



# SETTLEMENT AGREEMENT QUARTERLY REPORT

April – June 2021

**Chelsea Qiu, P.E., Ph.D.**

Lead Engineer

Compliance Assessment & Reporting Section

Water Quality Bureau

Technical Oversight Committee

November 2, 2021



[sfwmd.gov](http://sfwmd.gov)

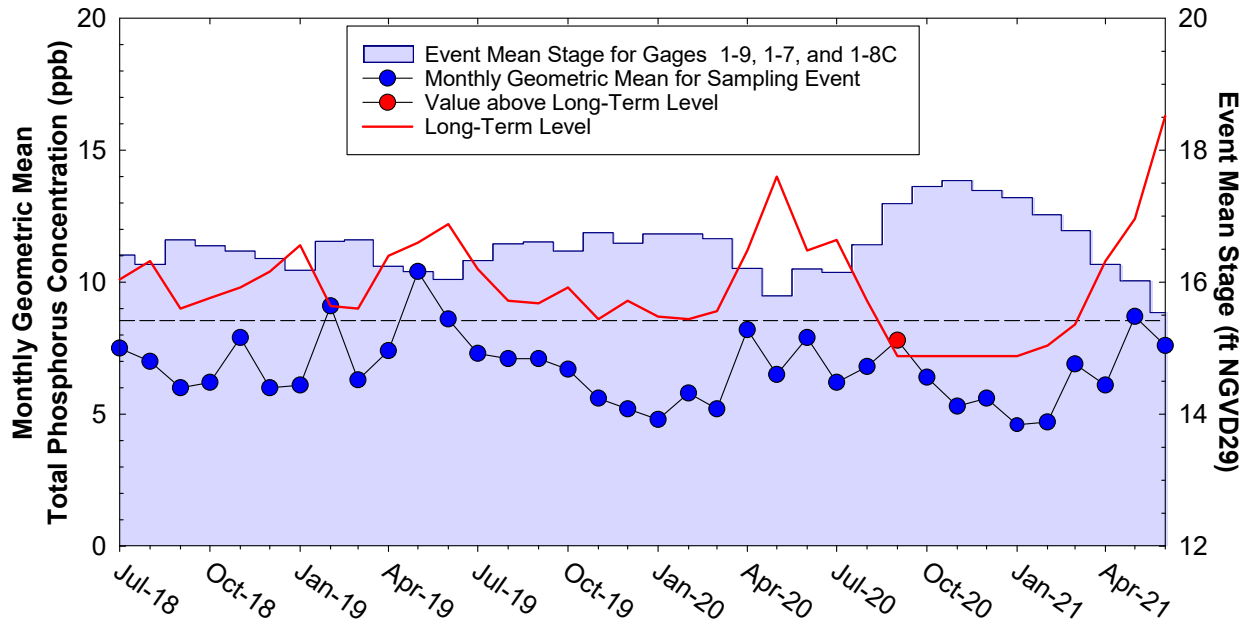
## SUMMARY

Month	Geometric Mean TP Concentration (ppb)	Long-Term Level (ppb)	Mean Stage (ft NGVD29)	Number of Samples	
<b>Arthur R. Marshall Loxahatchee National Wildlife Refuge</b>					
Apr 2021	6.1	10.8	16.27	11	
May 2021	8.7	12.4	16.02	9	
Jun 2021	7.6	16.3	15.54	5	
12-Month Period Ending	Total Flow (kac-ft)	12-Month TP FWMC (ppb)	Long-Term Limit (ppb)	Percent of Sampling Events Greater than 10 ppb	
				Guideline	Observed
<b>Everglades National Park – Shark River Slough – <i>PROVISIONAL DATA and RESULTS</i></b>					
Apr 2021	1,965.8	7.6	7.6	40.1	28.0
May 2021	1,977.6	7.9	7.6	40.1	30.8
Jun 2021	1,930.5	7.9	7.6	40.1	30.8
<b>Everglades National Park – Taylor Slough and Coastal Basins</b>					
Apr 2021	482.9	5.7	11.0	53.1	3.9
May 2021	472.6	5.4	11.0	53.1	1.9
Jun 2021	447.3	5.4	11.0	53.1	2.0

SRS - computed as  $S12s + [S333 + S333N + S355A + S355B + \min(S356, S335) - S334]$ . S334 flow is not excluded from the total flow for long-term limit calculations.

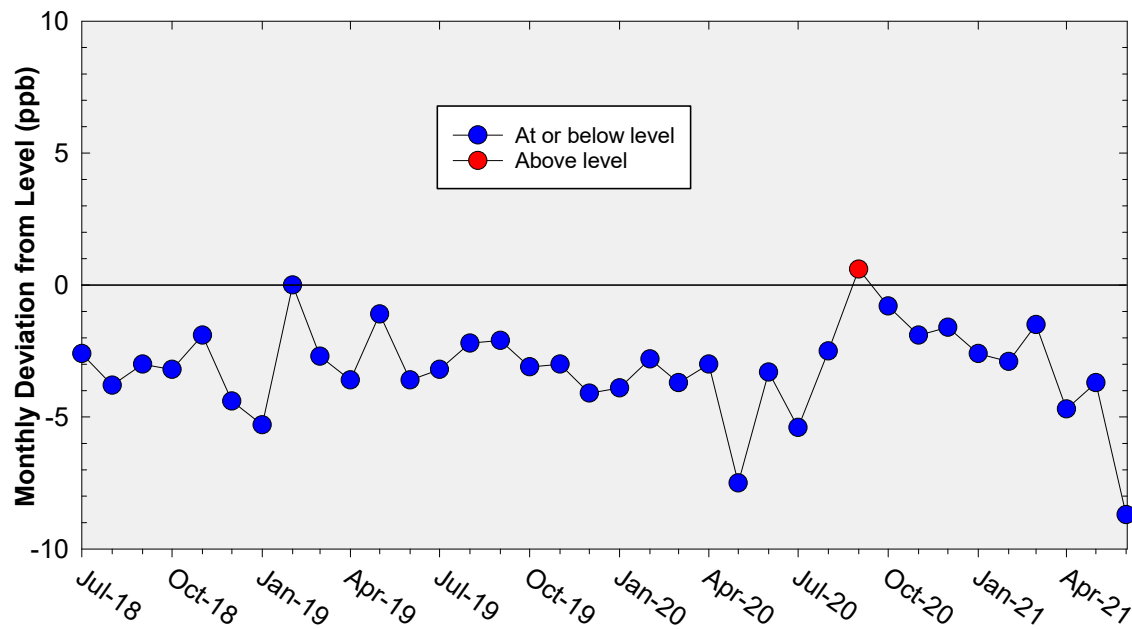
TS and CB – computed as  $(S332D - S332DX1 - S328) + S328 + G737 + S18C$ .

