

## 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: **December 22, 2020 – January 4, 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 **1,219 cfs at S-79 with a 7-day average of 852 cfs coming from the lake at S-77. The 14-day moving average flow at S-79 is 1,486 cfs and has been in the optimum flow envelope (750 – 2,100 cfs; RECOVER 2020) for the past 4 days.** The 14-day moving average flows were in **stressful** and **damaging** ranges for the previous **113 days**; 108 of the 113 days were in the damaging flow envelope (>2,600 cfs). A red tide bloom persists in Lee and Collier Counties causing multiple fish kill events, dead and injured wildlife, and respiratory irritation in humans. Minor, patchy accumulations of macroalgae have been reported on Sanibel beaches and in both impoundments of J.N. "Ding" Darling NWR. Water clarity in San Carlos Bay and in Cape Coral canals is improving in response to the gradual reduction of flow from Lake Okeechobee.

**Recommendation:** As we approach the end of the transition period from wet season to dry season, and after the gradual reduction of flows from Lake Okeechobee into the Caloosahatchee estuary, we request flows be maintained at **1,000 cfs** as measured at **S-79**. This flow rate will prevent rapid changes to salinities in the estuary and may benefit Lake Okeechobee ecology by lowering the lake stage into the ecological envelope. Additionally, 1000 cfs is within the range recommended by the RECOVER 2020 performance measure for salinity (750 cfs – 2,100 cfs) **for optimal ecological conditions.**

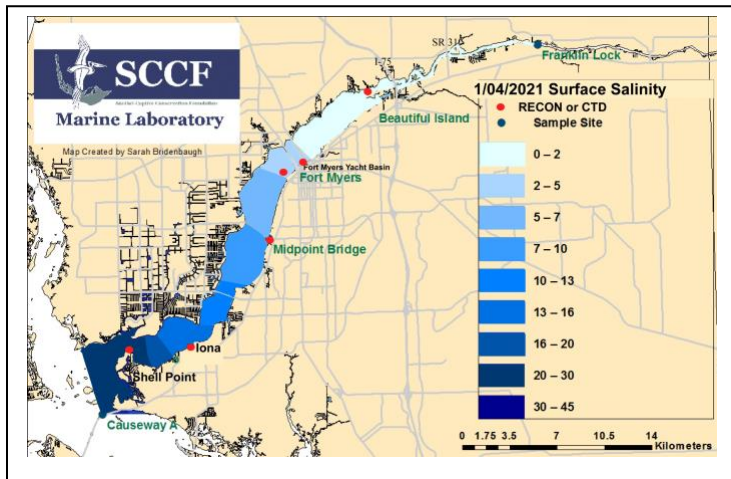
**USACE Action:** On Saturday 12/26/20 the USACE entered its fourth week in the gradual reduction of flows to the **Caloosahatchee Estuary** with a **7-day average target flow** (constant) of 1,500 cfs as measured at the WP Franklin Lock & Dam (S-79). Starting on Saturday 1/2/21 – 1/8/21, targeted flows (constant) were reduced to 1,000 cfs as measured at S-79. **With the current and forecasted hydrologic conditions and seasonal outlook, LORS 2008 guidance allows for releases up to 650 cfs at S-79.** For the **St. Lucie Estuary**, the Corps will implement a multi-week release pattern, alternating between a 7-day average release of 1,500 cfs from S-80 on 12/22 – 12/28 followed by a 5-day pause on 12/29/20 – 1/2/21.

**Lake Flows:** In the past 14 days, **66,569 AF** were discharged from Lake Okeechobee, with **23,770 AF (36%)** to the Caloosahatchee through **S-77**, **36,226 AF (54%)** to the St. Lucie River through **S-308**, **2,494 AF (4 %)** through **S-310** in Clewiston, and **4,079 AF (6%)** to the **EAA through S-351, S-352, and S-354**. There was a net flow of **1 AF** at the **L-8 canal**. Water conservation areas received flows of **210 AF**, **3,628 AF**, and **2,120 AF** at **WCA1, WCA2, and WCA3**, respectively. Everglades National Park received **18,320 AF\***.

