# MARTIN COUNTY

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September 12, 2022

Submitted via email: James.I.Booth@usace.army.mil

Department of the Army
Jacksonville District Corps of Engineers
701 San Marco Boulevard
Jacksonville, FL 32207-8175

Dear Colonel Booth,

The Martin County Board of County Commissioners (Martin County or the County), on behalf of its businesses and residents, appreciates the opportunity to participate as a stakeholder in the U.S. Army Corps of Engineers' (USACE) development of the Lake Okeechobee System Operating Manual (LOSOM) under the National Environmental Policy Act (NEPA). The County writes this letter in response to the July 2022 Draft Environmental Impact Statement (DEIS) regarding LOSOM.

The County recognizes the monumental effort the USACE has undertaken to develop the DEIS. For its part, the County has submitted no less that ten (10) formal comments for the administrative record in the LOSOM NEPA process. These comments included the County's comprehensive scoping letter, responses to various iterations of LOSOM models, salinity envelopes, baselines, and performance metrics in the effort to illustrate the harmful effects of discharges from Lake Okeechobee (the Lake) to the St. Lucie Estuary (SLE), the Indian River Lagoon (IRL), and the northern section of the Florida coral reef tract. The County reiterates all of its comments and technical data submitted in the ten letters as well as public comments and presentations as part of this response.

The County highlights certain fundamental shortcomings with the DEIS which include:

- Adoption of baseline surface water flows from LORS 2008 but yet attributing 77% of nutrient loading in the SLE to basin runoff.
- Adoption of 150 to 1400 cfs Lake flows to maintain salinity in the SLE, a volume that disregards the SFWMD's assessment of tidal basin rainfall and groundwater inflow within the basin particularly within the Lake Recovery Mode where negative impacts to the

estuaries is intended to be avoided by measuring flows at the Roosevelt Bridge and incorporating RECOVER stressful limits.

  - Section ES1.7.3 St Lucie Estuary (SLE) Ecology Benefits of the draft LOSOM EIS references that the preferred alternative would provide a "major long term improvement to SLE ecology by…providing more optimal flows". There are no such thing as optimal flows to the SLE that emanate from Lake Okeechobee due to the contaminants in the Lake water, such as blue green algae, nitrogen, phosphorous, and suspended solids. When considering the health of the estuary and the residents that live in the vicinity of it, zero discharges from the lake are the only optimal flow.
    - This section went on to state that the preferred alternative would provide an increase of optimal events (14 day moving average (ma) flows between 150-1400 cfs) and cited that as an environmental benefit. As stated in previous comments provided to the project team, the Restoration, Coordination, Verification (RECOVER) flow envelopes are based upon all sources of inflow to the estuary. This includes groundwater, local basin runoff, surface water flows, and Lake Okeechobee discharges.
    - There are additional inflow sources immediately east of the Roosevelt bridge that further impact the salinity in the SLE, including the nearby Warner creek with its 20,000 acre watershed. The available flow to remain in the optimal flow events, therefore, is approaching zero throughout the entire year when all inputs are considered.
  - All fresh water sources should be used in this calculation including the SFWMD's tidal basin runoff calculation and the average ground water flow of 150 CFS.
- Disregard for impacts to endangered and listed species in the SLE, IRL and on the coral reef from the high volume discharges of Lake water.
- The Lake's deliveries of blue green algae (BGA) to the SLE from discharges and the corresponding impacts to the environment and human health;
  - The SLE should be exempted from the Water Control Plan's prescription of flushing BGA from canals. Fresh water BGA that is discharged to slaine water bodies significantly increases the toxicity and human health risks. A USGS study concluded that "…higher salinities caused leaking of microcystin from the cells." – *USDOI/USGS Scientific Investigations Report 2018-5092 pg. 31;*
  - BGA persists in fresh water year round and poses a human health risk when discharged to saline water any time of the year. A study by the Association for the Sciences of Limnology and Oceanography found that "cyanobacterial blooms may appear year-round in eutrophic lakes" - *The persistence of cyanobacterial (Microcystis spp.) blooms throughout winter in Lake Taihu, China. Jianrong Ma,Boqiang Qin,Hans W. Paerl,Justin D. Brookes,Nathan S. Hall,Kun Shi,Yongqiang Zhou,Jinsong Guo,Zhe Li,Hai Xu,Tingfeng Wu,Shengxing Long.*
- Disregard for effects and impacts to the coral reef itself from Lake discharges based on the USACE's claim that the coral reef is outside of the LOSOM area of influence.

