



# SETTLEMENT AGREEMENT QUARTERLY REPORT

October – December 2021

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Water Quality Bureau

Technical Oversight Committee

May 10, 2022



# 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>					
Oct 2021	6.6	7.2	17.30	14	
Nov 2021	7.1	7.2	17.35	14	
Dec 2021	5.3	7.2	17.44	14	
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	
				Observed (%)	Guideline (%)
<b>Everglades National Park – Shark River Slough – <i>PROVISIONAL DATA and RESULTS</i></b>					
Oct 2021	1,710.7	8.3	7.6	50.0	40.1
Nov 2021	1,479.2	8.7	7.6	50.0	40.1
Dec 2021	1,238.5	9.5	7.6	50.0	40.1
<b>Everglades National Park – Taylor Slough and Coastal Basins</b>					
Oct 2021	371.1	5.5	11.0	2.1	53.1
Nov 2021	324.0	4.9	11.0	0.0	53.1
Dec 2021	300.9	4.8	11.0	0.0	53.1

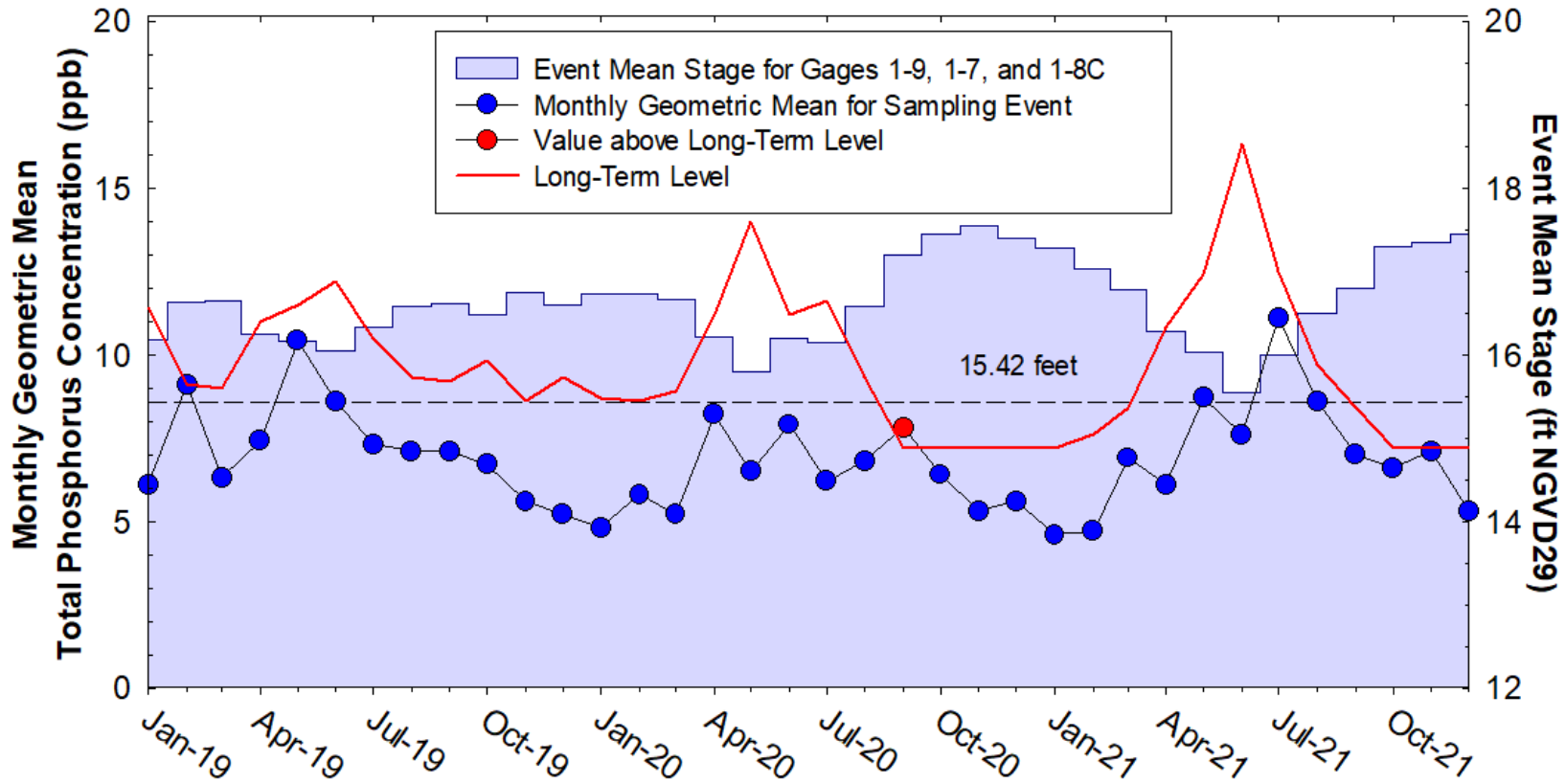
**SRS - computed as  $S12s + [S333 + S333N + S355A + S355B + \min(S356, S335) - S334]$ .**

**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

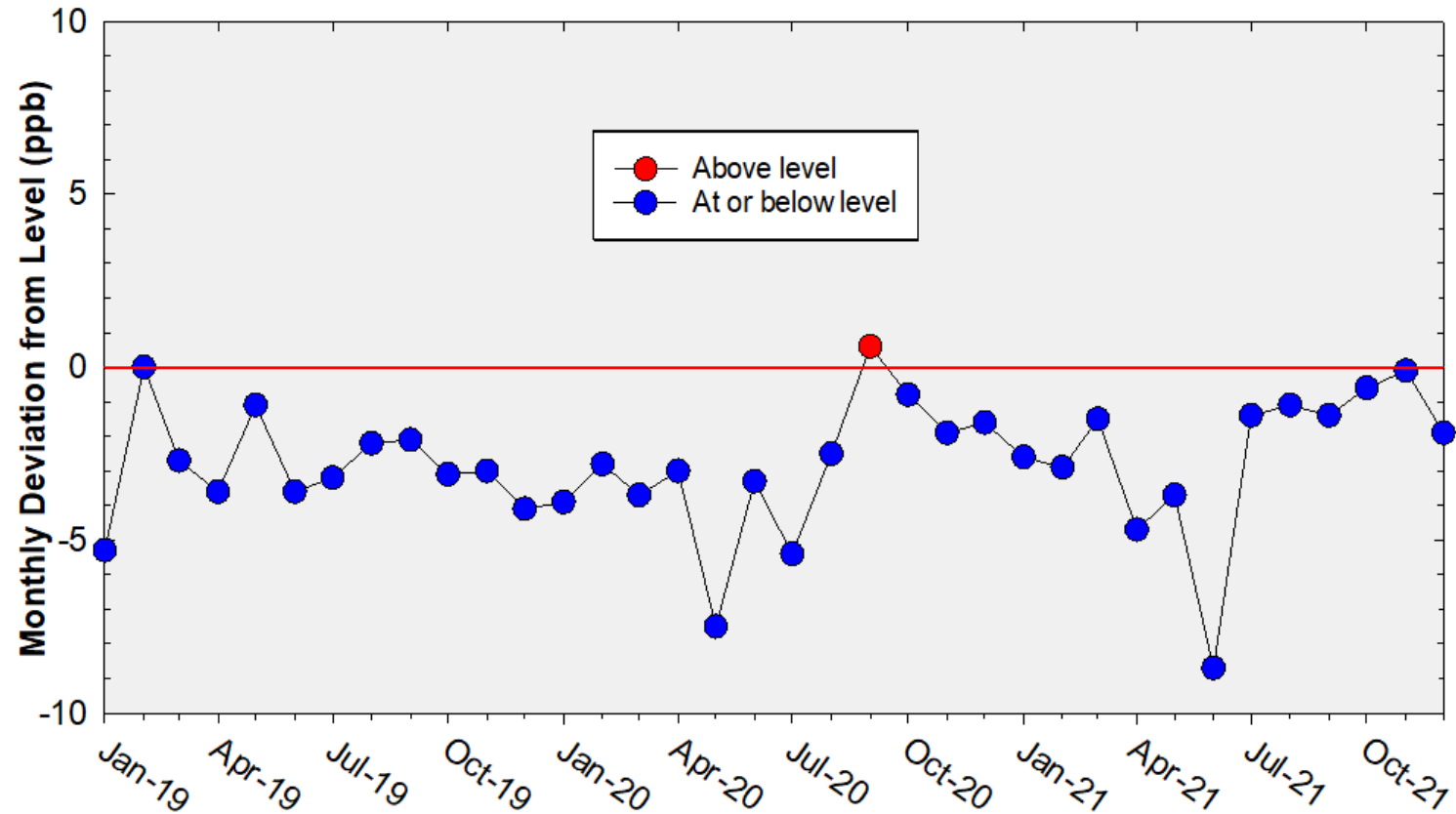


**36-Month Average TP Geometric Mean = 6.9 ppb**

**36-Month Average TP Long-term Level is = 9.7 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 = 2.8 ppb below the Long-Term Level**