\*data missing on 12/31/20 – 1/4/21 for ENP

<b>Lake Okeechobee Level:</b>	<b>15.79 ft (Low sub-band)</b>	<b>Last Week: 15.94 ft</b>
<b>Lake Okeechobee Inflow:</b>	<b>1,487 cfs</b>	<b>Lake Okeechobee Outflow: NR</b>
<b>Weekly Rainfall Total:</b>	WP Franklin <b>0.00"</b>	Ortona <b>0.06"</b> Moore Haven <b>≥0.00"</b>

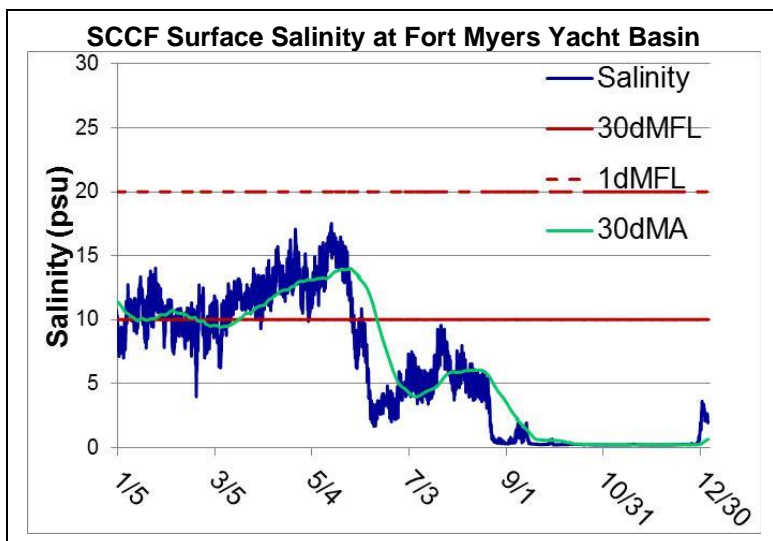
**Cyanobacteria Status:** On 12/28/20, sampling by the Lee County Environmental Lab reported the presence of *Microcystis*, *Dolichospermum*, and *Planktothrix* upstream of the Franklin Locks and *Microcystis*, *Dolichospermum*, *Planktothrix*, and *Aphanocapsa* and the Davis Boat ramp. On 1/5/21 the presence of *Microcystis*, *Dolichospermum*, and *Planktothrix* were reported upstream of the Franklin Locks and the presence of *Microcystis*, *Dolichospermum*, and *Cuspidothrix* were reported at the Davis Boat Ramp.



Light Penetration

Site	25% I <sub>z</sub>	Target Values	Turbidity	Target Values
	meters		NTU	
Fort Myers	0.79	> 1	2.6	< 18
Shell Point	1.21	>2.2	1.8	< 18
Causeway	1.73	> 2.2	4.6	< 5

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



ACOE Daily Reports			
Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
12/22/2020	3265	2709	2742
12/23/2020	1780	1956	1625
12/24/2020	805	538	240
12/25/2020	1600	297	0
12/26/2020	1430	1099	1404
12/27/2020	1885	1052	1209
12/28/2020	1508	867	808
12/29/2020	1310	853	825
12/30/2020	1409	849	830
12/31/2020	1263	567	813
1/1/2021	1360	638	343
1/2/2021	1057	700	357
1/3/2021	1069	791	363
1/4/2021	1066	779	372
14 day avg	1486	978	852

Water Quality Conditions:

Monitor Site	Salinity (psu) <sup>a</sup> [previous week]	Diss O <sub>2</sub> (mg/L) <sup>b</sup>	FDOM (qsde) <sup>c</sup>	Chlorophyll (µg/L) <sup>d</sup>
Beautiful Island	0.2 – 0.2 [0.2 – 0.2]	6.6 – 8.5	-----	3.7
Fort Myers Yacht Basin	0.2 – 3.6 [0.2 – 0.2]	7.4 – 9.3	415	3.9
Shell Point	10.8 – 30 [6.3– 29]	6.5 – 8.4	210	5.7
McIntyre Creek	-----	-----	-----	-----
Tarpon Bay	-----	-----	-----	-----
Wildlife Drive	26.3 – 28.7	0.9 – 14.2	-----	2.2 – 11.9
Wulfert Flats	25.3 – 30.3	5.8 – 9.7	-----	5.0 – 163.2