Moreover, with its DEIS, the USACE has neither considered nor taken a hard look at impacts of LOSOM by the USACE's adoption of baselines and studies that assume Lake surface water discharges to the SLE are natural, necessary and can never change, as described in the various submissions by County since 2019. Because of those positions taken, the USACE has not properly informed the public that it has considered the environmental impacts of LOSOM's discharge protocols to the SLE because it assumes that discharges have to occur to the SLE.

The most unambiguous representation of the USACE's lack of consideration of the effects and impacts of Lake discharges is its disregard for the Florida coral reef tract. The DEIS indicates that the coral reef is outside of the LOSOM project area and thus, no consideration was given to corals in the DEIS. This is a relatively new position considering the USACE's attempts during LOSOM to look at impacts to offshore corals. Therefore, the remainder of this response will address the reef issue with specificity.

NEPA requires federal agencies, including the USACE, to consider and report on the environmental effect of their proposed actions. *Wildearth Guardians v. Jewell*, 738 F.3d 298, 303 (D.C. Ct. of App. 2013); *citing*, *Theodore Roosevelt Conservation P'ship v. Salazar* (Theodore Roosevelt I), 616 F.3d 497, 503 (D.C.Cir.2010). "NEPA has twin aims. First, it places upon an agency the obligation to consider every significant aspect of the environmental impact of a proposed action. Second, it ensures that the agency will inform the public that it has indeed considered environmental concerns in its decision making process." *Balt. Gas & Elec. Co. v. Natural Res. Def. Council, Inc.*, 462 U.S. 87, 97, 103 S.Ct. 2246, 76 L.Ed.2d 437 (1983); *accord Dep't of Transp. v. Pub. Citizen*, 541 U.S. 752, 768, 124 S.Ct. 2204, 159 L.Ed.2d 60 (2004). There is no apparent basis for a federal agency to draw a geographic line in the sand under NEPA to justify avoidance of project effects like the USACE has done in the LOSOM DEIS. "Effects" are the issues to be considered.

"Effects" that are to be considered in a NEPA process are defined as:

> [C]hanges to the human environment from the proposed action or alternatives that are reasonably foreseeable and include the following:
>
> (1) Direct effects, which are caused by the action and occur at the same time and place.
>
> (2) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
>
> (3) Cumulative effects, which are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency

(Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

(4) Effects 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. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effects will be beneficial.

40 C.F.R. § 1508.1 Definitions.

The U.S. Environmental Protection Agency (U.S. EPA) has set policies on the geographic extent to which federal agencies should be reasonably considering the effects of a proposed project. The policy states that "[o]ne way to evaluate geographic boundaries is to consider the distance an effect can travel." NEPA.GOV, U.S. EPA, Cumulative Effects, Chp. 2, pg. 16. As pointed out in the County's April 2019 scoping letter, plumes from high volume Lake discharges (which are permitted under the DEIS) can blanket the reef as shown below.

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August 21, 2018
S-80 Lock
St. Lucie Inlet
Northern limits of the Southeast Florida Coral Reef Tract
Lake Okeechobee Plume

In 2021, Martin County provided documentation to the Corps demonstrating that offshore salinity data was available and that it could be utilized to assess potential impacts to the coral reef and colonized hard bottom depicted in Figure 1.

Offshore salinity data sets from NOAA and Florida DEP provided a long-term data set containing both surface and bottom salinity samples collected monthly over nearly a four (4) year time period, beginning in September 2016. The twelve (12) monthly sampling locations in the inlet throat and offshore reef area are shown on Figure 1. The influence of freshwater inflow on offshore salinity levels for selected stations is described below, and data for all twelve is available for analyses moving forward.

