Water Conditions Summary

South Florida Water Management District
Governing Board Meeting
April 9, 2020

John P. Mitnik, PE
Chief District Engineer
Assistant Executive Director
2018-2019 DRY SEASON
- Jan 2019 made dry season above normal.
- Dry Season ended slightly above average.

2019 WET SEASON
- May to August had above average rainfall
- August was 14% above average.
- Driest September in the 88-year POR.

2019-2020 DRY SEASON
- 81% of average to date.
- Single month above normal (214%): December.
- Driest March in 89 years of record

District Wide Average Rainfall

<table>
<thead>
<tr>
<th>Month</th>
<th>Average (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>2.12</td>
</tr>
<tr>
<td>Feb</td>
<td>1.98</td>
</tr>
<tr>
<td>Mar</td>
<td>2.51</td>
</tr>
<tr>
<td>Apr</td>
<td>2.74</td>
</tr>
<tr>
<td>May</td>
<td>4.21</td>
</tr>
<tr>
<td>Jun</td>
<td>8.55</td>
</tr>
<tr>
<td>Jul</td>
<td>7.18</td>
</tr>
<tr>
<td>Aug</td>
<td>8.03</td>
</tr>
<tr>
<td>Sep</td>
<td>7.34</td>
</tr>
<tr>
<td>Oct</td>
<td>4.03</td>
</tr>
<tr>
<td>Nov</td>
<td>1.99</td>
</tr>
<tr>
<td>Dec</td>
<td>1.84</td>
</tr>
</tbody>
</table>

Presenter: John Mitnik
March 2020 Rainfall
DISTRICT-WIDE: 0.25”

- 10% of average, -2.26” deficit
- Basin with largest % of average is WCA-1 with 19%
- March 2020 rainfall the driest March in the 89 years period of record

Dry Season Rainfall
02 Sep 2019 to 1 Apr 2020
DISTRICT-WIDE: 15.38”

- 70% of average, -6.50” deficit
- Eastern Broward is the closest to average rainfall (-3.16” deficit)
- Largest deficits are in WCA 3 (-9.47”) and Big Cypress Preserve (-8.83”)
Water Year Rainfall Map

- Below average (91%), -4.73” deficit.
- Basins are 79 to 97% of average.
- Lower East Coast appears to be the most favored with deficits as low as -1.48”
- Basins with largest deficit are ENP with -10.76” and WCA 3, with -9.12”, with similar trends for the monthly and seasonal time scales.
Lake Kissimmee (April 7, 2020)

50.31 feet NGVD

Lake Tohopekaliga (April 7, 2020)

53.25 feet NGVD

Below 53.0 feet NGVD (no data since Apr 2)

Presenter: John Mitnik
Lake Okeechobee SFWMM Apr 2020 Position Analysis

50% chance stage falls in purple-shaded region

(See assumptions on the Position Analysis Results website)
April 2020 PA - Likelihood of Releases to the Caloosahatchee Estuary

- Stage ≥ Base Flow Sub-band
- Releases > 650 cfs
- Releases ≤ 650 cfs

Probability (%)

1-Apr 1-May 1-Jun 1-Jul 1-Aug 1-Sep 1-Oct 1-Nov 1-Dec 1-Jan 1-Feb

Presenter: John Mitnik
Lake Okeechobee stage entered the Beneficial Use Sub-band as of March 4. No regulatory releases south. Supplemental environmental releases to the Caloosahatchee Estuary.

Rainfall Plan calls for no releases from WCA-3A to Shark River Slough. However, S-333 and S-334 are passing ~ 250 cfs daily average as supplemental deliveries to South Dade. S-12 C&D remain closed. L-29 canal stage constraint is 8.3 to 8.5 feet NGVD. District continues to operate the detention cells as necessary to provide seepage management for the SDCS (L-31N and C-111). However, S-332, S-199 and S-200 pumps have not run recently due to dry conditions.

WCA-1 is in Zone A1 of the regulation schedule; WCA-2A is below regulation schedule and below floor; WCA-3A stage is in Zone E (no flood control releases). S-10sw were opened Feb 7 to Apr 5, May 8 to May 23, Jun 11 to Jun 26 and Aug 7 to Sep 4. S-11sw were opened Feb 1 to Apr 10, May 16 to May 22, Jun 11 to Jul 17, Aug 2 to Sep 16 and Dec 18 to Jan 10. S-12C and D were opened on June 25. S-12A and B, S-343 A and B, and S-344 were opened on July 15 and closed on October 1. S-12 C&D closed since Nov 1st.
Status of Groundwater Conditions