## A.R.M Loxahatchee National Wildlife Refuge Monthly Total Phosphorus Geometric Mean Concentrations



**36-Month Average TP Geometric Mean = 7 ppb**  
**36-Month Average TP Long-term Level is = 10 ppb**

## A.R.M Loxahatchee National Wildlife Refuge Deviation of monthly geometric mean total phosphorus concentrations with calculated long-term levels



**36-Month Average TP geometric mean = 3 ppb below the Long-Term Level**

## Refuge TP Compliance Tracking

### For April – October 2021

Month	Geometric Mean TP Concentration (ppb)	Long-Term Level (ppb) Effective 12/31/2006	Average Stage (feet NGVD29)	Number of Samples
<b>2nd Quarter 2021 Compliance Tracking</b>				
<b>Apr-2021</b>	<b>6.1</b>	<b>10.8</b>	<b>16.27</b>	<b>11</b>
<b>May-2021</b>	<b>8.7</b>	<b>12.4</b>	<b>16.02</b>	<b>9</b>
<b>Jun-2021</b>	<b>7.6</b>	<b>16.3</b>	<b>15.54</b>	<b>5</b>
<b>Preliminary Data Outlook</b>				
<b>Jul-2021</b>	<b>11.1</b>	<b>12.5</b>	<b>16.00</b>	<b>8</b>
<b>Aug-2021</b>	<b>8.6</b>	<b>9.7</b>	<b>16.49</b>	<b>13</b>
<b>Sep-2021</b>	<b>7.0</b>	<b>8.4</b>	<b>16.79</b>	<b>13</b>
<b>Oct-2021</b>	<b>6.6</b>	<b>7.2</b>	<b>17.30</b>	<b>14</b>

Note: 17.14 ft NGVG29 was used for the long-term level calculation for October 2021.

## Shark River Slough TP Concentration Compliance Tracking

WY2021 (October 2020 to June 2021) Flow Data for S12s are Provisional.

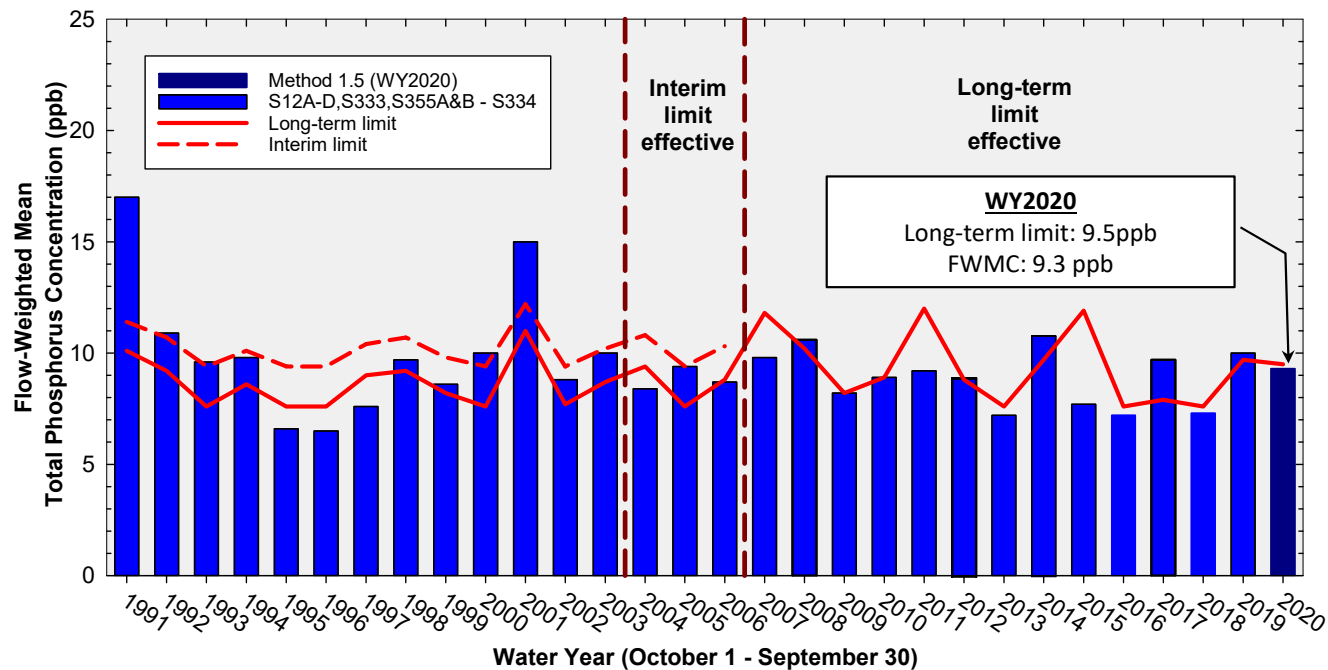
12-Month Period	Total Flow (kac-ft)	Flow-Weighted Mean TP Concentration (ppb)	Long-Term Limit (ppb) <i>Effective 12/31/2006</i>	Percent of Sampling Events Greater than 10 ppb	
				Guideline	Observed
<b>May 2020 - Apr 2021</b>	<b>1,965.8</b>	<b>7.6</b>	<b>7.6</b>	<b>40.1</b>	<b>28.0</b>
<b>Jun 2020 - May 2021</b>	<b>1,977.6</b>	<b>7.9</b>	<b>7.6</b>	<b>40.1</b>	<b>30.8</b>
<b>Jul 2020 - Jun 2021</b>	<b>1,930.5</b>	<b>7.9</b>	<b>7.6</b>	<b>40.1</b>	<b>30.8</b>

**Shark River Slough PROVISIONAL RESULTS:**

**FWMC computed as S12s + [S333 + S333N + S355A + S355B + minimum of (S356, S335) – S334] using all flow and TP grabs on bi-weekly compliance sampling dates.**