## Refuge TP Compliance Tracking

### For October 2021 – April 2022

Month	Geometric Mean TP Concentration (ppb)	Long-Term Level (ppb) Effective 12/31/2006	Average Stage (feet NGVD29)	Number of Samples
<b>4th Quarter 2021 Compliance Tracking</b>				
<b>Oct-2021</b>	<b>6.6</b>	<b>7.2</b>	<b>17.30</b>	<b>14</b>
<b>Nov-2021</b>	<b>7.1</b>	<b>7.2</b>	<b>17.35</b>	<b>14</b>
<b>Dec-2021</b>	<b>5.3</b>	<b>7.2</b>	<b>17.44</b>	<b>14</b>
<b>Preliminary Data Outlook</b>				
<b>Jan-2022</b>	<b>5.7</b>	<b>7.2</b>	<b>17.32</b>	<b>14</b>
<b>Feb-2022</b>	<b>5.0</b>	<b>7.3</b>	<b>17.12</b>	<b>13</b>
<b>Mar-2022</b>	<b>7.3</b>	<b>8.4</b>	<b>16.80</b>	<b>14</b>
<b>Apr-2022</b>	<b>7.7</b>	<b>10.6</b>	<b>16.31</b>	<b>13</b>

**Note: 17.14 ft NGVD29 was used for the long-term level calculation for October 2021 through January 2022.**

# Shark River Slough

## TP Concentration Compliance Tracking

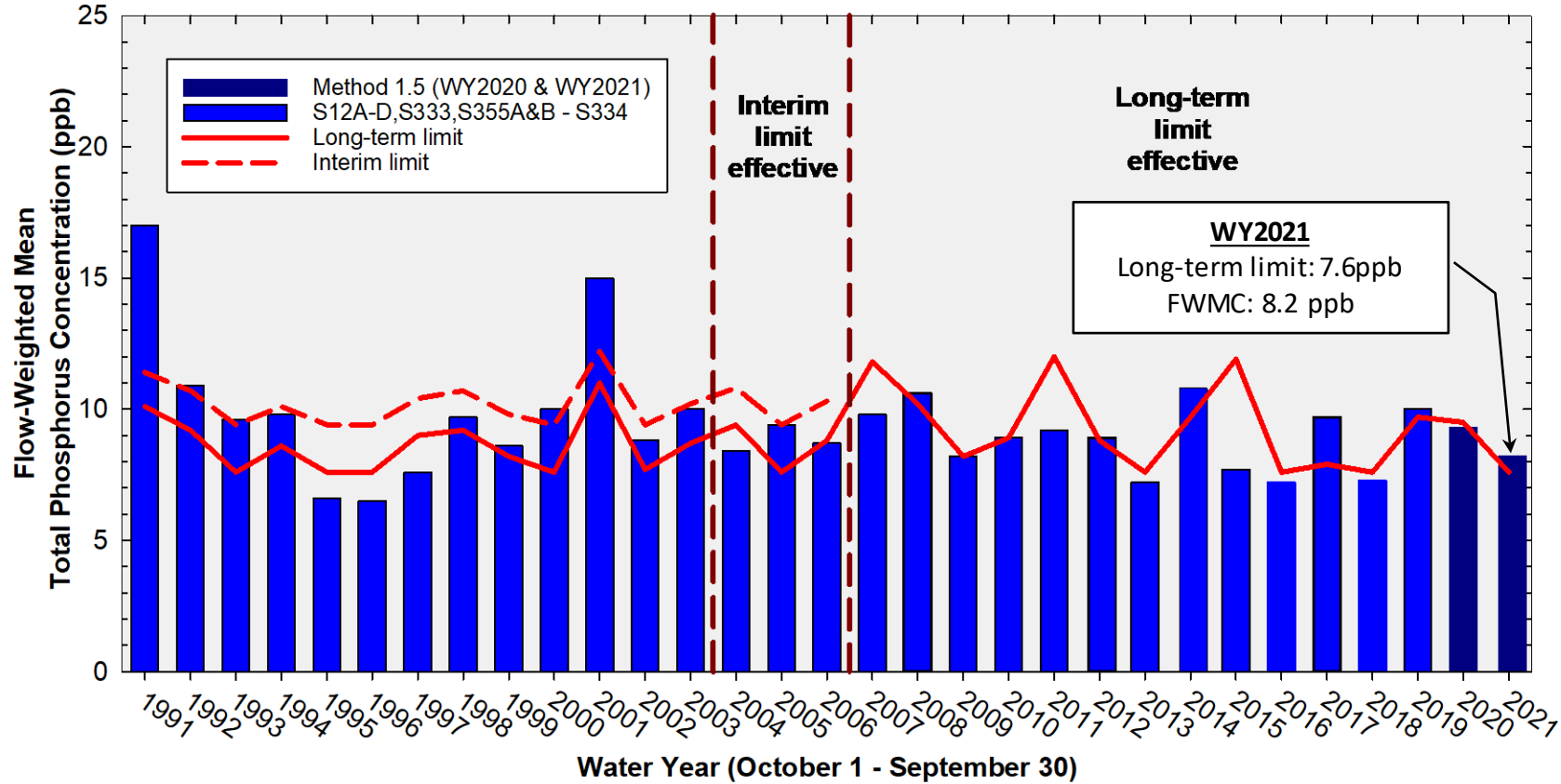
12-Month Period	Total Flow (kac-ft)	Flow-Weighted Mean TP Concentration (ppb)	Long-Term Limit (ppb) <i>Effective 12/31/2006</i>	Percent of Sampling Events Greater than 10 ppb	
				Observed (%)	Guideline (%)
<b>Nov 2020 - Oct 2021</b>	<b>1,710.7</b>	<b>8.3</b>	<b>7.6</b>	<b>50.0</b>	<b>40.1</b>
<b>Dec 2020 - Nov 2021</b>	<b>1,479.2</b>	<b>8.7</b>	<b>7.6</b>	<b>50.0</b>	<b>40.1</b>
<b>Jan 2021 - Dec 2021</b>	<b>1,238.5</b>	<b>9.5</b>	<b>7.6</b>	<b>50.0</b>	<b>40.1</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.**

