental monitoring contractor’s (Dial Cordy and Associates, “Dial Cordy”) own in situ data, Cuning et al. estimates that dredging affected 5-10 km of the reef to varying degrees.²⁰ In some areas near the channel, sediment buried 50-90% of the reef.²¹ Miller et al. 2016 found similar impacts, reporting that sediment percent cover on hardbottom was 36x higher near the dredging than at northern reference sites.²² The study also reported up to 10x higher sediment depth near the dredging as compared to reference sites. Corals near the construction had up to a 5.1x increase in partial coral mortality, and up to 21.3x more sediment accumulation on live coral tissue.²³ Miller et al. also reported that 48% of corals at the reference site displayed positive growth during the period of the project, but only 18% of surviving corals near the channel had positive growth, showing that sublethal stress on colonies near the construction was significant as well.²⁴ While Dial Cordy reported that 93% of corals near the channel had at least partial mortality due to sedimentation compared to 7% at reference locations,²⁵ they erroneously

¹³ DSEIS, App. C at 89.

¹⁴ DSEIS, App. C at 89.

¹⁵ *Florida’s Coral Reef Disease Outbreak: Response*, NOAA, <https://floridakeys.noaa.gov/coral-disease/response.html>.

¹⁶ *The Coral Ark That Hopes to Save Florida’s Ailing Reefs*, ATLAS OBSCURA (Feb. 12, 2020), <https://www.atlasobscura.com/articles/florida-coral-rescue-project-ark>.

¹⁷ *Coral Rescue Team*, FLA. DEP’T OF ENV’T PROT., <https://floridadep.gov/rcp/coral/content/coral-rescue-team>.

¹⁸ DSEIS at 139.

¹⁹ Cuning et al., *supra* note 1.

²⁰ *Id.*

²¹ *Id.*

²² Margaret W. Miller et al., *Detecting sedimentation impacts to coral reefs resulting from dredging the Port of Miami, Florida USA*, PEERJ 4:e2711 (Nov. 17, 2016).

²³ *Id.*

²⁴ *Id.*

²⁵ Dial Cordy and Associates, Inc., *Delineation of Potential Sedimentation Effect Area within Middle and Outer Reef Habitats Port of Miami Phase III Federal Channel Expansion Project* at 51–54; Figure 4 (Aug. 2015).

concluded that only six corals were actually killed by the dredging project.²⁶ This assertion is refuted by published literature (Miller et al. 2016, Cunning et al. 2019), and various NOAA letters and reports.²⁷ One NOAA study found that 95% of the reef area surveyed by NOAA had permanently transitioned to sand and therefore no longer served as functional reef.²⁸ Another letter stated:

NMFS unequivocally reiterates that the sedimentation actually experienced at the Port of Miami greatly exceeds the amount predicted in our [biological opinion]... [T]he sedimentation is clearly detectable and measurable and has clearly adversely affected impacted ESA listed corals such that they had to be relocated under emergency conditions or face imminent mortality (which constitutes a take).²⁹

The Corps must apply the lessons learned from the PortMiami coral disaster to avoid these unacceptable impacts in the context of the Port Everglades Project.³⁰

II. THE CORPS MUST PRODUCE A FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT THAT FULLY COMPLIES WITH THE NATIONAL ENVIRONMENTAL POLICY ACT

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.”³¹ 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].”³² 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.³³

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.”³⁴ In order to achieve this, environmental

²⁶ Dial Cordy and Associates, Inc., *Final Impact Assessment for Hardbottom Middle and Outer Reef Benthic Communities at Cross Sites, Miami Harbor Phase III Federal Channel Expansion Project*, at v, 59 (Nov. 2017).

²⁷ NMFS Final Report (2016), *supra* note 2, at 1, 47, 51 (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.”) *Id.* at Table 7 (finding low to very severe impacts on 158.5 acres of reef out of a total of 167 acres surveyed (158.5/167 = ~95%).

²⁸ NMFS Final Report (2016), *supra* note 2.

²⁹ Letter from David Bernhardt, Assistant Regional Administrator, NMFS, to Jason Spinning, USACE, Ongoing Re-initiation of consultation under the ESA between USACE and NMFS for Miami Dredging Project (May 14, 2015).

³⁰ Note that we refer to the 1978/1986 CEQ NEPA regulations rather than the new 2020 CEQ NEPA Regulations throughout this letter. The recent revisions to the NEPA “regulations [] apply to all NEPA processes begun after the effective date.” 85 Fed. Reg 43304, 43339 (July 16, 2020) (to be codified 40 C.F.R. §§ 1500–1508, 1515–1518). The Project’s NEPA process started before the 2020 CEQ NEPA regulations were finalized, and the use of the old regulations is consistent with the Corps’ practice with regards to this Project. See DSEIS at 23.

³¹ 42 U.S.C. § 4321.

³² 42 U.S.C. § 4332.

³³ *Steamboaters v. F.E.R.C.*, 759 F.2d 1382, 1392 (9th Cir. 1985).

³⁴ *Marsh v. Or. Nat. Res. Council*, 490 U.S. 360, 371 n.14 (1989) (citation omitted).

review must be prepared “at the earliest possible time to insure that planning and decisions reflect environmental values.”³⁵

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.

A. The Corps must re-open the comment period on the DSEIS to allow meaningful participation from the public.

As a preliminary matter, the Corps should re-open the comment period for the DSEIS to allow meaningful public participation. Incorporating and inviting public participation into the government’s environmental decision-making is a core element of the NEPA process. CEQ regulations state that agencies must “[e]ncourage and facilitate public involvement in decisions which affect ... the environment” ... “to the fullest extent possible.”³⁶ The regulations also require agencies to “[m]ake diligent efforts to involve the public in preparing and implementing their NEPA procedures.”³⁷ The opportunity to comment on draft environmental impact statements is one of the main avenues by which the public can participate in the NEPA process. To this end, CEQ regulations mandate *a minimum* of 45 days for public comment,³⁸ although agencies have discretion to lengthen the comment period.³⁹ Importantly, the length of the comment period must ensure adequate time for meaningful public participation.⁴⁰

Here, the 45-day comment period did not allow for meaningful public participation. The DSEIS is 239 pages and includes 11 appendixes with over 1,480 additional pages, bringing the total to over 1,725 pages of highly technical, complex material. It takes a substantial amount of time to review large amounts of materials and provide meaningful comments. Understandably, the Corps took a full three years to complete this 1,725-page document. To assume the public can read, interpret, understand, and fully respond to highly technical material which took three years to prepare in only 45 days is unrealistic and precludes public participation.

In addition to the extensive technical material contained in the DSEIS, two other circumstances frustrated the public’s ability to meaningfully comment during the 45-day period. First, the COVID-19 pandemic has led to office and school closures throughout the country.⁴¹ COVID cases in Florida reached an all-time high in early January in the middle of the comment

³⁵ *Metcalf v. Daley*, 214 F.3d 1135, 1142 (9th Cir. 2000) (quoting *Andrus v. Sierra Club*, 442 U.S. 347, 351 (1979)).

³⁶ 40 C.F.R. § 1500.2.

³⁷ 40 C.F.R. § 1506.6(a).

³⁸ 40 C.F.R. § 1506.10(c).

³⁹ 40 C.F.R. § 1506.10(d).

⁴⁰ *Idaho ex rel. Kempthorne v. U.S. Forest Serv.*, 142 F. Supp. 2d 1248, 1261 (D. Idaho 2001).

⁴¹ Several of the offices of the undersigned organizations have forced closures in addition to numerous school closures across the country impacting staff, volunteers, and concerned citizens.

period.⁴² As a result, members of the public, as well as attorneys and support staff at organizations engaged in this project have been forced to make necessary adjustments, including alternative childcare arrangements and coordination for timely filing of comments. This made it even more challenging to review and prepare comments in the allotted time.

Secondly, the comment period coincided with numerous holidays, during which attorneys, support staff, and members of the public could not engage with the DSEIS. The holidays, including the period surrounding Christmas and New Year's Day, removed essentially two weeks of time to review the DSEIS. The holiday period further rendered review of the DSEIS and its accompanying documents even more rushed and cursory.

Due to these reasons, the undersigned groups requested an extension of the comment period on December 23, but the Corps denied that request. The Corps should re-open the comment period to allow for meaningful public participation in the environmental decision-making process, as NEPA requires.

B. NEPA requires 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.⁴³ NEPA requires that an EIS “succinctly describe the environment of the area(s) to be affected.”⁴⁴ An assessment of baseline conditions must be “based on accurate information and defensible reasoning.”⁴⁵

The Corps' original 2016 baseline assessment for the Project was inadequate as it relied on outdated and truncated surveys, which surveyed an area too small (only to 150 m from the channel) to fully understand the Project's impacts.⁴⁶ Dial Cordy, the contractor that conducted the old surveys, also conducted the surveys for the PortMiami dredging.⁴⁷ Dial Cordy's PortMiami surveys vastly underestimated the number of corals present at the dredging site, resulting in the destruction of hundreds of ESA-listed coral colonies.⁴⁸

Dial Cordy's 2011 surveys for the Port Everglades Project were likewise inadequate, because they were measuring an area only 150 meters from the channel site.⁴⁹ The DSEIS makes

⁴² Aric Chokey, *Here are the latest COVID-19 statistics for Florida*, SUNSENTINEL, <https://www.sun-sentinel.com/coronavirus/fl-ne-coronavirus-county-progress-tracker-20201211-4ij2n4pmfrbn3ijjfc7c2xppnu-htmlstory.html>.

⁴³ *Great Basin Res. Watch v. Bureau of Land Mgmt.*, 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.2d 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.”).

⁴⁴ 40 C.F.R. § 1502.15.

⁴⁵ *Great Basin Res. Watch*, 844 F.3d at 1101 (quoting *Or. Nat. Desert Ass'n v. Jewell*, 840 F.3d 562, 570 (9th Cir. 2016)).

⁴⁶ 2015 FEIS, App. D.

⁴⁷ Letter from Rachel Silverstein et al. to Terr Jordan-Sellers, Regional Technical Specialist, USACE, Supplemental NEPA Document for the Port Everglades Navigation Improvements Project, at 42 (January 27, 2017).

⁴⁸ *Id.* 9-10.

⁴⁹ 2015 FEIS, App. D.

strides in improving the baseline assessment for the Project: new surveys were conducted in 2017, and the area surveyed was expanded dramatically.⁵⁰

Despite this improvement, however, the Corps still relies on the inadequate 2011 Dial Cordy surveys to characterize the area south of the Project site.⁵¹ In addition to being 10 years old, in only a small area, and unreflective of current baseline conditions, these surveys were designed and implemented in the same manner and by the same contractor that proved disastrously inaccurate information at PortMiami. The Corps must not rely on any outdated (2011) Dial Cordy studies to assess the baseline conditions at the Project site. Reliance on these surveys to establish baseline conditions for any part of the Project fails to meet NEPA's requirement that baseline assessments be "based on accurate information and defensible reasoning."⁵²

The Corps must also conduct baseline surveys *before* construction begins, rather than immediately after or during dredging. At PortMiami, Dial Cordy took baseline measurements up to several weeks after dredging had already begun, skewing the baseline data.⁵³

Likewise, baseline surveys must not occur in a window around a major storm, which would also skew baseline data, as storms can increase sedimentation in the water and on the benthos for weeks to even months. Appendix G suggests that baseline monitoring will begin the summer prior to construction,⁵⁴ which is the height of hurricane season. The DSEIS requires that if a storm does affect an area, the baseline data must be collected again. But collecting baseline data in the months after a hurricane, for example, will make the baseline data appear to have more sediment in the system than it might under typical conditions. Therefore, baseline data would be best-collected in the late winter/early spring, or as close as possible to the start of the Project, assuming that it does not overlap with the start of the project or in the period around a hurricane. Ideally, multiple baseline surveys would be conducted to understand most accurately pre-project baseline conditions. A single snapshot sampling event is unduly subject to anomalous readings and conditions.