**S334 flow was not excluded from the flow for long-term limit calculations.**

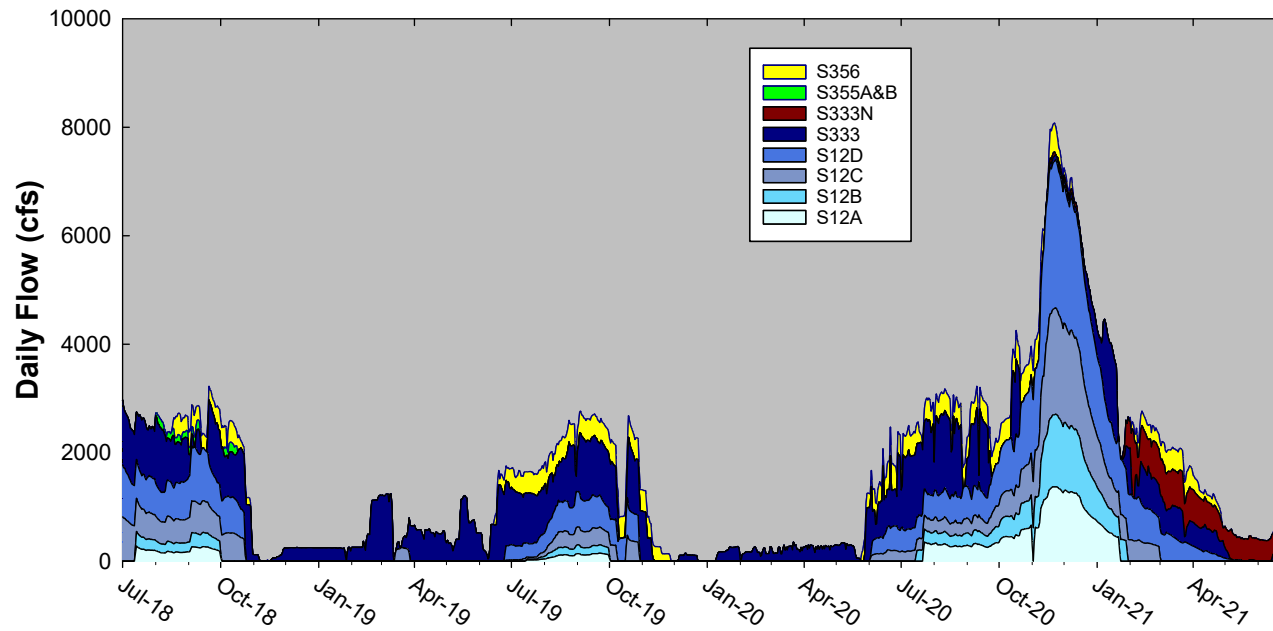
## Annual Flow-weighted Mean Concentrations Inflows to ENP through Shark River Slough



**12-month FWMC at the end of each water year compared to the TP interim and long-term limits**

# Shark River Slough Structure Daily Flows

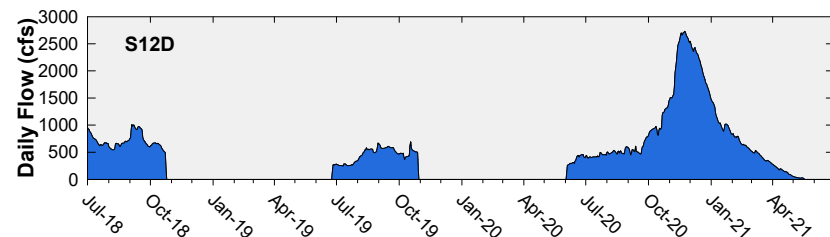
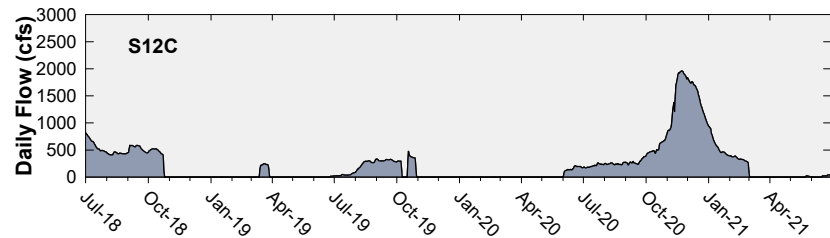
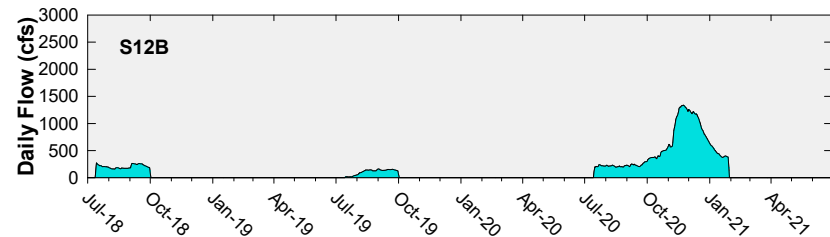
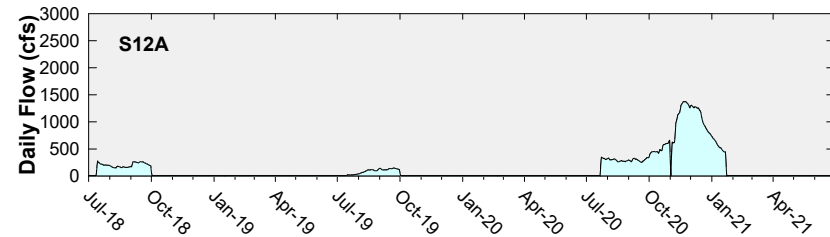
WY2021 (October 2020 to June 2021) Flow Data for S12s are Provisional.