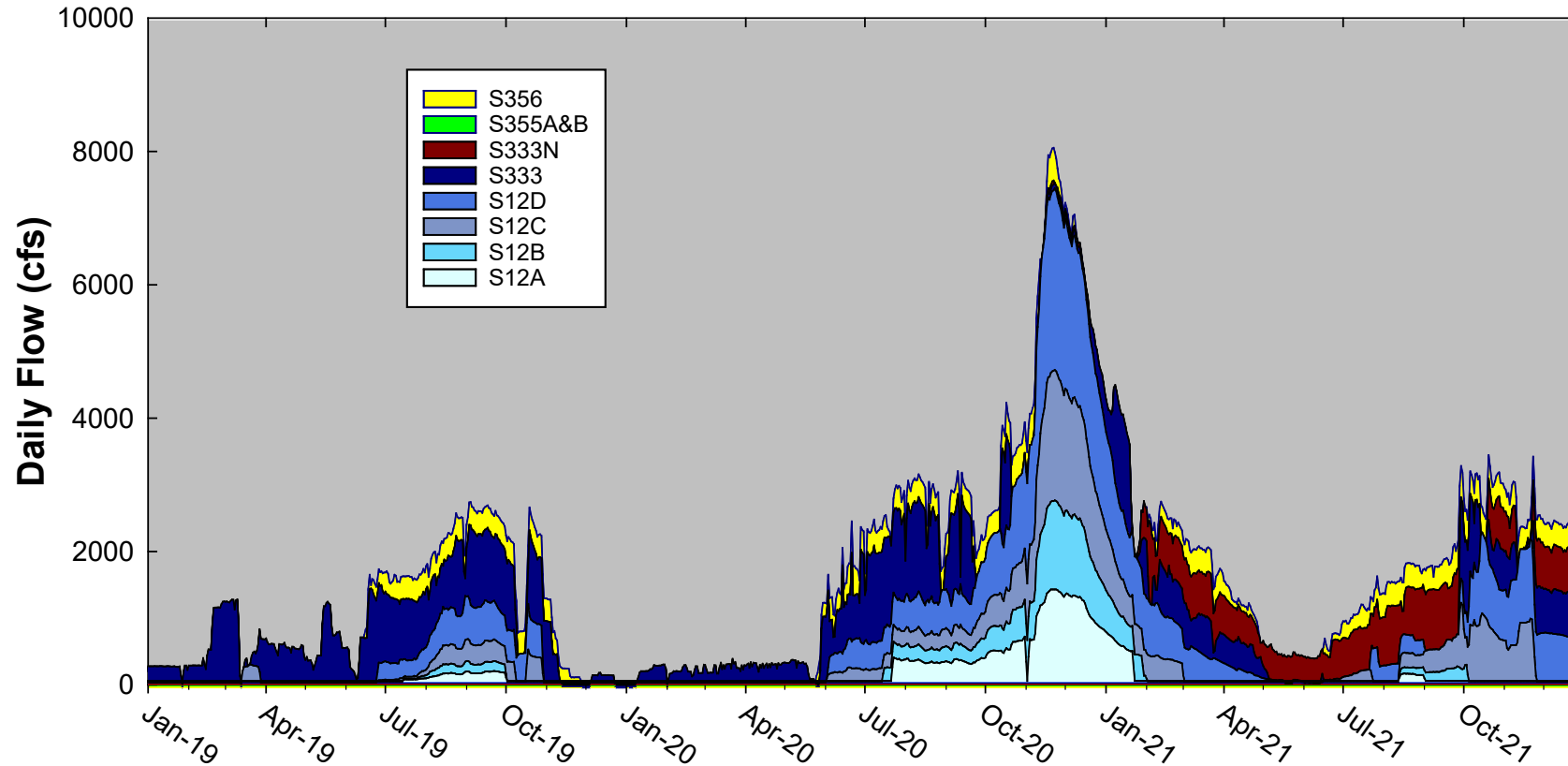
# Annual Flow-weighted Mean Concentrations Inflows to ENP through Shark River Slough



**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

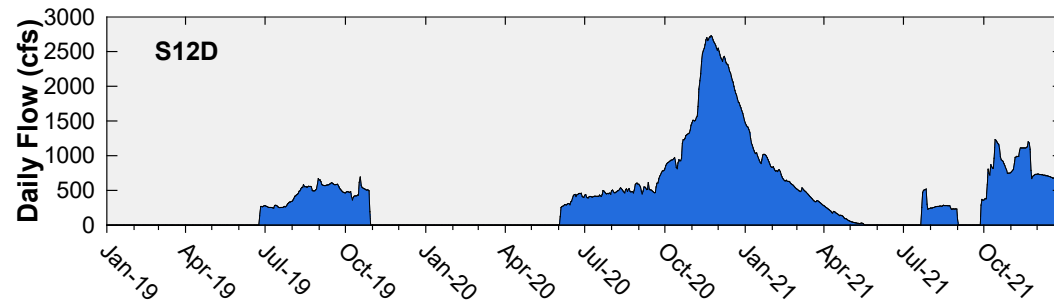
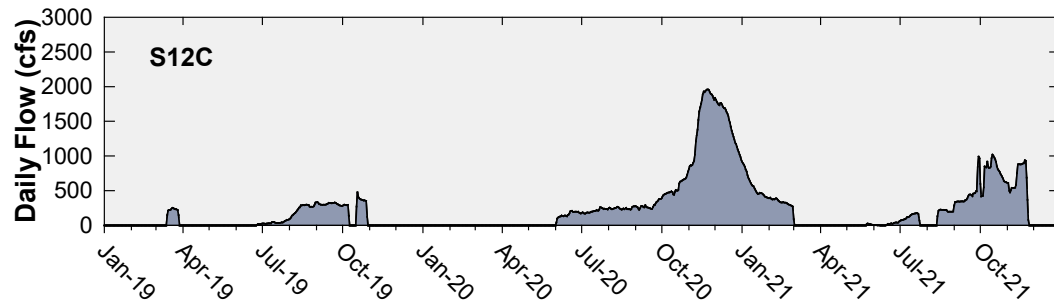
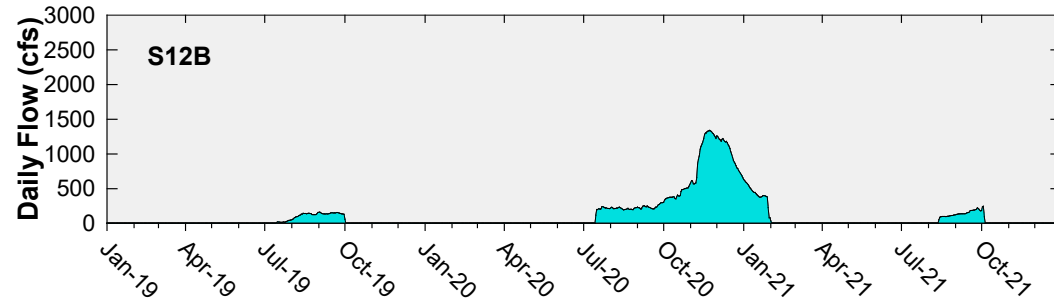
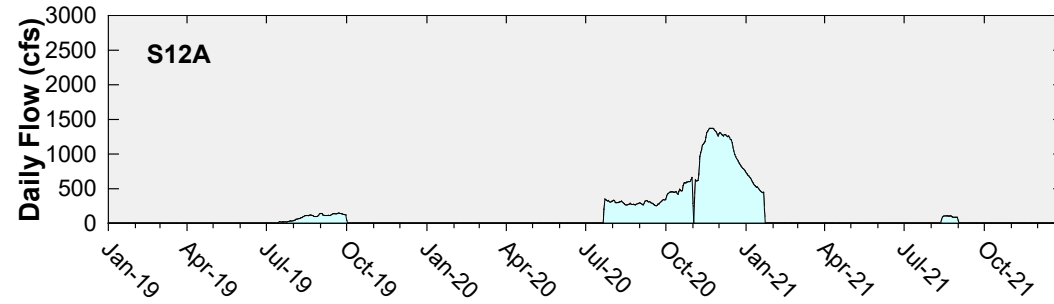
WY2022 (October 1, 2021, to December 31, 2021) Flow Data for S12s are Provisional.