- Red values are outside of the preferred range.
- <sup>a</sup> Salinity target values: BI < 5, FM < 10, SP = 25 – 32
- <sup>b</sup> Dissolved O<sub>2</sub> target values: all sites > 4
- <sup>c</sup> FDOM target values: BI < 70, FM < 70, SP < 11
- <sup>d</sup> Chlorophyll target values: BI < 11, FM < 11, SP < 11

**Upstream of S-79/Franklin Conditions:** On 12/22/20 the Olga Water Treatment plant reported chlorides of 53 mg/L, apparent color 136 CU and turbidity 2.61 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 0.6 psu, within the suitable range for tape grass. No hypoxia was recorded during the week at the RECON sites.

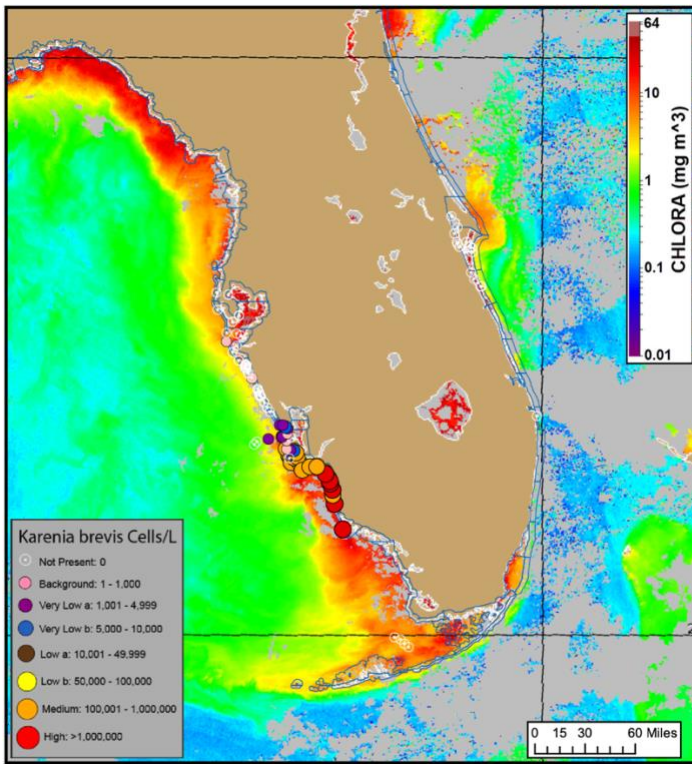
**Lower Estuary Conditions:** The average salinity at Shell Point RECON was 21, within the suitable range for oysters.

**Red Tide:** On 12/30/20 [FWC](#) reported that a bloom of the red tide organism, *Karenia brevis*, persists in Southwest Florida. Background to high concentrations of *K. brevis* were detected in 24 samples over the past week. Bloom concentrations (>100,000 cells/liter) were observed in 13 samples collected in Lee and Collier counties. The most recent satellite imagery (USF, NOAA) indicates that patches of elevated chlorophyll extend up to 20 miles offshore. Over the past week, *K. brevis* was observed at background to high concentrations in and offshore of Lee County, and medium to high concentrations in Collier County.

