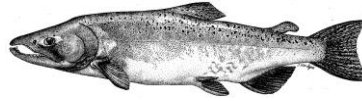


TUOLUMNE RIVER TECHNICAL ADVISORY COMMITTEE

DON PEDRO PROJECT - FERC LICENSE 2299

MODESTO IRRIGATION DISTRICT
TURLOCK IRRIGATION DISTRICT
CITY & COUNTY OF SAN FRANCISCO
CALIFORNIA DEPARTMENT OF FISH & GAME
U. S. FISH & WILDLIFE SERVICE



333 East Canal Drive
Turlock, CA 95381-0949
Phone: (209) 883-8278
Fax: (209) 656-2191
Email:pemaloney@tid.org

TECHNICAL ADVISORY COMMITTEE MEETING

March 14, 2024 – 9:00AM

VIA Zoom

<https://tid-org.zoom.us/j/7403273352?pwd=dGVLVmN4ejFKNmVtNXFUSXBVV1J4QT09&omn=99499829878>

DRAFT AGENDA

1. INTRODUCTION AND ANNOUNCEMENTS
 - Introduction/Announcement per Allison Boucher:
Effective January 2025, Trout Unlimited will assume responsibility for the Zanker Restoration project. Please welcome Ben Cook to the Tuolumne River. In the meantime, we will continue fulfilling the current grant requirements and work with Ben as the permit applications are prepared by McBain Assoc. and Stillwater Sciences.
2. ADMINISTRATIVE ITEMS:
 - Approve notes from Dec. 2023 meeting
 - Items since last meeting
3. MONITORING/REPORTS:
 - Fall run information – weir update
 - Ongoing monitoring – rotary screw trap and seine
 - Status of 2023 Annual Report to FERC
 - Summer monitoring plans - snorkel survey and thermograph downloads
4. FLOW OPERATIONS:
 - Current watershed conditions, runoff and flow volume forecasts
 - B-120 Update
 - Projected Flow Schedule for the 2024-2025 Fish Flow Year
5. AGENCY/NGO UPDATES
6. ADDITIONAL ITEMS
7. NEXT MEETING DATE – JUNE 13, 2024.

Tuolumne River Technical Advisory Committee

Don Pedro Project – FERC License 2299

Modesto Irrigation District
Turlock Irrigation District
City & County of San Francisco
California Department of Fish & Wildlife
U.S. Fish & Wildlife Service

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Turlock, CA 95381-0949
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TECHNICAL ADVISORY COMMITTEE MEETING

DECEMBER 14, 2023 AT 9:30 AM

VIA ZOOM

SUMMARY

1. INTRODUCTION AND ANNOUNCEMENTS

- Participants made self-introductions, a list of attendees follows.
- Gretchen Murphey announced that the CDFW's watershed restoration grants branch is still accepting concept grant applications. There is still plenty of wetland and mountain meadow funding available.
- J.D. Wikert announced that the Salmon Festival had 2,450 attendee's, which is up from last year. There were 42 exhibitors and vendors, which was a record high. State Parks will be joining the planning committee.
- Fred Meyer announced that all of the public outreach materials for the Zanker Family Farm Project were mailed out. It will be held on 03/22/24 from 10:00 – 2:00.
- Katrina Harrison announced that TID/MID & SFPUC received funds for construction of the old La Grange Bridge spawning gravel project.
- J.D. Wikert announced that if anyone is interested in seeing the latest Stanislaus River restoration project, it's at the Stanley Wakefield wilderness area, just east of Oakdale.
- Chris Guptill announced that the boat launch is finished and they are now working on asphaltting the parking area.
- Fred Meyer announced that construction of Bobcat Phase III is getting wrapped up. They ended up putting in just over 61,000 cubic yards of gravel.

2. ADMINISTRATIVE ITEMS:

- Today's agenda and notes from the September 2023 meeting were reviewed and approved.
- Pat Maloney will send out calendar meeting invitations in January for the 2024 meetings.

3. FLOW OPERATIONS:

- Pat Maloney shared the Tuolumne River Flow Schedule from April 2023 through April 2024. He also shared the Tuolumne River Watershed monthly accumulation of precipitation report from September 2023 through August 2024.
- J.D. Wikert advised that the folks out trying to do the Mossdale trawl are having some difficulties because there isn't quite enough water in the river. This will impact their data collection because there's not enough depth.
- Discussion regarding last water year and current water year took place.
- John Mauterer shared the Tuolumne River FNF vs ENSO 3.4 SST Anomalies (ASO) chart.
- Steve Tsao asked about the 300-350 cfs in the river and wanted to know if that was for capacity management.

- Pat Maloney advised that the base flow for this water year is 300 cfs through April 15th, which is buffered with between 25-30 cfs, and that is buffered even higher for the Infiltration Gallery. Their maximum daily average take is 25 cfs.
4. MONITORING/REPORTS:
 - Pat Maloney shared the Fall Run data for the Tuolumne & Stanislaus Rivers. Discussion followed.
 - Pat Maloney shared the Final Basin Index, the Annual Fish Flow Volume and the Fall Flow Schedule. Discussion followed.
 - Pat Maloney advised that the annual 2023 reports are still being processed.
 5. AGENCY/NGO UPDATES:
 - Peter Drekmeier advised that the State Water Board wrapped up the phase II hearings on Monday.
 6. ADDITIONAL ITEMS:
 - none
 7. NEXT MEETING DATE: MARCH 14, 2024

TRTAC Meeting Attendees

	<u>Name</u>	<u>Organization</u>
1.	Patrick Maloney	TID
2.	Dana Ortolan	TID
3.	Chris Guphill	9 to 99
4.	Bernard Aguilar	CDFW
5.	Gretchen Murphey	CDFW
6.	Steve Tsao	CDFW
7.	Kevin Marr	DWR
8.	Chrissy Sonke	FishBio
9.	Fred Meyer	McBain & Associates
10.	Katrina Harrison	McBain & Associates
11.	John Mauterer	MID
12.	Monica Gutierrez	NMFS
13.	Stephen Louie	SWRCB
14.	Catlin Ames	SWS
15.	Noah Hume	SWS
16.	J. D. Wikert	USFWS

Weir Monitoring

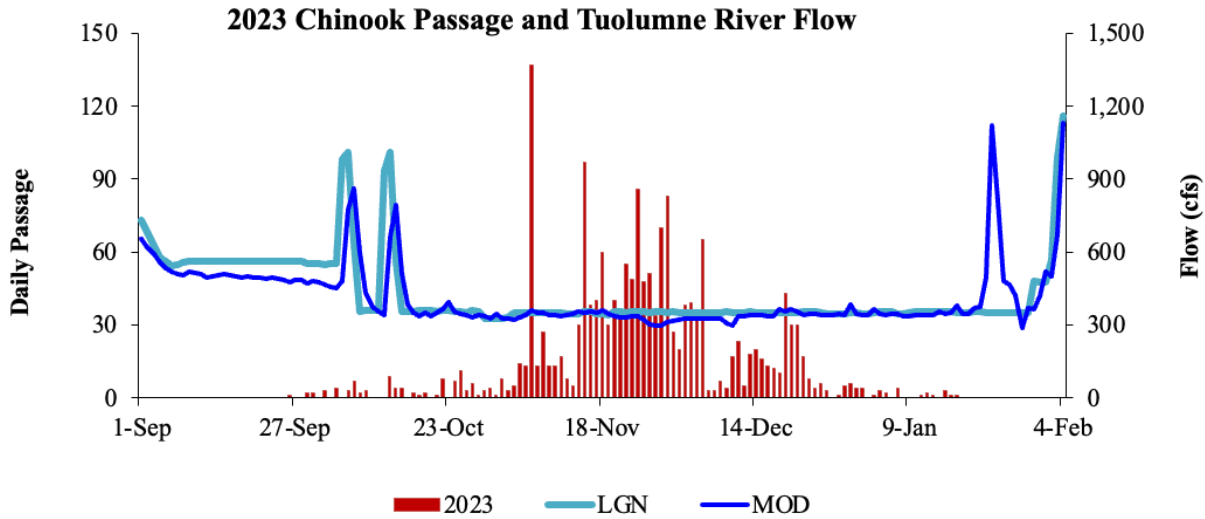


Figure 1. Daily adult Chinook passage at the Tuolumne River weir and flow at La Grange (LGN) and Modesto (MOD) during 2023-24.

- A total of 1,768 Chinook passed the Tuolumne River weir between September 12, 2023, and February 4, 2024. Sampling terminated due to high river flows.
- One *O. mykiss* (389 mm TL) was observed at the weir on January 31, 2024.
- 27% of the salmon were adipose fin clipped (indicating hatchery origin).