Moreover, the baseline surveys must cover a wide enough area to capture unplanned impact areas. If baseline monitoring only covers the area of expected impact, there will be no documentation of pre-project conditions in a wider area, if that should occur. This was a major issue at the Port of Miami project site, because immediately pre-project baseline monitoring only extended to 150 m from the channel. Other "baseline" surveys went to 500m, which was still inadequate to capture the area of impact.⁵⁵ Cuning et al. suggested that sedimentation impacts extended beyond 1200m from the channel at PortMiami.⁵⁶ Therefore, the Corps should extend the baseline surveys beyond 1200 m from the channels, likely to at least 5000 m from the channel at Port Everglades, to ensure the entire extent of the baseline conditions are documented.

⁵⁰ DSEIS at 90.

⁵¹ DSEIS, App. J at 2.

⁵² *Great Basin Res. Watch*, 844 F.3d at 1101.

⁵³ Water & Air Research, Inc., *Miami Harbor Phase III Dredging Project: Sediment Transport, Dispersal and Deposition Study Outer Entrance Channel of the Miami Harbor* at 39 [hereinafter Final Miami Task 1 Report].

⁵⁴ DSEIS, App. G at G-19.

⁵⁵ Final Miami Task 1 Report.

⁵⁶ Cuning et al., *supra* note 1.

C. The Corps must update the cost-benefit analysis, which is flawed and based on obsolete information.

Regulations implementing NEPA require that the action agency disclose the direct, indirect, and cumulative effects of actions, including “economic, [and] social” impacts.⁵⁷ In addition, regulations require that when an agency prepares such an analysis, it “discuss[es] the relationship between that analysis and any analyses of unquantified environmental impacts, values, and amenities.”⁵⁸ Federal courts have struck down NEPA analyses because economic and socio-economic benefits were not properly quantified.⁵⁹ An analysis that overstates the economic benefits of a project fails in its purpose of allowing decision-makers to balance environmental harms against economic benefits.⁶⁰

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.⁶¹ Similarly, an EIS that relies upon misleading economic information may violate NEPA if the errors subvert NEPA’s purpose of providing decision-makers and the public an accurate assessment upon which to evaluate the proposed project.⁶²

The economic information underpinning the Corps’ decision to go forward with the Project is misleading and inaccurate. The Corps failed to update their 2015 cost-benefit analysis, despite the major changes to the Project detailed in the 2020 DSEIS affecting both the costs and the benefits of the project. As we have been warning the Corps, Broward County, and members of Congress since 2015, the costs of mitigation and monitoring for this project were sorely underestimated. This supplemental DSEIS comes closer to addressing the true environmental scope of the project, but does not consider the increased costs of this expanded mitigation, monitoring, adaptive management, and minimization measures.

Moreover, the global shipping fleet has changed in the last 5+ years: a 48-ft channel depth can no longer accommodate the increasingly common neo-Panamax and Post-Panamax III vessels, rendering the Project out-of-date.⁶³ The economic planning for this Project started in 1997 and was mostly recently amended in 2013.⁶⁴ As with the PortMiami project, which almost immediately began a study for yet another Port expansion project after the Phase III deepening and widening work was completed, it is unlikely the economic analysis for this Project accurately represents current shipping needs or best estimates of the port’s needs for the 50-year

⁵⁷ 40 C.F.R. § 1508.8.

⁵⁸ 40 C.F.R. § 1502.23.

⁵⁹ See, e.g., *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983) (setting aside analysis that presented project benefits but not costs).

⁶⁰ *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 446–48 (4th Cir. 1996) (setting aside EIS).

⁶¹ *Id.* at 446.

⁶² *Oregon Env’t Council v. Kunzman*, 817 F.2d 484, 492 (9th Cir. 1987).

⁶³ *Channel Depth at Major North American Container Ports*, GEOGRAPHY OF TRANSPORT SYSTEMS, <https://transportgeography.org/contents/chapter6/port-terminals/channel-depth-ports-north-america/#:~:text=While%20a%20typical%20Panamax%20containership,handle%20ships%20above%2010%2C000%20TEUs.>

⁶⁴ USACE, *Final Feasibility Report and Environmental Impact Statement, Port Everglades Harbor Navigation Study*, at 120 (May 2015) [hereinafter 2015 Feasibility Study].

lifespan of this Project. The economic benefits of the Project are likely also affected by the recent expansion of PortMiami. This means that the economic benefits detailed in the 2015 Feasibility Study are likely over-estimated.

The Corps must fully and accurately analyze the Project’s costs and weigh them against an accurate accounting of the Project’s benefits, considering the changing nature of global shipping fleets.

1. The Corps must accurately present the true costs of the monitoring, mitigation, and adaptive management that is necessary to minimize harm from the Project’s vast environmental impact.

The 2020 DSEIS corrected some of the major flaws in the original 2015 FEIS, increasing the area of environmental impact, adding new avoidance and minimization areas, increasing the required mitigation, and implementing a more robust monitoring plan. However, the Corps failed to analyze the additional expenses revealed by these analyses and necessary measures, and therefore failed to incorporate the true costs of the Project into its decision-making process. Below we describe the unexamined costs of the Project in more detail.

- a. *The cost-benefit analysis fails to include additional mitigation costs identified in the DSEIS.*

In the 2020 DSEIS, the Corps vastly increased the area of environmental impact from the Project, particularly due to the indirect impacts of sedimentation from the project, which will cause permanent damage to corals and habitat. The Corps has correctly acknowledged that indirect impacts will need mitigation. Specifically, the Corps determined that the Project’s impacts necessitated environmental mitigation for an additional 147 acres (at a minimum) in various ecosystems as detailed in the chart below, largely based on the spillage model.⁶⁵

Table 1: Summary of Impacts Requiring Compensatory Mitigation

Habitat	2015 FEIS Impact (acres)	2020 DEIS additional Impact (acres)	Total Impact (acres)
Mangroves	1.16	1.19	2.35
Salt Marsh	0	0.05	0.05
Seagrass	4.21	3.265	7.475
Hardbottom and Coral Reef	0.71	142.77	143.48
Total	14.97	147.275	162.245

In the deeply flawed 2015 FEIS, the Corps determined that the mitigation for a much smaller area (less than 15 acres) would cost \$35,600,000, excluding the costs of coral propagation, which would cost an additional \$16,300,000.⁶⁶ Now that the Corps has increased the area in need of mitigation by over 1000%, presumably the cost of mitigation will also

⁶⁵ See DSEIS at 18–19.

⁶⁶ 2015 Feasibility Study at 120.

increase substantially. The Corps must examine this significant additional cost and incorporate this information into its decision-making process.

In addition to increasing the total area in need of mitigation, the Corps also improved the quality of mitigation for affected coral reef habitat. The deeply inadequate 2015 FEIS required only 5 acres of artificial coral reef creation. The improved 2020 DSEIS requires this same five acres of artificial coral reef creation, *plus* coral reef restoration on an additional 15 acres, *plus* reef enhancement with assisted propagation on an additional 79 acres. While novel and more effective mitigation methods are likely also more cost effective than building boulder reefs, the expanded nature of the mitigation plan overall will likely increase the cost of the project.

b. *The cost-benefit analysis fails to include the costs of the new adaptive management proposed in the DSEIS.*

The DSEIS also adds a new, adaptive management plan. The adaptive management plan requires near real-time monitoring of water quality and oceanographic data.⁶⁷ The plan also establishes water quality-based and biological triggers, which the Corps proposes to use to decide whether to shut down dredging operations “when necessary.”⁶⁸ Both real-time monitoring and the potential shutdown of dredging operations will affect the Project’s cost significantly. The Corps must conduct a new cost-benefit analysis that fully examines the cost associated with the adaptive management plan, which was not included in the original 2015 Feasibility Study.

c. *The cost-benefit analysis fails to include the costs of the additional avoidance and minimization measures proposed in the DSEIS.*

In an attempt to minimize the profound environmental impacts of the Project, the Corps developed new avoidance and minimization measures, including:

- Prohibiting rock chopping, which prohibits the use of a hydraulic cutterhead dredge without suction of the dredged material;
- Prohibiting overflow of sediment from transport scows; and
- Implementing a spawning window, a three-month period in the summer when dredging is prohibited offshore to allow corals to spawn.⁶⁹

Despite the addition of these necessary measures, nowhere does the Corps analyze and disclose the associated costs. The Corps must include a cost-benefit analysis in the Final SEIS that fully examines extra costs from additional avoidance and minimization measures.

⁶⁷ DSEIS, App. H, at H-2.

⁶⁸ *Id* at H-2, H-26.

⁶⁹ DSEIS at 38–54.

- d. *The cost-benefit analysis fails to include the costs of the additional avoidance and minimization measures proposed in the DSEIS.*

We support the DSEIS' proposal to hire two separate contractors for the Project's monitoring and dredging, which will help avoid conflicts of interest. Furthermore, the DSEIS greatly increases the scope and extent of monitoring. The 2015 FEIS had inadequate monitoring to capture the impacts from dredging, particularly in geographic scope (only to 150 m) and methodology. This DSEIS also expands the area of monitoring based on the predicted impacts from the spill model (which is likely still an underestimate of true project needs) and requires more baseline monitoring. This DSEIS also proposes more advanced monitoring methodology, and bases the adaptive management plan on that methodology. Finally, the DSEIS specifies that a third party monitoring team:

shall verify and review 10% of all survey data collected and entered during each monitoring event by the primary monitoring teams. Verification of monitoring data by the third-party team shall include in-water collection of independent data (Section G.2.6.1) for comparison with data collected by the primary monitoring teams as well as a review of the data collected and entered by the primary monitoring teams and their associated office-based team.⁷⁰

This additional monitoring will require more personnel, equipment, analysis, and potentially more surveying, all of which are essential and will add cost to the Project. These additional monitoring requirements mean that the 2015 estimate of \$900,000⁷¹ for monitoring is a gross underestimate. The Corps must fully analyze the additional costs of monitoring in the Final SEIS and weigh them against an accurate accounting of the Project's benefits.

2. The outdated 2015 cost-benefit analysis overestimates the benefits of the Project.

The outdated 2015 Feasibility Study analyzes several purported benefits from the Project, including accommodating a larger share of Post-Panamax vessels and decreasing the cost of transporting cargo. Specifically, the Feasibility Study claims that because additional tugs are required for many Post-Panamax containerships, transportation costs are increased by "delays, increasing fuel consumption, and by requiring additional tugs. These existing problems are projected to increase as future cargo tonnage and vessels sizes increase at the Port."⁷²

According to the 2015 Feasibility Study "[b]y the base year, 2023, approximately 26% of container vessel calls at Port Everglades will be Post-Panamax vessels. By 2030, that percentage is anticipated to increase to 31% and continues to increase throughout the 50-year period of analysis with containerized cargo."⁷³ The Final SEIS should update this analysis, and examine how many of these Post-Panamax ships actually call at PortMiami, to get a sense of how the Feasibility Study's projections match current conditions.

⁷⁰ DSEIS, App. G at G-39.

⁷¹ 2015 Feasibility Study at 120.

⁷² 2015 Feasibility Study at 51.

⁷³ DSEIS at 90.

In addition, neither the 2015 Feasibility Study nor the 2020 DSEIS examines how many of these ships Port Everglades will actually be able to accommodate, even after the dredging. Ships are ever increasing in size. “In 2017, the largest ships were around 21,400 TEU ... just two years later, ships ranging from 24,000-25,000 TEU are being ordered and built.”⁷⁴ Port Everglades will be unable to accommodate these large vessels even after dredging. To service these larger vessels, the Port will still need tugboats, delays, and increased fuel costs, and the anticipated cost-savings may never appear.