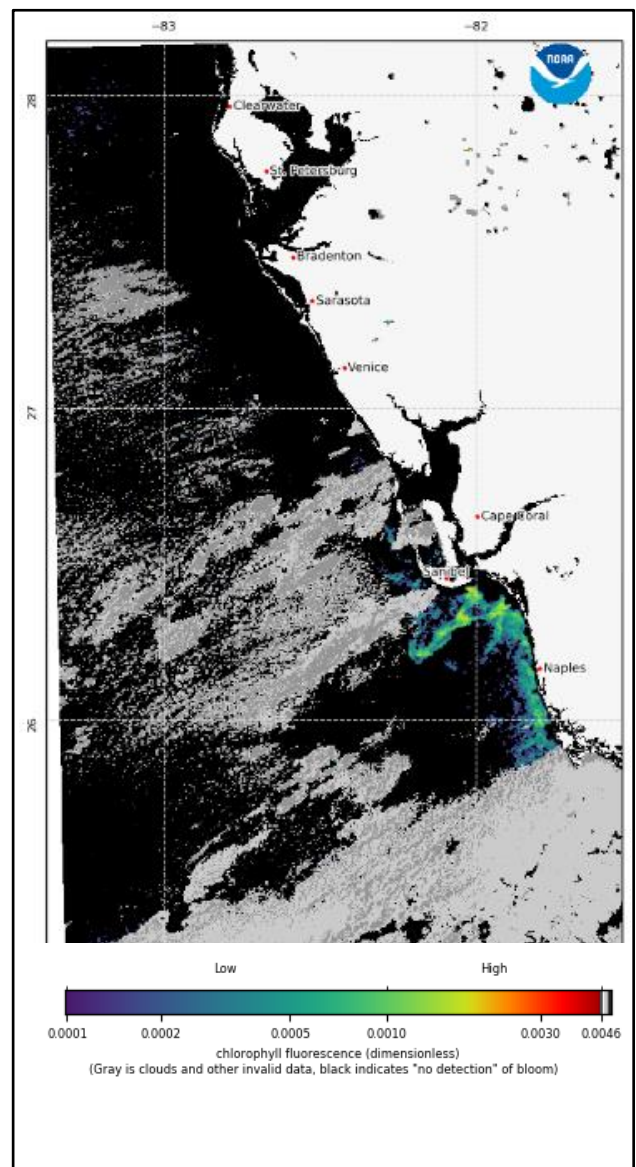
**Shellfish Advisory:** Shellfish harvest area #5802 Gasparilla Sound Shellfish Harvest Area (Aquaculture Use Zones and Leases remain open) is **CLOSED** by the Florida Department of Agriculture and Consumer Services (FDACS) as of 12/22/20 due to presence of *Karenia brevis*, shellfish meat results and conditions defined in The Biotxin Management Plan.

**Beach conditions:** Since 12/22/20 the [FWC Fish Kill Hotline](#) has received **16 reports** in Lee County related to the red tide event and its associated effects. Affected areas reported over the past week include Sanibel, J.N. "Ding" Darling National Wildlife Refuge, Estero Bay, Estero Pass, Fort Myers Beach Pier, and Tigertail Beach Lagoon. Numerous species of fish and invertebrates have been found dead.

**Wildlife Impacts:** In the past two weeks, the CROW wildlife hospital on Sanibel **received 16 brevetoxicosis patients:** 6 double-crested cormorants (1 released, 2 died, 3 still at CROW), 2 white pelicans (1 died, 1 still at CROW), 1 northern gannet (DOA), 1 laughing gull (died), 2 common loons (2 died), 1 common tern (died), 1 cattle egret (still at CROW), 1 brown pelican (died), and 1 anhinga (still at CROW). 2 dead white pelicans were reported in J.N. "Ding" Darling NWR (possibly the 2 pelicans released from CROW last week at the refuge).



[Satellite imagery](#) (VIIRS, 12/29) shows elevated to very high chlorophyll (2 to >20  $\mu\text{g/L}$ ) is present alongshore southwest Florida from Lee to Collier counties. A dense patch of very high chlorophyll with the optical characteristics of *Karenia brevis* is present along- and up to 10 miles offshore Sanibel Island in central Lee County, extending 25 miles south of Marco Island, and offshore of the Ten Thousand Islands region of southern Collier County.



[NOAA National Center for Coastal Ocean Science](#) satellite imagery from 01/04. Red Band Difference (RBD) showing relative chlorophyll fluorescence from high (red) to low (violet).