

Water Quality Conditions for Everglades National Park, Water Year 2021 Shark River Slough

Technical Oversight Committee Quarterly Meeting
May 10, 2022

SRS Water Quality Conditions – Final Results

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 (%)
Aug 2020 - Jul 2021	1,853.0	7.8	7.6	34.6	40.1
Sep 2020 - Aug 2021	1,780.0	7.9	7.6	46.2	40.1
Oct 2020 - Sep 2021	1,733.0	8.2	7.6	50.0	40.1

FINAL WY2021 RESULTS

SRS FWMC- 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.

SRS Water Quality Conditions – Outline

Evaluation of the WY2021 Exceedance

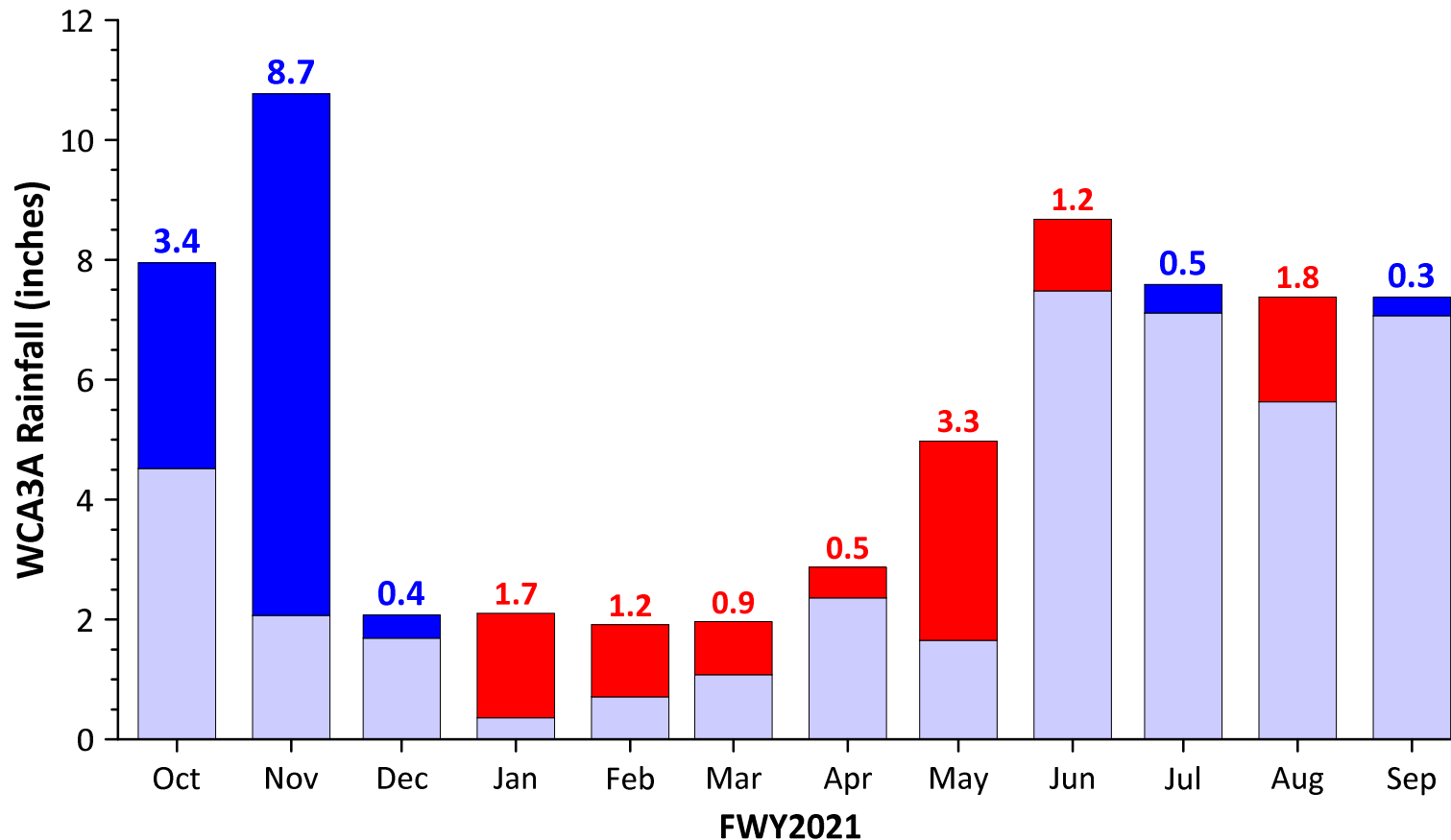
Evaluation under the Consent Decree	Data errors?
	Extraordinary natural phenomena?
What occurred throughout the year?	System operations
	Upstream conditions
Identified the major drivers to compliance results	

SRS Water Quality Conditions – Data Errors?