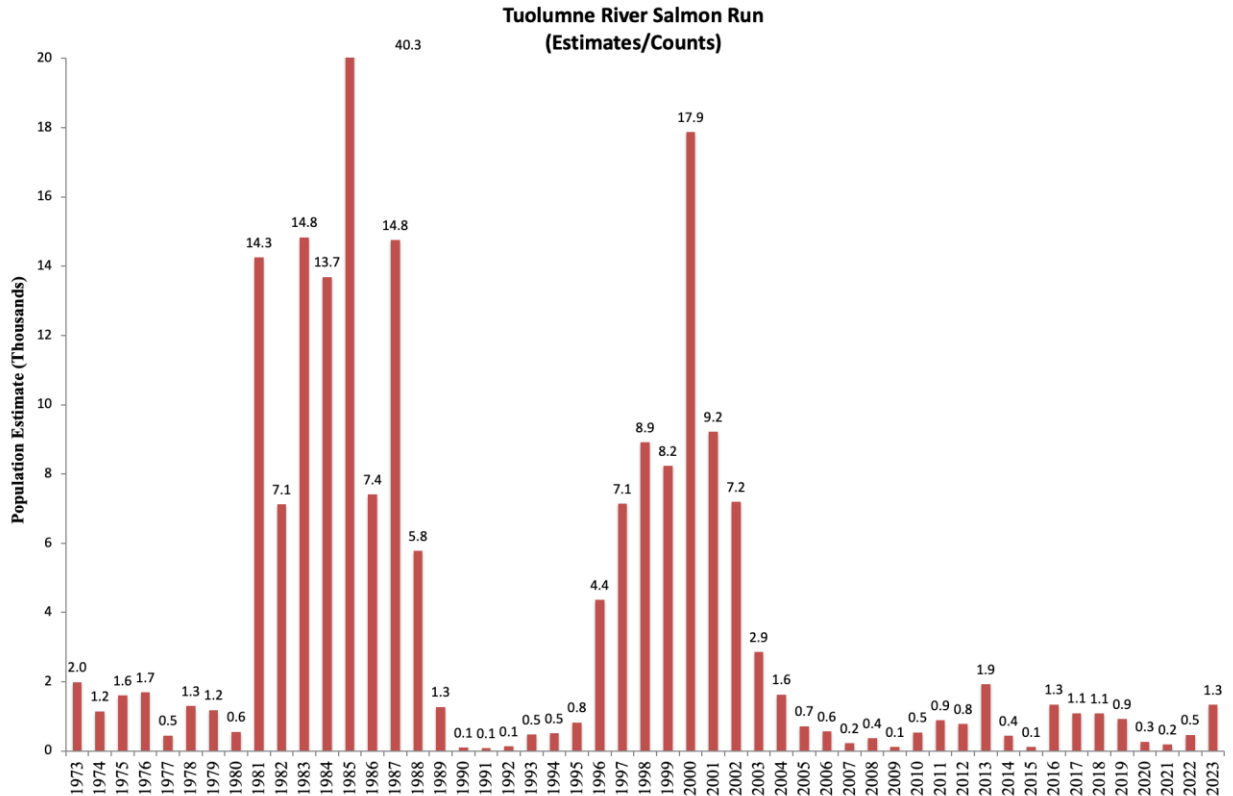


Figure 2. Total Chinook passage at the Tuolumne River Weir, 1973-2023.

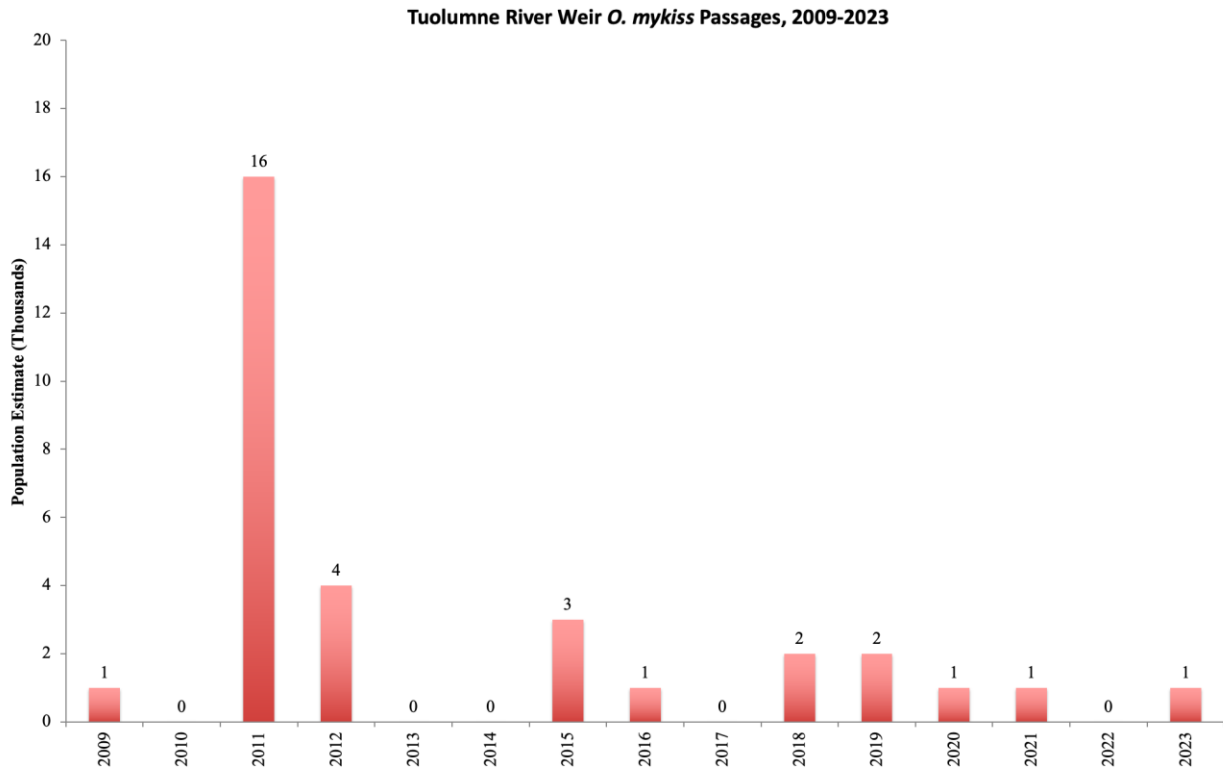


Figure 3. *O. mykiss* passages at the Tuolumne River weir during fall/winter monitoring, 2009-2023.

RST Monitoring

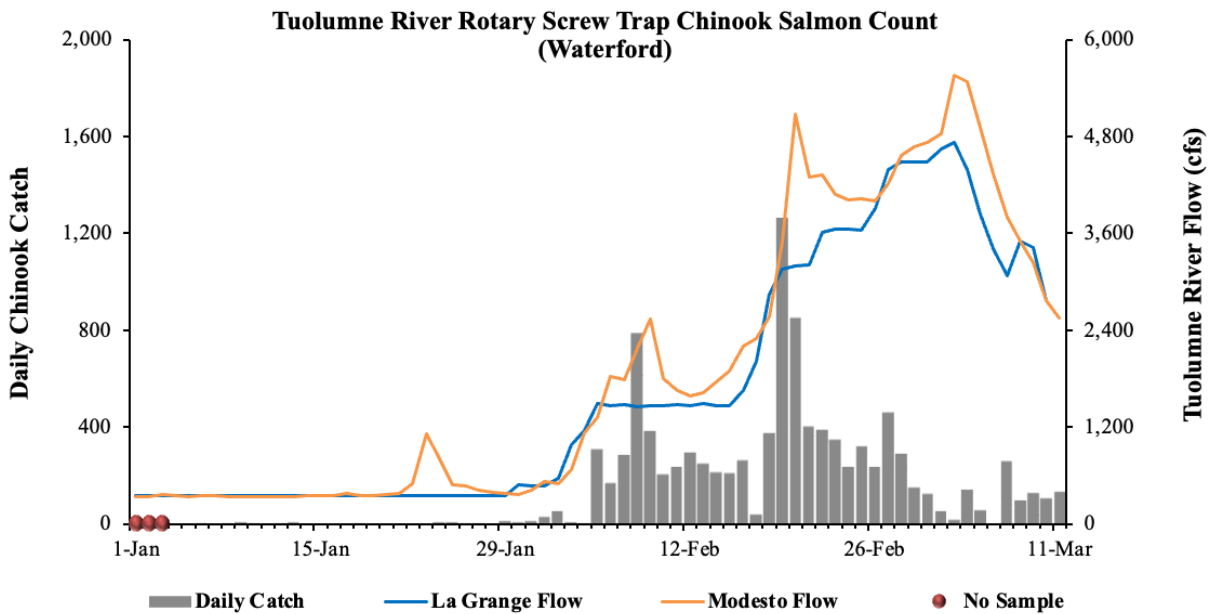


Figure 4. Daily juvenile Chinook passage at the Waterford RST and Tuolumne River flow at La Grange (LGN) and Modesto (MOD).

- A total of 10,204 juvenile Chinook salmon have been captured through March 11, 2024 at the Waterford RST.
- Three releases (one wild and two hatchery group) were conducted at Waterford so far this season. Juvenile Chinook salmon from Merced River Hatchery were used for releases when capture of wild fish in the trap is insufficient at the higher flows.
- Two juvenile *O. mykiss* were captured at Waterford on January 23 (189 mm FL; silvery parr) and February 5 (Figure 6; [203 mm FL; smolting]). These were the first *O. mykiss* captured at Waterford since 2012.