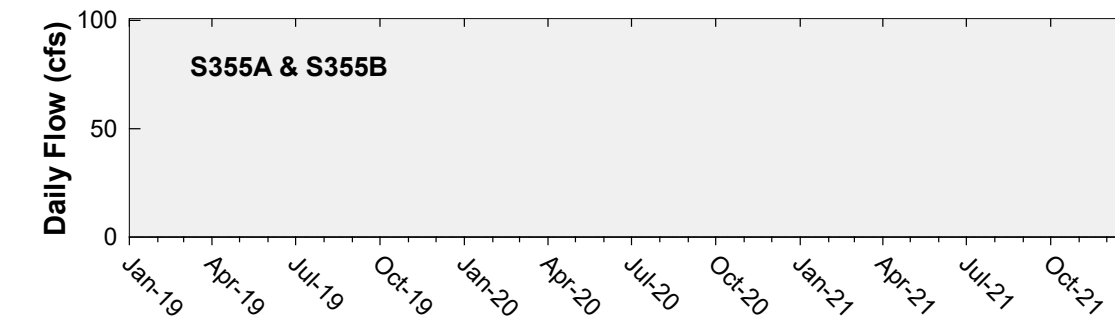
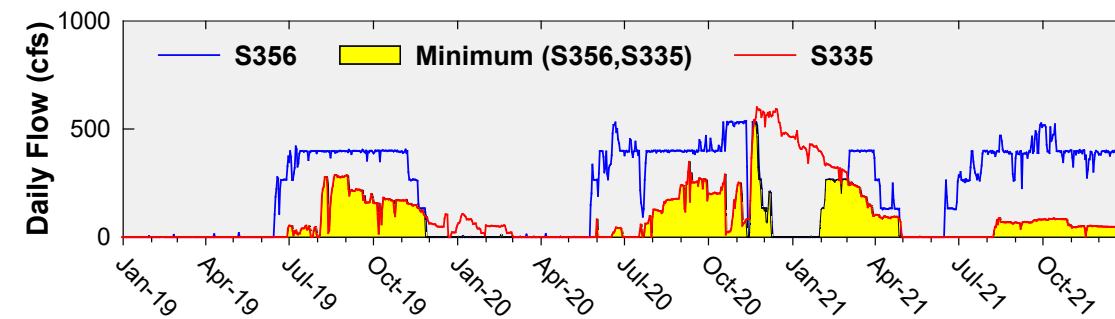
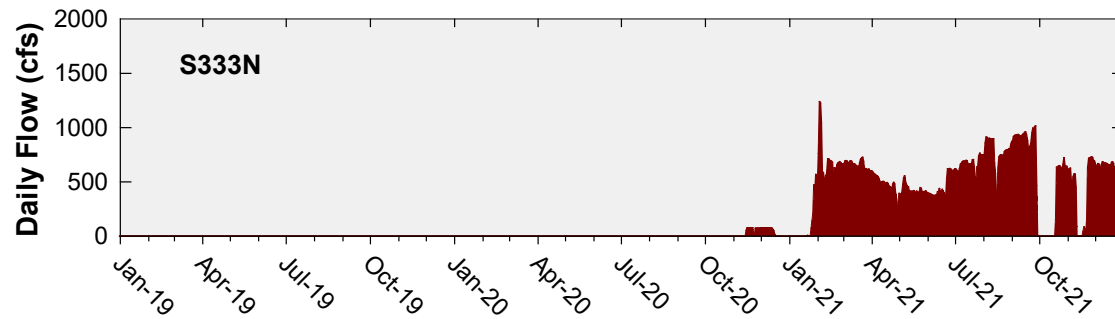
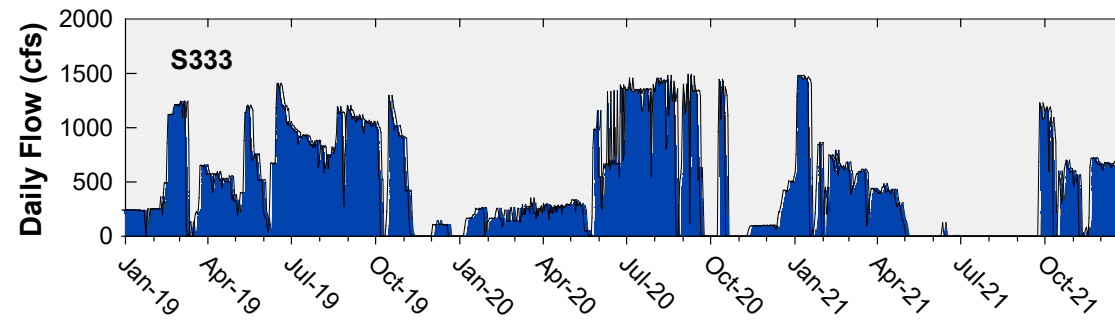


# Daily Flows at S12 Structures to Shark River Slough

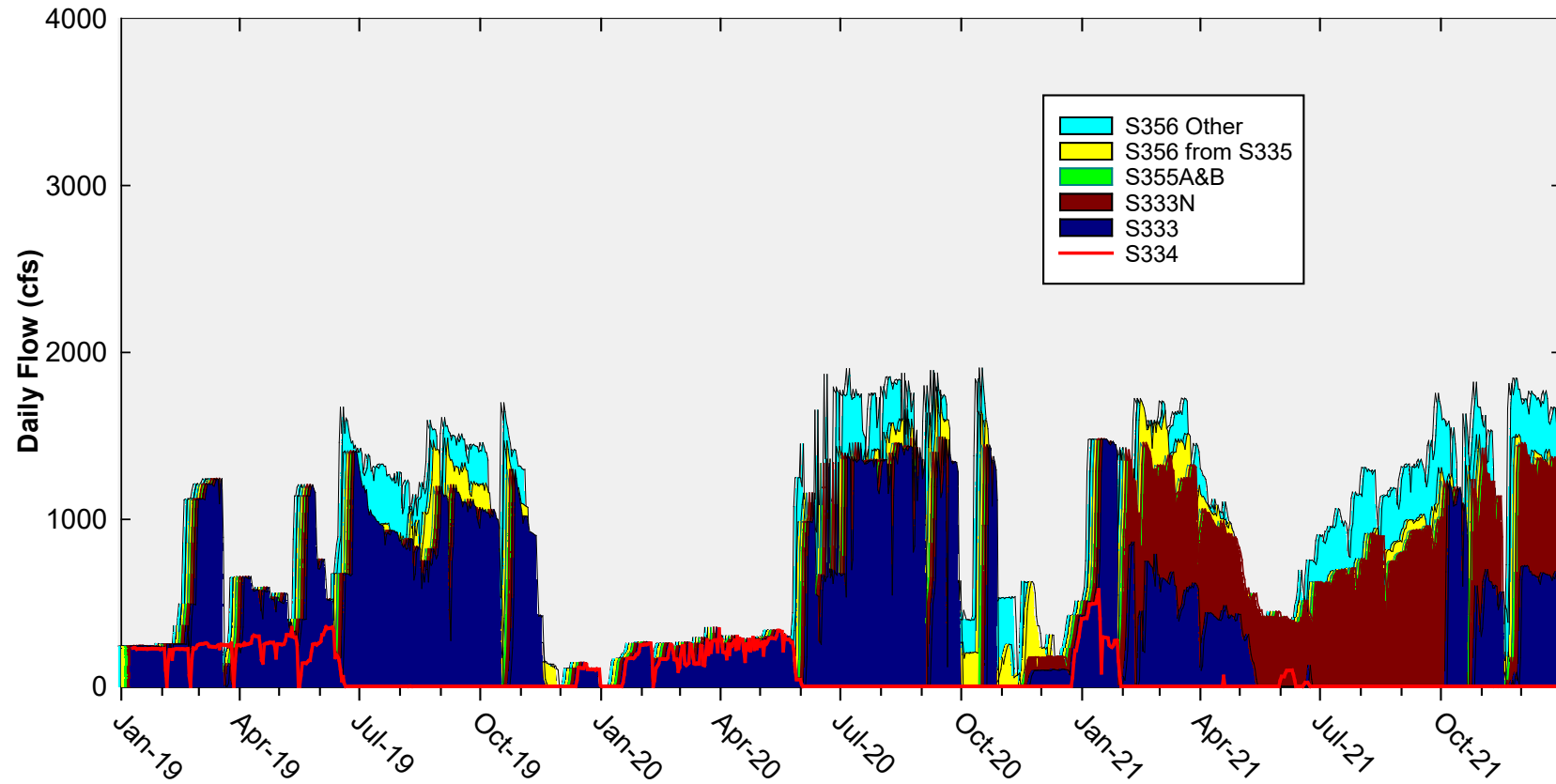
WY2022 (October 1, 2021, to December 31, 2021) Flow Data for S12s are Provisional.