Evaluation of Data Errors

Potential Data Issues	Flow	Water Quality	Effects on Compliance Results
Missing data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 2 samples	No influence detected
Suspicious (Qualified) data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 1 event	No influence detected

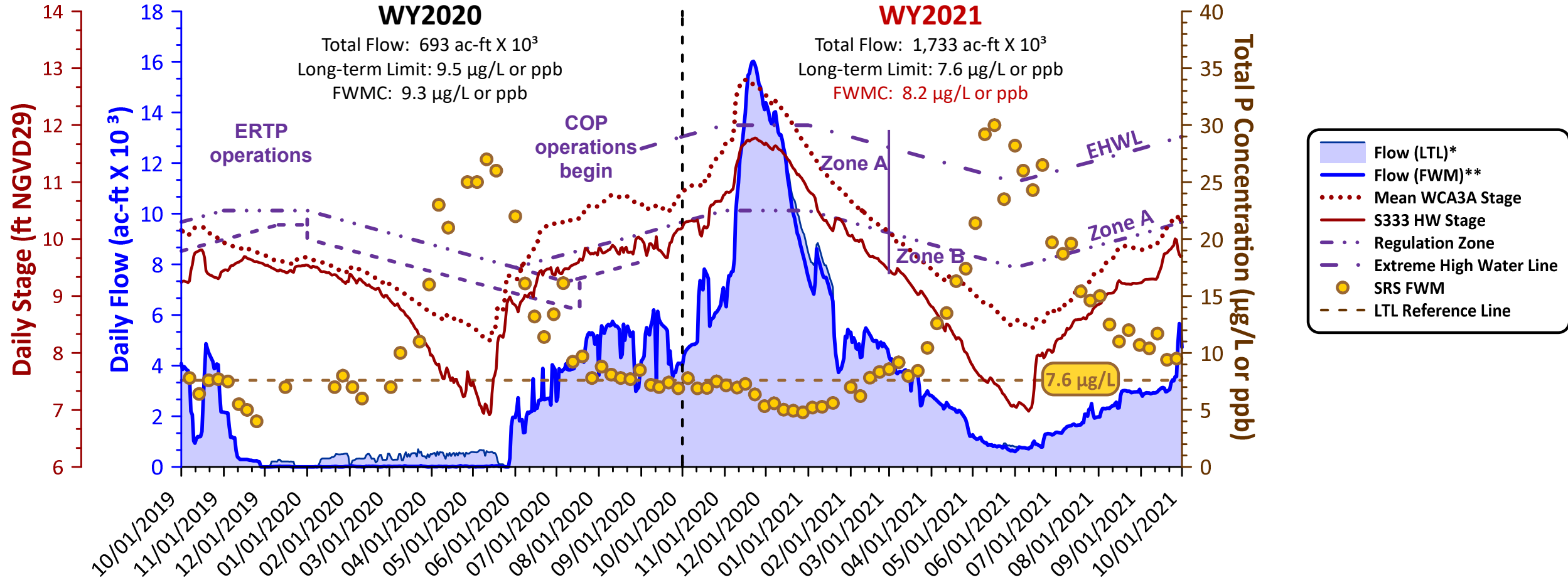
SRS Water Quality Conditions - Extraordinary Natural Phenomena?



■ Deficit from 30-Year Mean
 ■ Surplus from 30-Year Mean

- WCA3A had two extremes of rainfall in WY2021
- High rainfall in October and November (18.7"), highest in 30 years.
- Low rainfall in December-September (36.3"), 2nd lowest in 30 years.
- Annual total of 55.0".