Indeed, this same problem is occurring at PortMiami, which recently completed its own mega-dredging project to a 50-ft. depth. Even this 50-ft depth, which is two feet deeper than the planned dredging of Port Everglades, is now insufficient to accommodate the next generation of vessel sizes, and PortMiami started planning for *another major* dredging project almost immediately upon completion of the first.⁷⁵ The Project’s design covers a 50-year timeframe,⁷⁶ but given the changing nature of global shipping fleets and as demonstrated at PortMiami, this design is already obsolete.

Finally, given that PortMiami has already completed a dredging project to accommodate larger vessels and is planning to conduct another such project, it is unclear why Port Everglades must do so as well. PortMiami is less than 30 miles from Port Everglades, likely obviating the need for a second deep-water port in the region. The Corps must complete an economic analysis to assess the actual need and demand.

D. The Corps must take a “hard look” at environmental impacts including the vast impact dredging has on corals.

The fundamental purpose of NEPA analysis is to force the decision-maker to take a “hard look” at a particular action before deciding whether to proceed. 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.⁷⁷ This “hard look” requires agencies to utilize all high-quality information and accurate scientific analysis, including accurate scientific interpretations of data and studies.⁷⁸ If there are not sufficient data available, the agency must follow the requisite procedure for addressing or evaluating the impacts in view of incomplete or unavailable information.⁷⁹ “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.”⁸⁰ The law is clear that the environmental analysis must be a

⁷⁴ *Container Ships: Is Bigger Always Better?*, HELLENIC SHIPPING NEWS (Jan. 21, 2020), <https://www.hellenicshippingnews.com/container-ships-is-bigger-always-better/#:~:text=Ever%20since%20the%20advent%20of,ships%20were%20around%2021%2C400%20TEU>.

⁷⁵ Jenny Staletovich, *PortMiami Seeks to Expand Three Years After Controversial ‘Deep Dredge’ Project*, MIAMI HERALD (Nov. 13, 2018), <https://www.tnews.com/articles/portmiami-seeks-expand-three-years-after-controversial-deep-dredge-project>.

⁷⁶ 2015 Feasibility Study at 3.

⁷⁷ See 40 C.F.R. §§ 1500.1(b), 1502.1.

⁷⁸ See *id.* at 1500.1(b).

⁷⁹ *Id.* § 1502.22.

⁸⁰ *Klamath-Siskiyou Wilderness Center v. Bureau of Land Mgmt.*, 387 F.3d 989, 994 (9th Cir. 2004) (quoting *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1380 (9th Cir. 1998)).

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.”⁸¹ Finally, NEPA does not “permit agencies to falsify data or to ignore available information that undermines their environmental impact conclusions.”⁸² Thus, the Corps’ review must be thorough and the agency may not “sweep[] negative evidence under the rug.”⁸³

The DSEIS for the Port Everglades Project does not include a complete analysis of impacts. Instead, it underestimates total impact by refusing to acknowledge the true mortality of corals during PortMiami dredging and by relying on an inadequate spillage model. As stated above, the PortMiami dredging destroyed over 500,000 corals, far beyond what the Corps or NMFS predicted. Despite numerous studies demonstrating these outcomes, the Corps has failed to acknowledge the true scope of the impact at PortMiami or apply that scope of impact to the Port Everglades Project. In order to take the “hard look” that NEPA requires, the Corps must acknowledge the true scope of coral mortality at PortMiami, conduct modeling adequate to measure impact, more fully assess the connections between dredging activities and coral disease, examine impacts from climate change, and analyze additional sediment impacts from blasting and dewatering. Moreover, the Corps must analyze potential impacts to scalloped hammerheads and the Florida snook.

1. The DSEIS fails to fully and accurately analyze the Project’s impacts to corals.

As stated above, the impact on corals from dredging is extreme. The PortMiami dredging killed at least 560,000 corals and possibly twice that many.⁸⁴ The PortMiami dredging also coincided with a devastating disease outbreak, and could have even contributed to it, either sparking or accelerating the outbreak. This has not yet been thoroughly investigated, but the link between sedimentation and disease is well-established.⁸⁵ At least one species of coral, pillar coral, became locally extinct in the north Florida reef tract as a result of this disease.⁸⁶

a. The Corps must use information gained at PortMiami to estimate and analyze coral mortality for the project.

A major impetus for drafting a supplemental EIS for this Project was to examine the impact from the PortMiami project to inform the Project at Port Everglades. But nowhere in the DSEIS does the Corps discuss the extent of coral mortality at PortMiami or analyze how it might occur again at Port Everglades. Indeed, the DSEIS does not even estimate how many corals will likely be killed during the Project, even though this information is available: Jocelyn Karazsia

⁸¹ 40 C.F.R. §§ 1502.22(b)(2), (4), 1502.24.

⁸² *Hoosier Env’t Council v. U.S. Dep’t of Transp.*, 2007 WL 4302642, at *13 (S.D. Ind. Dec. 10, 2007).

⁸³ *Nat’l Audubon Soc’y v. Dep’t of the Navy*, 422 F.3d 174, 194 (4th Cir. 2005).

⁸⁴ Cuning et al., *supra* note 1.

⁸⁵ DSEIS at 139.

⁸⁶ Neely, *supra* note 12.

(NMFS) estimated 340,000+ corals will be killed in the direct and indirect anticipated impact areas.⁸⁷ If this estimate is based on the spillage model, it is likely an underestimate, as discussed in more detail below. Moreover, the Corps must analyze how and whether this level of mortality due to sedimentation will initiate or exacerbate a second disease outbreak and potentially lead to the local extirpation of additional coral species.

b. *The DSEIS underestimates coral mortality because the spillage model fails to adequately demonstrate sedimentation impacts from the Project.*

The Corps further underestimates the Project’s impacts to corals by relying on a flawed spillage model. The DSEIS claims that the spillage model was developed for a narrow purpose: to understand the impact of eliminating overflow.⁸⁸ “The Corps recently developed the PEV Spillage Model (included as Appendix I) to compare the relative change in impacts associated with eliminating overflow, as well as compare potential spillage associated with using different dredge methodologies (e.g. cutter suction dredge vs. mechanical dredge).”⁸⁹ Instead, the Corps relies on the model beyond its stated purpose, and its results form the foundation of the subsequent impact estimates, minimization measures, monitoring plans, and mitigation plans. But the model is far too limited and basic for the task to which it is now being applied. While we are pleased that the Corps is attempting an impact estimate model in the DSEIS (a missing feature of the 2015 FEIS), the model is likely underestimating the impact area. Very simply, the Port Everglades Project is a 5-year-long dredging effort, producing continuous sediment from different strata, blasting, and operating both offshore and inshore with constantly running transport scows and generating ongoing resuspension events. By contrast, the spillage model is based on a single, large sedimentation event that is wholly dissimilar from the Project.⁹⁰ The DSEIS acknowledges the limitations of the model, stating:

The Corps recognizes several limitations of this model. Since it is not a numerical model with a well-defined model grid, the resolution of results is restricted. In addition, there is no time component, that is, results assume all material is released and settles at once in the model and assumes a uniform distribution of particles in the cross-shore direction. Furthermore, the model was not developed for resuspension and does not address fines from the Anastasia and Fort Thompson formations.⁹¹

These limitations render the model nearly useless to analyze the full scope of the impacts from this Project.

We support the Corps’ decision to significantly expand the area of impact to corals. However, NEPA requires that the Corps take a “hard look” at impacts, and relying on such a flawed model hamstring the Corps’ ability to do so. Instead, the Corps should develop a sophisticated model to examine impacts or look at the impact at PortMiami—an actual real-

⁸⁷ Jocelyn Karazsia, NMFS, Presentation to the Disease Advisory Committee, Slide 9 (January 13, 2021).

⁸⁸ DSEIS at 140.

⁸⁹ *Id.*

⁹⁰ *Id.* at 49.

⁹¹ *Id.* at 102–103.

world example of how dredging affects corals in southeastern Florida—to estimate and analyze the impact to corals at Port Everglades. As stated above, studies done after the PortMiami dredging indicated that 560,000 corals were killed, impacts extended 5-10 km from the channel to varying degrees, and sedimentation increased on reef habitat 26-fold, resulting in an up to 5.1-fold increase in partial coral mortality.⁹² Moreover, coral mortality was not the only impact: coral near the channel displayed little or no growth for *two years* following dredging.⁹³ Either the Corps must develop a more sophisticated model to assess the Project’s impacts, which is certainly within the Corps’ expertise and capability, or these studies, rather than a flawed model, should form the basis of the Corps’ impact analysis and mitigation for corals.

Finally, the DSEIS refers to a sediment morphodynamics study,⁹⁴ which is not included in the DSEIS. This study likely will provide crucial information for developing a monitoring, mitigation, adaptive management, and minimization plan. Therefore, the Corps should analyze the results of that study before finalizing the SEIS and provide that information to the public. The Corps should also include a robust study such as the Air and Water Research Report Task 2 report (May 2018) using tracers, modelling the residence time and transport of various types of sediment.⁹⁵ Decisions based on incomplete analysis will once again lead to an underestimate of the true impact of dredging on corals, in violation of NEPA.

- c. *The Corps must fully analyze the link between sedimentation and disease to determine whether another large dredging project could trigger or exacerbate a second disease outbreak on Florida’s reef tract.*

While the DSEIS contains a robust discussion of the research and a possible link between coral disease and dredging, more investigation is needed into the possible role of the dredging at PortMiami in causing or contributing to the SCTLD outbreak. This data is available for analysis by the Corps or NOAA. The DSEIS states:

Natural and anthropogenic sedimentation and/or increased turbidity, should they occur, could exacerbate the effects of the SCTLD. One of the main impacts of sedimentation and turbidity on coral disease is the impairment of the coral’s innate immune system, leaving the colony susceptible to disease. The processes by which coral remove sediment (e.g. mucous production and ciliary action) are energy-intensive, burdening the coral at a time when their energetic budget may already be reduced (Riegl and Branch 1995). Direct contact with sediment can cause abrasion or breakage (Erftemeijer et al. 2012), reduced growth, and increase recent partial mortality (Miller et al. 2016), potentially leading to entire colony mortality, or lower overall fitness. Abrasion and breakage can also potentially open the coral to infection. As such, it is important that coastal construction projects (including

⁹² Miller et al., *supra* note 22; Cunning et al., *supra* note 1.

⁹³ Miller et al., *supra* note 22.

⁹⁴ DSEIS at 101.

⁹⁵ Water & Air Research, Inc., *Miami Harbor Phase III Dredging Project: Report Findings of Sediment Transport, Dispersal and Deposition Study Outer Entrance Channel of Miami Harbor – Report II* (May 2018) [hereinafter Final Miami Task 2 Report].

dredging) in Florida consider minimizing project-related sedimentation impacts until the ecosystem is stable and preferably has had its resilience restored.⁹⁶

However, it is clear that the ecosystem is not yet stable and that the risk of disease remains significant. The DSEIS also notes that “SCTLD has proven to be a very persistent disease in Florida; susceptible corals that first experienced the disease at outbreak levels in 2014 and 2015 can still be found with active disease lesions, suggesting that the (yet unidentified) causative pathogen(s) can persist in the coral reef system at least several years after introduction.”⁹⁷

Clearly, SCTLD is still present on Florida’s reefs. Therefore, it is possible—if not likely—that another major, multi-year dredging project could reignite the disease, spreading it to the corals of Broward County and then the reef tract. The Corps has not fully considered this risk in the DSEIS. The Corps should not proceed with dredging if disease is active in the area. The Corps must also 1) fully explore the link between dredging and disease at PortMiami to understand the role of the dredging project in causing or worsening SCTLD; 2) create a monitoring plan for early SCTLD or other disease outbreak signs; and 3) have an immediate adaptive management plan to address a disease outbreak and stop work.