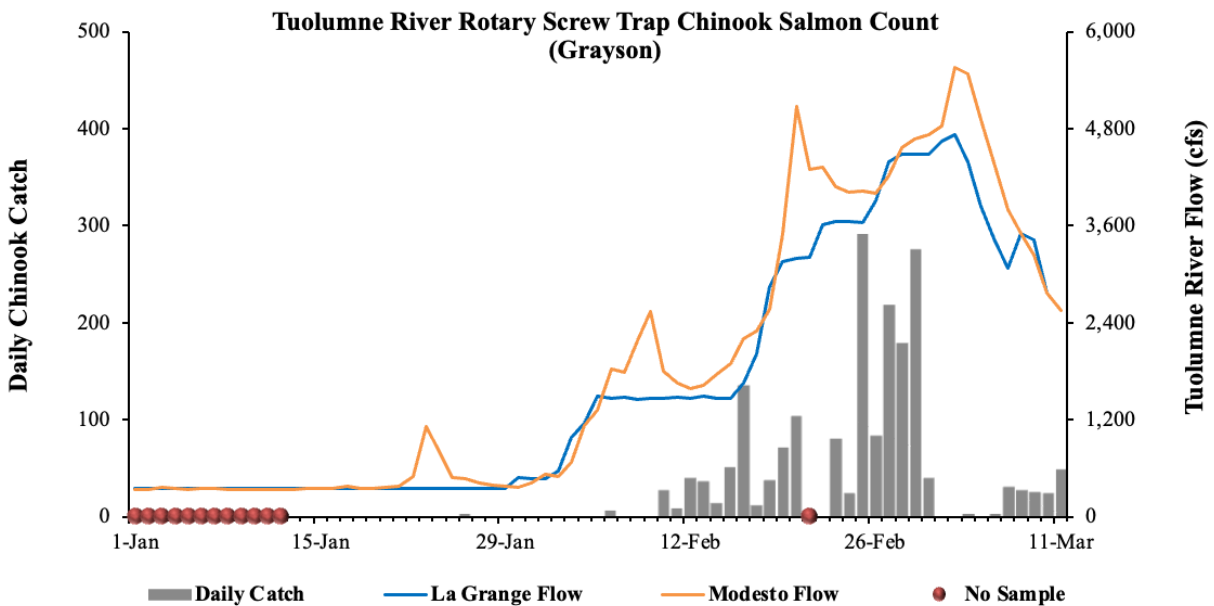


Figure 5. Daily juvenile Chinook passage at the Grayson RST and Tuolumne River flow at La Grange (LGN) and Modesto (MOD).



Figure 6. *O. mykiss* captured at the Waterford RST on 2/5/24.

- A total of 1,898 juvenile Chinook salmon have been captured through March 11, 2024, at the Grayson RSTs.
- One trap efficiency release has been conducted at Grayson using juvenile Chinook salmon from Merced River Hatchery, since capture of wild fish in the trap is insufficient to conduct releases.
- Two juvenile *O. mykiss* were captured at Grayson on February 8 (206 mm FL; smolting) and March 9 (235 mm FL; smolting). These were the first *O. mykiss* captured at Grayson since 2008.
- We are collaborating with NMFS again this year by collecting fin clips from juvenile Chinook at both trapping sites as part of their genetic analysis of salmon runs in the San Joaquin Basin tributaries.

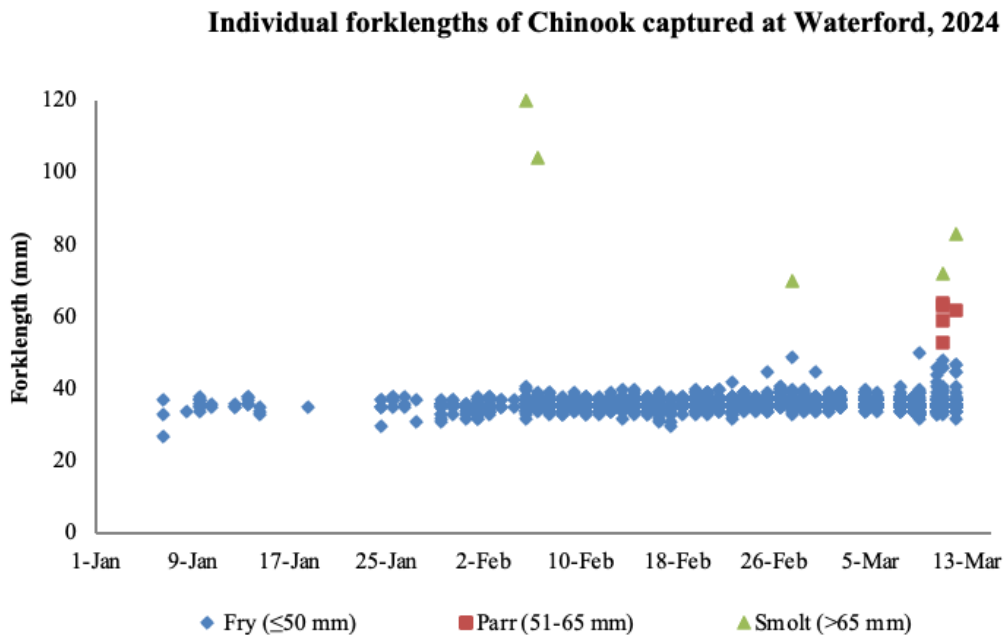


Figure 7. Individual forklengths of juvenile Chinook salmon captured at the Waterford RST, 2024.

Seining

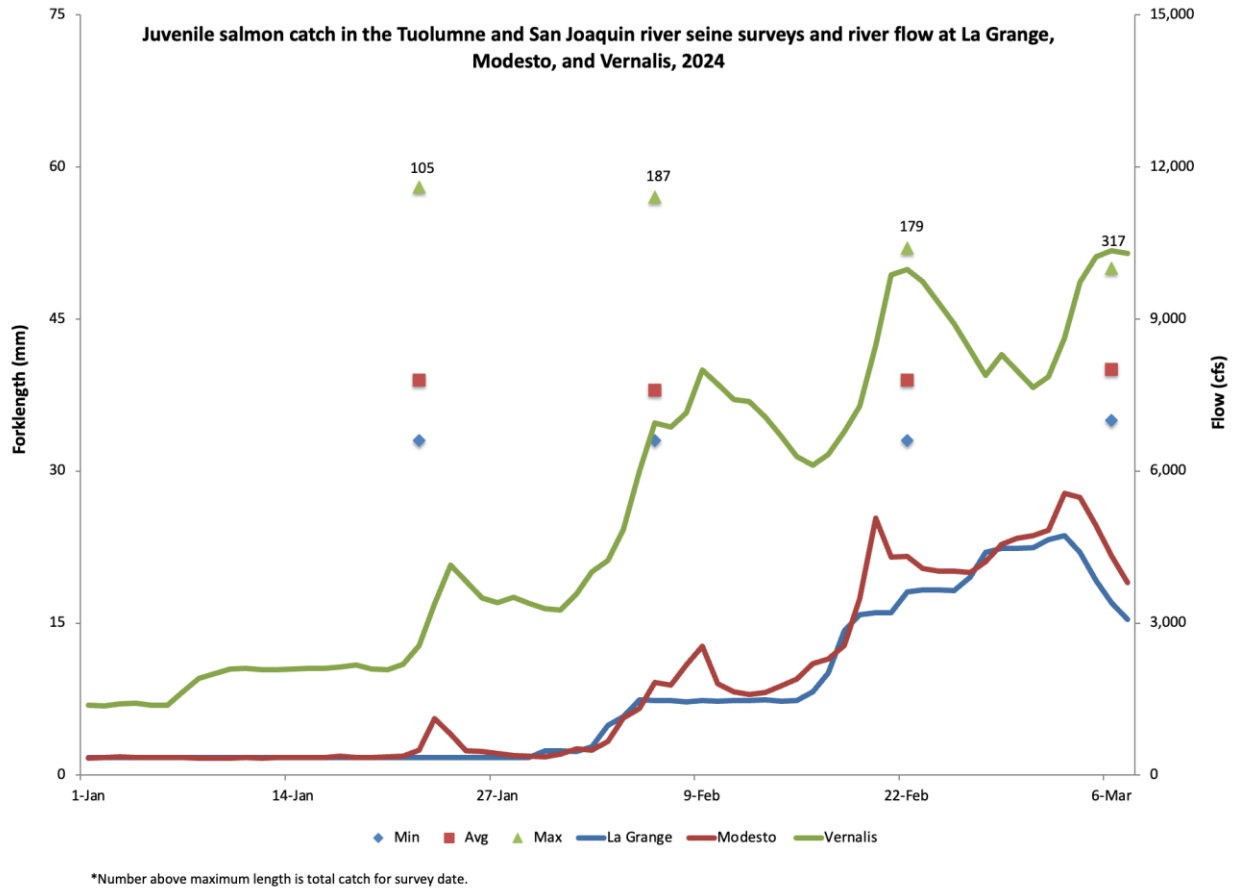
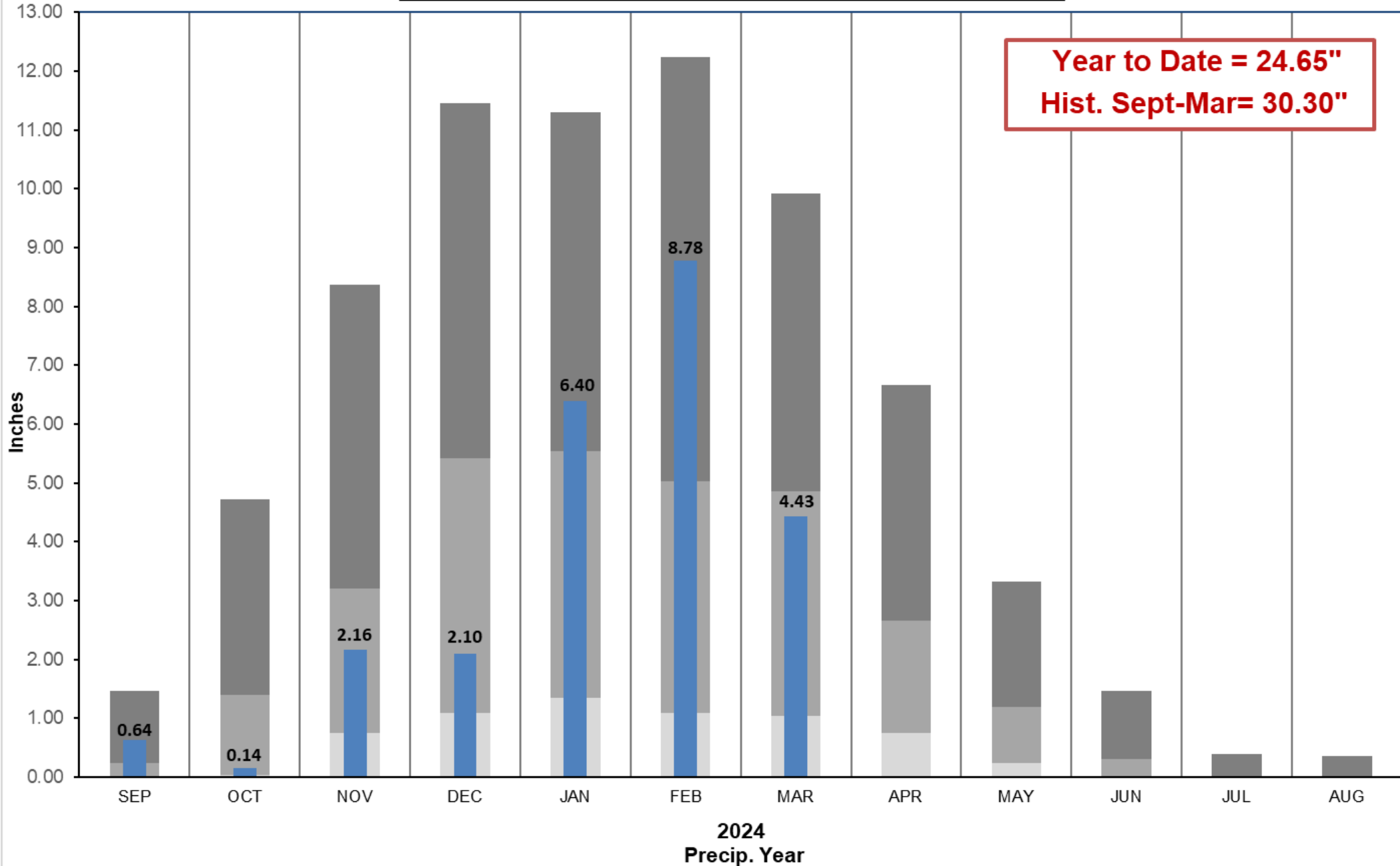