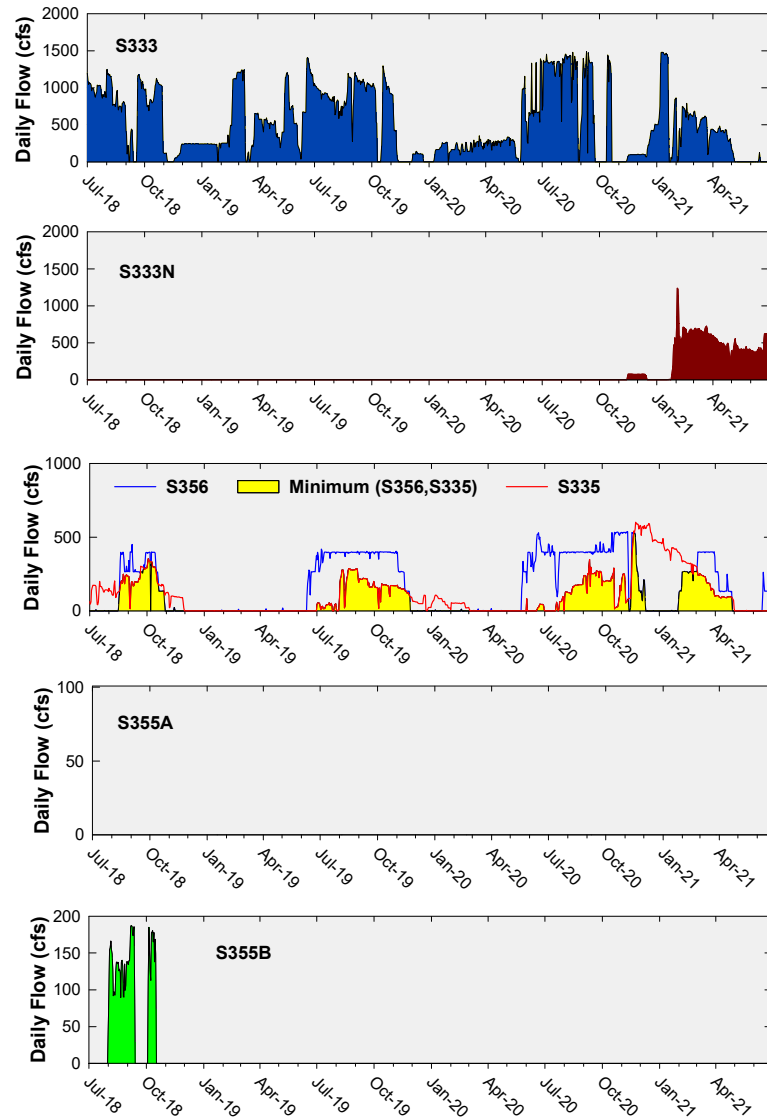


## Daily Flows at S12 Structures to Shark River Slough

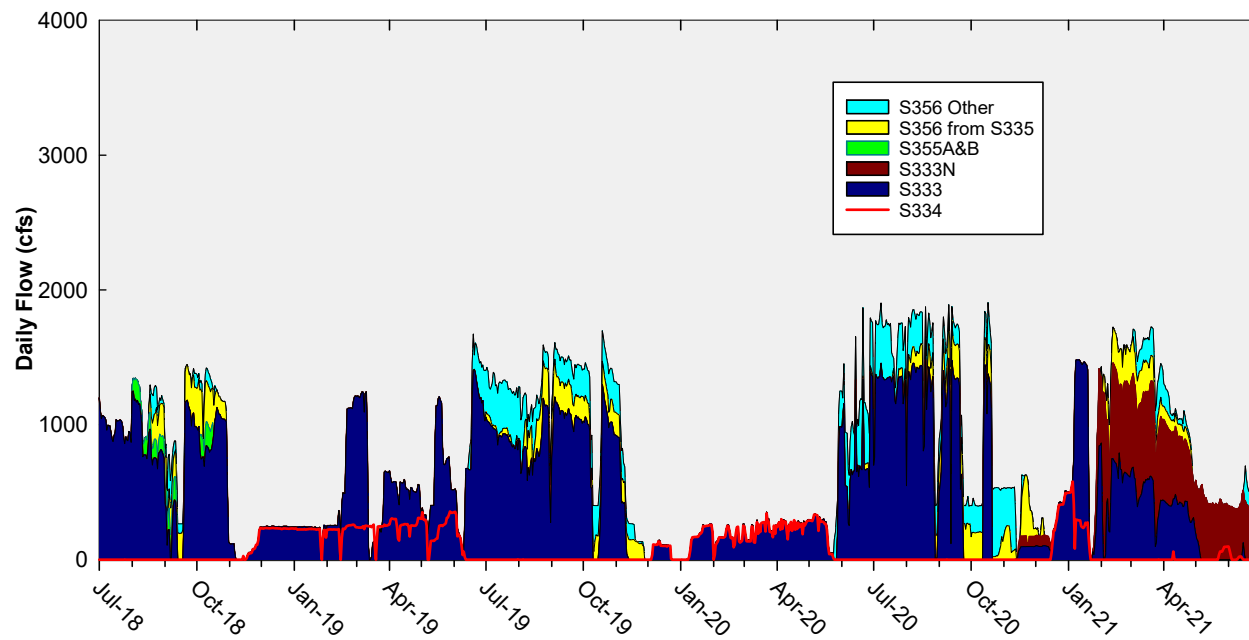
WY2021 (October to June 2021) Flow Data for S12s are Provisional.



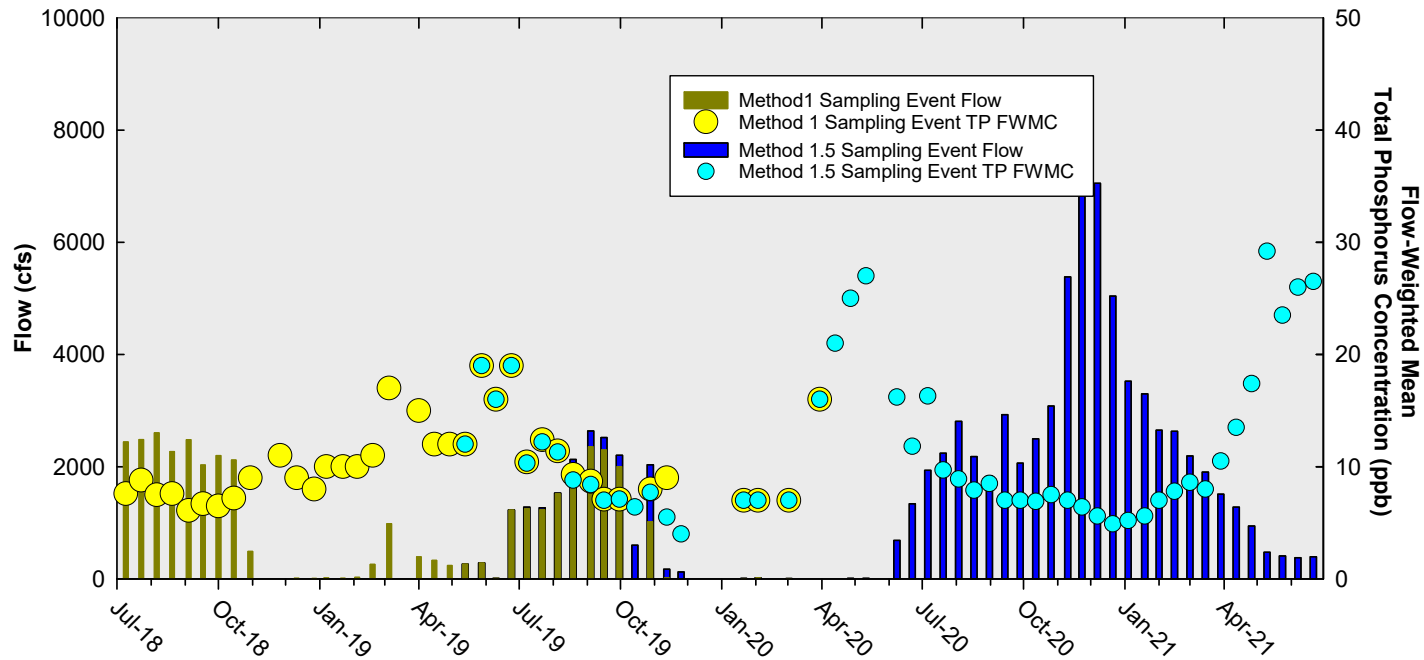
# Daily Flows at Individual Inflow Structures to Shark River Slough



