MEMORANDUM
To: USACE Colonel James L. Booth, LTC Todd F. Polk, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Drew Bartlett, Jennifer Reynolds, Lawrence Glenn, DEP Secretary Shawn Hamilton
From: Periodic Scientists Conference Call Participants
  Kevin Godsea & Avery Renshaw - 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
  Leah Reidenbach, Rick Bartleson PhD, & Matt Depaolis - SCCF (Sanibel-Captiva Conservation Foundation)
Subject: Caloosahatchee & Estuary Conditions Report

Reporting Period: December 20, 2022 – January 2, 2023

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 Conditions Summary: Flow to the Caloosahatchee Estuary had a 7-day average of 1,899 cfs at S-79 with a 7-day average of 1,057 cfs (56%) coming from the lake at S-77. The 14-day moving average flow at S-79 is 1,810 cfs and has been in the optimal flow envelope (750 – 2,100 cfs; RECOVER 2020) for 4 days after 4 days in the stress flow envelope (2,100 – 2,600 cfs).

Recommendation: To keep the Caloosahatchee River and Estuary in the optimal salinity envelope and to avoid unnecessary stress, we encourage the Corps to maintain flows within the RECOVER 2020 optimal flow envelope of 750 – 2,100 cfs at S-79 for the Caloosahatchee Estuary.

USACE Action: With Lake Okeechobee in the Intermediate subband and normal to wet tributary hydrologic conditions and weather forecast, LORS08 Part D currently suggests up to 4,000 cfs at S-77. On 12/3/22 the USACE increased releases from Lake Okeechobee to the Caloosahatchee Estuary from the W.P. Franklin Lock and Dam (S-79) to a seven-day average pulse release of 2,000 cubic feet per second. No lake releases are planned for the St. Lucie Estuary. The USACE is utilizing a make-up release tool which allows them to make releases at levels lower than suggested in LORS08 and bank the volume not released for beneficial use throughout the dry season.

Lake Flows: In the past 7 days the total outflow from Lake Okeechobee was 19,865 AF with 14,670 AF to the Caloosahatchee through S-77, 54 AF through S-310 in Clewiston, and 5,133 AF to the EAA through S-351, S-352, and S-354. The total net inflow to the Lake was 26,914 AF (26,886 AF from Fisheating Creek, S-71, S-72, S-84s, S-65EX, and S-65EX1) with a total backflow volume of 28 AF from S310 and C10A. Water conservation areas received flows of 577 AF, 0 AF, and 3,144 AF at WCA1, WCA2, and WCA3, respectively. Everglades National Park received 14,975 AF.

Lake Level: 16.35 ft (Intermediate sub-band)
Last Week: 16.35 ft  Last Year: 15.48 ft

Lake Okeechobee Inflow: 2119 cfs
Lake Okeechobee Outflow: 2581 cfs

Weekly Rainfall Total:
WP Franklin: 0.00”
Ortona: 0.00”
Moore Haven: ≥ 0.00”
7-Day Lake Recession Rate: +0.00 ft/week
Light Penetration

<table>
<thead>
<tr>
<th>Site</th>
<th>25% Iz</th>
<th>Target Values</th>
<th>Turbidity</th>
<th>Target Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fort Myers</td>
<td>ND</td>
<td>&gt; 1</td>
<td>ND</td>
<td>&lt; 18</td>
</tr>
<tr>
<td>Shell Point</td>
<td>1.68</td>
<td>&gt; 2.2</td>
<td>2.0</td>
<td>&lt; 18</td>
</tr>
<tr>
<td>Causeway</td>
<td>2.16</td>
<td>&gt; 2.2</td>
<td>2.2</td>
<td>&lt; 5</td>
</tr>
</tbody>
</table>

25% Iz 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 12/27/22 sampling for cyanobacteria by the Lee County Environmental Lab reported the presence of *Microcystis* and *Dolichospermum* upstream of the Franklin Locks as a wind driven tan-green scum along the lock. *Microcystis* and *Dolichospermum* were moderately abundant the Davis Boat Ramp as a wind driven tan-green scum along the seawall. On 1/3/23 they reported the presence of *Microcystis* upstream of the Franklin Locks as a wind driven tan-green scum along the lock. *Microcystis* and *Dolichospermum* were moderately abundant the Davis Boat Ramp as a wind driven tan-green scum along the seawall and as streaks.

