

MEMORANDUM

To: USACE Colonel Andrew D. Kelly, LTC Todd F. Polk, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Drew Bartlett, Jennifer Reynolds, Lawrence Glenn, DEP Secretary Noah Valenstein

From: Periodic Scientists Conference Call Participants
 Kevin Godsea & Jeremy Conrad - J.N. "Ding" Darling National Wildlife Refuge (NWR) Complex
 Holly Milbrandt & Dana Dettmar - City of Sanibel
 Lesli Haynes & Lisa Kreiger - Lee County
 Harry Phillips & Maya Robert - City of Cape Coral
 James Evans, Leah Reidenbach, & Rick Bartleson PhD - SCCF (Sanibel-Captiva Conservation Foundation)

Subject: Caloosahatchee & Estuary Conditions Report

Reporting Period: **January 26 – February 1, 2021**

This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity, and function of the system.

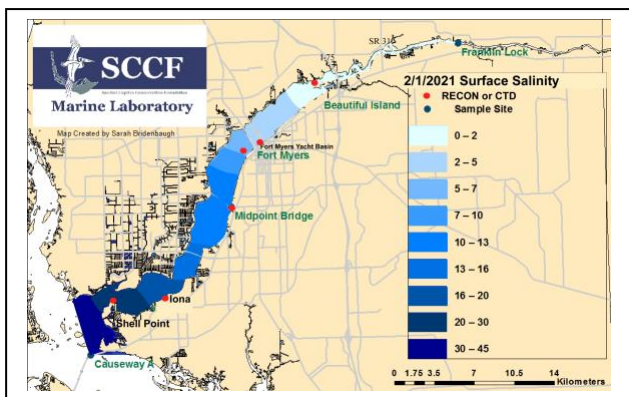
Caloosahatchee Condition Summary: Flows to the Caloosahatchee estuary had a 7-day average of **1,032 cfs at S-79** with a 7-day average of **583 cfs coming from the lake at S-77**. The **14-day moving average flow at S-79 is 841 cfs and has been in the optimum flow envelope (750 – 2,100 cfs; RECOVER 2020) for the past 32 days**. A patchy red tide bloom persists in Lee and Collier counties causing fish kill events, dead and injured wildlife, and respiratory irritation in humans. High concentrations of *Karenia brevis* persist near Lighthouse Beach Park, and satellite imagery confirms that a patch of dense chlorophyll with some of the optical characteristics of *K. brevis* is present 4 miles offshore Sanibel Island. Water clarity has remained the same throughout the area. No drift macroalgae is being reported for Sanibel beaches, and Cape Coral canals are clear of harmful algae.

Recommendation: We request flows to the Caloosahatchee be maintained at a 7-day average of **1,000 cfs** as measured at **S-79** which is within the range recommended by the RECOVER 2020 performance measure for *salinity* (750 cfs – 2,100 cfs) **for optimal ecological conditions**. While the need to decrease Lake Okeechobee levels before the beginning of the wet season in May is important, a patch of the harmful alga, *Karenia brevis*, near Lighthouse Beach Park raises concerns that increased nutrient loads from increased flows could exacerbate bloom conditions. We respectfully request that as the Corps considers increasing flows to the Caloosahatchee estuary, that red tide conditions are closely monitored and adaptive management is applied.