## Daily Flows Into Shark River Slough through S333&S333N, S355A&B, and S356 and Out through S334



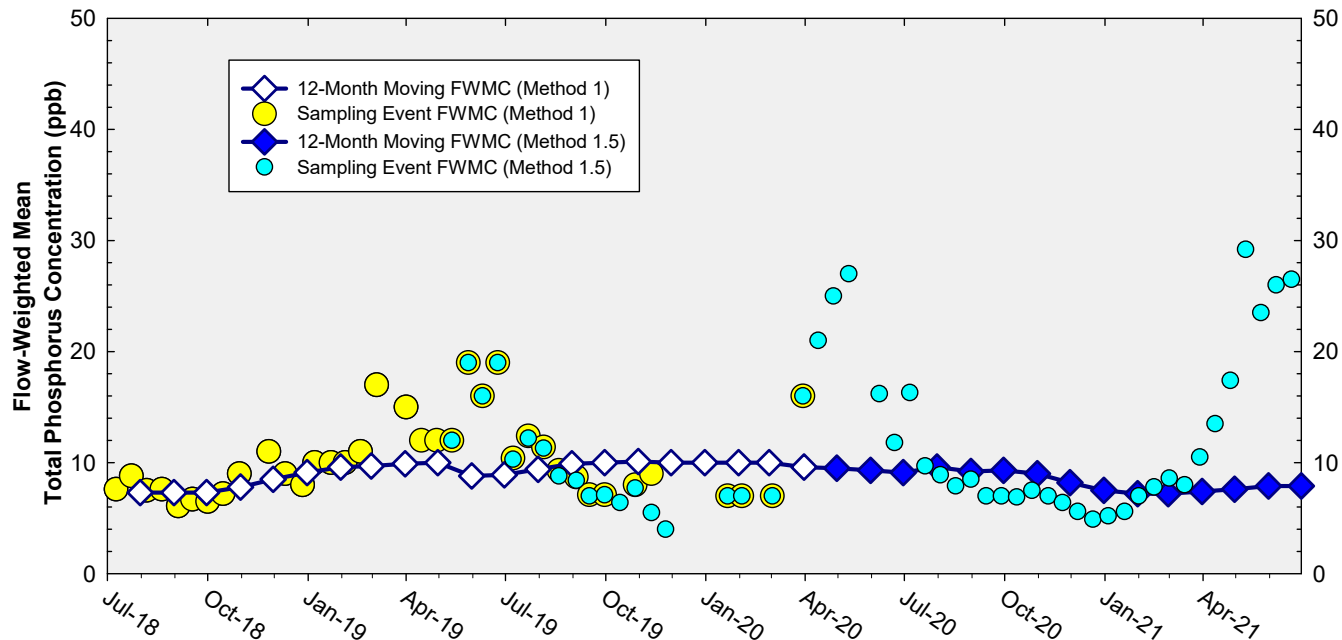
## Shark River Slough Sampling Event Flow and FWMC



**Flow to Shark River Slough and the corresponding TP FWMCs  
for individual sampling events**

**Note: October to June 2021 Flow Data for S12s are Provisional.**

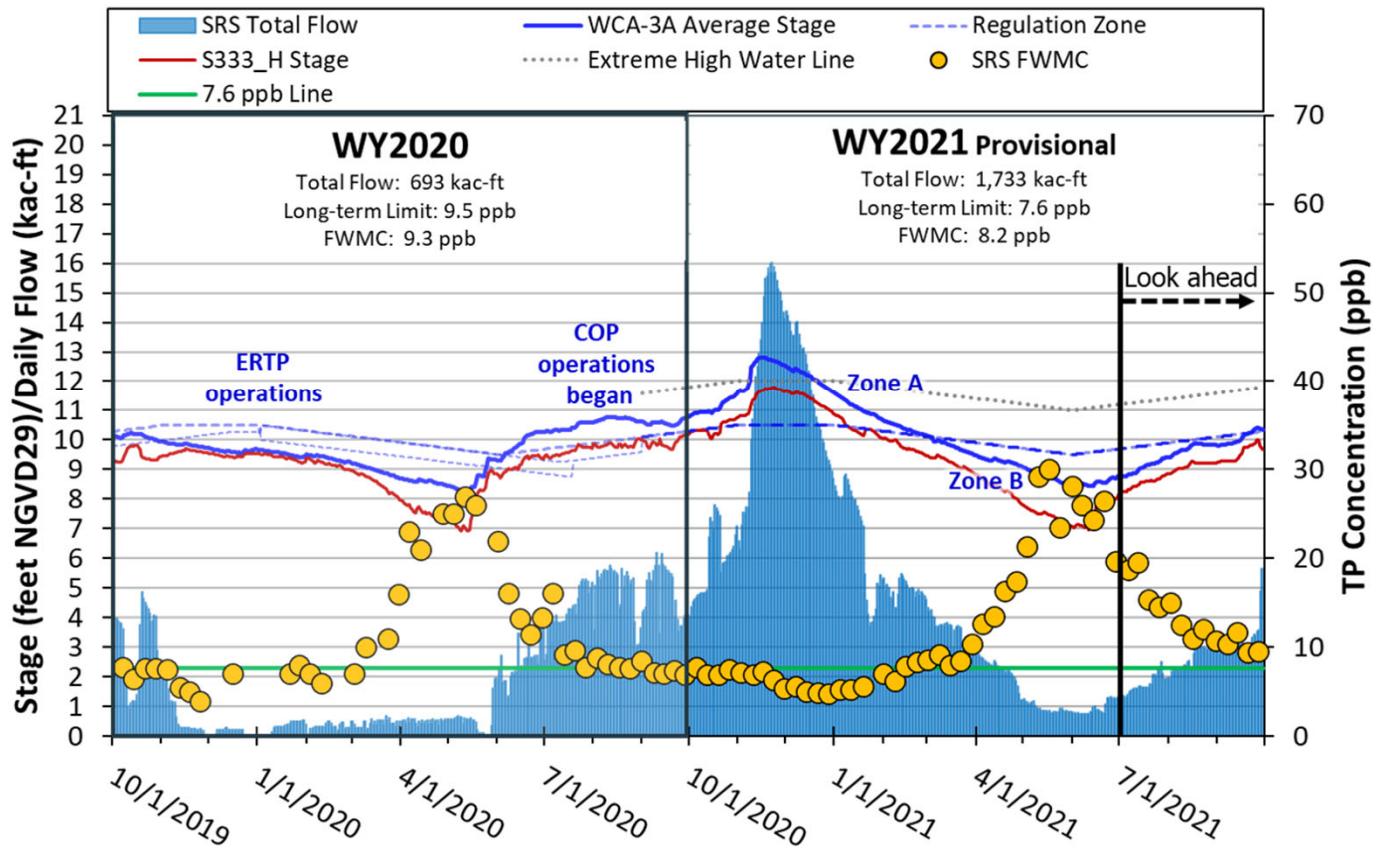
## Flow-Weighted Mean Concentrations Inflows to ENP through Shark River Slough