Upper Estuary Conditions: The 30-day average surface salinity at the Fort Myers Yacht Basin was 6.3 psu, within the suitable range for tape grass.

Lower Estuary Conditions: The average salinity at Shell Point RECON was 25 psu, within the optimal range for oysters and seagrass. Chlorophyll at Shell Point was elevated during recent high tides with diatoms (*Thalassionema, Pseudonitzschia, Skeletonema*) dominant. Water temperatures dropped to almost 10.0°C, where fish and sea turtles can be stunned, on 12/26/22.

Water Quality Conditions:

<table>
<thead>
<tr>
<th>Monitor Site</th>
<th>Salinity (psu)*</th>
<th>Diss O₂ (mg/L)b</th>
<th>FDOM (qsde)c</th>
<th>Chlorophyll (µg/L)d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beautiful Island</td>
<td>0.3 - 1.4 [0.5 – 2.9]</td>
<td>6.8 – 8.3</td>
<td>------</td>
<td>6.8</td>
</tr>
<tr>
<td>Fort Myers Yacht Basin</td>
<td>2.0 - 7.5 [3.9 – 10]</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Shell Point</td>
<td>15 – 31 [16 – 33]</td>
<td>5.3 – 6.8</td>
<td>110</td>
<td>2.3</td>
</tr>
<tr>
<td>McIntyre Creek</td>
<td>------</td>
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<tr>
<td>Tarpon Bay</td>
<td>------</td>
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<tr>
<td>Wulfert Flats</td>
<td>------</td>
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</tbody>
</table>

Red values are outside of the preferred range.

* Salinity target values: BI < 5, FM < 10, SP = 10 – 30
* Dissolved O₂ target values: all sites > 4
* FDOM target values: BI < 70, FM < 70, SP < 11
* Chlorophyll target values: BI < 11, FM < 11, SP < 11
* Single sonde lower and surface layer or surface grab lab measurement
  ------ no data

Red Tide: On 12/29/22, the FWC reported that over the past week the red tide organism, *Karenia brevis*, was observed in 39 samples collected from and offshore of Southwest Florida over the past week. Bloom concentrations (>100,000 cells/liter) were present in 11 samples: four in Pinellas County, four in Manatee County, and three in Sarasota County.

In Southwest Florida over the past week, *K. brevis* was observed at low to medium concentrations in Pinellas County, background to medium concentrations in Manatee and Sarasota counties, background concentrations in Charlotte and Lee counties, and background to low concentrations in and offshore of Collier County.

Wildlife Impacts: In the past two weeks, the CROW wildlife hospital on Sanibel received 3 patients with toxicosis symptoms: 1 adult brown pelican (still at CROW), 1 adult royal tern (still at CROW), and 1 adult white ibis (still at CROW).
Fish Kills: The FWC Fish Kill Hotline reported multiple fish kills in Lee County with cold weather as the suspected cause. Species affected include spotted sea trout, catfish, tilapia, peacock bass, and largemouth bass.

Daily average bottom salinity data for the last 14-days from sampling locations within the tidal Caloosahatchee River Estuary relative to oyster health (Sanibel, Shell Point and Cape Coral) and tape grass (Vaillantera americana) health (Ft. Myers only) conditions.

Data are provisional and subject to change.

Water clarity at Lighthouse Beach Park on 1/3/22 at 12:02 PM on a rising tide (1.4 ft). Lighthouse Beach Park Virtual Tour.