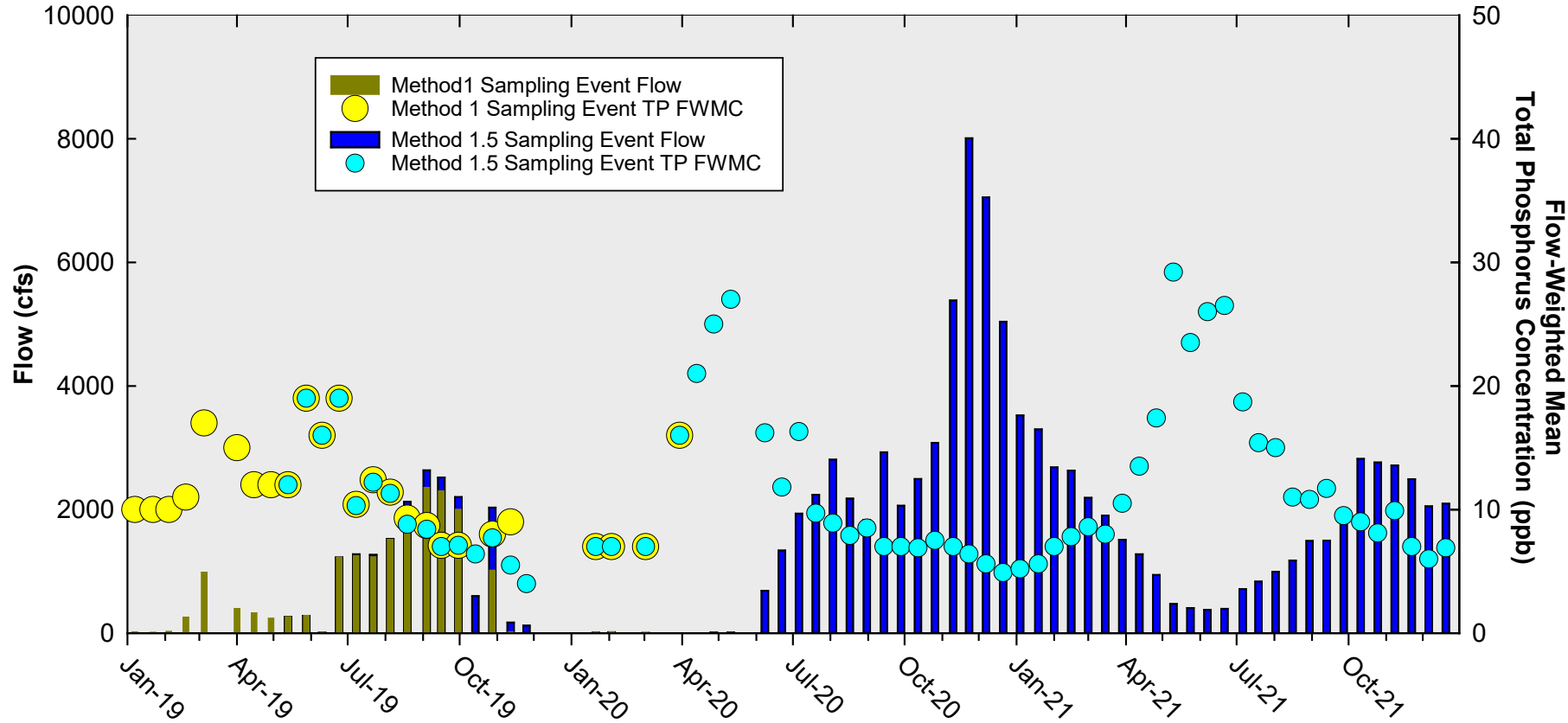
# Daily Flows at Individual Inflow Structures to Shark River Slough



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



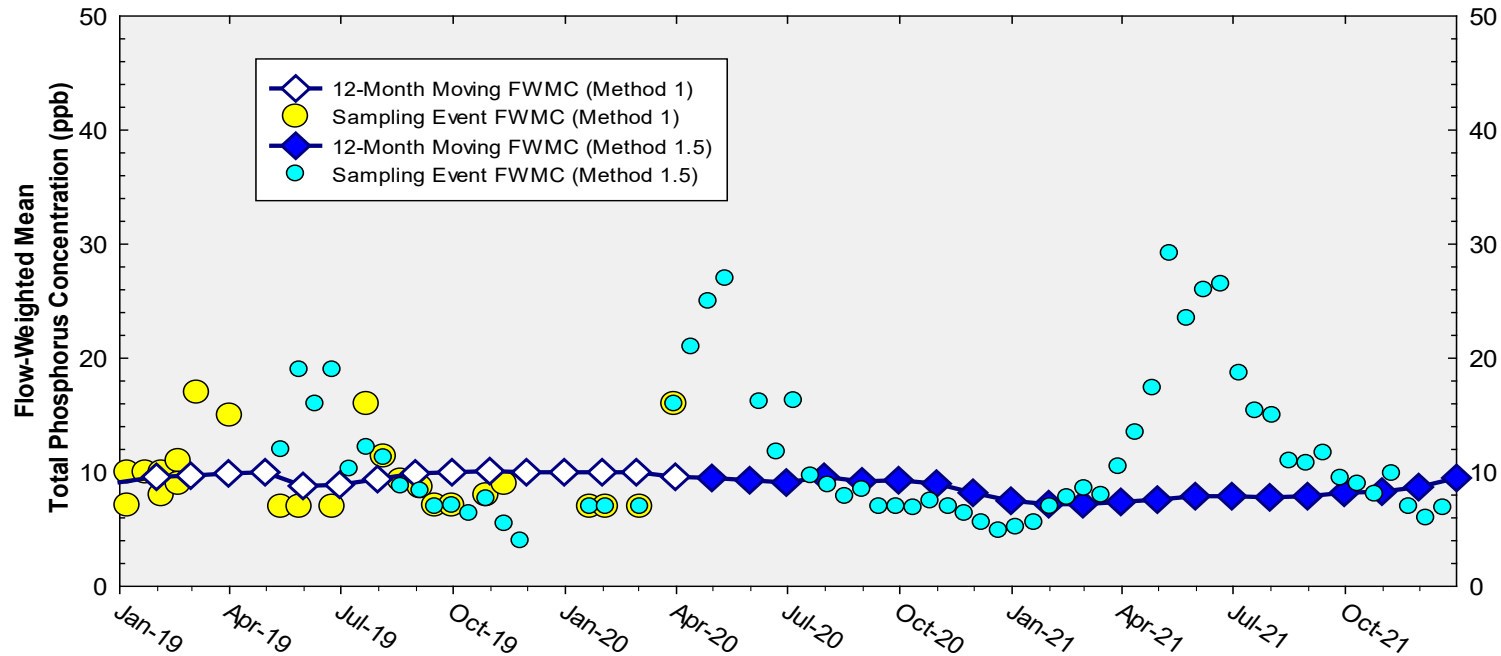
# Shark River Slough Sampling Event Flow and FWMC



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

**Note: WY2022 (October 1, 2021, to December 31, 2021) Flow Data for S12s are Provisional.**

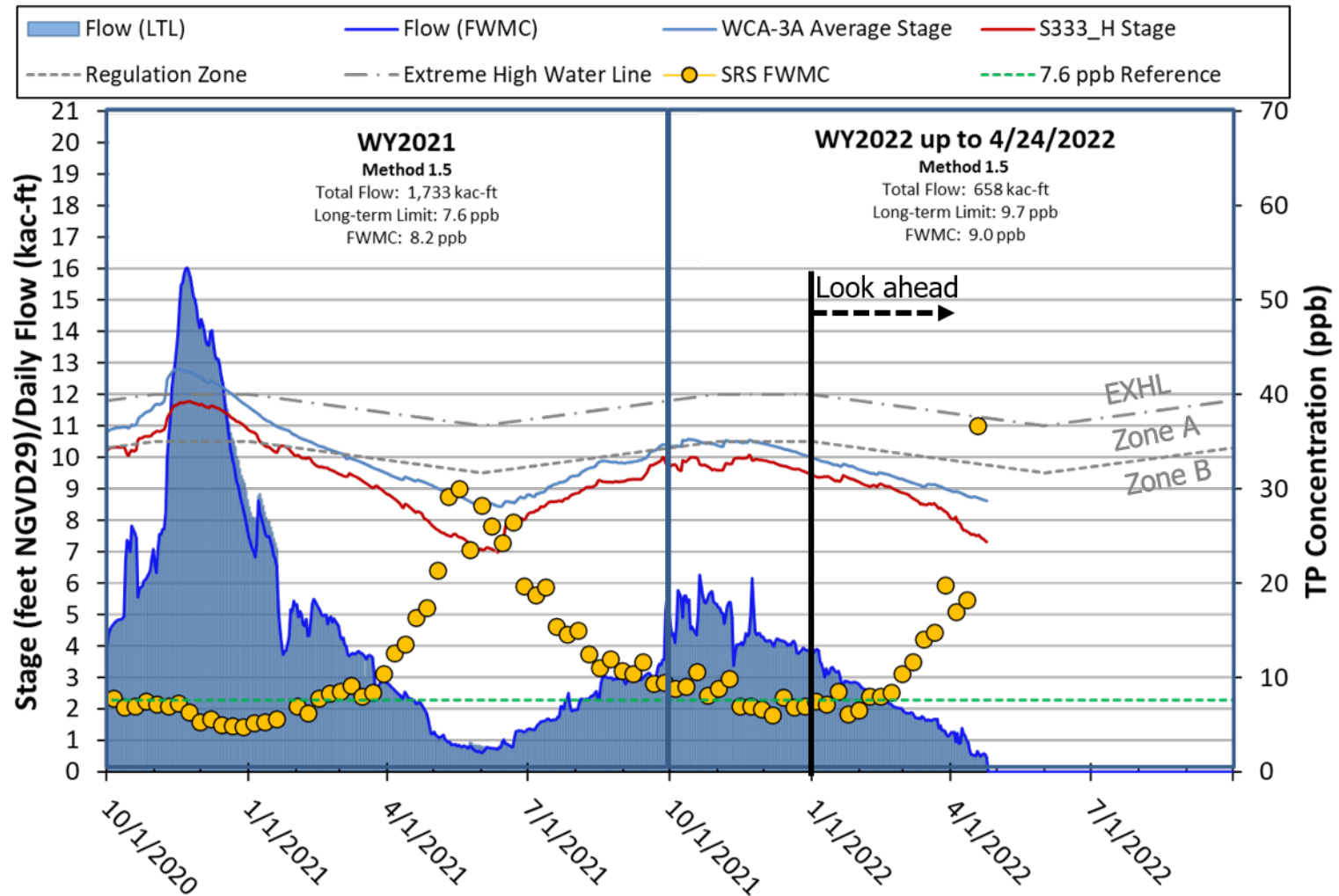
# Flow-Weighted Mean Concentrations Inflows to ENP through Shark River Slough