**The composite TP concentration and 12-month FWMC at the end of each month for each sampling event**

**October 2020 to June 2021 Flow Data for S12s are Provisional.**

## WY2020 & 2021\* Stage, Flow, and TP FWMC Inflows to ENP through Shark River Slough



\* WY2021 results are PROVISIONAL

## Taylor Slough and Coastal Basins

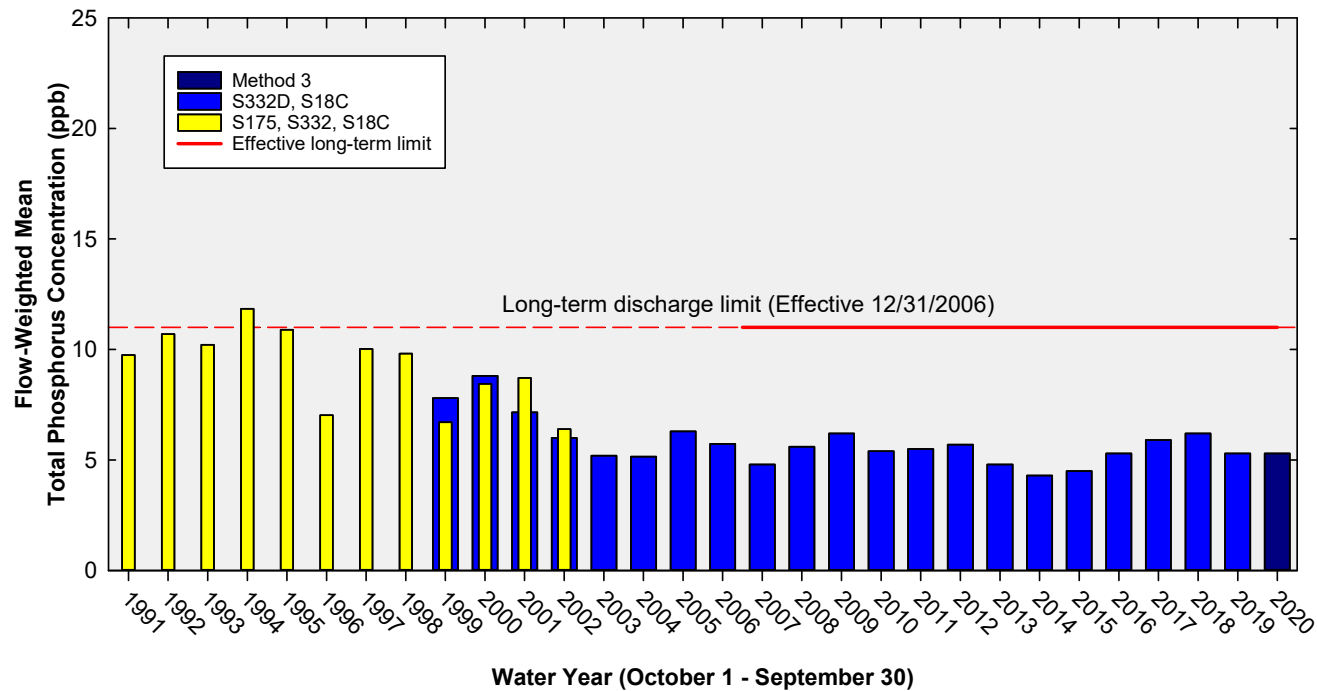
### TP Concentration Compliance Tracking

12-Month Period	Total Flow (kac-ft)	Flow-Weighted Mean TP Concentration in ppb LTL = 11.0 ppb Effective 12/31/2006	Observed Percent of Sampling Events Greater than 10 ppb Guideline = 53.1%
May 2020 - Apr 2021	482.9	5.7	3.9
Jun 2020 - May 2021	472.6	5.4	1.9
Jul 2020 - Jun 2021	447.3	5.4	2.0

FWMC computed as [(S332D-S332DX1-S328)+S328+G737+S18C] using all flow and TP grabs on weekly compliance sampling.

Total flow is (S332D-S332DX1)+G737+S18C]

## Annual Flow-Weighted Mean Concentrations Inflows to the ENP through Taylor Slough and Coastal Basins

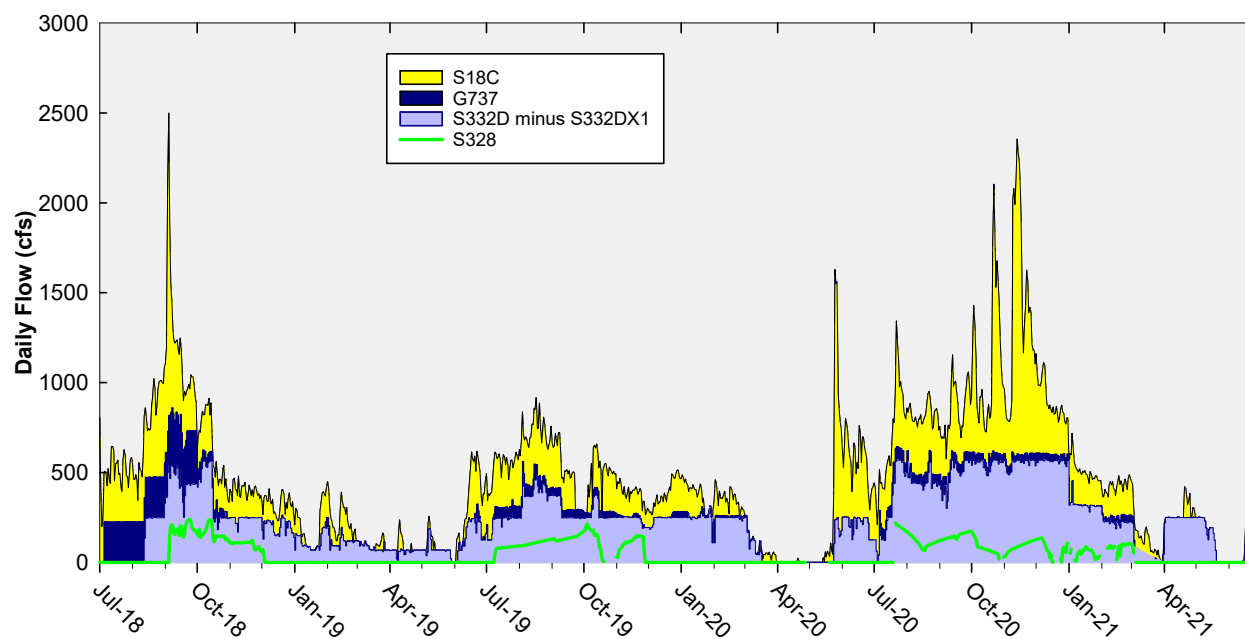


**The 12-month FWMC at the end of each water year  
compared to the 11 ppb long-term TP limit**

Note: Blue bars show S332D, S18C, & S174 until September 2007 when S174 was plugged.