Figure 9. Juvenile Chinook salmon captured during seine surveys and Tuolumne and San Joaquin river flows, 2024.

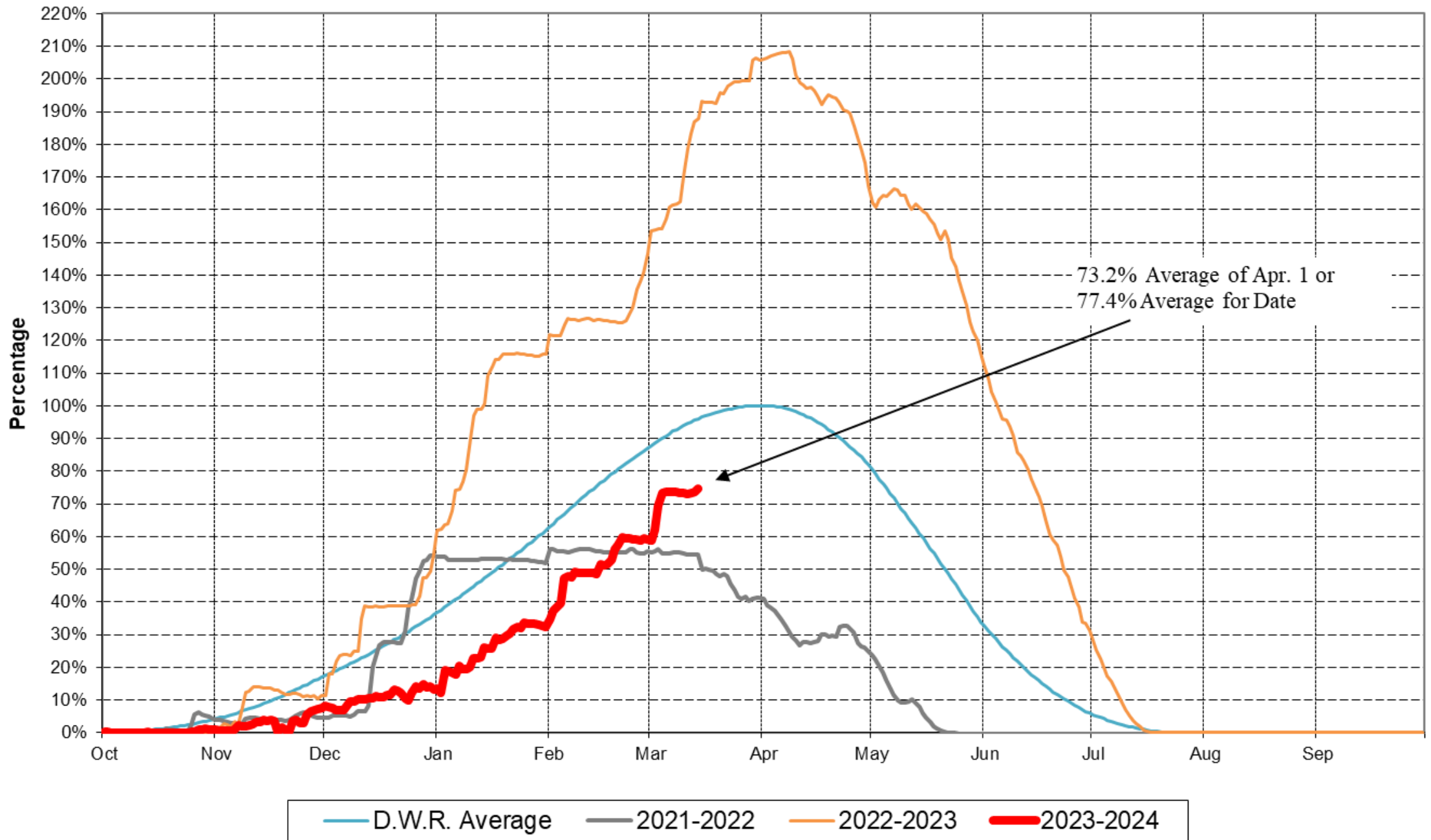
- After four surveys, a total of 788 juvenile salmon have been captured in the Tuolumne River between Old La Grange Bridge and Shiloh Bridge. Salmon were captured in all three reaches, but none were captured in the San Joaquin River.
- Some sites were not able to be sampled during the higher flows. Alternate sites were sampled when suitable if normal sites were inaccessible due to high flows.

Tuolumne River Watershed Monthly Accumulation of Precipitation

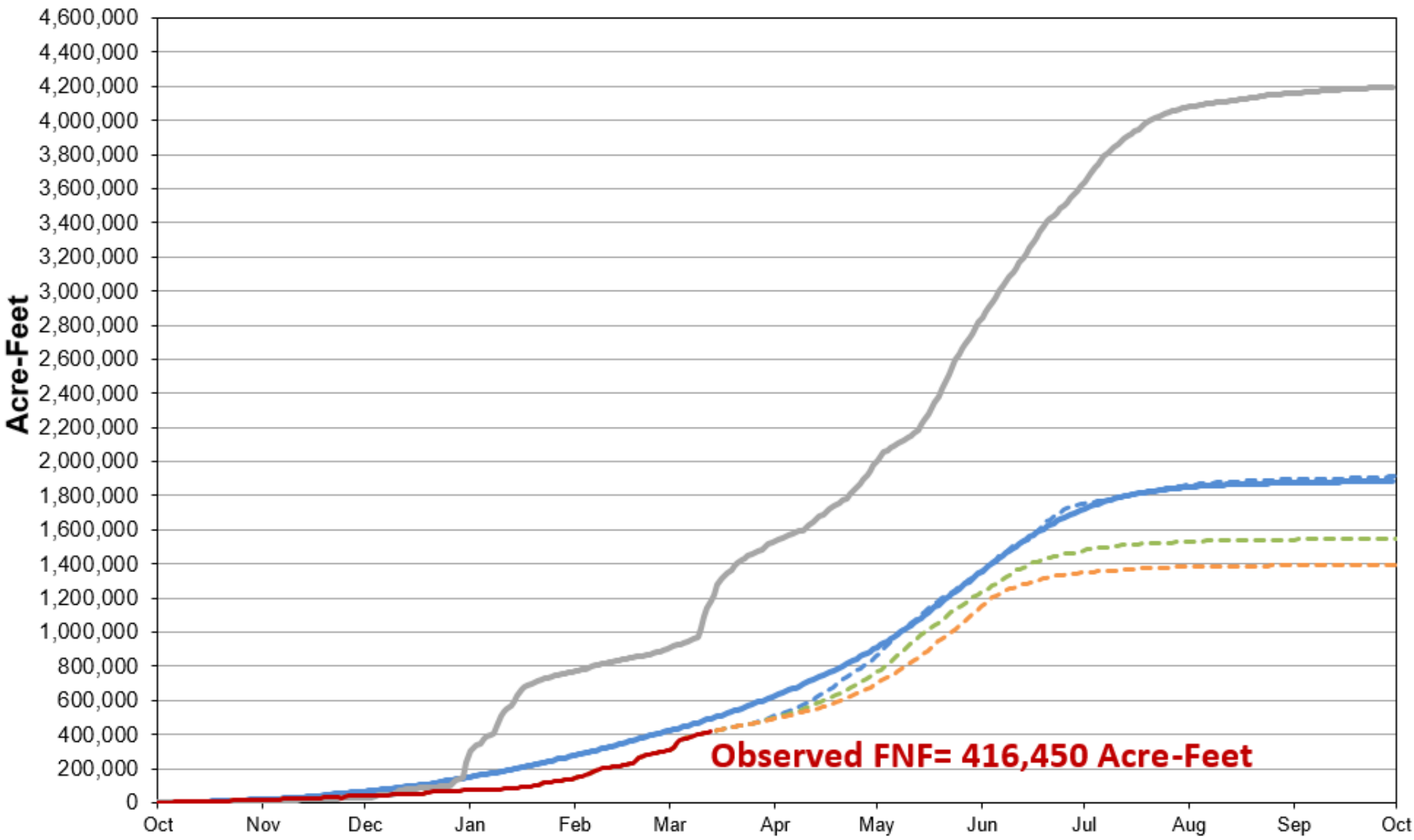
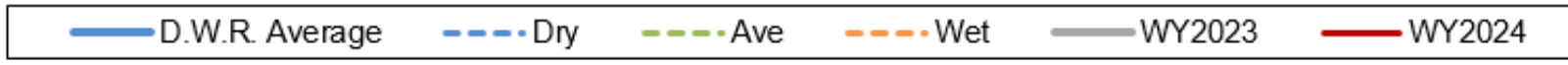
■ Dry ■ Ave ■ Wet ■ 2023-2024