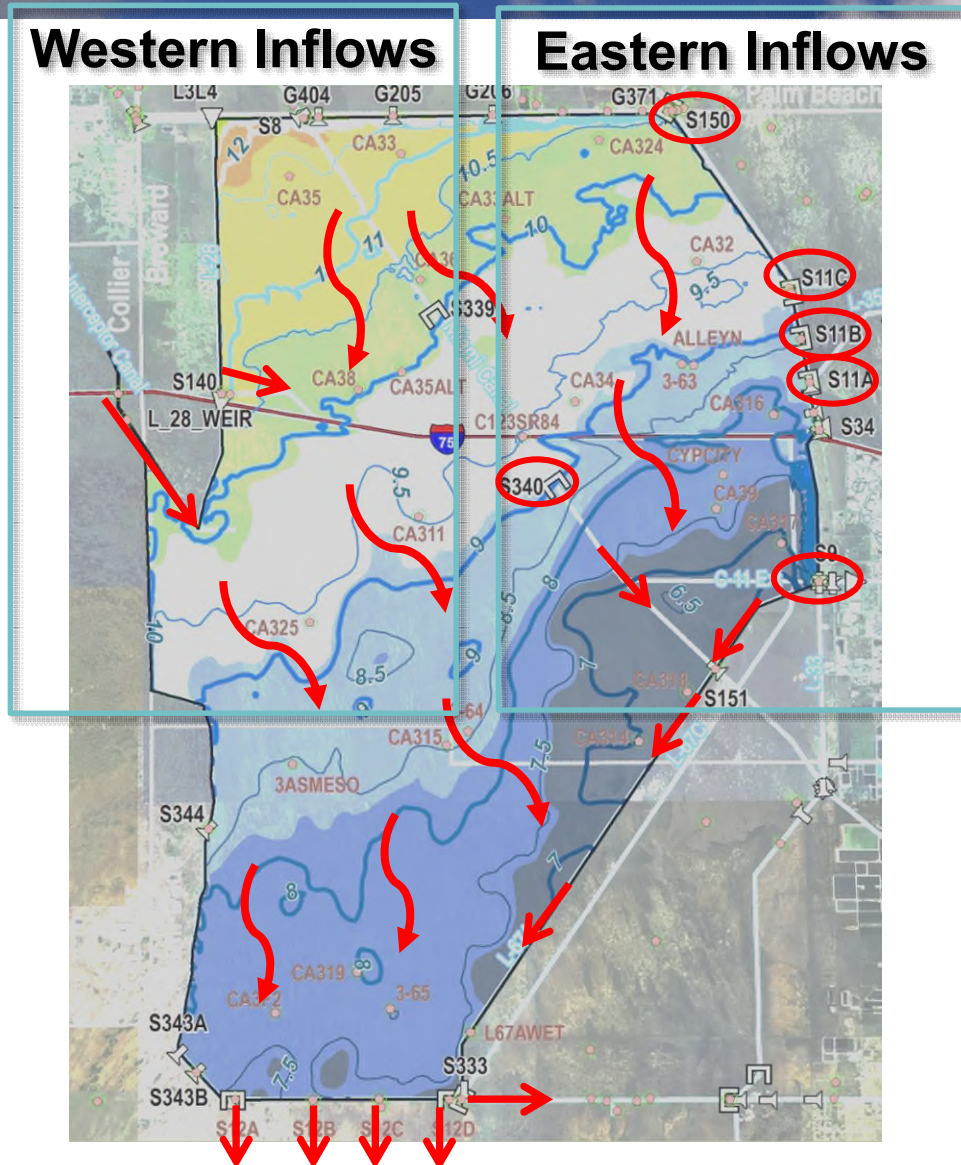
SRS Water Quality Conditions – Rainfall Impact and System Operations



* Flow (LTL) = S12s + S333&S333N + S355A&B + S356 + min(S356,S335)