Figures 2 through 6 illustrate observed offshore salinity levels across the reef tract that are influenced by freshwater inflow, where the top plot of each figure depicts the pertinent salinity over time and the bottom plot of each figure shows the freshwater inflow into the St. Lucie Estuary (SLE), including discharges from Lake Okeechobee. Discussions with Florida DEP Coral Program staff have indicated that two thresholds are appropriate for ensuring protection of offshore coral resources in the vicinity of St. Lucie Inlet (SLI):

1. During the critical spawning and brooding period, which extends from March to October, salinity levels near the surface need to be kept above 33 ppt to prevent destruction of sperm, eggs, and larvae that are released into the water column. Therefore, a seasonal threshold of 33 ppt at the surface for the March to October timeframe has been recommended.
2. For the remainder of the year (November through February), salinity levels at the bottom should not fall below 30 ppt to prevent damage to adult coral species. Therefore, a seasonal threshold of 30 ppt at the bottom for the November to February timeframe has been recommended.

The varying seasonal thresholds along with appropriate salinity observations for the five selected stations are depicted in Figures 2 through 6, where salinity levels that fall below the conditions that could damage coral resources fall within the shaded area of the top graph in each figure. Review of the data reveals the following:

- Most high freshwater inflow events occur during the time period when offshore corals are most sensitive, i.e. the 'wet season' corresponds to the time period of coral spawning and brooding.
- The influence of freshwater plumes exiting St. Lucie Inlet is quite persistent and can drop ocean salinity levels to near 20 ppt at reefs areas as far as ~5 miles south of the inlet (see Figure 6 for October 2017).
- All reef areas exhibited several salinity observations that are destructive to offshore corals during the March to October timeframe over the ~4-year monitoring period. Observed salinity levels along the reef drop to between 20 and 24 ppt during the highest observed freshwater inflow events over the September 2016 to March 2020 time period.

- Averaged freshwater inflow rates to the SLE of approximately 1,000 cfs reduce salinity levels on the northern reef area below the 33 ppt March to October threshold over the time period of three consecutive monthly measurements (see Figures 2 and 3 for the time period between June and August, 2017).

Regarding the conclusion that discharges generated by the Preferred Alternative are not expected to affect the coral reefs or reef resources within the action area, please refer to Figure 7. When the RSMBN modeled releases for S80 were run for the year 2016 changes in flows are noted. While the frequency of discharges is reduced for the Preferred Alternative, the magnitude of those releases was much larger than in the No Action (NA) alternative and can continue for months. Looking back to the observed salinities on the reefs in 2016 where observations on the reefs are limited to September-December, dangerously depressed salinities existed on the reef with lower magnitude discharges under the NA alternative. As shown in Figures 8 and 9, these lethal salinities under the NA alternative existed both at the top of the water column where impacts to spawning occur but also at the bottom of the water column smothering the live corals with intolerably low salinity water. It is reasonable to assume those salinities would be further depressed with the larger discharges, with the critically low salinities reaching the coral reefs themselves even further away from the St. Lucie Inlet. Considering the impact of these later season discharges, the extreme magnitude modeled for the 2 month February-March time frame could yield bottom salinities lethal to the live corals and associated coral resources. These extreme high flow conditions exist twice in a single year. Given the regeneration time of corals, measured in decades, these recurring flows will most certainly irreparably harm coral reefs and coral associated resources outside the St. Lucie Inlet.

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**Figure 1**. Map of CRCP monitoring stations offshore of Martin County. Plots of salinity data are provided below for the stations indicated by the arrows.