2. The Corps must analyze impacts from “dewatering,” including whether dewatering negates the benefits of eliminating overflow.

We encourage the Corps to continue to improve the SEIS’ minimization measures. The DSEIS proposes to prohibit overflow at Port Everglades. This measure should be required for this Project as well as future projects. Overflow was a major contributor to sedimentation and impacts to the hardbottom at PortMiami,⁹⁸ releasing fine, suspended sediments around the location of dredging.

The Corps has not, however, eliminated dewatering from Project operations.⁹⁹ “Dewatering” is not defined in the DSEIS. But both dewatering and overflow appear to be methods that release sediment-filled water at the site of dredging (i.e. over the reef area). These methods, therefore, likely contribute similarly to sedimentation and turbidity. If dewatering has similar or worse sedimentation impacts than overflow (which we do not know because there is no analysis on dewatering in the DSEIS), then the prohibition on overflow does not actually minimize harm as the Corps claims in the DSEIS. The Final SEIS should include: 1) definitions of dewatering and overflow; 2) an analysis on the sedimentation impacts from dewatering; and 3) a prohibition on dewatering for the same reasons the Corps is prohibiting overflow.

Likewise, the DSEIS does not prohibit the use of green valve technology. This technology contributed to increased sedimentation at PortMiami¹⁰⁰ and therefore should be prohibited in this Project.

⁹⁶ DSEIS at 139.

⁹⁷ *Id.*

⁹⁸ Avoidance and Minimization Measure (AMM) 3D describes an upland “dewatering” site on Port property, where dredged material unsuited for the offshore disposal site will be treated before being shipped to a landfill

⁹⁹ DSEIS at 45.

¹⁰⁰ Dial Cordy and Associates Inc., *Weekly Offshore Coral Stress and Sediment Block Compliance Report, Port Miami Phase III Harbor Deepening, Week 17*, at 4 (Mar. 27, 2014).

3. The Corps must analyze the sedimentation impacts from blasting, including whether blasting negates the benefits from the prohibition on rock-chopping.

The DSEIS prohibits rock chopping at the Project site.¹⁰¹ Rock chopping was a major contributor to sedimentation at PortMiami because it “results in multiple resuspension events from the chopping event itself, to potential resuspension of these sediments from passing vessels or current energy, and finally dredging of the chopped sediments. This pre-treatment methodology was shown to be deleterious to hardbottom and coral reef resources at PortMiami.”¹⁰² We support the Corps’ decision to prohibit rock chopping, and urge the Corps to prohibit it in future projects as well.

However, the project will still allow blasting.¹⁰³ Specifically, the Corps plans to allow 280 days of blasting over the course of Project construction.¹⁰⁴ Blasting may have a similar effect on the ecosystem as rock chopping, in terms of allowing debris to remain on the benthos and to resuspend for long periods of time with every passing boat and wave. In short, blasting could result in the same kind of sedimentation harms to coral as rock-chopping. If so, the prohibition on rock chopping does not actually achieve the minimization of harm that the DSEIS claims. The Final SEIS must include an analysis on the sedimentation impacts of blasting, to determine whether the current minimization measures are adequate.

4. The DSEIS fails to analyze additional environmental impact from leaking scows.

At PortMiami, transport scows were continually leaking, despite requirements to change leaking scows and ullage-change restrictions for transit. The DSEIS analyzes a number of alternatives to the use of scows, an analysis “prompted by lessons learned from PortMiami where leaky scows were identified as a source of increased turbidity and sedimentation in the water column during transport. The Corps investigated seven disposal options in this category from upland disposal to pumping material.”¹⁰⁵ Ultimately, however, the Corps determined that the alternatives were not feasible and identified the use of transport scows as the preferred method of removing and disposing of sediment.¹⁰⁶ The scows will transport dredged material from the Project site to the disposal site, located four nautical miles northeast of the entrance of Port Everglades.¹⁰⁷ The DSEIS notes that no scow is 100% watertight and that dredged material will leak.¹⁰⁸

The DSEIS fails to consider the impact of leaking scows to surrounding habitats and species. The DSEIS states:

¹⁰¹ DSEIS at 40.

¹⁰² *Id.*

¹⁰³ *Id.* at 41.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.* at 42.

¹⁰⁶ *Id.* at 161

¹⁰⁷ *Id.* at 30

¹⁰⁸ *Id.* at 49.

The ullage (loaded draft) of each scow is recorded approximately every 30-seconds to determine if there is any loss of material from the scow during transit. These data are reviewed after each load by the contractor and the Corps if a scow has a net loss of an agreed upon level of draft stated in the project Site Management and Monitoring Plan (SMMP) between the dredge site and placement site(s) (averaged between the bow and stern monitoring locations). This serves as a “red flag” to conduct an investigation as to why the draft loss occurred.... A 1.5 feet loss trigger for Port Everglades has been set as a condition in USEPA’s SMMP for the PEV ODMDS (USEPA 2020).¹⁰⁹

There is no analysis of the impact of material loss up to 1.5 feet (or more) of draft per trip on the surrounding environment, which may be significant.

5. The Corps must analyze impacts to the ESA-listed scalloped hammerhead shark.

The DSEIS explicitly fails to analyze the Project’s impacts on scalloped hammerheads, a listed species under the Endangered Species Act. The Corps bases this conclusion on a statement from NMFS’ South Atlantic Regional Biological Opinion for Dredging and Material Placement Activities in the Southeast United States.¹¹⁰ However, this statement is inaccurate. Scalloped hammerheads exist in Florida waters,¹¹¹ as NMFS has stated elsewhere.¹¹² Therefore, the Corps must analyze the Project’s impacts to scalloped hammerheads in the Final SEIS.

6. The Final SEIS must analyze blasting impacts to snook spawning.

In our comments on the scoping process for this DSEIS, we explained how the Project could deleteriously affect snook spawning.¹¹³ Specifically, 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, the Corps must 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 affect 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 a snook aggregation site could affect snook populations for the entire region and along the course of this species’ migratory route. The Corps failed to

¹⁰⁹ *Id.* at 48.

¹¹⁰ *Id.* at 168.

¹¹¹ Neil Hammerschlag, Personal Communication, January 2021.

¹¹² Margaret H. Miller et al., *Status Review Report: Scalloped Hammerhead*, NOAA NMFS, 9 (Mar. 2013), ftp://ftp.library.noaa.gov/noaa_documents.lib/NMFS/OfcProtectedResources/Status_Review/SR_scalloped_hammerhead_2013_508.pdf. (“In the western Atlantic Ocean, the scalloped hammerhead range extends from the northeast coast of the United States (from New Jersey to Florida) to Brazil, including the Gulf of Mexico and Caribbean Sea.”).

¹¹³ Rachel Silverstein et al., Comment Letter on the Supplemental NEPA Document for the Port Everglades Navigation Improvements Project, 82 Fed. Reg. 8585 (January 26, 2017), at 34–35 (Mar. 27, 2017).

analyze the effects of dredging and blasting on snook both in the original 2015 FEIS and in the 2020 DSEIS. The Final SEIS must correct this flaw.

7. The Corps must analyze the effects of climate change in conjunction with the Project.

The greenhouse gases currently in the atmosphere commit the planet to long-lasting climate change that is irreversible on a multi-century to millennial time scale.¹¹⁴ Carbon dioxide (“CO₂”) has a long residence time in the atmosphere, meaning that a large fraction of the CO₂ emitted to date will remain in the atmosphere for tens to hundreds of thousands of years.¹¹⁵ Climatic changes that are caused by CO₂ emissions, such as ocean warming, sea level rise, and ocean acidification are long-lasting and irreversible on human timescales.¹¹⁶ Even if all greenhouse emissions were to completely cease today, significant ongoing regional changes in temperature and precipitation would still occur, global average temperatures would not drop significantly for at least 1,000 years, and sea-level rise would continue for millennia.¹¹⁷ Deforestation and land-use change (including the loss of 30% of the world’s mangrove coverage in the last 50 years) account for up to 20% of total anthropogenic CO₂ emissions.¹¹⁸

In 2016, the CEQ released guidance explaining that climate change “and its effects fall squarely within NEPA’s purview.”¹¹⁹ The CEQ further stated that considering climate change under NEPA allows “agencies to improve the quality of their decisions” by identifying “important interactions between a changing climate and the environmental impacts from a proposed action.”¹²⁰

The guidance directs agencies to analyze two facets of climate change in relation to a project: 1) the “potential effects of a proposed action on climate change” and 2) the “effects of climate change on a proposed action and its environmental impacts.”¹²¹ For the analysis on a

¹¹⁴ Intergovernmental Panel on Climate Change (IPCC), Summary for Policymakers, in CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS, CONTRIBUTION OF WORKING GROUP I TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (2013).

¹¹⁵ Peter U. Clark et al., *Consequences of twenty-first century policy for multi-millennial climate and sea-level change*, 6 NATURE CLIMATE CHANGE 360 (2016).

¹¹⁶ Archer & Brovkin, *supra* note 115; Solomon et al., *supra* note 115; Nathan P. Gillett et al., *Ongoing climate change following a complete cessation of carbon dioxide emissions*, 4 NATURE GEOSCIENCE 83 (2011).

¹¹⁷ Archer & Brovkin 2008; Solomon et al. 2009; Gillett, Nathan P. et al., *Ongoing climate change following a complete cessation of carbon dioxide emissions*, 4 NATURE GEOSCIENCE 83 (2011).

¹¹⁸ Meenakshi Jerath et al., *The role of economic, policy, and ecological factors in estimating the value of carbon stocks in Everglades mangrove forests, South Florida, USA*, 66 ENV’T SCIENCE & POLICY 160 (Dec. 2016).

¹¹⁹ Memorandum from Christina Goldfuss, CEQ, *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* (Aug. 1, 2016), https://ceq.doe.gov/docs/ceq-regulations-and-guidance/nepa_final_ghg_guidance.pdf. [hereinafter 2016 NEPA Climate Guidance]. 2016 Guidance at 2. EO 1378 rescinded the CEQ’s 2016 climate guidance, relied upon here. However, President Biden recently rescinded EO 1378 as well as the 2019 climate guidance issued under the Trump administration. See <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/>. Presumably, this means that the 2016 climate guidance has been reinstated until new climate guidance is published.

¹²⁰ 2016 NEPA Climate Guidance at 3.

¹²¹ *Id.* at 4.

project's effects on climate change (facet 1), the guidance explicitly states that agencies should not only consider greenhouse gas emissions but carbon sequestration as well.

For the Port Everglades Project, therefore, the Corps must analyze both how the Project may contribute to climate change, including how the destruction of mangrove and seagrass habitat may result in the destruction of carbon sequestration potential, as well as how climate change will interact with and potentially exacerbate the environmental impacts of the Project. Neither the original 2015 FEIS nor the 2020 DSEIS contain such an analysis.

