Water Quality Conditions for Everglades National Park, Water Year 2017
Shark River Slough

Technical Oversight Committee Quarterly Meeting
January 23, 2018
PROVISIONAL WY2017 RESULTS

SRS - Method 1 (left values) computed as S12s+(S333+S355A+S355B-S334) and Method 2 (values in parentheses) computed as S12s+(S333+S355A+S355B+S356-S334)
Neither method excludes S334 flow from the total flow for long-term limit calculations.

TS and CB - Method 1 (left values) computed as S332D+S18C, Method 2 (first values in parentheses) computed as S332D+S18C+G737, and Method 3 as (S332D-S332DX1-S328)+S328+G737+S18C.
Water Quality Conditions – WY2017 Shark River Slough

- Prolonged dry conditions January-early June 2017
- Extreme rainfall June 2017 resulting in flow to SRS
Water Quality Conditions – WY2017 Shark River Slough

- WY2017 TP results with and without flow
- TP grab June 12 at S333 = 87 ppb

S12A, S12B, and S12 D are generally sampled weekly if flowing

S12A and S333 are sampled weekly independent of flow

S12A TP with No Flow

S333 TP with Flow “around the corner”

Symbols not filled represent events when no flow was recorded at a structure
Water Quality Conditions – WY2017 Shark River Slough

- Little to no flow to SRS leading up to June 6, 2017
- ~1,100 cfs through S333 beginning June 6
Water Quality Conditions – WY2017 Shark River Slough

- Dry conditions dropped WCA3 stage to 8.5’ NGVD
- 3” rainfall June 6… 8” rainfall June 7
- EDEN12 marsh station stage rose 10” in 20 hours
Water Quality Conditions – WY2017 Shark River Slough

- Approximately 470 cfs of the approximately 1,100 cfs at S333 flowed to S334
- Low flow and dropping stage up to June 6
Water Quality Conditions – WY2017 Shark River Slough

- Daily flows at S333 and S334
- 630 cfs to SRS June 6 – July 5, on average

June 6 – July 5, 2017
S333 Average
Mean Daily Flow ≈ 1,100 cfs
(S334 ≈ 470 cfs)

April 1 – June 6, 2017
S333 Average
Mean Daily Flow ≈ 50 cfs
(S333 ≈ S334)

WCA3A Stage = 3 Gage Mean
Water Quality Conditions – WY2017 Shark River Slough

- TP levels rising as WCA3 stage falls
- High TP June 12 following stage and flow increase

Mean Total P = 31 ppb
Range Total P = 6 – 87 ppb
Water Quality Conditions – WY2017 Shark River Slough

- June 12 grab sample TSS spiked at 11 mg/L
Water Quality Conditions – WY2017 Shark River Slough

• S333 phosphorus more directly related to S333 HW
Water Quality Conditions – WY2017 Shark River Slough

WCA-3A Average Stage and Flow and TP Flow-weighted Mean Concentration to Shark River Slough

(Plot shows Method 1 Total Flow (S12s+S333+S355A&B) and FWMC [S12s+(S333+S355A&B-S334)].

<table>
<thead>
<tr>
<th>Year</th>
<th>Method 1</th>
<th>Total Flow:</th>
<th>Flow Limit:</th>
<th>Long-term Limit:</th>
<th>12-Month FWMC:</th>
</tr>
</thead>
<tbody>
<tr>
<td>WY 2014</td>
<td>Total Flow: 649 kac-ft</td>
<td>3.7 ppb</td>
<td>9.7 ppb</td>
<td>10.8 ppb</td>
<td></td>
</tr>
<tr>
<td>WY 2015</td>
<td>Total Flow: 257 kac-ft</td>
<td>11.9 ppb</td>
<td>7.6 ppb</td>
<td>7.7 ppb</td>
<td></td>
</tr>
<tr>
<td>WY 2016</td>
<td>Method 1 (Method 2)</td>
<td>Total Flow: 1,445 (1,495) kac-ft</td>
<td>7.8 (7.6) ppb</td>
<td>7.7 (7.7) ppb</td>
<td>9.8 (9.8) ppb</td>
</tr>
<tr>
<td>WY 2017 (Provisional)</td>
<td>Method 1 (Method 2)</td>
<td>Total Flow: 1,038 (1,042) kac-ft</td>
<td>7.7 (7.7) ppb</td>
<td>9.8 (9.8) ppb</td>
<td></td>
</tr>
</tbody>
</table>
Water Quality Conditions – WY2017 Shark River Slough

Stage and TP Concentrations at SRS During the Period (WY2003-WY2017)

- SRS TP FWMC
- 3A-28 (3-65) Stage
- S333_H Stage
### Water Quality Conditions – WY2017 Shark River Slough

<table>
<thead>
<tr>
<th></th>
<th>SRS1B</th>
<th>SRS1C</th>
<th>SRS2</th>
<th>G-3273</th>
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</thead>
<tbody>
<tr>
<td>May2017-Sep2017</td>
<td>0.008</td>
<td>0.007</td>
<td>0.005</td>
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<tr>
<td></td>
<td>Geomean</td>
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</tr>
<tr>
<td>Oct2016-Sep2017</td>
<td>0.008</td>
<td>0.006</td>
<td>0.004</td>
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<tr>
<td></td>
<td>Geomean</td>
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<tr>
<td>Average of WY13-17</td>
<td>0.007</td>
<td>0.005</td>
<td>0.004</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>Geomeans</td>
<td></td>
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</tr>
</tbody>
</table>

**Note:** June ENP sampling – 6/13 & 6/14
Water Quality Conditions – WY2017 Shark River Slough

• Summary of Water Year 2017:
  • Water Year 2017 conditions are representative of the previously documented dynamic between stage and total phosphorus concentration observed
  • Long-term water quality conditions and trends in Everglades Protection Area Continue to improve
  • The long-term, downward trend in the flow-weighted mean total phosphorus concentration for the inflow structures to Everglades National Park continued through Water Year 2017