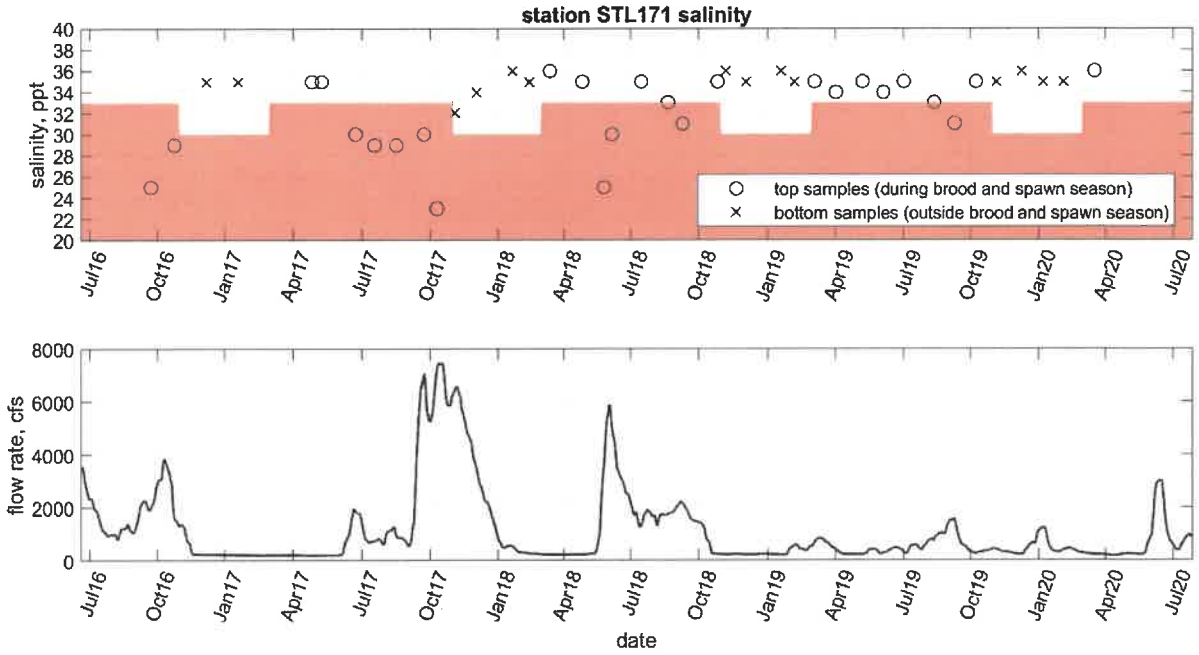


**Figure 2**. Top plot shows measured salinity at CRCP station STL 171, located 0.8 miles from the SLI south jetty. The pink shaded area indicates the seasonal minimum salinity envelope for corals. During March through the October brooding and spawning season, salinity should not be lower than 33 ppt, measured at the surface. For the remainder of the year (November through February), for adult coral salinity should not be lower than 30 ppt, measured at the bottom. Surface samples are indicated using circles, bottom samples by an "x". The bottom plot shows total freshwater discharge from the SLE watershed, including discharges from Lake Okeechobee.