- a. *The Corps failed to analyze the impacts of the Project's destruction of carbon sequestering ecosystems on climate change.*

Mangrove ecosystems are one of the most effective carbon sequestering systems on the planet. Mangroves can sequester two to three times as much carbon as rainforests, up to 2,000 tons of CO₂ equivalent per hectare.¹²² Likewise, seagrass and salt marsh habitat are also effective carbon sequestering systems.¹²³ Unfortunately, piecemeal development of coastal wetland habitat has resulted in the destruction and continued decrease of these important, carbon-sequestering ecosystems. Ensuring that coastal wetlands remain intact is crucial to tackling the climate crisis. At the very least, NEPA requires that agencies examine this impact and identify mitigation for it as necessary. The Corps thus must conduct an analysis on how the Project's destruction of mangroves (10+ acres including the Turning Notch expansion), seagrass (7+ acres), and salt marsh (0.05 acres) will contribute to and exacerbate climate change.¹²⁴ The Corps must look at this impact in the context of the Project's other greenhouse gas emissions (i.e. from Project construction). Then, the Corps must identify ways to avoid and otherwise mitigate, in order to minimize the Project's climate impacts.¹²⁵

- b. *The Corps failed to analyze how climate change will interact with and exacerbate the Project's environmental impacts.*

In addition to analyzing the Project's impact on climate change, the Corps must analyze how climate change will interact and potentially exacerbate the Project's environmental impacts. Climate change causes ocean temperatures to rise and increases the amount of carbon in ocean waters, leading to ocean acidification. In the northern part of the Florida reef tract, for example, corals actually start to dissolve in the winter months.¹²⁶ Warming ocean waters, which can cause coral bleaching, are devastating coral ecosystems around the world, and these problems are only intensifying.¹²⁷ Climate change is also inducing more frequent and extreme local climatic events,

¹²² IUCN BLUE CARBON, <https://www.iucn.org/resources/issues-briefs/blue-carbon> (last visited January 28, 2021).

¹²³ *Id.*; Aurora M. Ricart et al., *High Variability of Blue Carbon Storage in Seagrass Meadows at the Estuary Scale*, 10 SCIENTIFIC REPORTS NATURE RESEARCH 5865 (2020).

¹²⁴ 2016 NEPA Climate Guidance, *supra* note 118 at 3; *See* DSEIS at 18–19.

¹²⁵ *See* 40 C.F.R. §§ 1502.14(f), 1502.16(h).

¹²⁶ N. Muellehner et al., *Dynamics of carbonate chemistry, production, and calcification of the Florida Reef Tract (2009–2010): Evidence for seasonal dissolution*, 30 GLOBAL BIOGEOCHEMICAL CYCLES 661 (2016).

¹²⁷ Michon Scott & Rebecca Lindsey, *Unprecedented 3 Years of Global Coral Bleaching, 2014-2017*, NOAA (Aug. 1, 2018), <https://www.climate.gov/news-features/understanding-climate/unprecedented-3-years-global-coral-bleaching-2014%E2%80%932017>.

which can also stress coral reefs.¹²⁸ The combined influence of multiple stressors on corals can have amplified negative impacts.

Corals in the region are already stressed by climate change impacts, including warming temperatures (causing bleaching) and ocean acidification. These stressors can impact coral immunity, disease vulnerability, healing rates, reproduction, feeding, sediment rejection, and growth patterns. The Corps must examine these synergistic impacts on corals and analyze how they may interact with the sedimentation caused by the Project. Studies show that bleached coral, for example, is less able to clear deposited sediment,¹²⁹ suggesting that prolonged dredging will make it more difficult for coral species to survive or recover from other climate-induced threats. Likewise, bleaching can disrupt growth (Suzuki 2003) and reproduction (Levitan et al. 2014) in corals, as can sedimentation.¹³⁰ Additionally, corals experiencing thermal stress may be more vulnerable to disease, as can corals experiencing sedimentation.¹³¹ The Corps must analyze how the Project's specific environmental stressors may interact synergistically with climate change impacts for coral reefs, such as how bleaching, acidification, and disease can potentially be worsened by sedimentation, and how this may affect recovery, growth, feeding, or reproduction. This analysis must be included in this analysis in the Final SEIS, as NEPA requires.

8. The FSEIS Must Include a Flushing or Flooding Model.

An accurate model of the alteration in hydrodynamics, a flooding and flushing model, is crucial for this project and must be completed 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 recommends that “the [Corps] provide a detailed hydrographic assessment” for this project.¹³² 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.¹³³ 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 Final SEIS.

¹²⁸ Felipe M. Franca et al., *Climatic and local stressor interactions threaten tropical forests and coral reefs*, 375 PHILOSOPHICAL TRANSACTIONS B 1 (2020), <https://royalsocietypublishing.org/doi/10.1098/rstb.2019.0116>.

¹²⁹ Bessell-Brown et al., *Cumulative Impacts: Thermally Bleached Corals Have Reduced Capacity to Clear Deposited Sediment*, 7 SCIENTIFIC REPORTS NATURE RESEARCH 2716 (2017).

¹³⁰ A. Suzuki et al., *Skeletal isotope microprofiles of growth perturbations in Porites corals during the 1997–1998 mass bleaching event*. 22 CORAL REEFS 357 (2003); Don R. Levitan et al., *Long-term reduced spawning in Orbicella coral species due to temperature stress*. 515 MAR. ECOL. PROG. SER. 1 (2014).

¹³¹ ECOLOGY 2859 (2009); F. Joseph Pollock et al., *Sediment and Turbidity Associated with Offshore Dredging Increase Coral Disease Prevalence on Nearby Reefs*, 9(7) PLoS ONE e102498 (2014).

¹³² Letter from Roy E. Crabtree, NMFS Regional Administrator, to Col. Alan Dodd, USACE Commander, NMFS Review of the DEIS on the Port Everglades Dredging Project, at 10–11 (Aug. 12, 2013).

¹³³ 2015 FEIS, App. C.

E. Cumulative Impacts.

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.”¹³⁴ “Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”¹³⁵ “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.”¹³⁶

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.¹³⁷ 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.’”¹³⁸ The cumulative impact analysis must also include an assessment of potential interrelated impacts to the natural or physical environment.¹³⁹

1. 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.

Despite the great strides made in the DSEIS to more accurately gauge the Project’s impacts, the Corps failed to meaningfully update the cumulative impact analysis. Instead, the DSEIS states:

[T]he 2016 FEIS provides a thorough review of potential cumulative effects, including past, present and reasonably foreseeable future actions at the time of the development of the 2016 FEIS. This information remains valid and thus, will not be reiterated within this document; the material has been incorporated by reference and updated only where new pertinent data exists.¹⁴⁰

In the original 2015 FEIS, the Corps narrowly limited its consideration of cumulative effects by only discussing dredging, beach renourishment, and port expansion and construction

¹³⁴ 40 C.F.R. § 1508.7.

¹³⁵ *Id.*

¹³⁶ *Id.* § 1508.8(b).

¹³⁷ *Fla. Wildlife Fed’n v. U.S. Corps of Eng’rs*, 401 F. Supp. 2d 1298, 1326 (S.D. Fla. 2005); *see also Soda Mountain Wilderness Council v. Norton*, 424 F. Supp. 2d 1241, 1266 (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.”).

¹³⁸ *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 810 (9th Cir. 1999).

¹³⁹ 40 C.F.R. 1508.8; *see e.g., Wyoming v. U.S. Dep’t 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 effects are interrelated,” then the NEPA analysis must discuss “all of these effects on the human environment.”).

¹⁴⁰ DSEIS at 195.

projects, most of which appear to be actions conducted or supervised by the Corps.¹⁴¹ 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.¹⁴² This minimal analysis does not include the detail and quantification necessary to satisfy the “hard look” standard NEPA requires.

In addition, as the impact assessment and the presence of listed species has dramatically increased (from ~15 to 500+ acres of coral reef, for example), the entire cumulative impacts analysis has changed, and therefore the 2015 FEIS cumulative impact analysis is no longer valid.¹⁴³

Moreover, both the original FEIS and the DSEIS fail 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 2015 FEIS appears to be limited only to actions undertaken or supervised by the Corps or taking place at the Port. NEPA, however, requires the Corps to analyze all actions “regardless of what agency (Federal or non-Federal) or person undertakes such other actions.”¹⁴⁴ Other actions that are affecting 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 affecting coral colonies in the project area.¹⁴⁵ 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.¹⁴⁶ Rather than fixing this problem, the DSEIS merely identifies a single new project: a U.S. Navy dredging project at the South Florida Ocean Measurement Facility,¹⁴⁷ located on the south side of the Port Everglades inlet.¹⁴⁸ But the DSEIS does not explain when this additional dredging will occur, whether it will overlap with the Project’s dredging, or whether the coral around the Port can sustain additional dredging pressure. In short, there is no actual analysis of the cumulative impact, even from this one project. 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.

¹⁴¹ 2015 FEIS at 263–67.

¹⁴² *Id.* at 268–73.

¹⁴³ See 2016 FEIS at 273 (Cumulative Impacts Analysis, stating, “The Recommended Plan would impact an additional 15.33 acres of hardbottom habitat from among these areas. This comprises approximately 0.1% of the offshore historic reef coverage of Broward County.”).

¹⁴⁴ 40 C.F.R. § 1508.7.

¹⁴⁵ NMFS, *Biological Opinion for Dredging and Expansion of Port Everglades*, 85–87 (Mar. 7, 2014) [hereinafter “2014 BiOp”].

¹⁴⁶ Ryan Mills, *Florida Senate budget chief Latvala proposes overhaul of beach aid programs*, NAPLES DAILY NEWS (March 2, 2017), <https://www.naplesnews.com/story/news/politics/2017/03/02/senate-leader-proposes-overhaul-state-beach-program/98628928/>.

¹⁴⁷ DSEIS at 198.

¹⁴⁸ *South Florida Ocean Measurement Facility*, DEP’T OF DEFENSE STEM, <https://dodstem.us/labs/south-florida-ocean-measurement-facility>.

In addition to the missing projects listed above, it is foreseeable that Port Everglades, like Port Miami, will determine, immediately after dredging this project, that 48-ft channels are insufficient to accommodate ever-increasing vessel sizes (as discussed in Section II(C) above). They would then need to do another expansion project immediately. As a result, the Corps must analyze the cumulative environmental impact of this persistent future dredging that is reasonably foreseeable.

Furthermore, the Corps must include a discussion of the impacts of climate change on coral reefs. Climate change and associated ocean acidification are 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.¹⁴⁹ Reefs in Broward County have already started to dissolve at certain times of year as a result of these conditions.¹⁵⁰

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.¹⁵¹ 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 (e.g. bleaching and acidification) 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 the Port Everglades Project in the context of climate change, including 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.

2. The Corps must clearly define and explain the geographic scope for the cumulative impacts analysis.

In addition, agencies must identify the geographic area of the cumulative impacts analysis. “NEPA requires that an agency explain in the EIS how it chose the geographic area in which it conducted the cumulative impacts analysis and that it demonstrate that in making such choice it considered the relevant factors.”¹⁵² “Relevant factors include ‘the scope of the project considered, the features of the land, and the types of species in the area.’ The presence of species

¹⁴⁹ Michael Oppenheimer et al., *Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities*, IPCC, 379 (2019), https://www.ipcc.ch/site/assets/uploads/sites/3/2019/11/08_SROCC_Ch04_FINAL.pdf.

¹⁵⁰ Nancy Muehlehner et al., *Dynamics of carbonate chemistry, production, and calcification of the Florida Reef Tract (2009-2010): Evidence for seasonal dissolution*, 30:5 GLOBAL BIOGEOCHEMICAL CYCLES 661 (2016).

¹⁵¹ 2015 FEIS at 246, 260–62

¹⁵² *Habitat Educ. Ctr., Inc. v. Bosworth*, 363 F. Supp. 2d 1090, 1097 (E.D. Wis. 2005)

habitat outside the project area is also a relevant consideration in determining the geographic scope of a cumulative impacts analysis for wildlife.”¹⁵³

For this Project, the Corps identified an inadequate and poorly defined geographic area for the cumulative impacts analysis. The 2015 FEIS merely states:

The geographic areas used for the scope of this analysis varies for each affected resource, For example, air quality is generally evaluated on a county by county basis by USEPA, so the cumulative effects for air quality would be evaluated by this bounding area. Marine resources, however, are affected only within the nearshore areas off of the Broward County coastline and marine inshore waters. Mangrove wetlands are distributed throughout south Florida including Broward County. Revelevant [sic] past, current and future projects have been included in the cumulative impact analysis.¹⁵⁴

Although the Corps asserts that “Marine resources ... are only affected within the nearshore areas off of the Broward County coastline and marine inshore waters,”¹⁵⁵ the Corps fails to support this claim with any analysis. The PortMiami dredging project coincided in space and time with a severe outbreak of SCTLD disease, leading to the hypothesis that the dredging project may have possibly triggered the outbreak or exacerbated its spread. SCTLD has had far-reaching and devastating consequences for the entire Floridian reef tract and the broader population of Caribbean corals, including the local extirpation of at least one coral species (*D. cylindrus*). As the link between coral disease and sedimentation becomes clearer, the Corps must carefully scrutinize the cumulative impacts of multiple dredging projects on Florida’s fragile reef ecosystem.