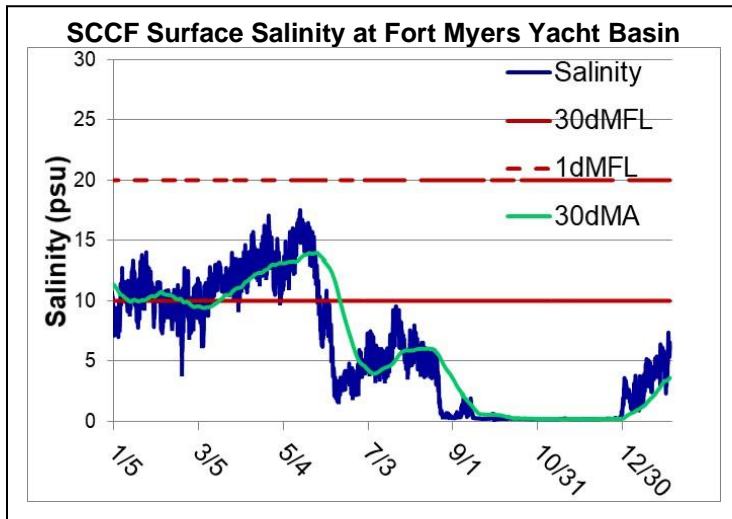
USACE Action: On Saturday 1/30/21 the USACE continued flow to the Caloosahatchee Estuary at a 7-day average targeted flow (pulse) of 1000 cfs as measured at the WP Franklin Lock & Dam (S-79). For the St. Lucie Estuary, the Corps will release no water from Lake Okeechobee to S-80.

Lake Flows: In the past 7 days **26,147 AF** were discharged from Lake Okeechobee, with **8,116 AF (31%)** to the Caloosahatchee through **S-77**, **403 AF (1.5%)** to the St. Lucie River through **S-308**, **2,557 AF (10%)** through **S-310** in Clewiston, and **15,071 AF (58%)** to the EAA through **S-351**, **S-352**, and **S-354**. There was a net flow of **2117 AF** at the **L-8 canal**. Water conservation areas received flows of **131 AF***, **153 AF***, and **2,436 AF*** at **WCA1**, **WCA2**, and **WCA3**, respectively. Everglades National Park received **22,533 AF***. *Missing data from ENP 1/30/21 – 01/31/21; missing data from WCAs on 1/30/21.

Lake Okeechobee Level:	15.51 ft (Low sub-band)	Last Week:	15.58 ft
Lake Okeechobee Inflow:	1,028 cfs	Lake Okeechobee Outflow:	1,431 cfs
Weekly Rainfall Total:	WP Franklin ≥0.30"	Ortona 0.18"	Moore Haven ≥0.00"



ACOE Daily Reports			
Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
1/26/2021	1080	637	810
1/27/2021	1076	635	814
1/28/2021	1083	630	837
1/29/2021	987	429	659
1/30/2021	870	519	444
1/31/2021	1138	603	300
2/1/2021	987	600	216
7-day avg	1032	579	583



Light Penetration

Site	25% I _z	Target Values	Turbidity	Target Values
	meters		NTU	
Fort Myers	1.05	> 1	2.3	< 18
Shell Point	1.75	>2.2	2.9	< 18
Causeway	2.17	> 2.2	8.8	< 5

25% I_z is the depth (z) where irradiance (I) is 25% of surface irradiance. Target values indicate the depth of light penetration needed for healthy seagrass.

Cyanobacteria Status: On 2/2/21, sampling by the Lee County Environmental Lab reported no cyanobacteria in the Caloosahatchee estuary.

Upstream of S-79/Franklin Conditions: On 2/2/21 the Olga Water Treatment plant reported chlorides of **60 mg/L**, apparent color **42 CU** and turbidity **2.35 NTU**. No visible algae were reported at the plant intake the past week. The plant is online at **1800 GPM**.

Upper Estuary Conditions: The 30-day average surface salinity at the Fort Myers Yacht Basin was 3.6 psu, within the suitable range for tape grass. No hypoxia was recorded during the week at the RECON sites.

Lower Estuary Conditions: The average salinity at Shell Point RECON was 26, within the suitable range for oysters and seagrass.