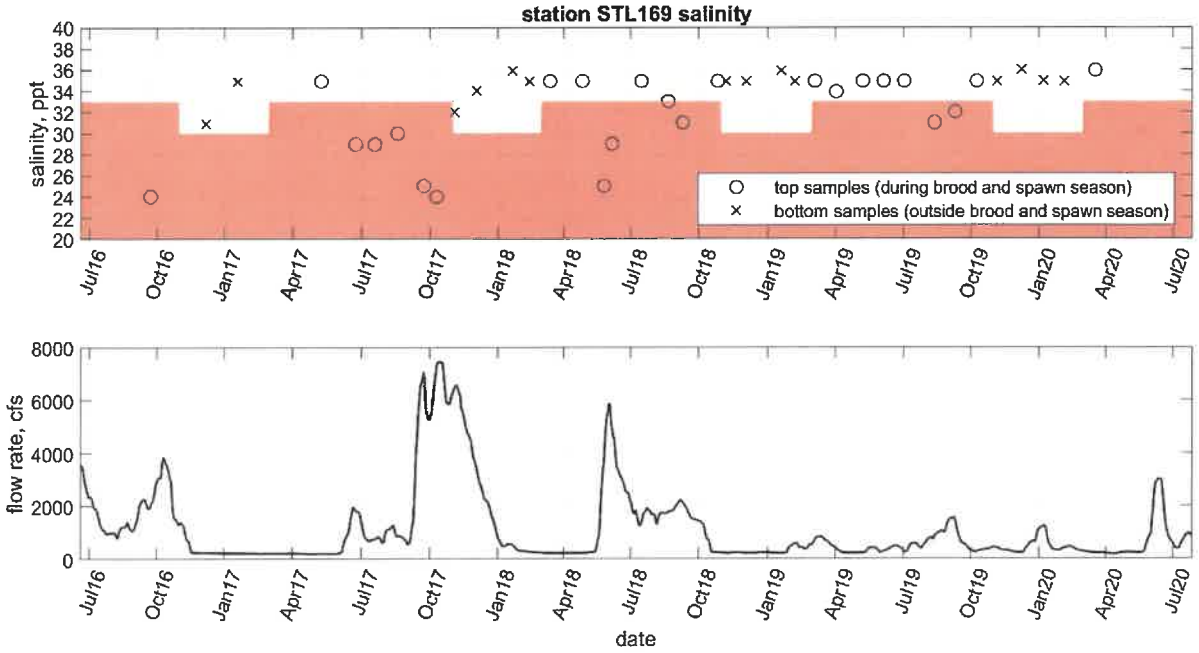


**Figure 3**. Top plot shows measured salinity at CRCP station STL 169, located 0.8 miles south of the SLI south jetty. The bottom plot shows total freshwater discharge from the SLE watershed, including discharges from Lake Okeechobee.

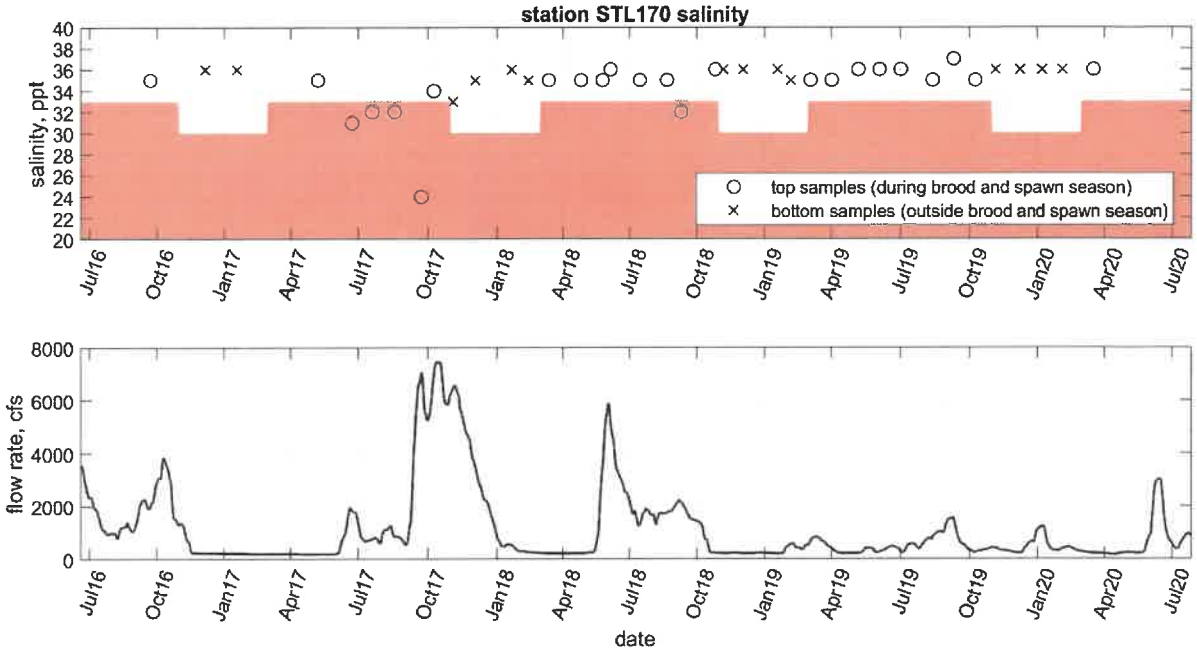


**Figure 4**. Top plot shows measured salinity at CRCP station STL 170, located 2.5 miles south of the SLI south jetty. The bottom plot shows total freshwater discharge from the SLE watershed, including discharges from Lake Okeechobee.