- 96% of Public Water Supply comes from groundwater
- Real-time groundwater levels
  - Each dot represents a monitoring site, continuously monitoring water levels
  - Color coding corresponds to statistical comparison of current water levels compared to historical for this time of year
  - Most of the District is average to below-average groundwater levels for this time of year
  - Lowest groundwater levels -- Southern Miami-Dade County, Cape Coral

Presenter: John Mitnik
SFWMD – Selected Release Volumes for the Period Water Year 2019: May 1, 2018 to Apr 30, 2019 (volumes in 1,000 acre-feet)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Volume (1,000 acre-feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Season to Date</td>
<td>Last Month</td>
</tr>
<tr>
<td>Upper Kissimmee to Lower Kissimmee</td>
<td>927.1</td>
<td>40.8</td>
</tr>
<tr>
<td>Inflows to Lake Okeechobee</td>
<td>1629.8</td>
<td>40.1</td>
</tr>
<tr>
<td>Lake Releases and Basin Runoff</td>
<td>2188.0</td>
<td>61.1</td>
</tr>
<tr>
<td>Lake Releases East and West</td>
<td>1230.4</td>
<td>53.8</td>
</tr>
<tr>
<td>Lake Flood Control to Estuaries</td>
<td>1052.6</td>
<td>39.3</td>
</tr>
<tr>
<td>Total Lake Releases South</td>
<td>966.1</td>
<td>106.5</td>
</tr>
<tr>
<td>Releases to Indian River Lagoon</td>
<td>174.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Upper East Coast discharges to St. Lucie Estuary</td>
<td>268.1</td>
<td>4.0</td>
</tr>
<tr>
<td>Uncontrolled flows (creeks)</td>
<td>651.3</td>
<td>11.0</td>
</tr>
</tbody>
</table>

1,000 acre-feet = 325.9 Million Gallons

Presenter: John Mitnik
SFWMD – Selected Release Volumes for the Period
May 1, 2019 to April 7, 2020
(volumes in 1,000 acre-feet)

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<tr>
<td></td>
<td>Inflows to Lake Okeechobee</td>
<td>1277.4</td>
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<tr>
<td></td>
<td>Lake Releases and Basin Runoff</td>
<td>912.0</td>
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<tr>
<td></td>
<td>Lake Releases East and West</td>
<td>290.7</td>
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<td></td>
<td>Lake Flood Control to Estuaries</td>
<td>140.3</td>
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<tr>
<td></td>
<td>Total Lake Releases South</td>
<td>599.4</td>
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<tr>
<td></td>
<td>Releases to Indian River Lagoon</td>
<td>54.1</td>
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<tr>
<td></td>
<td>Upper East Coast discharges to St. Lucie Estuary</td>
<td>200.7</td>
</tr>
<tr>
<td></td>
<td>Uncontrolled flows (creeks)</td>
<td>382.2</td>
</tr>
</tbody>
</table>

1,000 acre-feet = 325.9 Million Gallons
### SFWMD – Selected Release Volumes for the Period Water Year 2019: May 1, 2018 to Apr 30, 2019
(volume in 1,000 acre-feet)

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<tr>
<th>Symbol</th>
<th>Description</th>
<th>Volume (1000 acre-feet)</th>
<th>Season to Date</th>
<th>Month</th>
</tr>
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<tbody>
<tr>
<td>➡️</td>
<td>Lake Releases East and West</td>
<td>1230.4</td>
<td>53.8</td>
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<tr>
<td>➡️</td>
<td>Total Lake Releases South</td>
<td>966.1</td>
<td>106.5</td>
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<tr>
<td>➡️</td>
<td>Lake Flood Control to Lake Worth Lagoon</td>
<td>39.5</td>
<td>0.0</td>
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<tr>
<td>➡️</td>
<td>EAA Runoff</td>
<td>930.5</td>
<td>3.2</td>
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<td>➡️</td>
<td>Lake Delivery for Irrigation</td>
<td>396.3</td>
<td>90.0</td>
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<td>➡️</td>
<td>Inflows to STAs FEBs from Lake</td>
<td>494.1</td>
<td>6.7</td>
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<tr>
<td>➡️</td>
<td>Inflows to STAs FEBs from Runoff +Other</td>
<td>1032.9</td>
<td>4.6</td>
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<tr>
<td>➡️</td>
<td>Inflows to WCAs from STAs+Other</td>
<td>1734.4</td>
<td>20.0</td>
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<tr>
<td>➡️</td>
<td>Flood Control Releases WCA to WCA</td>
<td>1315.2</td>
<td>10.8</td>
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<tr>
<td>➡️</td>
<td>WCA Flood Control to Intracoastal</td>
<td>296.7</td>
<td>1.1</td>
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<tr>
<td>➡️</td>
<td>Urban areas flood control to Intracoastal</td>
<td>2701.0</td>
<td>45.2</td>
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<tr>
<td>➡️</td>
<td>WCA-3 Releases to ENP (L-29 Canal)</td>
<td>311.2</td>
<td>17.0</td>
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<td>➡️</td>
<td>L-31N Seepage to ENP</td>
<td>42.5</td>
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<tr>
<td>➡️</td>
<td>Flow to Detention Cells</td>
<td>340.4</td>
<td>1.7</td>
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<tr>
<td>➡️</td>
<td>Flows to Taylor Slough</td>
<td>29.7</td>
<td>0.0</td>
<td></td>
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<tr>
<td>➡️</td>
<td>C-111 to Barnes Sound</td>
<td>35.5</td>
<td>0.0</td>
<td></td>
</tr>
</tbody>
</table>