** Flow (FWM) = S12s + S333&S333N + S355A&B + min(S356,S335) – S334

SRS Water Quality Conditions - Upstream Conditions



WCA-3A Surface Water Inflows

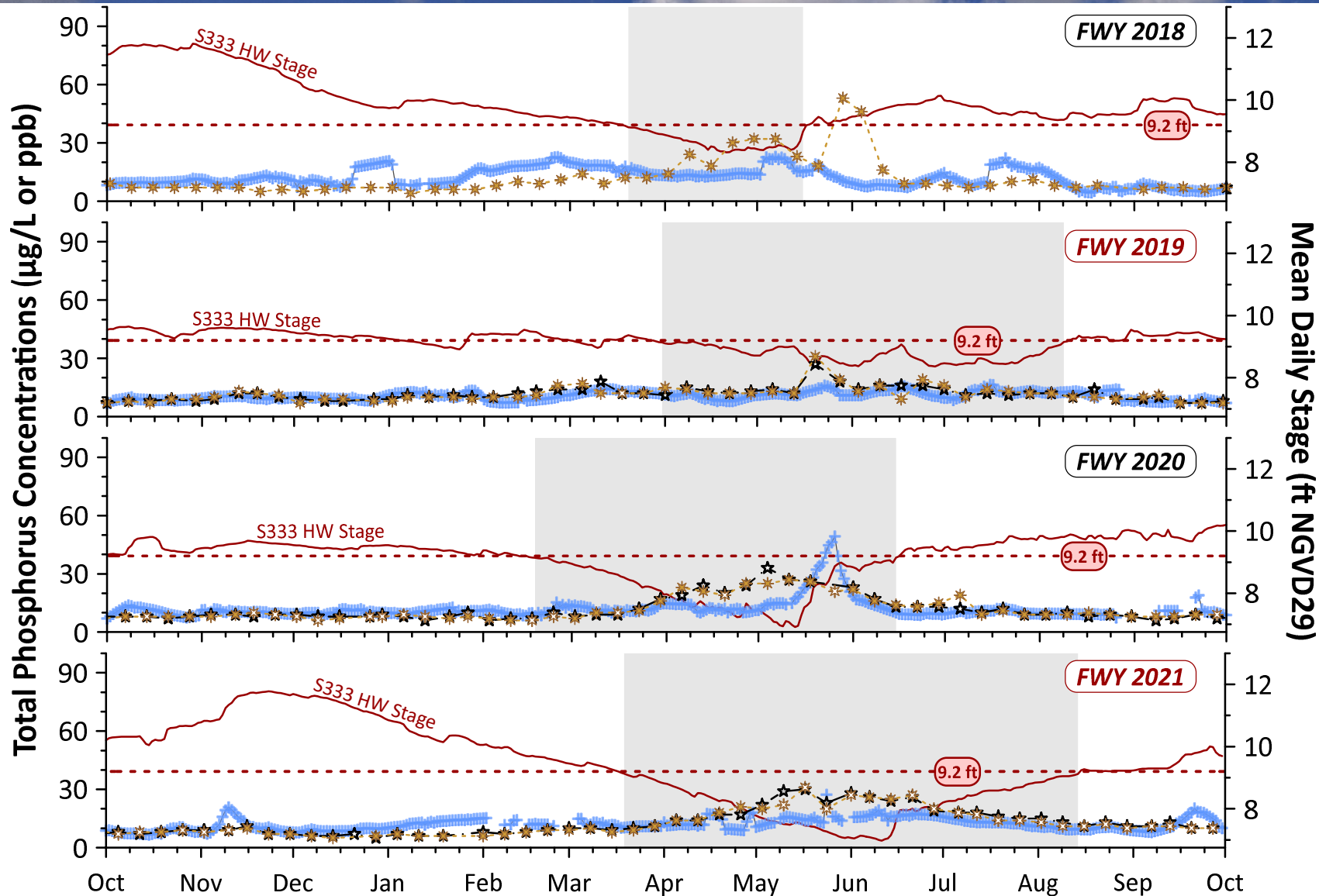
• Eastern Inflows (included)

- S150 from EAA STAs
- S11A-C from WCA-2
- S9 & S9A from Western Broward
- S340 from Miami Canal & WCA-3A

• Western Inflows (excluded)

- S8 from STA-3/4 and Rotenberger
- L3/L4 Canals from STA-5/6
- S140 from L-28 Canal
- S190 from L-28 Interceptor Canal
- Mullet Slough from Big Cypress

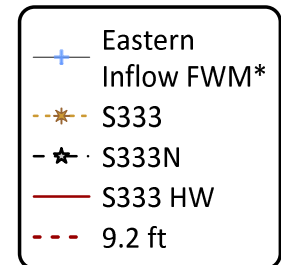
SRS Water Quality Conditions - Upstream Conditions



Water Year	TP FWMC	
	Eastern Inflow*	S333 / S333N
2018	10	12
2019	11	11
2020	12	11
2021	11	12