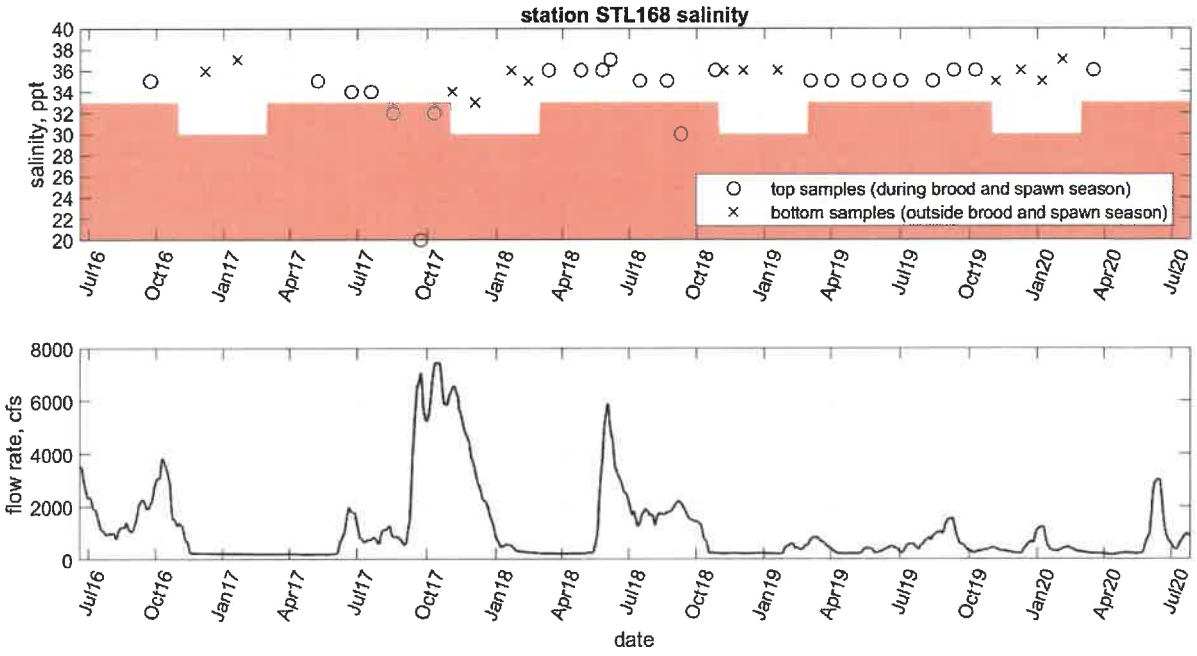


**Figure 5**. Top plot shows measured salinity at CRCP station STL 168, located 3.4 miles south of the SLI south jetty. The bottom plot shows total freshwater discharge from the SLE watershed, including discharges from Lake Okeechobee.