Snow Sensors Used in Tuolumne River Forecast



Accumulated Full Natural Flow



Observed FNF= 416,450 Acre-Feet

Wet
WY: 1,915,349 af
WY %: 100%
Rainfall: 17.9 in

Ave
WY: 1,547,363 af
WY %: 81%
Rainfall: 7.7 in

Dry
WY: 1,393,472 af
WY %: 73%
Rainfall: 4.2 in

Precipitation Forecasts

Precipitation (in)
during the period:

Wed, 13 MAR 2024 at 00Z

-to-

Thu, 21 MAR 2024 at 00Z

Thu, 21 MAR 2024 at 00Z

-to-

Fri, 29 MAR 2024 at 00Z

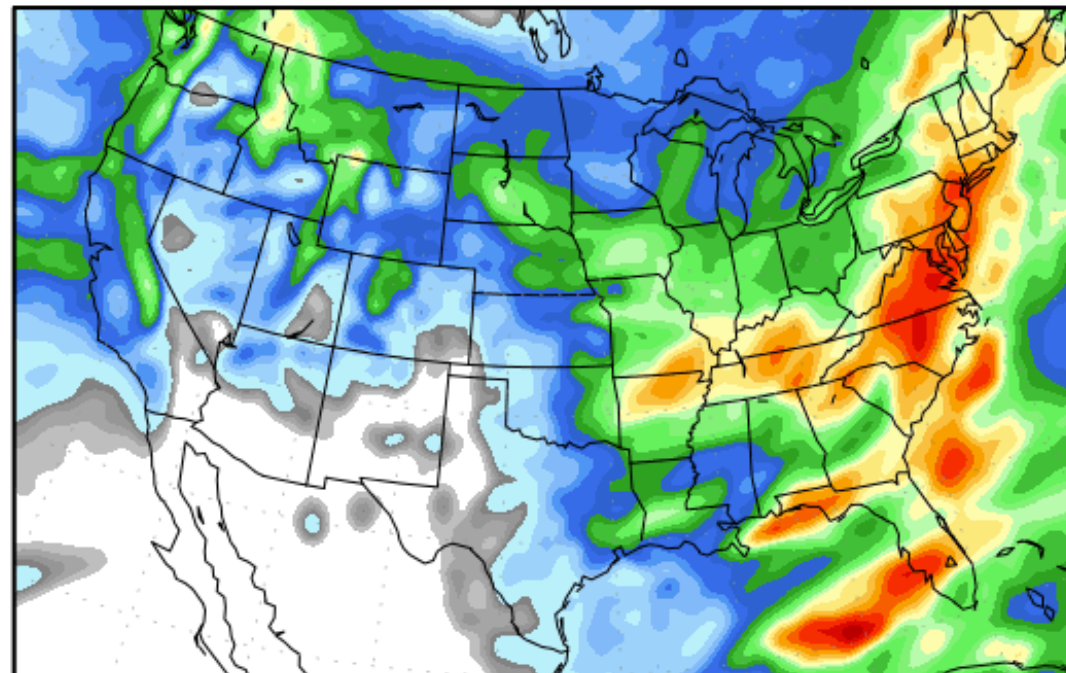
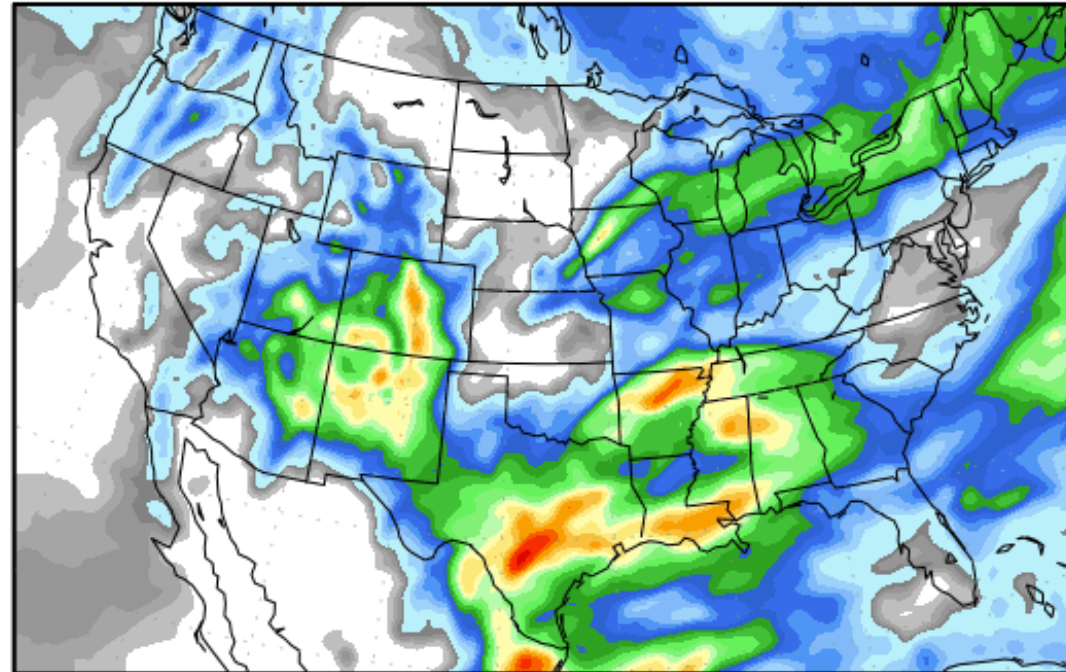
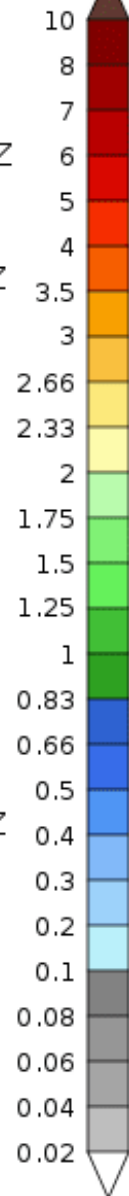


Table 3
Tuolumne River Flow Schedule
 Based on DWR Values, 60-20-20 Index for 2023, Hydrologic Conditions
 Schedule For 2023-2024 Fish Flow Year