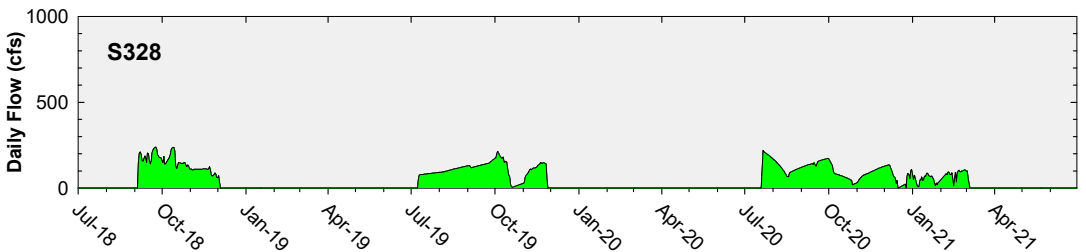
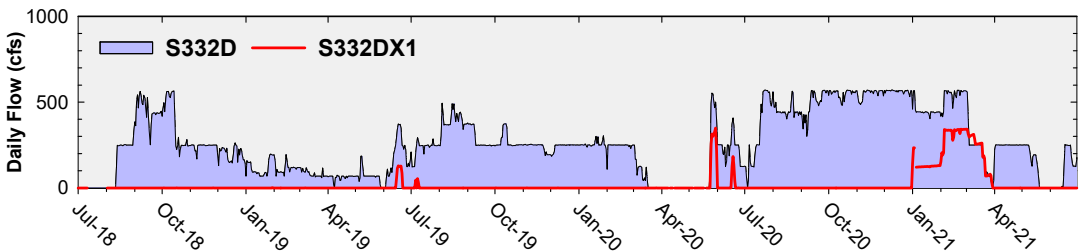
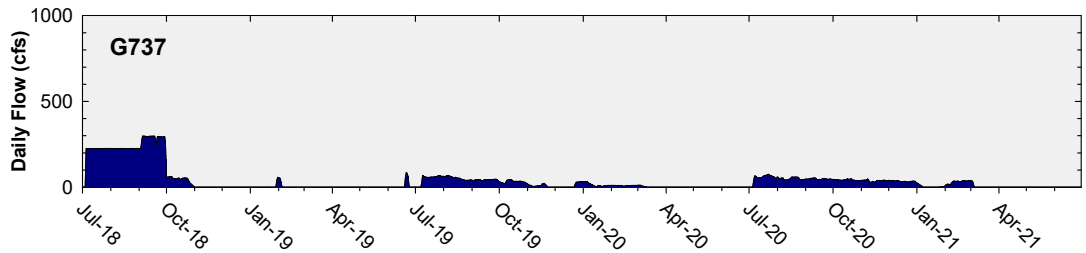
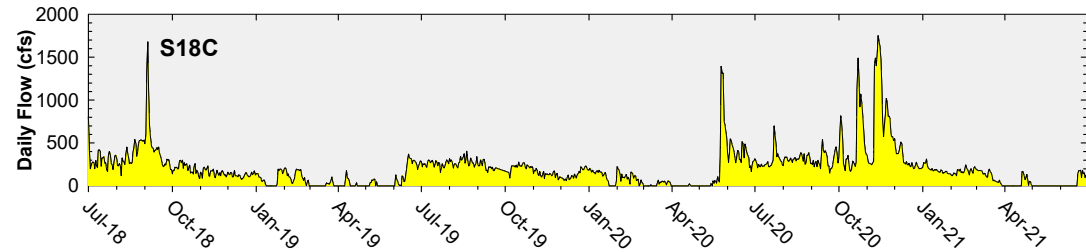


## Daily Flows at Taylor Slough and Coastal Basins Structures into ENP

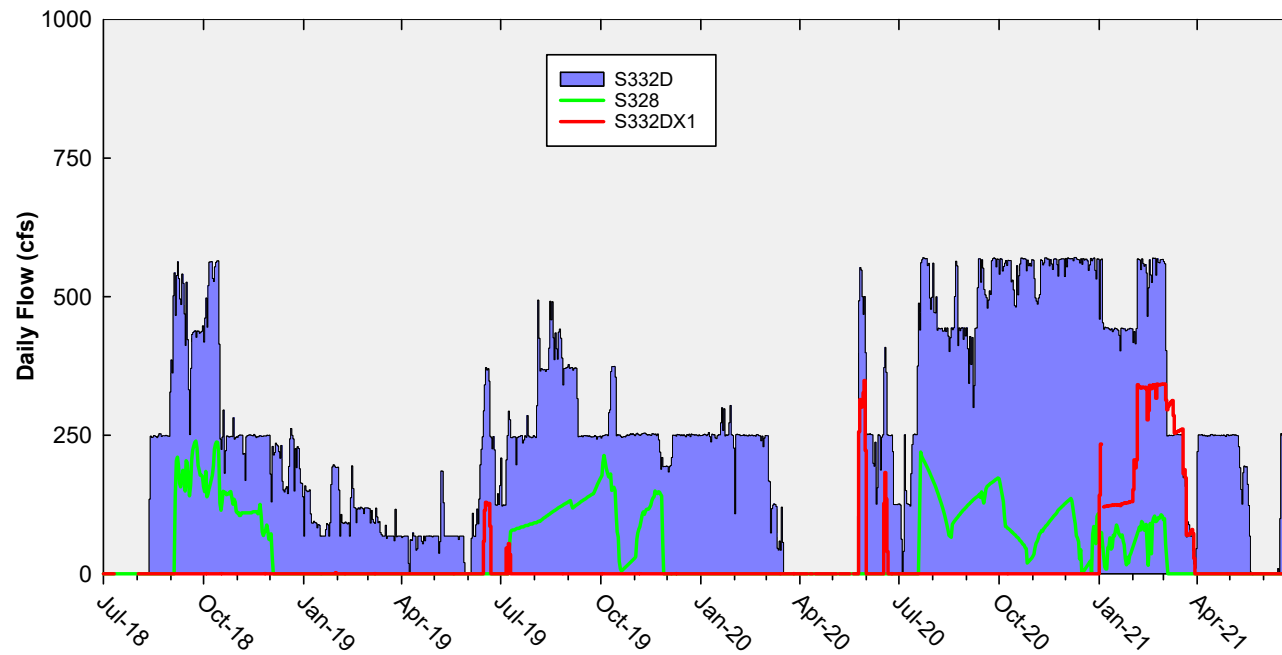


Note: Daily flow data are missing for S18C from September 23 to October 4, 2019.