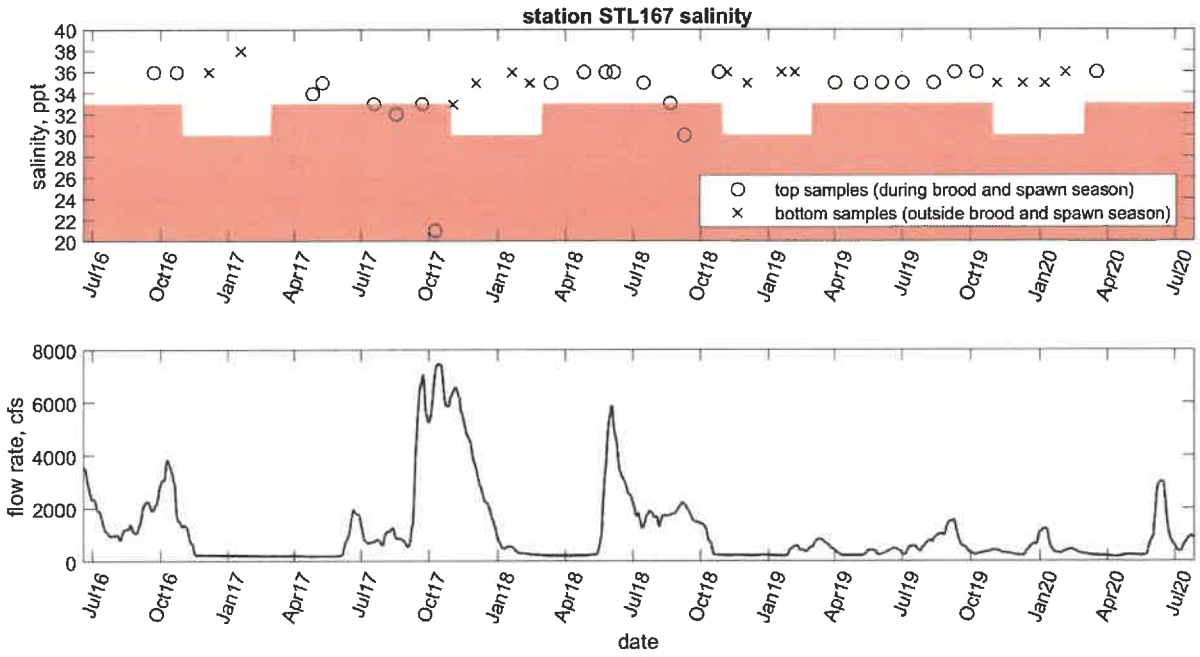


**Figure 6**. Plot of measured salinity at CRCP station STL 167, located 4.9 miles south of the SLI south jetty. The bottom plot shows total freshwater discharge from the SLE watershed, including discharges from Lake Okeechobee.

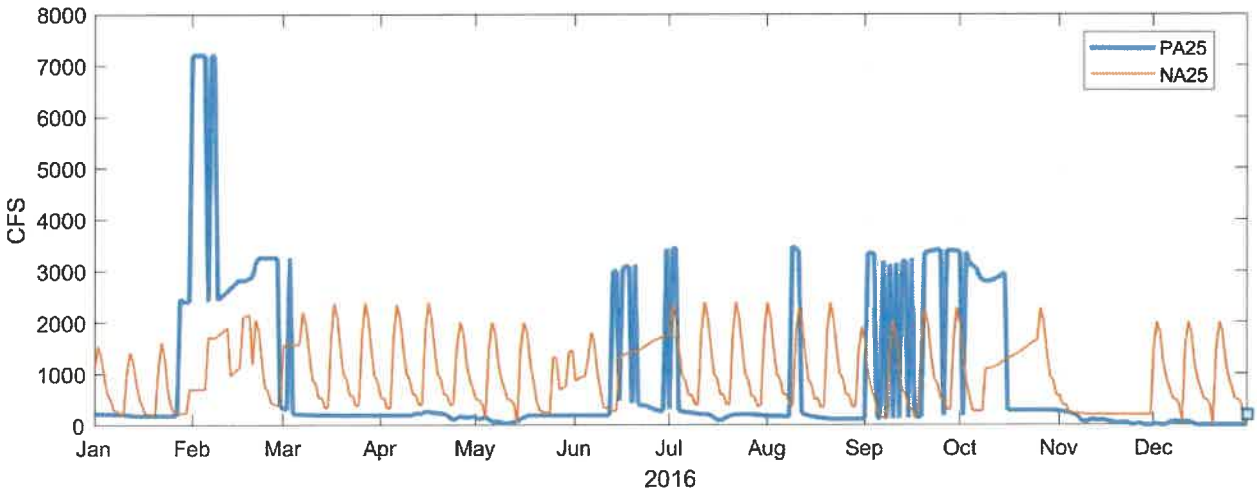


**Figure 7.** Comparison of RSMBN modeled S80 releases for the year 2016, from the Preferred Alternative 2025 (PA25) and the No Action 2025 (NA25) simulations.