*Eastern Inflow FWM Aggregate (S11s, S150, S9, S9A, S340)

Shaded region depicts the period where S333 HW stage was consistently below 9.2 ft

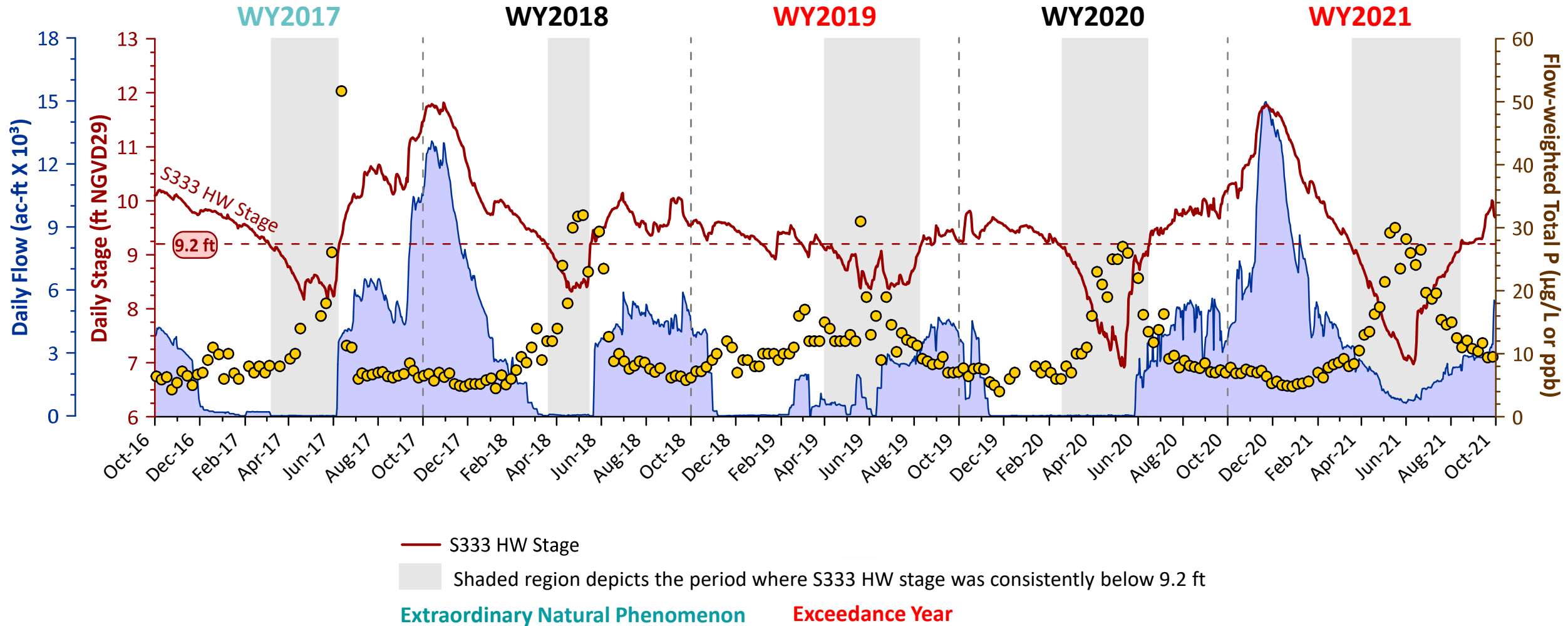


SRS Water Quality Conditions - Effects on Compliance

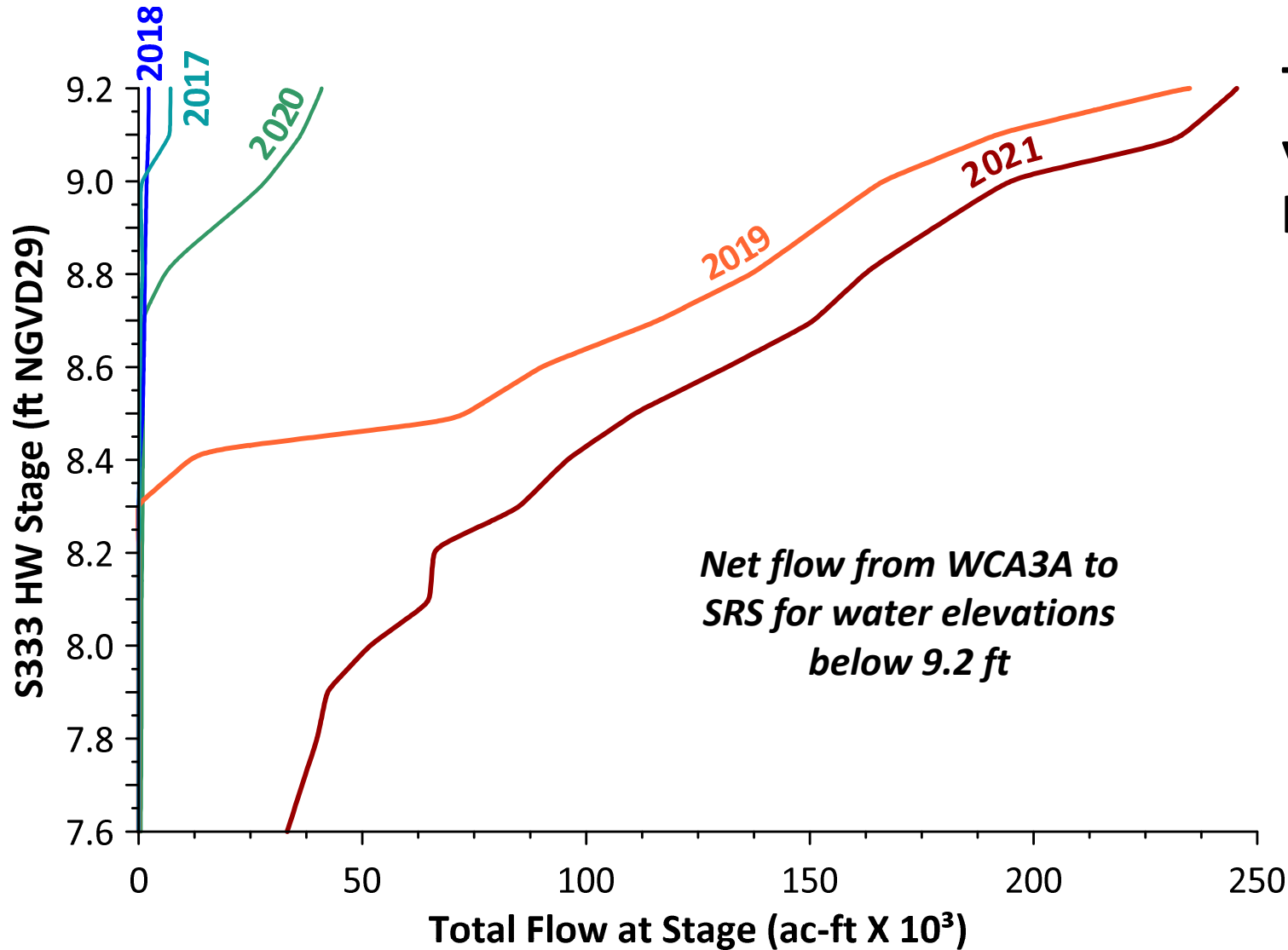
Understanding what might have caused the exceedance

- The relationship between WCA-3A stage and TP concentration
- Flows from WCA-3A to SRS below S333 HW stage of 9.2 ft
- Effects on compliance results
- Identified major drivers to compliance results

SRS Water Quality Conditions - Effects on Compliance



SRS Water Quality Conditions - Effects on Compliance



The top two years of the last 30 years with highest flows under low stage:

- 1st: 2021 (exceedance year)
- 2nd: 2019 (exceedance year)

FWY	LTL	FWM TP	Flow below 9.2 ft (ac-ft X 10 ³)
	(µg/L or ppb)		
2017	7.9	9.7	7
2018	7.6	7.3	2
2019	9.7	10	235
2020	9.5	9.3	41
2021	7.6	8.2	245

Extraordinary natural phenomena

Exceedance year

SRS Water Quality Conditions - Summary

Evaluation of the WY2021 Exceedance

Data errors?	Is not a factor
Extraordinary natural phenomena?	Does not appear to be a factor
Upstream influence?	Continues not to be a factor
Major Driver?	<ul style="list-style-type: none">• Localized effects – periods of higher concentrations under low stage conditions• More flow during these periods



QUESTIONS