From:	DATE	To:	Number of DAYS	BASE FLOW ¹			PULSE FLOW ²			INTERPOLATION FLOW			Other Adjusted Flow			TOTAL PERC FLOW			Agreed Upon		
				CFS	AF	ACCUM.	CFS	AF	ACCUM.	CFS	AF	ACCUM.	CFS	AF	ACCUM.	CFS	AF	ACCUM.			
24-Jan-2024	Wed	24-Jan-2024	Wed	1	300	595	157,488	0	0	95,832	0	0	0	0	0	0	0	0	300	253,320	No
25-Jan-2024	Thu	25-Jan-2024	Thu	1	300	595	158,083	0	0	95,832	0	0	0	0	0	0	0	0	300	253,915	No
26-Jan-2024	Fri	26-Jan-2024	Fri	1	300	595	158,678	0	0	95,832	0	0	0	0	0	0	0	0	300	254,510	No
27-Jan-2024	Sat	27-Jan-2024	Sat	1	300	595	159,273	0	0	95,832	0	0	0	0	0	0	0	0	300	254,105	No
28-Jan-2024	Sun	28-Jan-2024	Sun	1	300	595	159,868	0	0	95,832	0	0	0	0	0	0	0	0	300	255,700	No
29-Jan-2024	Mon	29-Jan-2024	Mon	1	300	595	160,463	0	0	95,832	0	0	0	0	0	0	0	0	300	256,295	No
30-Jan-2024	Tue	30-Jan-2024	Tue	1	300	595	161,058	0	0	95,832	0	0	0	0	0	0	0	0	300	256,890	No
31-Jan-2024	Wed	31-Jan-2024	Wed	1	300	595	161,653	0	0	95,832	0	0	0	0	0	0	0	0	300	257,485	No
01-Feb-2024	Thu	01-Feb-2024	Thu	1	300	595	162,248	0	0	95,832	0	0	0	0	0	0	0	0	300	258,080	No
02-Feb-2024	Fri	02-Feb-2024	Fri	1	300	595	162,843	0	0	95,832	0	0	0	0	0	0	0	0	300	258,675	No
03-Feb-2024	Sat	03-Feb-2024	Sat	1	300	595	163,438	0	0	95,832	0	0	0	0	0	0	0	0	300	259,270	No
04-Feb-2024	Sun	04-Feb-2024	Sun	1	300	595	164,033	0	0	95,832	0	0	0	0	0	0	0	0	300	259,865	No
05-Feb-2024	Mon	05-Feb-2024	Mon	1	300	595	164,628	0	0	95,832	0	0	0	0	0	0	0	0	300	260,460	No
06-Feb-2024	Tue	06-Feb-2024	Tue	1	300	595	165,223	0	0	95,832	0	0	0	0	0	0	0	0	300	261,056	No
07-Feb-2024	Wed	07-Feb-2024	Wed	1	300	595	165,818	0	0	95,832	0	0	0	0	0	0	0	0	300	261,651	No
08-Feb-2024	Thu	08-Feb-2024	Thu	1	300	595	166,413	0	0	95,832	0	0	0	0	0	0	0	0	300	262,246	No
09-Feb-2024	Fri	09-Feb-2024	Fri	1	300	595	167,008	0	0	95,832	0	0	0	0	0	0	0	0	300	262,841	No
10-Feb-2024	Sat	10-Feb-2024	Sat	1	300	595	167,603	0	0	95,832	0	0	0	0	0	0	0	0	300	263,436	No
11-Feb-2024	Sun	11-Feb-2024	Sun	1	300	595	168,198	0	0	95,832	0	0	0	0	0	0	0	0	300	264,031	No
12-Feb-2024	Mon	12-Feb-2024	Mon	1	300	595	168,793	0	0	95,832	0	0	0	0	0	0	0	0	300	264,626	No
13-Feb-2024	Tue	13-Feb-2024	Tue	1	300	595	169,388	0	0	95,832	0	0	0	0	0	0	0	0	300	265,221	No
14-Feb-2024	Wed	14-Feb-2024	Wed	1	300	595	169,983	0	0	95,832	0	0	0	0	0	0	0	0	300	265,816	No
15-Feb-2024	Thu	15-Feb-2024	Thu	1	300	595	170,579	0	0	95,832	0	0	0	0	0	0	0	0	300	266,411	No
16-Feb-2024	Fri	16-Feb-2024	Fri	1	300	595	171,174	0	0	95,832	0	0	0	0	0	0	0	0	300	267,006	No
17-Feb-2024	Sat	17-Feb-2024	Sat	1	300	595	171,769	0	0	95,832	0	0	0	0	0	0	0	0	300	267,601	No
18-Feb-2024	Sun	18-Feb-2024	Sun	1	300	595	172,364	0	0	95,832	0	0	0	0	0	0	0	0	300	268,196	No
19-Feb-2024	Mon	19-Feb-2024	Mon	1	300	595	172,959	0	0	95,832	0	0	0	0	0	0	0	0	300	268,791	No
20-Feb-2024	Tue	20-Feb-2024	Tue	1	300	595	173,554	0	0	95,832	0	0	0	0	0	0	0	0	300	269,386	No
21-Feb-2024	Wed	21-Feb-2024	Wed	1	300	595	174,149	0	0	95,832	0	0	0	0	0	0	0	0	300	269,981	No
22-Feb-2024	Thu	22-Feb-2024	Thu	1	300	595	174,744	0	0	95,832	0	0	0	0	0	0	0	0	300	270,576	No
23-Feb-2024	Fri	23-Feb-2024	Fri	1	300	595	175,339	0	0	95,832	0	0	0	0	0	0	0	0	300	271,171	No
24-Feb-2024	Sat	24-Feb-2024	Sat	1	300	595	175,934	0	0	95,832	0	0	0	0	0	0	0	0	300	271,766	No
25-Feb-2024	Sun	25-Feb-2024	Sun	1	300	595	176,529	0	0	95,832	0	0	0	0	0	0	0	0	300	272,361	No
26-Feb-2024	Mon	26-Feb-2024	Mon	1	300	595	177,124	0	0	95,832	0	0	0	0	0	0	0	0	300	272,956	No
27-Feb-2024	Tue	27-Feb-2024	Tue	1	300	595	177,719	0	0	95,832	0	0	0	0	0	0	0	0	300	273,551	No
28-Feb-2024	Wed	28-Feb-2024	Wed	1	300	595	178,314	0	0	95,832	0	0	0	0	0	0	0	0	300	274,146	No
29-Feb-2024	Thu	29-Feb-2024	Thu	1	300	595	178,909	0	0	95,832	0	0	0	0	0	0	0	0	300	274,741	No
01-Mar-2024	Fri	01-Mar-2024	Fri	1	300	595	179,504	0	0	95,832	0	0	0	0	0	0	0	0	300	275,337	No
02-Mar-2024	Sat	02-Mar-2024	Sat	1	300	595	180,099	0	0	95,832	0	0	0	0	0	0	0	0	300	275,932	No
03-Mar-2024	Sun	03-Mar-2024	Sun	1	300	595	180,694	0	0	95,832	0	0	0	0	0	0	0	0	300	276,527	No
04-Mar-2024	Mon	04-Mar-2024	Mon	1	300	595	181,289	0	0	95,832	0	0	0	0	0	0	0	0	300	277,122	No
05-Mar-2024	Tue	05-Mar-2024	Tue	1	300	595	181,884	0	0	95,832	0	0	0	0	0	0	0	0	300	277,717	No
06-Mar-2024	Wed	06-Mar-2024	Wed	1	300	595	182,479	0	0	95,832	0	0	0	0	0	0	0	0	300	278,312	No
07-Mar-2024	Thu	07-Mar-2024	Thu	1	300	595	183,074	0	0	95,832	0	0	0	0	0	0	0	0	300	278,907	No
08-Mar-2024	Fri	08-Mar-2024	Fri	1	300	595	183,669	0	0	95,832	0	0	0	0	0	0	0	0	300	279,502	No
09-Mar-2024	Sat	09-Mar-2024	Sat	1	300	595	184,264	0	0	95,832	0	0	0	0	0	0	0	0	300	280,097	No
10-Mar-2024	Sun	10-Mar-2024	Sun	1	300	595	184,859	0	0	95,832	0	0	0	0	0	0	0	0	300	280,692	No
11-Mar-2024	Mon	11-Mar-2024	Mon	1	300	595	185,455	0	0	95,832	0	0	0	0	0	0	0	0	300	281,287	No
12-Mar-2024	Tue	12-Mar-2024	Tue	1	300	595	186,050	0	0	95,832	0	0	0	0	0	0	0	0	300	281,882	No
13-Mar-2024	Wed	13-Mar-2024	Wed	1	300	595	186,645	0	0	95,832	0	0	0	0	0	0	0	0	300	282,477	No
14-Mar-2024	Thu	14-Mar-2024	Thu	1	300	595	187,240	0	0	95,832	0	0	0	0	0	0	0	0	300	283,072	No
15-Mar-2024	Fri	15-Mar-2024	Fri	1	300	595	187,835	0	0	95,832	0	0	0	0	0	0	0	0	300	283,667	No
16-Mar-2024	Sat	16-Mar-2024	Sat	1	300	595	188,430	0	0	95,832	0	0	0	0	0	0	0	0	300	284,262	No
17-Mar-2024	Sun	17-Mar-2024	Sun	1	300	595	189,025	0	0	95,832	0	0	0	0	0	0	0	0	300	284,857	No
18-Mar-2024	Mon	18-Mar-2024	Mon	1	300	595	189,620	0	0	95,832	0	0	0	0	0	0	0	0	300	285,452	No
19-Mar-2024	Tue	19-Mar-2024	Tue	1	300	595	190,215	0	0	95,832	0	0	0	0	0	0	0	0	300	286,047	No
20-Mar-2024	Wed	20-Mar-2024	Wed	1	300	595	190,810	0	0	95,832	0	0	0	0	0	0	0	0	300	286,642	No
21-Mar-2024	Thu	21-Mar-2024	Thu	1	300	595	191,405	0	0	95,832	0	0	0	0	0	0	0	0	300	287,237	No

Table 3
Tuolumne River Flow Schedule
 Based on DWR Values, 60-20-20 Index for 2023, Hydrologic Conditions
 Schedule For 2023-2024 Fish Flow Year