Water Quality Conditions

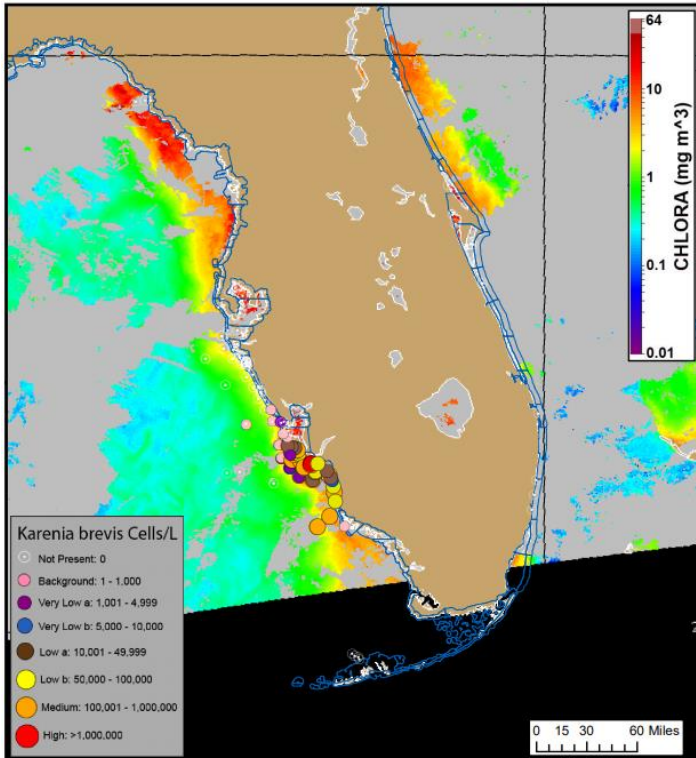
Monitor Site	Salinity (psu) ^a [previous week]	Diss O ₂ (mg/L) ^b	FDOM (qsde) ^c	Chlorophyll (µg/L) ^d
Beautiful Island	0.6 – 1.4 [0.3 – 1.4]	7.1 – 9.2	---	4.4
Fort Myers Yacht Basin	2.3 – 7.4 [2.4 – 5.4]	7.5 – 8.5	260	7.8
Shell Point	23 – 29 [15 – 29]	6.6 – 7.6	101	4.3
McIntyre Creek	-----	-----	-----	-----
Tarpon Bay	28.5 – 32.5	6.4 – 8.2	5.2 – 15.5	1.0 – 3.3
Wildlife Drive	29.8 – 32.3	1.2 – 13.4	-----	0.8 – 13.5
Wulfert Flats	29.6 – 32.3	5.5 – 8.5	-----	4.8 – 131.3

Red values are outside of the preferred range.
^a Salinity target values: BI < 5, FM < 10, SP = 25 – 32
^b Dissolved O₂ target values: all sites > 4
^c FDOM target values: BI < 70, FM < 70, SP < 11
^d Chlorophyll target values: BI < 11, FM < 11, SP < 11