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

**WY2022 (October 1, 2021, to December 31, 2021) Flow Data for S12s are Provisional.**

# WY2021 & 2022\* Stage, Flow, and TP FWMC Inflows to ENP through Shark River Slough



\* WY2022 Up to Date results are Provisional data for Look Ahead

## Taylor Slough and Coastal Basins

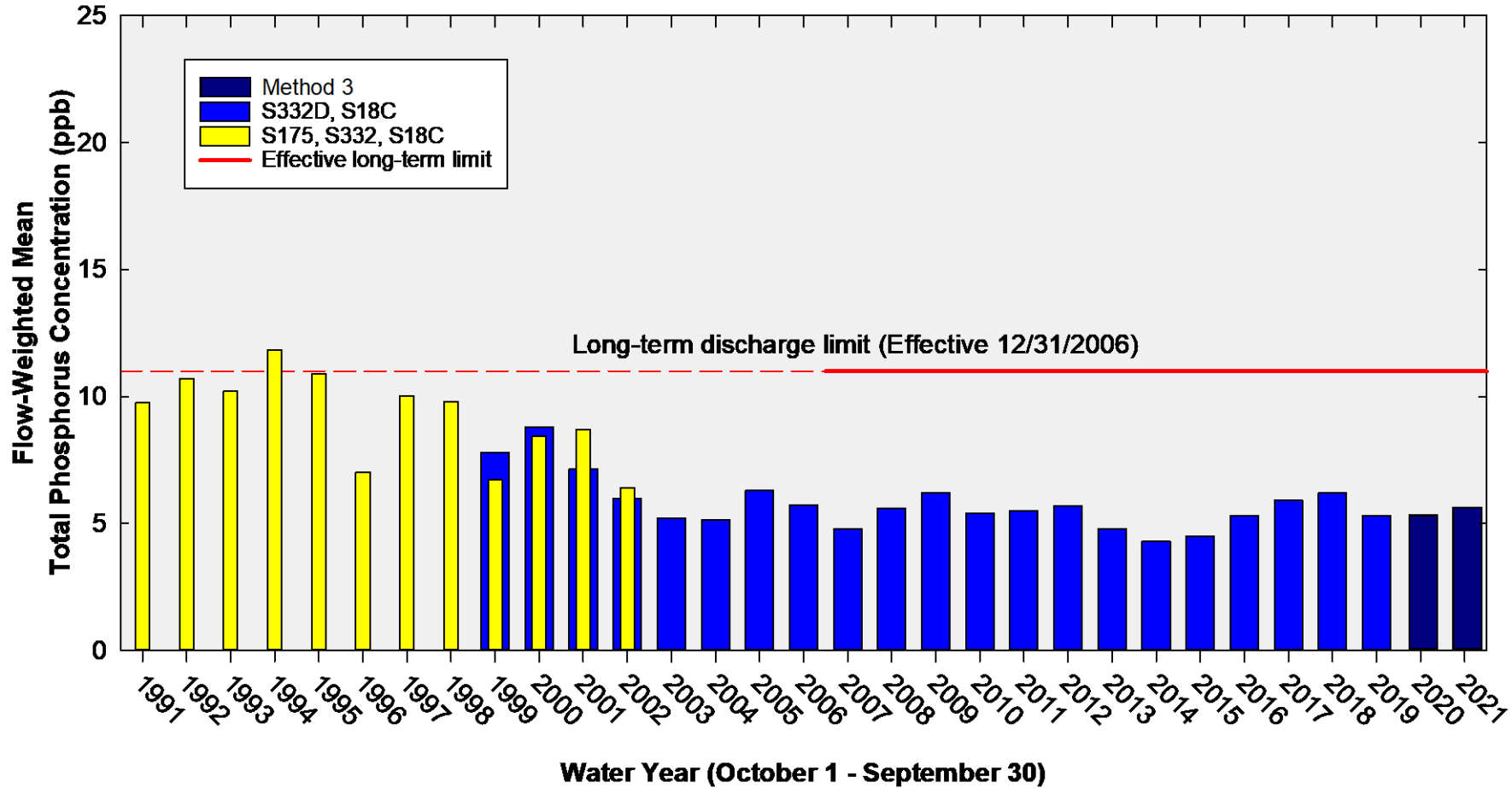
### TP Concentration Compliance Tracking

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%
<b>Nov 2020 - Oct 2021</b>	<b>371.1</b>	<b>5.5</b>	<b>2.1</b>
<b>Dec 2020 - Nov 2021</b>	<b>324.0</b>	<b>4.9</b>	<b>0.0</b>
<b>Jan 2020 - Dec 2021</b>	<b>300.9</b>	<b>4.8</b>	<b>0.0</b>

**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

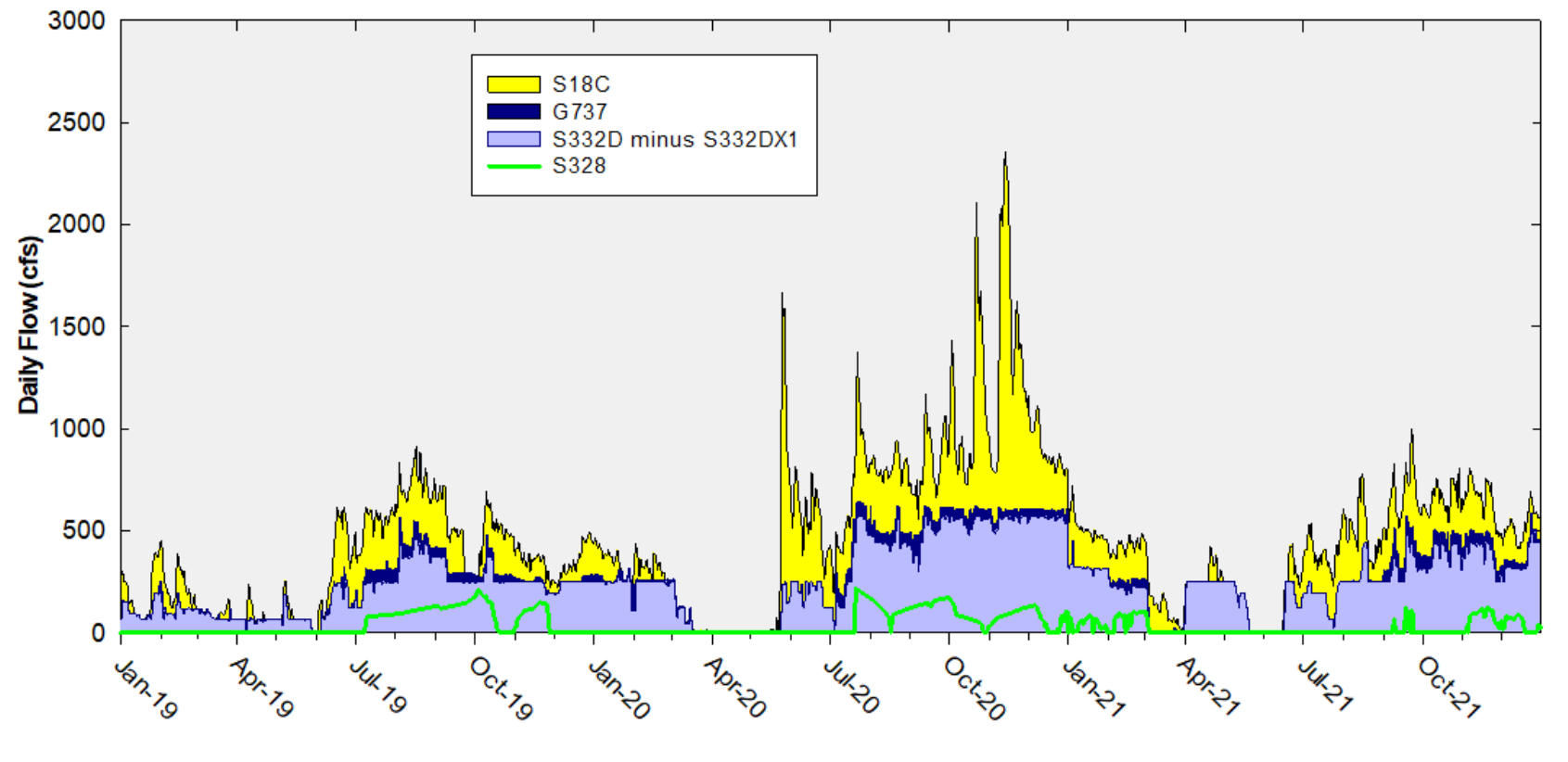


The 12-month FWMC at the end of each water year compared to the 11 ppb long-term TP limit