DATE	From:	To:	Number of DAYS	BASE FLOW ¹			PULSE FLOW ¹			INTERPOLATION FLOW			Other Adjusted Flow			TOTAL FERCC FLOW		Agreed Upon
				CFS	AF	ACCUM. A.F.	CFS	AF	ACCUM. A.F.	CFS	AF	ACCUM. A.F.	CFS	AF	ACCUM. A.F.	CFS	ACCUM. A.F.	
22-Mar-2024	Fri	22-Mar-2024	Fri	1	300	595	192,000	0	0	0	0	0	0	0	0	0	0	No
23-Mar-2024	Sat	23-Mar-2024	Sat	1	300	595	192,595	0	0	0	0	0	0	0	0	0	0	No
24-Mar-2024	Sun	24-Mar-2024	Sun	1	300	595	193,190	0	0	0	0	0	0	0	0	0	0	No
25-Mar-2024	Mon	25-Mar-2024	Mon	1	300	595	193,785	0	0	0	0	0	0	0	0	0	0	No
26-Mar-2024	Tue	26-Mar-2024	Tue	1	300	595	194,380	0	0	0	0	0	0	0	0	0	0	No
27-Mar-2024	Wed	27-Mar-2024	Wed	1	300	595	194,975	0	0	0	0	0	0	0	0	0	0	No
28-Mar-2024	Thu	28-Mar-2024	Thu	1	300	595	195,570	0	0	0	0	0	0	0	0	0	0	No
29-Mar-2024	Fri	29-Mar-2024	Fri	1	300	595	196,165	0	0	0	0	0	0	0	0	0	0	No
30-Mar-2024	Sat	30-Mar-2024	Sat	1	300	595	196,760	0	0	0	0	0	0	0	0	0	0	No
31-Mar-2024	Sun	31-Mar-2024	Sun	1	300	595	197,355	0	0	0	0	0	0	0	0	0	0	No
01-Apr-2024	Mon	01-Apr-2024	Mon	1	300	595	197,950	0	0	0	0	0	0	0	0	0	0	No
02-Apr-2024	Tue	02-Apr-2024	Tue	1	300	595	198,545	0	0	0	0	0	0	0	0	0	0	No
03-Apr-2024	Wed	03-Apr-2024	Wed	1	300	595	199,140	0	0	0	0	0	0	0	0	0	0	No
04-Apr-2024	Thu	04-Apr-2024	Thu	1	300	595	199,735	0	0	0	0	0	0	0	0	0	0	No
05-Apr-2024	Fri	05-Apr-2024	Fri	1	300	595	200,331	0	0	0	0	0	0	0	0	0	0	No
06-Apr-2024	Sat	06-Apr-2024	Sat	1	300	595	200,926	0	0	0	0	0	0	0	0	0	0	No
07-Apr-2024	Sun	07-Apr-2024	Sun	1	300	595	201,521	0	0	0	0	0	0	0	0	0	0	No
08-Apr-2024	Mon	08-Apr-2024	Mon	1	300	595	202,116	0	0	0	0	0	0	0	0	0	0	No
09-Apr-2024	Tue	09-Apr-2024	Tue	1	300	595	202,711	0	0	0	0	0	0	0	0	0	0	No
10-Apr-2024	Wed	10-Apr-2024	Wed	1	300	595	203,306	0	0	0	0	0	0	0	0	0	0	No
11-Apr-2024	Thu	11-Apr-2024	Thu	1	300	595	203,901	0	0	0	0	0	0	0	0	0	0	No
12-Apr-2024	Fri	12-Apr-2024	Fri	1	300	595	204,496	0	0	0	0	0	0	0	0	0	0	No
13-Apr-2024	Sat	13-Apr-2024	Sat	1	300	595	205,091	0	0	0	0	0	0	0	0	0	0	No
No. of days				365														

1 cfs day = 1,983,471 acre-feet (af)

- Total accumulation amount pertains to 2023-2024 Fish Year only.
- The pulse flows are a target that represents a daily average target. The actual operational data will be adjusted to attain the annual requirement. Based on an hourly calculation schedule for the target flows. This represents a daily average.

Case	60-20-20 Index	60-20-20 Index Scheduled Above	Base Total	Pulse Total	Interpolation Total	Adjustment Total	FERCC Total
90%	6,232,187		205,091	95,832	-	-	300,923
		Difference	205,091	95,832	-	-	300,923
			0	(0)	-	-	(0)

Table 1
SAN JOAQUIN VALLEY WATER YEAR HYDROLOGIC CLASSIFICATION
602020 INDEX

60-20-20 YEAR	April - July Runoff (AF)					Oct - March Runoff (AF)					60-20-20 Index	Tuolumne River Minimum Flow Requirement	SJWYT	FERC WYT	Base Flow Requirement	Spring Pulse Requirement	Fall Pulse Requirement	Interpolation Requirement	
	Stanislaus	Tuolumne	Merced	Friant	TOTAL	Stanislaus	Tuolumne	Merced	Friant	TOTAL									
14	232,171	423,354	180,810	375,485	1,211,820	123,348	166,401	57,498	113,744	460,991	1,160,495	94,000	Critical	Critical Water Year and Below	82,909	11,091		0.00	
15	133,081	307,952	104,627	192,518	738,178	190,977	276,982	74,324	123,674	665,957	808,197	94,000	Critical	Critical Water Year and Below	82,909	11,091		0.00	
16	568,262	1,020,077	494,607	892,555	2,975,501	498,761	783,833	351,782	391,110	2,025,486	2,352,037	142,434	Dry	Median Dry	90,446	37,060		11,877.83	
17	1,440,796	2,454,169	1,232,846	2,641,089	7,768,900	1,570,518	2,276,847	1,222,014	1,585,049	6,654,428	6,462,633	300,923	Wet	Median Wet/Maximum	205,091	89,882		0.00	
18	588,162	1,011,627	459,456	947,685	3,006,930	378,596	620,658	273,637	368,411	1,641,302	3,032,418	287,999	Below Normal	Median Below Normal	103,240	60,027		118,106.32	
19	1,241,334	1,990,176	1,076,834	2,034,275	6,342,619	639,508	907,414	503,118	591,514	2,641,554	4,940,366	300,923	Wet	Median Wet/Maximum	205,091	89,882		0.00	
20	438,126	686,861	359,181	670,195	2,154,363	215,159	269,451	124,084	192,804	801,498	2,352,917	142,502	Dry	Intermediate D-BN	104,096	37,060		11,939.68	
2021 WY	212,305	448,885	220,632	360,017	1,241,839	121,641	145,294	91,084	152,032	510,051	1,317,697	94,000	Critical	Critical Water Year and Below	82,909	11,091		0.00	
2022 WY	313,163	535,170	258,162	524,059	1,630,554	356,911	505,423	231,362	486,610	1,580,306	1,557,933	106,142	Critical	Median Critical Water Year	82,909	20,091		0.00	
2023 WY	1,509,956	2,550,892	1,502,669	2,999,243	8,562,760	963,194	1,488,984	1,038,046	1,274,360	4,764,584	6,402,159	300,923	Wet	Median Wet/Maximum	205,091	89,882	5950	0.00	
2024 WY	700,000	1,200,000	600,000	1,180,000	3,680,000	345,000	515,000	285,000	450,000	1,595,000	3,807,432	125,272	Wet	Median Above Normal	84,397	32,619	1964	6,291.95	
1-Feb																			
90% DRY	240,000	560,000	290,000	700,000	1,790,000	189,000	325,000	186,000	328,000	1,028,000	1,591,187	103,000	Critical	Median Critical Water Year	82,909	20,091	0	3,244.84	
50% AVERAGE	570,000	990,000	520,000	1,130,000	3,210,000	328,000	484,000	291,000	436,000	1,539,000	2,545,387	142,502	Below Normal	Intermediate D-BN	104,096	35,920	1676	10,353.49	
10% WET	1,010,000	1,700,000	880,000	1,830,000	5,420,000	503,000	685,000	427,000	588,000	2,203,000	4,004,187	300,923	Wet	Intermediate AN-W	205,091	89,882	5,950	0.00	
1-Mar																			
90% DRY	490,000	950,000	470,000	790,000	2,700,000	311,000	490,000	255,000	397,000	1,453,000	3,191,032	300,923	Above Normal	Intermediate BN-AN	205,091	89,882	5950	0.00	
50% AVERAGE	700,000	1,200,000	600,000	1,180,000	3,680,000	345,000	515,000	285,000	450,000	1,595,000	3,807,432	300,923	Wet	Median Above Normal	205,091	89,882	5950	0.00	
10% WET	1,140,000	1,860,000	980,000	1,780,000	5,760,000	430,000	596,000	355,000	515,000	1,896,000	5,115,632	300,923	Wet	Median Wet / Maximum	205,091	89,882	5,950	0.00	

Table 3
Tuolumne River Flow Schedule
 Based on DWR Values, 60-20-20 Index for 2023, Hydrologic Conditions
 Schedule For 2023-2024 Fish Flow Year