1,000 acre-feet = 325.9 Million Gallons

*Presenter: John Mitnik*
The most recent CPC precipitation outlook for April 2020 calls for equal chances of above-normal, normal, and below-normal rainfall.

The outlooks for the 3-month windows from Apr-Jun to Jun-Aug are or slightly increased chances of above-normal rainfall for south Florida.

All the other 3-month windows to the end of the 2020 wet season call for equal chances of above-normal, normal, or below-normal rainfall.
U.S. Drought Monitor
Florida

March 31, 2020
(Released Thursday, Apr. 2, 2020)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

<table>
<thead>
<tr>
<th></th>
<th>D0</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>0.19</td>
<td>99.81</td>
<td>66.71</td>
<td>1.07</td>
<td>0.00</td>
</tr>
<tr>
<td>Last Week (9/24/2020)</td>
<td>11.53</td>
<td>88.47</td>
<td>4.94</td>
<td>1.07</td>
<td>0.00</td>
</tr>
<tr>
<td>3 Months Ago (12/31/2019)</td>
<td>76.86</td>
<td>24.14</td>
<td>8.59</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Start of Calendar Year (12/31/2019)</td>
<td>75.86</td>
<td>24.14</td>
<td>8.59</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Start of Water Year (7/1/2019)</td>
<td>56.91</td>
<td>43.09</td>
<td>23.59</td>
<td>6.18</td>
<td>0.61</td>
</tr>
<tr>
<td>One Year Ago (7/1/2018)</td>
<td>71.24</td>
<td>28.76</td>
<td>4.53</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Intensities:
- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:
David Simmeral
Western Regional Climate Center

droughtmonitor.unl.edu
LORS 2008 Regulation Zones and Releases

Presenter: John Mitnik
2008 LORS
Part C: Establish Allowable Lake Okeechobee Releases to the Water Conservation Areas

Apply Multi-Seasonal Climate/Hydrologic Outlooks on a Monthly Basis
Apply Tributary Condition Criteria Daily

High Lake Management Band

START
Lake Okeechobee Water Level

High
Intermediate
Low
Base Flow

Tributary Hydrologic Conditions

Multi-Seasonal Climate/Hydrologic Outlook

TRUE
FALSE

All Downstream WCAs < max of upper schedule +0.25 ft

TRUE
FALSE

Desirable OR with minimum Everglades impacts

Maximum Practicable to WCAs
No Releases to WCAs
Maximum Practicable to WCAs
No Releases to WCAs
Up to Maximum Practicable to WCAs
No Releases to WCAs

DRY
NORMAL TO VERY WET
OTHERWISE

Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

Presenter: John Mitnik
2008 LORS

Part D: Establish Allowable Lake Okeechobee Releases to Tide (Estuaries)

- **High Lake Management Band**
  - Lake level projected to rise to High Lake Management Band

- **Very Wet**
  - Normal to Wet
  - Normal to Very Wet
  - Up to 30 day Meteorological Forecast

- **Normal to Very Wet**
  - Normal to Dry
  - Either Forecast Indicates Normal to Very Wet
  - Seasonal Climate/Hydrologic Outlook

- **Normal to Dry**
  - Normal to Wetter
  - Up to 30 day Meteorological Forecast

- **Seasonal Climate/Hydrologic Outlook**
  - Multi-Seasonal Climate/Hydrologic Outlook
  - WET TO VERY WET

- **WET TO VERY WET**
  - S-77 Up to 6500 cfs
  - S-80 Up to 2800 cfs

- **S-77 Up to 6500 cfs**
  - S-80 Up to 2800 cfs

- **S-79 Up to 3000 cfs**
  - S-80 Up to 1170 cfs

- **S-77 Up to 4000 cfs**
  - S-80 Up to 1800 cfs

- **S-79 Up to 4500 cfs**
  - S-80 Up to 200 cfs

Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

*Very Dry Conditions may require that releases to tide (estuaries) be discontinued.*

Presenter: John Mitnik
QUESTIONS?