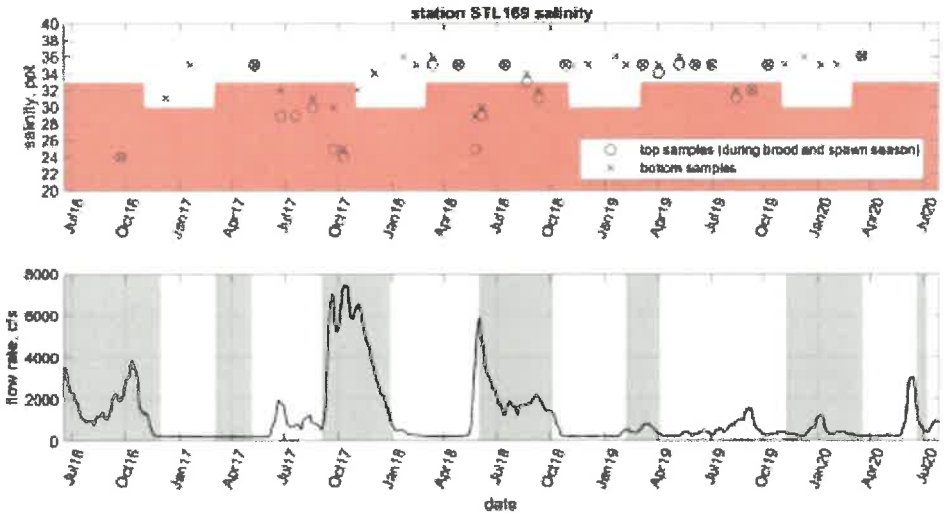


**Figure 8**. Top plot shows measured salinity at CRCP station STL 169, located 0.8 miles south of the SLI south jetty. Surface samples are indicated using circles (during brooding season), bottom samples by an "x" (for all sampling events). The bottom plot shows total freshwater discharge from the SLE watershed, including discharges from Lake Okeechobee.

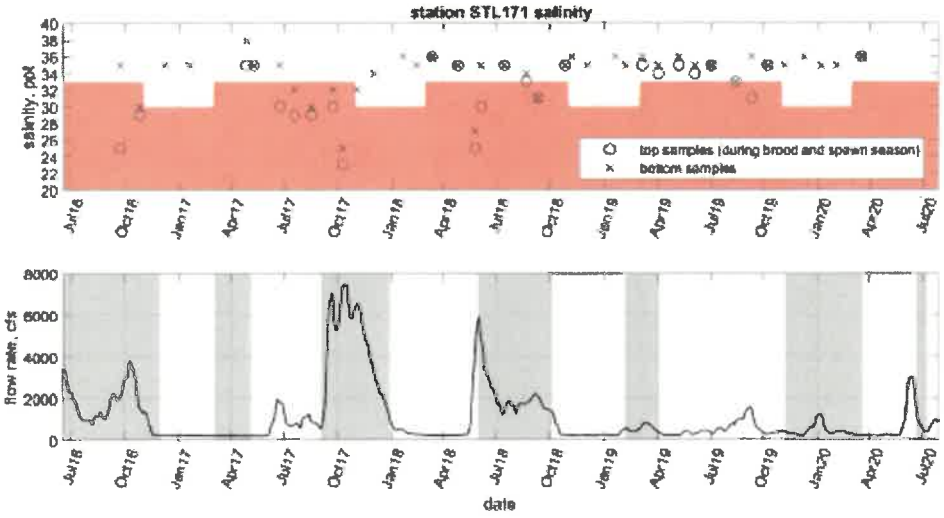


**Figure 9**. Top plot shows measured salinity at CRCP station STL 171, located 0.8 miles from the SLI south jetty. Surface samples are indicated using circles(during brooding season), bottom samples by an "x" (for all sampling events). The bottom plot shows total freshwater discharge from the SLE watershed, including discharges from Lake Okeechobee.

As the USACE is well aware, an agency action is arbitrary and capricious if:
"the agency has relied on factors which Congress has not intended it to consider, **entirely failed to consider an important aspect of the problem**, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." *Del. Riverkeeper Network v. FERC*, 753 F.3d 1304, 1313 (D.C. Cir. 2014) (quoting *Motor Vehicle Mfrs. Ass'n of the U.S., Inc. v. State Farm Mut. Auto. Ins.*, 463 U.S. 29, 43, 103 S.Ct. 2856, 77 L.Ed.2d 443 (1983) )(emphasis

added). This standard applies when assessing an agency's compliance with NEPA. *WildEarth Guardians v. Jewell*, 738 F.3d 298, 319 (D.C. Cir. 2013) (citing *Theodore Roosevelt Conservation P'ship v. Salazar*, 616 F.3d 497, 507 (D.C. Cir. 2010); *Nevada v. Dep't of Energy*, 457 F.3d 78, 87 (D.C. Cir. 2006) ).

Accordingly, the County respectfully requests the USACE consider the issues that the County has previously raised throughout the LOSOM process and has made a part of the administrative record. Most significantly, the County urges the USACE to consider Lake discharge effects to the Florida coral reef tract as discussed herein.

Thank you for your considerable efforts in LOSOM. Martin County would be happy to discuss the issues raised in this letter in more detail should you have any questions or concerns.

Sincerely,

Don G. Donaldson, P.E.
County Administrator

cc: Congressman Brian Mast
Drew Bartlett, Executive Director SFWMD
Jacqui Thurlow-Lippisch, SFWMD