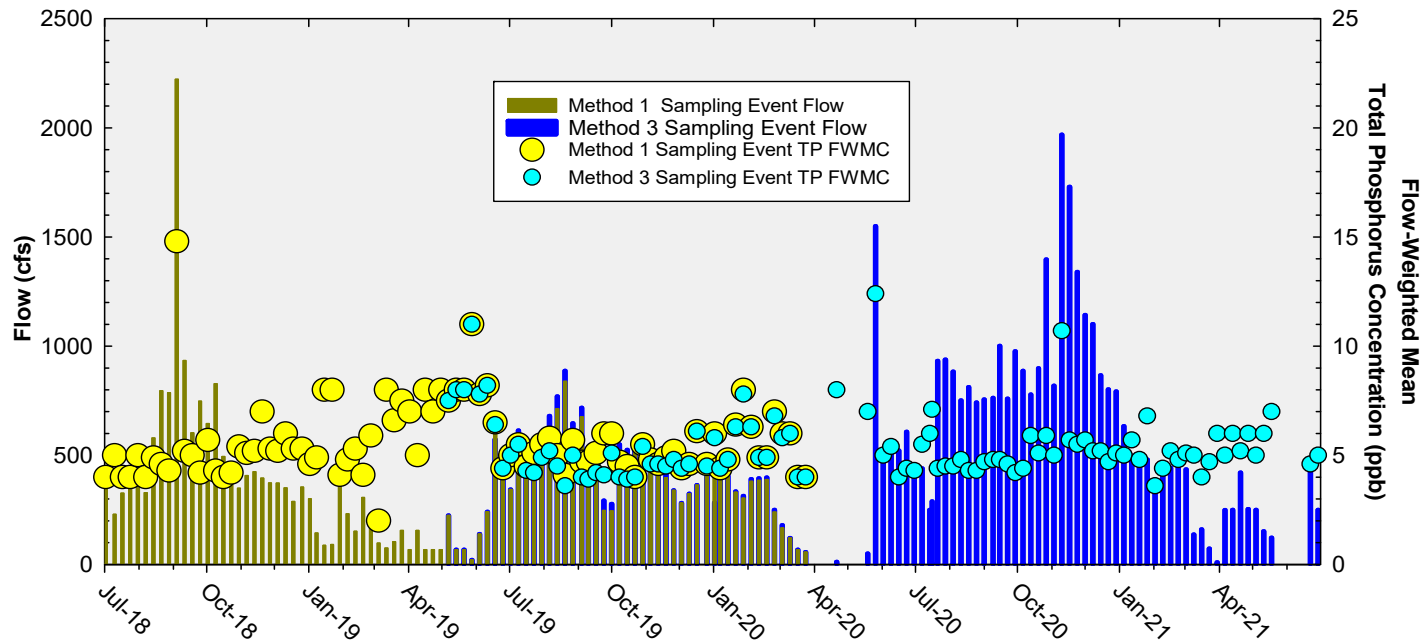
# Daily Flows at Individual Taylor Slough and Coastal Basins Structures



## Daily Flows Into and Out of C-111 Detention Area

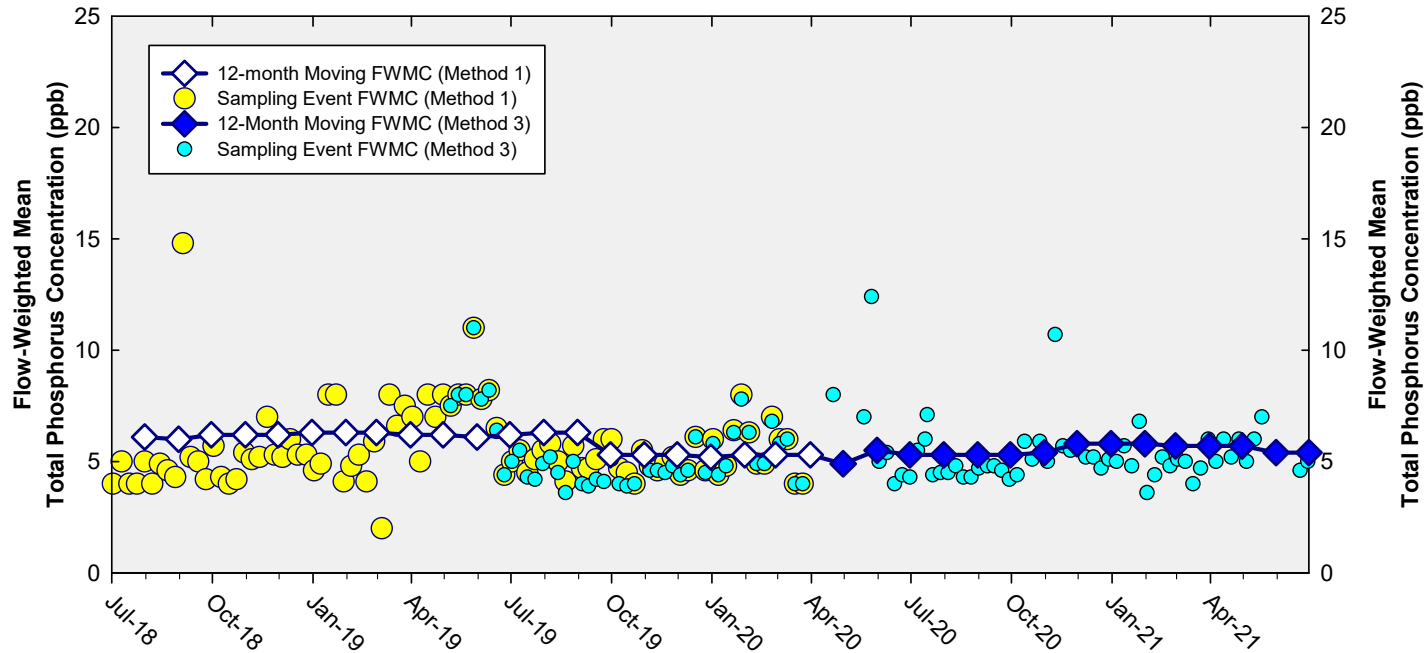


## Taylor Slough and Coastal Basins Sampling Event Flow and FWMC



**Flow at Taylor Slough and Coastal Basins structures and the corresponding TP FWMCs for individual sampling events**

## Flow-Weighted Mean Concentrations Inflows to the ENP through Taylor Slough and Coastal Basins



**The 12-month FWMC at the end of each month and the composite TP concentration for each sampling event**

Thank You