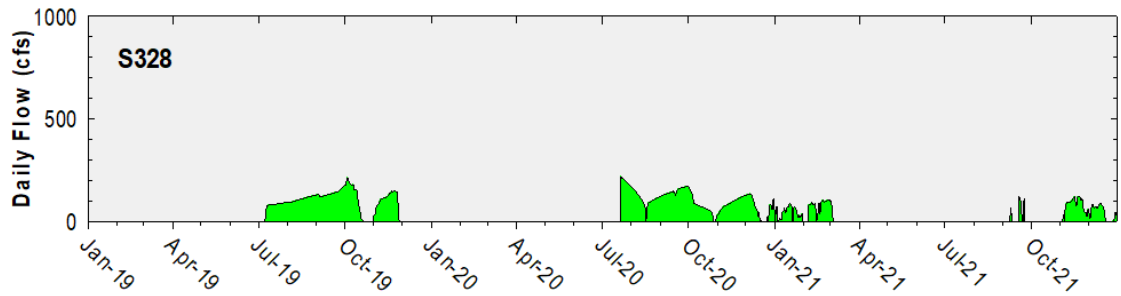
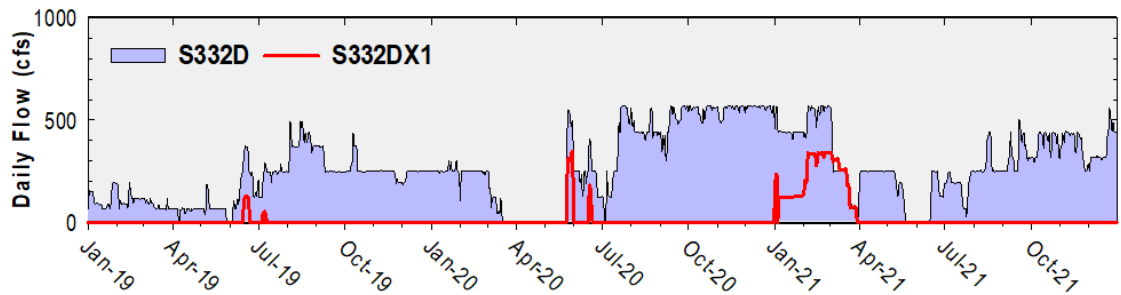
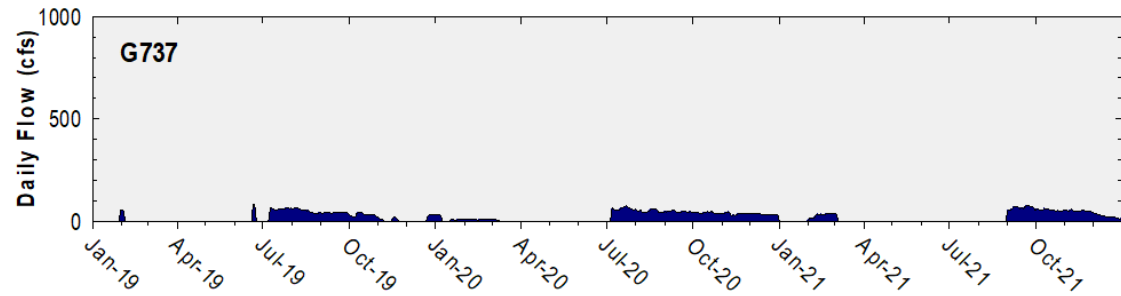
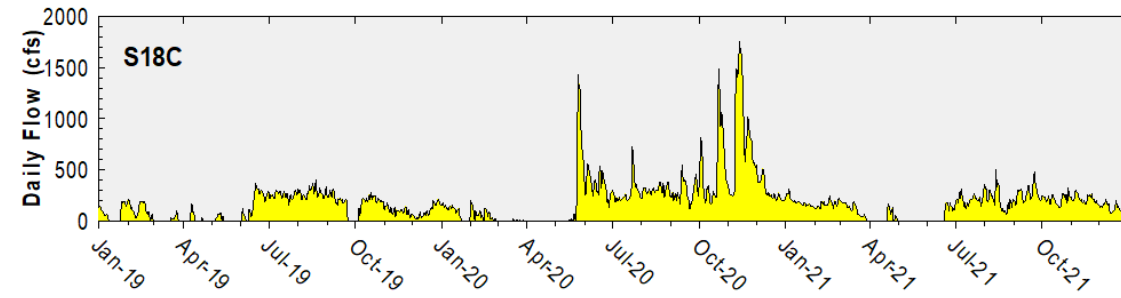
Note: Blue bars show S332D, S18C, & S174 until September 2007 when S174 was plugged.



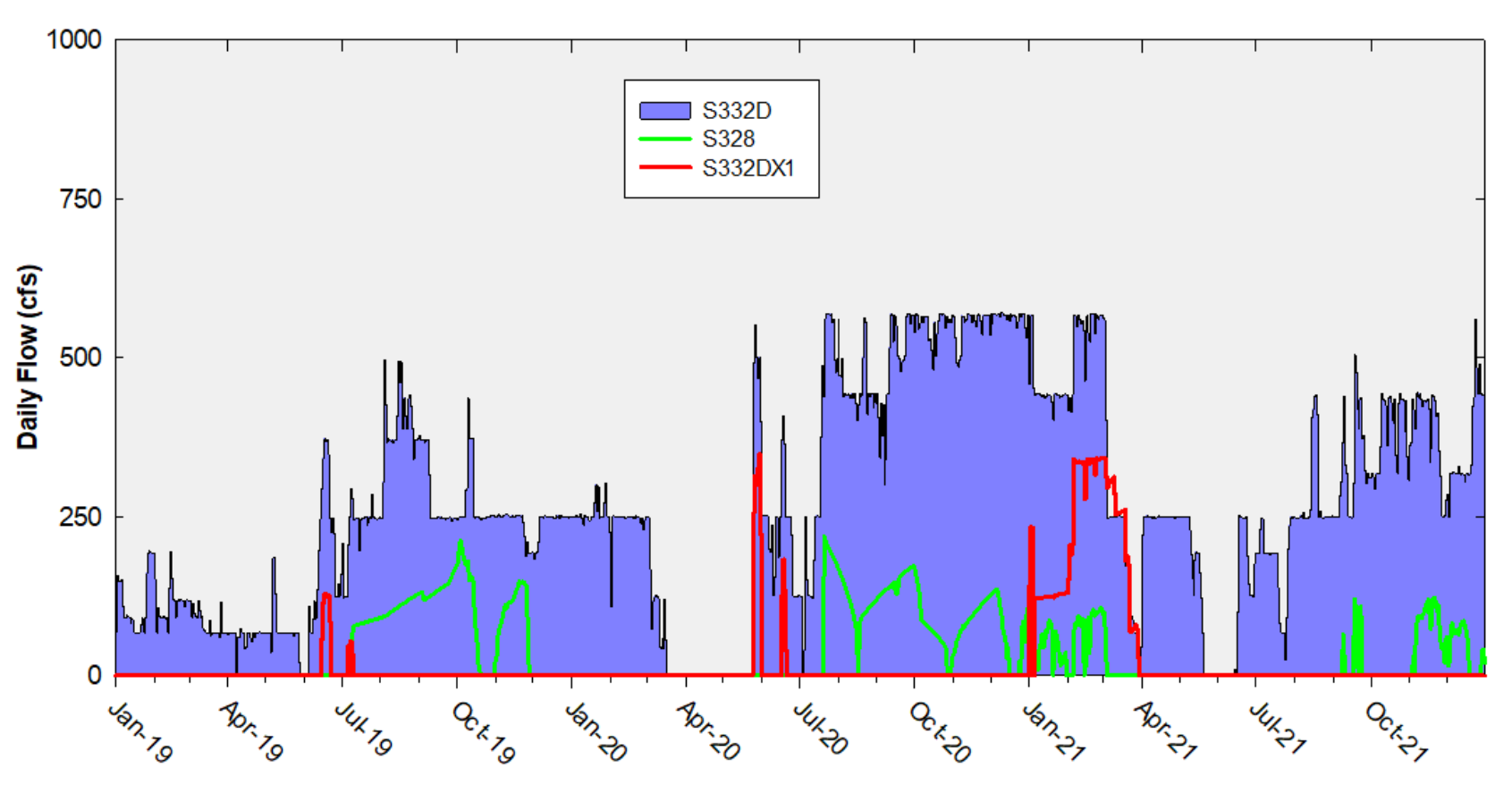
## Daily Flows at Taylor Slough and Coastal Basins Structures into ENP