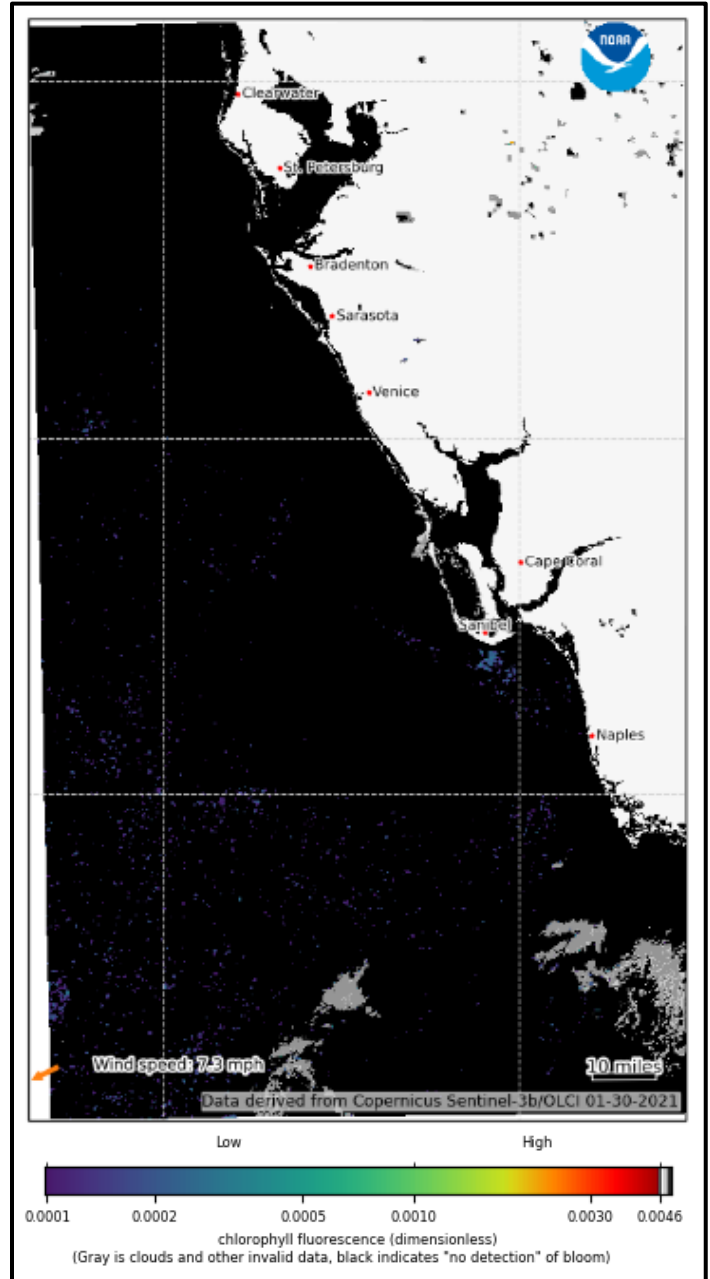
Red Tide: On 1/29/21 [FWC](#) reported that a patchy bloom of the red tide organism, *Karenia brevis*, persists in Southwest Florida. Over the past week, *K. brevis* was detected in 43 samples. Bloom concentrations (>100,000 cells/liter) were observed in 10 Lee County samples and four Collier County samples. Recent satellite imagery (1/27; NOAA, USF) indicates the presence of patches of chlorophyll >5 miles offshore of Lee, Collier, and Monroe counties. In Southwest Florida over the past week, *K. brevis* was observed at background to very low concentrations in and offshore of Charlotte County, background to high concentrations in and offshore of Lee County, and background to medium concentrations in and offshore of Collier County. Samples from Pinellas, Hillsborough, Manatee, Sarasota, and Monroe counties did not contain red tide.

Beach Conditions: In the past week, the [FWC Fish Kill Hotline](#) has received 4 reports in Lee County related to the red tide event and its associated effects. Affected areas include Sanibel Beach, Tarpon Bay Beach and Bunche Beach. At Bunche Beach, several dead sting rays were reported.

Wildlife Impacts: In the past week, the CROW wildlife hospital on Sanibel **received 21 toxicosis patients:** 4 royal terns (1 died, 3 still at CROW), 11 double-crested cormorants (3 died, 8 still at CROW), 1 ring-billed gull (still at CROW), 2 brown pelican (both still at CROW), 1 white pelican (died), and 2 laughing gulls (1 died, 1 still at CROW). The Town of Fort Myers Beach reported 1 dead manatee on the south side of Estero Island. The cause of death is suspected to be red tide. There were no visible signs of boat strikes and samples were sent for analysis. Two sea turtles strandings were reported in Fort Myers Beach with no visible signs of boat strikes: 1 near Dakota Beach Access on 2/1/2021 and 1 near Turtle Time on Bonita Beach.



[Satellite imagery](#) (VIIRS, 1/30), shows elevated to high chlorophyll (2 – 15 µg/L) is present alongshore southwest Florida from Pinellas to Lee counties, though much of the region does not contain the optical characteristics of *K. brevis*. A patch of dense chlorophyll with some of the optical characteristics of *K. brevis* is present 4 miles offshore Sanibel Island in central Lee County. FWC sampling data from: 1/22/21 – 1/28/21.



[NOAA National Center for Coastal Ocean Science](#) satellite imagery from 1/30. Red Band Difference (RBD) showing relative chlorophyll fluorescence from high (red) to low (violet).