PortMiami is located only 27 miles (~43 km) from Port Everglades. PortMiami recently completed one major dredging project and is already planning another, but the Corps did not include impacts from the Miami dredging projects on the area’s coral reefs in its cumulative impact analysis for the Project. This Project, which could overlap in time with yet another expansion dredging project and/or operation and maintenance dredging at PortMiami, may be enough to push more coral species over the edge in southeastern Florida, particularly considering the loss of recruitment habitat from sedimentation and/or if it triggers or reignites a disease outbreak.

At the very least, the Corps must analyze this possibility in a full and robust cumulative impacts analysis that includes a wide enough geographic area to understand the threats to the reef ecosystem at issue.

¹⁵³ *Id.* (citations omitted).

¹⁵⁴ 2015 FEIS at 268.

¹⁵⁵ *Id.*

F. The Corps improperly segmented the Turning Notch Expansion from the Project.

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.¹⁵⁶ 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.”¹⁵⁷

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.”¹⁵⁸ As described above, the Corps must also consider “cumulative actions,” which include those that “when viewed with other proposed actions have 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.”¹⁵⁹

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.¹⁶⁰ The Corps removed this portion of the project before completing the 2015 FEIS, however, and the local sponsor, the Port, took over the expansion of this area.¹⁶¹ The expansion will deepen the Turning Notch to 48 feet, matching the new depth of the Port’s channels after Project completion. The Corps claims the Turning Notch expansion would occur even without the Project. But deepening the Port’s channels to 48 feet would seem to “automatically trigger” the need to deepen the Turning Notch to the same depth, undercutting the Corps’ suggestion that the expansion is unrelated to the Project.

The expansion also would eliminate approximately 8.5 acres of red and black mangrove wetlands.¹⁶² 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.¹⁶³ The Final EIS states, “This component of the project

¹⁵⁶ 40 C.F.R. § 1508.27(b)(7) (“Significance cannot be avoided by ... breaking [an action] down into small component parts.”).

¹⁵⁷ *Earth Island Inst. v. U.S. Forest Serv.*, 351 F.3d 1291, 1305 (9th Cir. 2003). *See also* 40 C.F.R. § 1508.25; *Fla. Wildlife Fed’n*, 401 F. Supp. 2d at 1313.

¹⁵⁸ 40 C.F.R. § 1508.25.

¹⁵⁹ *Id.*

¹⁶⁰ 2015 FEIS at iv.

¹⁶¹ *Id.*

¹⁶² *Id.* at 41.

¹⁶³ 40 C.F.R. §§ 1508.25, 1508.741.

was removed from the federal project for economic reasons.”¹⁶⁴ These reasons should be spelled out clearly in the Final SEIS, and environmental tradeoffs investigated while taking this portion of the construction into account.

NMFS commented on the original 2015 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.¹⁶⁵

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.¹⁶⁶ The Turning Notch impacts do not explicitly appear in the mitigation plan either. Indeed, the Corps seems to treat the expansion project inconsistently, sometimes analyzing the expansion’s environmental impacts within the Project’s NEPA process, and sometimes excluding it. For example, the Corps includes the expansion project in the blasting plan,¹⁶⁷ but the DSEIS fails to include the cost of the expansion in the Cost Benefit Analysis,¹⁶⁸ even though it is an integral part of the Project. Likewise, the Corps fails to analyze the expansion’s impacts to mangroves or seagrasses. The expansion will destroy an additional 8+ acres of mangroves on top of the 2+ acres the Project will destroy, resulting in the total destruction of over 10 acres of mangroves.¹⁶⁹ The mangroves the expansion will destroy were under conservation easement.¹⁷⁰

In the original 2015 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.¹⁷¹ Even if it is appropriate for the Corps to discuss 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. The Corps must analyze how the removal of 10+ acres of mangroves will affect wildlife, listed species, water quality, carbon sequestration capability, and coastal resiliency to storms—an analysis that was explicitly excluded in the original 2015 FEIS¹⁷² and never revisited in the 2020 DSEIS.¹⁷³ Indeed, not only did the Corps

¹⁶⁴ 2015 FEIS at 41.

¹⁶⁵ *Id.*, App. L.

¹⁶⁶ *Id.*

¹⁶⁷ DSEIS at 177, Table 36.

¹⁶⁸ *See* 2015 Feasibility Study at 74, stating that the turning notch expansion is included in the “without Project” scenario.

¹⁶⁹ 2015 FEIS at 41; *See* DSEIS at 18–19.

¹⁷⁰ 2015 FEIS at 271; 264.

¹⁷¹ 2015 FEIS at 263–73.

¹⁷² *See id.* at 268–71 (listing impacts to threatened species, other fish and wildlife, water quality, and coastal barrier resources (among others) as not included in the cumulative impacts analysis).

¹⁷³ *See* DSEIS at 195.

fail to analyze these impacts, it also failed to calculate the loss of these benefits in the cost-benefit analysis, artificially deflating the Project's true costs.

Instead, the Corps dismissed the impacts associated with the removal of mangrove wetlands because the local sponsor is planting approximately 16 acres of mangroves as mitigation.¹⁷⁴ This is insufficient: requiring mitigation does not relieve an agency of its duty to analyze an impact. Only after an agency has fully analyzed an impact can the agency identify and implement appropriate mitigation. Moreover, mitigation does not fully negate the impact. This is another reason why full and careful analysis of environmental impacts is necessary *before* an agency identifies mitigation.¹⁷⁵ 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 and sequester carbon. Planting new mangroves will not negate the significant and long-lasting impacts of removing fully-developed mangroves and their habitat.¹⁷⁶ As the Corps noted in the 2015 FEIS, mangroves provide invaluable resources to Florida, supporting fish nurseries and other important habitat, but have undergone significant declines.¹⁷⁷ The Corps must fully account for the impacts the Turning Notch expansion will have on mangrove wetlands as part of the Final SEIS for the Port Everglades Project.

Moreover, because the expansion will destroy an additional 8+ acres of mangroves, the Corps cannot characterize excluding the expansion from the Project as a “significant reduction . . . of impacts”, or an effort to “preserv[e] important . . . mangrove wetland”, or as a component of a reduction of up to 98% of impacts.”¹⁷⁸ Nor should the DSEIS maintain the fiction that the segmentation of the Turning Notch expansion project “decreas[es] impacts to seagrasses and mangroves.”¹⁷⁹ The expansion will occur, as will its environmental impacts, so the Corps' claims of reduced impact are false.

The expansion of the Turning Notch is an interdependent part of the Port Everglades Project and the Final SEIS should treat it that way. NEPA explicitly prohibits an agency from doing what the Corps did in the FEIS and DSEIS: dividing a project into multiple actions, or “breaking it down into small component parts,” in order to avoid a determination that “the action is related to other actions with individually insignificant but cumulatively significant impacts.”¹⁸⁰

¹⁷⁴ 2015 FEIS at 271-72.

¹⁷⁵ See *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1084–85 (9th Cir. 2011) (“[M]itigation measures, while necessary, are not alone sufficient to meet [] NEPA obligations to determine the projected extent of the environmental harm to enumerated resources *before* a project is approved. Mitigation measures may help alleviate impact *after* construction, but do not help to evaluate and understand the impact before construction. In a way, reliance on mitigation measures presupposes approval. It assumes that—regardless of what effects construction may have on resources—there are mitigation measures that might counteract the effect without first understanding the extent of the problem.”).

¹⁷⁶ A.M. Gill & P.B. Tomlinson, *Studies on the Growth of Red Mangrove (Rhizophora mangle L.)* 3. *Phenology of the Shoot*, 3(2) BIOTROPICA 109 (Dec. 1971); A.M. Ellison & E.J. Farnsworth, *Spatial and temporal variability in growth of Rhizophora mangle saplings on coral cays: links with variation in insolation, herbivory, and local sedimentation rate*, 84 JOURNAL OF ECOLOGY 717 (Oct. 1996).

¹⁷⁷ 2015 FEIS at 271.

¹⁷⁸ *Id.* at 45.

¹⁷⁹ DSEIS at 17.

¹⁸⁰ 40 C.F.R. § 1508.27(b)(7).

G. The Final SEIS must evaluate a range of reasonable alternatives and fully evaluate monitoring and mitigation measures.

The analysis of alternatives “is characterized as ‘the heart’ of the environmental impact statement.”¹⁸¹ In the environmental analysis, the agency must “[r]igorously explore and objectively evaluate *all* reasonable alternatives”¹⁸² in response to a “specif[ied] . . . purpose and need.”¹⁸³ 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.¹⁸⁴ NEPA requires the development of “information sufficient to permit a reasoned choice of alternatives as far as environmental aspects are concerned.”¹⁸⁵

NEPA’s statutory language implicitly charges agencies with mitigating the adverse environmental impacts of their actions.¹⁸⁶ Mitigation measures are also required by NEPA’s implementing regulations.¹⁸⁷ 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.”¹⁸⁸ According to the CEQ, “[a]ny such measures that are adopted must be explained and committed in the [record of decision].”¹⁸⁹

“[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.”¹⁹⁰ 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.¹⁹¹ 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.”¹⁹²

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

¹⁸¹ *Colo. Env’t Coal. v. Dombeck*, 185 F.3d 1162, 1174 (10th Cir. 1999) (quoting 40 C.F.R. § 1502.14).

¹⁸² 40 C.F.R. § 1502.14(a) (emphasis added).

¹⁸³ 40 C.F.R. § 1502.13; *see also New Mexico ex rel. Richardson*, 565 F.3d 683, 703(10th Cir. 2009) (“[A]n 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)).

¹⁸⁴ *See Baltimore Gas & Elec. Co. v. Nat’l Res. Defense Council*, 462 U.S. 87, 97 (1983).

¹⁸⁵ *Colo. Env’t Coal.*, 185 F.3d at 1174 (quotations and alteration omitted). *See also New Mexico ex rel. Richardson*, 565 F.3d at 708.

¹⁸⁶ *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).

¹⁸⁷ 40 C.F.R. §§ 1502.14(f), 1502.16(h).

¹⁸⁸ Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations, 46 Fed. Reg. 18026, 18031 (March 23, 1981).

¹⁸⁹ *Id.* at 18036.

¹⁹⁰ *Robertson*, 490 U.S. at 353.

¹⁹¹ *Neighbors of Cuddy Mountain*, 137 F.3d at 1380–81.