# Daily Flows at Individual Taylor Slough and Coastal Basins Structures

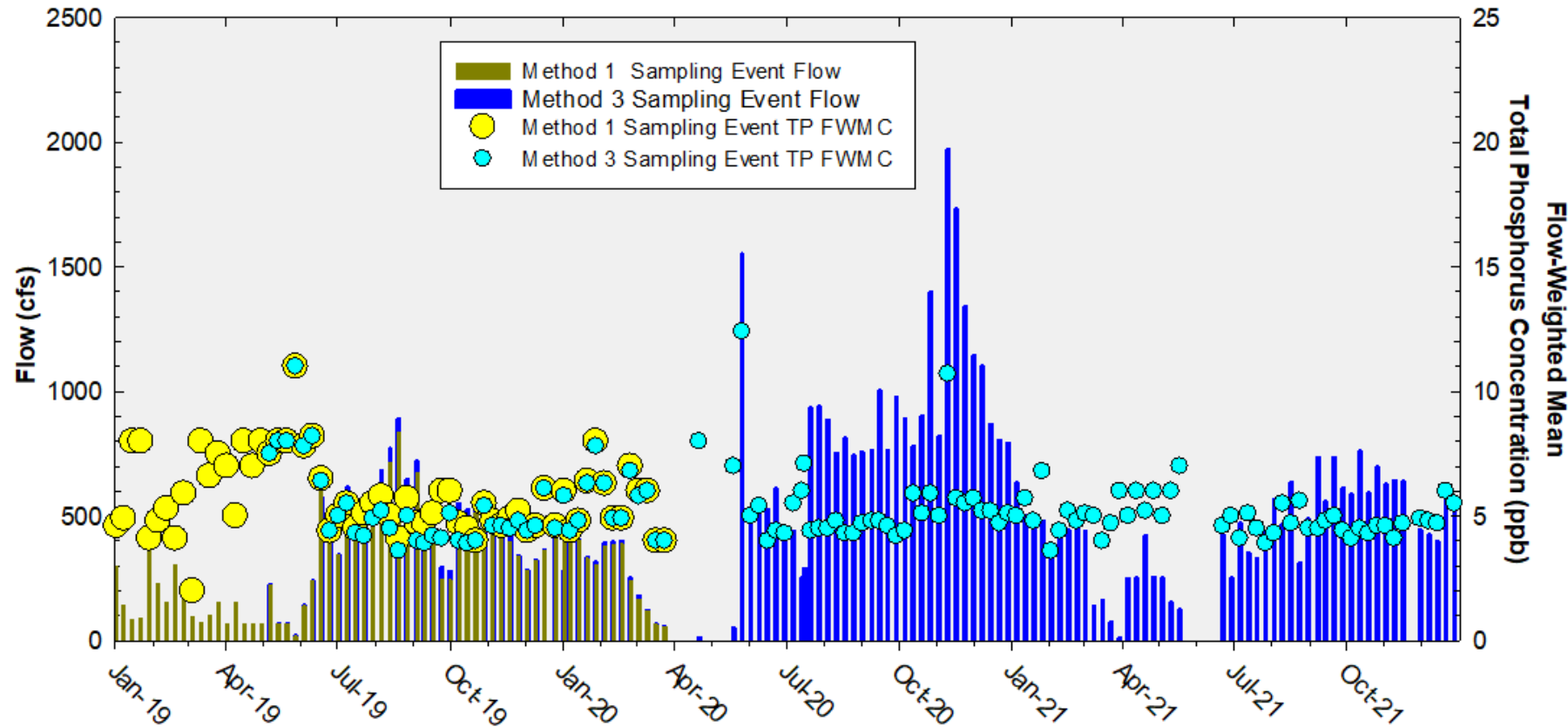


## Daily Flows Into and Out of C-111 Detention Area



# Taylor Slough and Coastal Basins

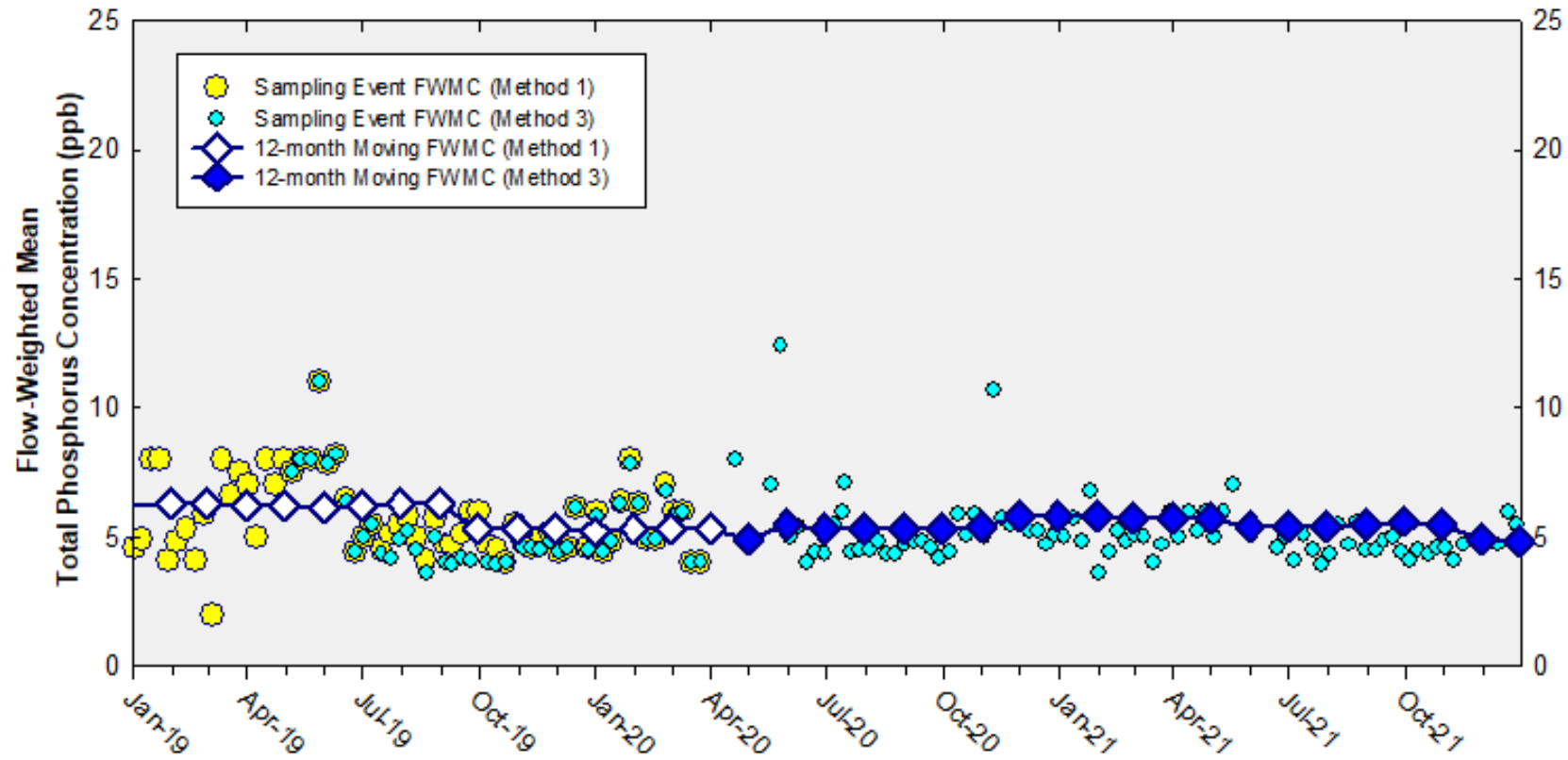
## Sampling Event Flow and FWMC



**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