¹⁹² 40 C.F.R. § 1505.2(c).

that “agencies may commit to mitigation measures considered as alternatives in an EA or EIS so as to achieve an environmentally preferable outcome.”¹⁹³

1. The Final SEIS must analyze alternatives that reduce or mitigate damage to corals.

In the 2015 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. *The Corps must analyze and implement an avoidance and minimization measure requiring relocation of all corals at the Project site.*

The DSEIS states, “the Corps has committed to relocating over 12,000 stony corals as an impact minimization measure, including all ESA-listed corals regardless of size class.”¹⁹⁴ This is a similar relocation plan to the one included in the original 2015 FEIS, which also specified the relocation of about 12,000 corals.¹⁹⁵ The plan to relocate *only* 12,000 of the 340,000+ coral the Project will likely kill is insufficient.¹⁹⁶ A relocation plan for 12,000 corals was insufficient in the 2015 FEIS and is even more insufficient now, when impact assessments are orders of magnitude higher. In an era when 60% of live coral tissue has just been lost from Florida’s reef tract in a matter of years,¹⁹⁷ and “coral arks” are working to save every last healthy coral colony to preserve dwindling genetic diversity,¹⁹⁸ the intentional and knowing destruction of hundreds of thousands of living corals is wholly unacceptable. Furthermore, the corals remaining on the reef tract now are particularly resilient—they have survived multiple bleaching events and SCTLD. Therefore, they contain key genetic material that is likely hardy and resistant to these stressors. These are the very colonies that the government should be supporting, saving, and restoring to re-seed the dwindling reef tract. Allowing these precious coral species to perish is not only losing valuable coral tissue, but the unique coral that is resistant to the very stressors that are pushing the reef tract toward catastrophe. The Final SEIS must analyze and implement an avoidance and minimization measure requiring the relocation of all corals at the Project site.

Furthermore, the wording of this “commitment” is unclear. Will the Corps relocate 12,000 corals in addition to the ESA-listed coral in the indirect and direct impact areas? Or will the Corps relocate the ESA-listed corals and then, only consider relocating other species if there are any remaining in the 12,000 relocation ceiling? What if there are more than 12,000 ESA-listed corals in the area? Will no non-ESA-listed corals be relocated? The relocation plan must

¹⁹³ Memorandum from Nancy Sutley, CEQ, *Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact 2* (Jan. 14, 2011); see also *id.* at 6 (“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.”).

¹⁹⁴ DSEIS at 154.

¹⁹⁵ 2015 FEIS at 47.

¹⁹⁶ Jocelyn Karazsia, NMFS, Presentation to the Disease Advisory Committee, Slide 9 (January 13, 2021).

¹⁹⁷ Charles J. Walton, et al., *Impacts of a Regional, Multi-Year, Multi-Species Coral Disease Outbreak in Southeast Florida*, 5 FRONT. MAR. SCI. 323 (Sept. 13, 2018).

¹⁹⁸ Sabrina Imbler, *The Coral Ark that Hopes to Save Florida’s Ailing Reefs*, ATLAS OBSCURA (Feb. 12, 2020), <https://www.atlasobscura.com/articles/florida-coral-rescue-project-ark>.

be expanded and clarified. All corals in the area must be relocated. The Final SEIS must clearly explain the relocation plan for corals at the Project site, including the total number of ESA and non-ESA corals the Corps plans to relocate.

- b. *The Corps should adopt avoidance and minimization measure 5C prohibiting all dredging during coral spawning months and must also prohibit blasting during this time.*

The DSEIS analyzes several avoidance and minimization measures implementing a “dredging window,” a period of time when dredging does not occur to protect spawning corals. Preferred avoidance and minimization measure 5D prohibits dredging in the outer channel but allows dredging in the inner harbor during the months of July through September when most of the listed corals present at the Project site spawn.¹⁹⁹ We support the Corps’ proposal to allow for a dredging window from July to September, as suggested by NOAA and our scoping letter (2017). This pause in dredging will allow corals to experience reduced sediment stress during many of the species’ spawning periods and during the hottest times of the year.

However, this dredging window should be a true pause in activities in order to be considered a minimization factor. As proposed now, dredging would still be allowed to occur in the inner harbor during the window. As the spillage model (Appendix I) shows, sediment released at or near the inner harbor will be transported to the reef and cause sedimentation and turbidity offshore.²⁰⁰ In fact, all of the impacts predicted by the spillage model are due to a sediment release event at or near the inner harbor. Further, scows taking dredge material offshore during this window may be leaking sediment, as occurred routinely at PortMiami, despite prohibitions on scow leakage.²⁰¹

The Corps considered implementing a true pause in avoidance and minimization measure 5C (which was not a preferred measure).²⁰² However, the Corps did not analyze whether or how the sediment released from inner harbor dredging from July through September would impede coral spawning, or what that impact would have on coral spawning. Instead, the Corps summarily claimed that “Avoidance and Minimization Measure 5C would be similar to Avoidance and Minimization Measure 5D in regard to indirect effects on hardbottom and coral reef communities within these areas” without providing justification or reasoning for this claim.²⁰³

In addition, blasting is another source of sedimentation and debris, and therefore should not be allowed during the dredge window either. It is not clear in the DSEIS whether blasting will be allowed during the dredging window. Blasting debris will sit on the seafloor for some unspecified time, possibly resuspending and further damaging reef and corals, much like rock chopping did at PortMiami. If blasting occurs immediately before or during the dredging window, it may obviate the benefit of avoidance and minimization measure 5D. The Corps must

¹⁹⁹ DSEIS at 52–53.

²⁰⁰ *Id.*, App. I at I-15.

²⁰¹ See DSEIS at 42 (“[L]essons learned from PortMiami where leaky scows were identified as a source of increased turbidity and sedimentation in the water column during transport.”)

²⁰² DSEIS at 52.

²⁰³ *Id.* at 62.

fully analyze the impact of blasting on sedimentation and corals. The Corps should also consider an alternative avoidance and minimization measure that completely prohibits dredging *and* blasting during the coral spawning periods.

Finally, the Corps did not examine the impact of resumed dredging at the end of the spawning window. New coral recruits that settle in the area of the project during the spawning window, may then be buried in areas of sedimentation from recent dredging or when dredging resumes. The DSEIS does not adequately consider impacts to recent coral recruits that may settle in the area during the dredging window, only to be buried in sediment again once the dredging restarts offshore.

- c. *The Corps must ensure adequate coral mitigation by outplanting corals at proper densities and mitigate for the full range of sediment depths.*

The mitigation plan acknowledges that indirect impacts to over 128 acres of coral reef will be permanently harmed, an increase from 0.7 acres in the last plan.²⁰⁴ The new plan also agrees to mitigate for the corals on the channel walls and the downslope of the channel.²⁰⁵ We support the use of novel coral restoration methodology to create the compensatory mitigation plan, including coral outplanting, assisted reproduction, herbivory restoration, and more. The state of coral restoration science has advanced significantly in the last several years. The use of expensive boulder reefs to approximate mitigation for damage to coral reefs is wholly outdated and ineffectual at coral reef restoration. The NOAA Coral Restoration Consortium²⁰⁶ has been presenting and evaluating novel coral restoration strategies, as has the recent National Academies of Science panel on coral reef interventions, both of which should be relied upon as best available science for restoration strategies. Given their expertise in the field, NOAA should lead the implementation of this large and novel mitigation strategy. We are also very pleased to see Habitat Equivalency Analysis used to inform the mitigation plan, and that the Corps invested the time and resources into developing ways to include these novel mitigation approaches into a Habitat Equivalency Analysis model. We encourage the Corps to continue to explore novel methods for coral reef enhancement and mitigation and urge the Florida DEP to utilize these kinds of calculations and models for mitigation.

The use of the Habitat Equivalency Analysis (“HEA”) is a vast improvement over other methodologies used and this should become the standard method moving forward. However, the primary consideration for coral outplanting density should be viable sexual reproduction. The 2014 Port Everglades Biological Opinion, for example, found that 6.67 *Acropora cervicornis* corals would be required per square meter “to provide the full conservation benefit of the critical habitat which will be permanently lost due to the project ($0.2 \text{ m}^2/0.03 \text{ m}^2 = 6.67$ colonies/m²).”²⁰⁷ The NMFS *Acropora* Recovery team found that a minimum of 1 colony (>0.5 m diameter) per square meter would be required to achieve population viability.²⁰⁸ Indeed, the density of outplanted corals is at least as important as the total area of planting for mitigation and

²⁰⁴ DSEIS at 64.

²⁰⁵ See e.g., DSEIS, Appendix F at F-32–33.

²⁰⁶ THE CORAL RESTORATION CONSORTIUM, <http://crc.reefresilience.org/> (last visited January 31, 2021).

²⁰⁷ 2014 BiOp at 103.

²⁰⁸ *Id.*

conservation purposes. The Corps should therefore prioritize the design of mitigation projects to achieve each coral species' desired viability density.

Further, the acknowledgement of the risk of indirect impacts of sedimentation on area reef is important. The DSEIS acknowledges that “Standing sediment >1 cm is considered to render an area non-functional as recruitable coral habitat (NMFS 2016).”²⁰⁹ However, the DSEIS inconsistently analyzes the amount of sedimentation and associated impacts. For example, Appendix D contains the impact and functional assessments for the Project, including the HEA. For the HEA, Table D-23 delineates impacts at sediment depths of 10 cm, 5cm, 1cm, and 0.5 cm and determines necessary mitigation area based on impacts associated with those depths.²¹⁰ Table 26 of the DSEIS, however, shows that sediment depths will reach up to 20 cm on more than 8 acres, twice the sediment depth analyzed in the HEA with potentially increased impacts to corals.²¹¹ The HEA must include analysis of 20-cm depths, which may greatly expand the mitigation requirements. Moreover, the DSEIS seems to be measuring impact at a totally different categorization of sediment depths than Appendix D.²¹² But the DSEIS omits any explanation for why the HEA fails to consider areas with 20 cm of sediment nor does it explain the inconsistency in this analysis. The Final SEIS must correct this omission and provide the requisite analysis.

- d. *The Corps must analyze implementing lower turbidity limits and monitoring turbidity plumes as a potential avoidance and minimization measure.*

The Corps should establish turbidity limits conservative enough to protect corals at the Project. Turbidity limits of 29 NTU did not protect corals at PortMiami.²¹³ The Florida DEP is currently in the process of redefining turbidity limits for construction around corals reefs, through a new water quality criterion. It is not clear how the Corps will adapt these plans to updated water quality rule changes from DEP.

Turbidity monitoring was inadequate at PortMiami. The discussion of lessons learned in the DSEIS do not cover the scope of turbidity monitoring issues that need to be addressed for this Project.²¹⁴ Despite vast impacts to corals and habitat from sedimentation and an extremely high turbidity limit of 29 NTUs above background, the PortMiami dredging project managed to avoid all-but-a-few turbidity limit violations.²¹⁵ There were many issues with oversight of the turbidity monitoring via boat, turbidity monitoring at night, reporting turbidity violations in a

²⁰⁹ DSEIS at 156.

²¹⁰ DSEIS, App. D, at D-69.

²¹¹ Table 26 considers 20 cm, 15 cm, 6 cm, and 0.5 cm (36.82 acres) in the DSEIS compared to 10 cm, 5 cm, 1 cm, and 0.5 cm in Appendix D. Compare DSEIS at 157 with DSEIS, App. D at D-69.

²¹² 20 cm, 15 cm, 6 cm, and 0.5 cm (36.82 acres) in the DSEIS than compared to 10 cm, 5 cm, 1 cm, and 0.5 cm in Appendix D, Table D-23.

²¹³ B.B. Barnes et al., *Sediment plumes induced by the Port of Miami dredging: analysis and interpretation using Landsat and MODIS data*, 170 REMOTE SENSING OF ENVIRONMENT 328 (2015); Final Miami Task 2 Report at 3.

²¹⁴ Final Miami Task 1 Report at 3.

²¹⁵ *Id.*

speedy manner, and data management, monitoring near the benthos, sediment types, sediment blocks, and more, all of which the Corps must fully analyze in the Final SEIS.

The Corps must also evaluate monitoring turbidity plumes via satellite imagery as well. Barnes et al. 2015 showed that turbidity plumes are clearly detectable via remote sensing, and Cuning et al. 2019 showed that turbidity plumes can be linked to benthic habitat and coral sedimentation impacts, such as coral burial.²¹⁶ Failing to consider using remote sensing technology is a deficiency in this plan.

2. The Final SEIS must ensure accountability for the mitigation of unanticipated impacts.

The dredging at PortMiami resulted in vast unanticipated impacts, which remain unmitigated today, five years later. This DSEIS does not properly address mitigation for the unanticipated impacts that may occur in the course of the Project, saying only, “Post-project mitigation will be provided, if necessary.”²¹⁷ The mitigation plan for unanticipated impacts, including triggering or worsening a disease outbreak, must be detailed before the Project begins and be explicit in the final dredging contract. The contract should also specify the responsible party for the cost of unanticipated impacts. The Corps must identify funding to pay for unanticipated impacts before the Project begins. We recommend that this responsibility and cost lie with the dredging contractor, to incentivize a priority of environmental protection. At PortMiami, the local sponsor, Miami-Dade County, is responsible for the unanticipated impacts,²¹⁸ creating a disincentive for the contractor to ensure environmental protection: those doing the action were not responsible for the consequences.

A clear and unambiguous system for documenting, analyzing, and mitigating for unanticipated impacts must be predetermined in detail. This was not clear in PortMiami, and it has now been 5+ years since the project ended, with no impact assessment or mitigation plan released, let alone mitigation work completed. NOAA, in addition to DEP, should be able to assess whether unanticipated impacts have occurred, and they should be able to use HEA to do so. As currently written, the baseline surveys and monitoring plan would not capture impacts beyond 1300m, but indirect impacts could easily occur further than 1300m (as was documented at PortMiami, Cuning et al. 2019, and considering the limitations of the spillage model).²¹⁹ This was a major issue at PortMiami, where baseline data and monitoring data was lacking outside of the areas of anticipated impacts, and therefore areas of unanticipated impacts were not properly monitored or surveyed.²²⁰ For example, Dial Cordy stated in their August 2015 Sediment delineation report: “Since there are no baseline data for areas outside of the channel-side compliance and reference sites that are quantitatively comparable it is not possible to definitively

²¹⁶ Barnes et al., *supra* note 217; Cuning et al., *supra* note 1.

²¹⁷ DSEIS at 159.

²¹⁸ Letter from Nona Schaffner, Senior Assistant General Council, Florida Department of Environmental Protection, to Richard Seavey, Assistant County Attorney, Miami-Dade County, Tropical Audubon et al. v. CORP et al DOAH Case No. 11-6242, Local Sponsor Agreements (May 22, 2012).

²¹⁹ Cuning et al., *supra* note 1.

²²⁰ Final Miami Task 1 Report at 39; Dial Cordy and Associates, Inc., *Delineation of Potential Sedimentation Effect Area within Middle and Outer Reef Habitats Port of Miami Phase III Federal Channel Expansion Project* (Aug. 2015)

tie a cause of mortality or partial mortality (permanent impact) of any benthic organisms to any particular cause (dredging or otherwise) post-hoc. This is a lesson learned for future projects.”²²¹ The Final EIS must include clear mechanisms for mitigating all unanticipated impacts of the Project.

3. The DSEIS’ seagrass mitigation plan is unclear and insufficient.

In our 2017 scoping comments, we explained that there is simply not enough room in West Lake Park to accommodate all of the needed seagrass mitigation credits for the Project.²²² The original 2015 FEIS stated that the Corps intended to obtain 2.5 seagrass functional mitigation credits at West Lake Park. But NMFS rightly observed in its comments on the original draft 2015 EIS 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.²²³

In the 2015 FEIS, The Corps never satisfactorily explained why it believed 2.2 mitigation credits were sufficient, rather than the five credits NMFS identified as necessary. Nor did the Corps find a place outside of West Lake Park for mitigation, even though the Park did not have enough room for even their own underestimate of necessary mitigation. The DSEIS only makes this problem worse. Although the DSEIS increases the amount of acreage in need of mitigation from 4.21 acres to 7.475 acres,²²⁴ the Corps *decreases* the number of mitigation credits for seagrass from 2.5 credits²²⁵ to 1.84 credits.²²⁶ This is illogical: a larger impact should trigger more mitigation, not less. Furthermore, the acreage of seagrass impacts is not clear. Table 1 in the Atkins 2020 survey says that there is 16.54 acres of seagrass impact,²²⁷ but the mitigation plan says that there are only 7.475 acres of seagrass will be harmed as a result of the Project.²²⁸ The Final SEIS must clearly explain the discrepancies between these numbers and ensure mitigation for all the Project’s seagrass impacts.

²²¹ Dial Cordy and Associates, Inc. (2015), *supra* note 224 at 58.

²²² 2017 Scoping Comments at 47–48.

²²³ Letter from Roy E. Crabtree, NMFS, *supra* note 131 at 10–11.

²²⁴ DSEIS at 64.

²²⁵ 2015 FEIS, Sub-App. E at 14.

²²⁶ DSEIS, App. F at F-1.

²²⁷ *Id.*, App. J at 24.

²²⁸ *Id.*, App. F at F-1.

4. The Final SEIS should analyze and implement improvements to the Adaptive Management Plan.

The use of real-time monitoring and eco-forecasting is a significant advance in the DSEIS. However, we are concerned that the “adaptive” actions to be taken if the triggers are met are not clearly defined. The Corps should analyze and implement the following improvements to the adaptive management plan:

a. *Triggers must include shut-down.*

The dredging operation must shut down if triggers are exceeded, not simply move elsewhere and continue causing impacts, as occurred at PortMiami.²²⁹ As we saw at PortMiami, there is a strong resistance to shutting down if problems are encountered. Despite massive documented impacts to the reef and insistence from NOAA that ESA take was ongoing in the project,²³⁰ the Corps never once stopped dredging in response. Even during an ESA-listed coral rescue that the Corps had confirmed to a federal judge would take place, the Corps refused to shut down—or even to move—the dredging operation to allow the rescue to proceed.²³¹ As such, is it absolutely vital that this project have clear and unambiguous “shut down” triggers to protect the reef from sediment stress— and to add incentive for the dredging company to stay within the environmental parameters. One of these triggers should be the presence of disease. If there is any sign that the dredging is triggering a second disease outbreak on Florida’s reef tract, the dredging must shutdown. The adaptive management plan is almost meaningless without clarity about these limits—and consequences for exceeding them.

b. *Real time access to monitoring data and adaptive management decisions is crucial.*

It is also essential for the public to have real time access to these monitoring data, in order to observe conditions, whether triggers are met, and whether adaptive management steps are being taken appropriately. Public trust was significantly eroded by PortMiami, and presenting the data in real-time, in an easy-to-access and easy to analyze format will be a big step forward in improving public confidence. Data should also have version controls. The manner in which monitoring data is shared with agencies and the public is another key lesson learned. Data should not be presented in formats that prevent rapid analyses, such as individual PDFs.

²²⁹ Dial Cordy and Associates, Inc. (2015), *supra* note 224 at 4.

²³⁰ Letter from David Bernhardt, *supra* note 29.

²³¹ See Email from Miles Croom, NOAA, to Robert Hoffman et al., Re: POM Coral Relocation Ops Update (Oct 29, 2014) (Miles Croom, NOAA, stating “Bob Hoffman and I talked with Corps Jacksonville (contracting officer, project manager) and asked if the Corps had any flexibility in scheduling the dredge to allow the NMFS team clear access for 2 to 4 days to complete the coral rescue. I also said we believed take may be occurring that has not been authorized. The Corps said the only way to locate the dredge out of the work area would be extremely expensive (I think Jason Spinning said it would be on the order of \$570K per day), and that is an expense they are not willing to incur... Bottom line, no agreement to relocate the dredge for the purpose of allowing clear access to the NMFS field team to complete the coral harvest as quickly as possible.”)

5. The Final SEIS should analyze and implement improvements to the monitoring plan.

The monitoring plan is an improvement over the PortMiami monitoring plan and the Port Everglades FEIS in both scope and substance. We support third party oversight of the monitoring data. The inclusion of sediment depths at intervals as well as sediment sample analysis will provide crucial information about sediment impacts. The additional analysis of sediment will also yield useful information about sediment impacts, much like the Swart 2016 mineralogical analysis of PortMiami sediments did.²³² Similarly, separating the environmental monitoring contracts from the dredging company contracts is a positive step toward transparency and reducing inherent conflicts of interest. Despite these improvements, the monitoring plan is still inadequate. In particular, the Corps should take special care to identify and respond quickly to any potential disease outbreaks, should they be observed. The Final SEIS should analyze and implement the following improvements to the monitoring plan:

- a. *The Corps should monitor a greater distance from the channel to capture possible unanticipated areas of impact.*

The monitoring area is not far enough from the channel to capture possible area of unanticipated impact. Cunning et al. suggested that sedimentation impacts extended beyond 1200m from the channel at Port of Miami. The failure to gather baseline data from areas outside of the predicted impact areas was a failing in assessing impacted areas at PortMiami.²³³ The Corps should consider an adaptive monitoring plan approach: if areas at 1200m from the channel show signs of sedimentation during construction, the monitoring area should be extended beyond 1200m until the area does not show sedimentation impacts. In order for this adaptive monitoring approach to be successful, however, pre-project baseline data must be collected from these expanded areas as well. While the same area does not need regular monitoring during construction, baseline surveys should be carried out at replicable locations at least 3,000-5,000m from the channel in order to provide critical pre-project baseline information in the event that the project impacts extend further than anticipated.

- b. *The Corps must monitor corals more frequently than only 3-4 times a year.*

The Corps must analyze and implement more frequent monitoring of corals. During-construction monitoring is not frequent enough to capture coral impacts, disease outbreaks, or to conduct proper adaptive management. The DSEIS currently proposes to monitor corals only 3-4 times a year.²³⁴ Even at PortMiami, corals were monitored weekly or even biweekly. It is not clear how adaptive management can take place with only quarterly monitoring, and proposed eco-forecasting technology will not evaluate coral health regularly.

²³² Final Miami Task 1 Report at 49; Peter K. Swart, MGS, *Report on the Mineralogy and the Stable Carbon and Oxygen Isotopic Composition of Samples Supplied by NOAA* (June 28, 2016).

²³³ Dial Cordy and Associates, Inc. (2015), *supra* note 224.

²³⁴ DSEIS, App. G at G-20.

c. *The Final SEIS must clearly define sedimentation indicators.*

Sedimentation indicators described in section G.2.5.5.2.3.2.1 are a significant improvement and reflect lessons learned from PortMiami.²³⁵ However, these conditions must be very clearly defined in order to avoid skewing the results. For example, Appendix G says that partial mortality will be recorded. But partial mortality is a non-specific term that might indicate that 5% of a coral is dead or 95%.²³⁶ Therefore, a percentage estimate of partial mortality and whether it is recent must be recorded. It can also be difficult to estimate partial mortality in the field because dead areas of coral can be quickly colonized. Corals may need to be compared to baseline photos/measurements to appropriately determine the true percent tissue loss of partial mortality. Recording sediment accumulation conditions must also be clearly defined, as a few particles of sediment may be recorded as sediment accumulation at reference sites and skew the results. Recording sediment halos/berms is also critical data to gather, but for a similar reason, must be clearly defined before the project begins to avoid skewing results at reference sites. Standardized photograph angles and distances from the colony will be important for comparing colonies growth or mortality over time.

d. *Data management must be transparent, easily accessible, and organized.*

The data management protocols at PortMiami caused great difficulty in analyzing the monitoring data.²³⁷ While having data in excel files in templates is a significant improvement over Dial Cordy's process at PortMiami, the Corps should consider implementing version controls to track changes made in the data for Qa/Qc and database management software. The Corps must also ensure that the collected data is posted online, or otherwise accessible and available for public review as soon as possible.

III. CONCLUSION

Thank you for your consideration of these comments. 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,

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²³⁵ *Id.* at G-35–36.

²³⁶ *See id.*

²³⁷ Final Miami Task 1 Report.