From:	DATE	To:	Number of DAYS	BASE FLOW ¹			PULSE FLOW ²			INTERPOLATION FLOW			Other Adjusted Flow			TOTAL PERC FLOW			Agreed Upon		
				CFS	AF	ACCUM.	CFS	AF	ACCUM.	CFS	AF	ACCUM.	CFS	AF	ACCUM.	CFS	AF	ACCUM.			
24-Jan-2024	Wed	24-Jan-2024	Wed	1	300	595	157,488	0	0	95,832	0	0	0	0	0	0	0	0	300	253,320	No
25-Jan-2024	Thu	25-Jan-2024	Thu	1	300	595	158,083	0	0	95,832	0	0	0	0	0	0	0	0	300	253,915	No
26-Jan-2024	Fri	26-Jan-2024	Fri	1	300	595	158,678	0	0	95,832	0	0	0	0	0	0	0	0	300	254,510	No
27-Jan-2024	Sat	27-Jan-2024	Sat	1	300	595	159,273	0	0	95,832	0	0	0	0	0	0	0	0	300	254,105	No
28-Jan-2024	Sun	28-Jan-2024	Sun	1	300	595	159,868	0	0	95,832	0	0	0	0	0	0	0	0	300	255,700	No
29-Jan-2024	Mon	29-Jan-2024	Mon	1	300	595	160,463	0	0	95,832	0	0	0	0	0	0	0	0	300	256,295	No
30-Jan-2024	Tue	30-Jan-2024	Tue	1	300	595	161,058	0	0	95,832	0	0	0	0	0	0	0	0	300	256,890	No
31-Jan-2024	Wed	31-Jan-2024	Wed	1	300	595	161,653	0	0	95,832	0	0	0	0	0	0	0	0	300	257,485	No
01-Feb-2024	Thu	01-Feb-2024	Thu	1	300	595	162,248	0	0	95,832	0	0	0	0	0	0	0	0	300	258,080	No
02-Feb-2024	Fri	02-Feb-2024	Fri	1	300	595	162,843	0	0	95,832	0	0	0	0	0	0	0	0	300	258,675	No
03-Feb-2024	Sat	03-Feb-2024	Sat	1	300	595	163,438	0	0	95,832	0	0	0	0	0	0	0	0	300	259,270	No
04-Feb-2024	Sun	04-Feb-2024	Sun	1	300	595	164,033	0	0	95,832	0	0	0	0	0	0	0	0	300	259,865	No
05-Feb-2024	Mon	05-Feb-2024	Mon	1	300	595	164,628	0	0	95,832	0	0	0	0	0	0	0	0	300	260,460	No
06-Feb-2024	Tue	06-Feb-2024	Tue	1	300	595	165,223	0	0	95,832	0	0	0	0	0	0	0	0	300	261,056	No
07-Feb-2024	Wed	07-Feb-2024	Wed	1	300	595	165,818	0	0	95,832	0	0	0	0	0	0	0	0	300	261,651	No
08-Feb-2024	Thu	08-Feb-2024	Thu	1	300	595	166,413	0	0	95,832	0	0	0	0	0	0	0	0	300	262,246	No
09-Feb-2024	Fri	09-Feb-2024	Fri	1	300	595	167,008	0	0	95,832	0	0	0	0	0	0	0	0	300	262,841	No
10-Feb-2024	Sat	10-Feb-2024	Sat	1	300	595	167,603	0	0	95,832	0	0	0	0	0	0	0	0	300	263,436	No
11-Feb-2024	Sun	11-Feb-2024	Sun	1	300	595	168,198	0	0	95,832	0	0	0	0	0	0	0	0	300	264,031	No
12-Feb-2024	Mon	12-Feb-2024	Mon	1	300	595	168,793	0	0	95,832	0	0	0	0	0	0	0	0	300	264,626	No
13-Feb-2024	Tue	13-Feb-2024	Tue	1	300	595	169,388	0	0	95,832	0	0	0	0	0	0	0	0	300	265,221	No
14-Feb-2024	Wed	14-Feb-2024	Wed	1	300	595	169,983	0	0	95,832	0	0	0	0	0	0	0	0	300	265,816	No
15-Feb-2024	Thu	15-Feb-2024	Thu	1	300	595	170,579	0	0	95,832	0	0	0	0	0	0	0	0	300	266,411	No
16-Feb-2024	Fri	16-Feb-2024	Fri	1	300	595	171,174	0	0	95,832	0	0	0	0	0	0	0	0	300	267,006	No
17-Feb-2024	Sat	17-Feb-2024	Sat	1	300	595	171,769	0	0	95,832	0	0	0	0	0	0	0	0	300	267,601	No
18-Feb-2024	Sun	18-Feb-2024	Sun	1	300	595	172,364	0	0	95,832	0	0	0	0	0	0	0	0	300	268,196	No
19-Feb-2024	Mon	19-Feb-2024	Mon	1	300	595	172,959	0	0	95,832	0	0	0	0	0	0	0	0	300	268,791	No
20-Feb-2024	Tue	20-Feb-2024	Tue	1	300	595	173,554	0	0	95,832	0	0	0	0	0	0	0	0	300	269,386	No
21-Feb-2024	Wed	21-Feb-2024	Wed	1	300	595	174,149	0	0	95,832	0	0	0	0	0	0	0	0	300	269,981	No
22-Feb-2024	Thu	22-Feb-2024	Thu	1	300	595	174,744	0	0	95,832	0	0	0	0	0	0	0	0	300	270,576	No
23-Feb-2024	Fri	23-Feb-2024	Fri	1	300	595	175,339	0	0	95,832	0	0	0	0	0	0	0	0	300	271,171	No
24-Feb-2024	Sat	24-Feb-2024	Sat	1	300	595	175,934	0	0	95,832	0	0	0	0	0	0	0	0	300	271,766	No
25-Feb-2024	Sun	25-Feb-2024	Sun	1	300	595	176,529	0	0	95,832	0	0	0	0	0	0	0	0	300	272,361	No
26-Feb-2024	Mon	26-Feb-2024	Mon	1	300	595	177,124	0	0	95,832	0	0	0	0	0	0	0	0	300	272,956	No
27-Feb-2024	Tue	27-Feb-2024	Tue	1	300	595	177,719	0	0	95,832	0	0	0	0	0	0	0	0	300	273,551	No
28-Feb-2024	Wed	28-Feb-2024	Wed	1	300	595	178,314	0	0	95,832	0	0	0	0	0	0	0	0	300	274,146	No
29-Feb-2024	Thu	29-Feb-2024	Thu	1	300	595	178,909	0	0	95,832	0	0	0	0	0	0	0	0	300	274,741	No
01-Mar-2024	Fri	01-Mar-2024	Fri	1	300	595	179,504	0	0	95,832	0	0	0	0	0	0	0	0	300	275,337	No
02-Mar-2024	Sat	02-Mar-2024	Sat	1	300	595	180,099	0	0	95,832	0	0	0	0	0	0	0	0	300	275,932	No
03-Mar-2024	Sun	03-Mar-2024	Sun	1	300	595	180,694	0	0	95,832	0	0	0	0	0	0	0	0	300	276,527	No
04-Mar-2024	Mon	04-Mar-2024	Mon	1	300	595	181,289	0	0	95,832	0	0	0	0	0	0	0	0	300	277,122	No
05-Mar-2024	Tue	05-Mar-2024	Tue	1	300	595	181,884	0	0	95,832	0	0	0	0	0	0	0	0	300	277,717	No
06-Mar-2024	Wed	06-Mar-2024	Wed	1	300	595	182,479	0	0	95,832	0	0	0	0	0	0	0	0	300	278,312	No
07-Mar-2024	Thu	07-Mar-2024	Thu	1	300	595	183,074	0	0	95,832	0	0	0	0	0	0	0	0	300	278,907	No
08-Mar-2024	Fri	08-Mar-2024	Fri	1	300	595	183,669	0	0	95,832	0	0	0	0	0	0	0	0	300	279,502	No
09-Mar-2024	Sat	09-Mar-2024	Sat	1	300	595	184,264	0	0	95,832	0	0	0	0	0	0	0	0	300	280,097	No
10-Mar-2024	Sun	10-Mar-2024	Sun	1	300	595	184,859	0	0	95,832	0	0	0	0	0	0	0	0	300	280,692	No
11-Mar-2024	Mon	11-Mar-2024	Mon	1	300	595	185,455	0	0	95,832	0	0	0	0	0	0	0	0	300	281,287	No
12-Mar-2024	Tue	12-Mar-2024	Tue	1	300	595	186,050	0	0	95,832	0	0	0	0	0	0	0	0	300	281,882	No
13-Mar-2024	Wed	13-Mar-2024	Wed	1	300	595	186,645	0	0	95,832	0	0	0	0	0	0	0	0	300	282,477	No
14-Mar-2024	Thu	14-Mar-2024	Thu	1	300	595	187,240	0	0	95,832	0	0	0	0	0	0	0	0	300	283,072	No
15-Mar-2024	Fri	15-Mar-2024	Fri	1	300	595	187,835	0	0	95,832	0	0	0	0	0	0	0	0	300	283,667	No
16-Mar-2024	Sat	16-Mar-2024	Sat	1	300	595	188,430	0	0	95,832	0	0	0	0	0	0	0	0	300	284,262	No
17-Mar-2024	Sun	17-Mar-2024	Sun	1	300	595	189,025	0	0	95,832	0	0	0	0	0	0	0	0	300	284,857	No
18-Mar-2024	Mon	18-Mar-2024	Mon	1	300	595	189,620	0	0	95,832	0	0	0	0	0	0	0	0	300	285,452	No
19-Mar-2024	Tue	19-Mar-2024	Tue	1	300	595	190,215	0	0	95,832	0	0	0	0	0	0	0	0	300	286,047	No
20-Mar-2024	Wed	20-Mar-2024	Wed	1	300	595	190,810	0	0	95,832	0	0	0	0	0	0	0	0	300	286,642	No
21-Mar-2024	Thu	21-Mar-2024	Thu	1	300	595	191,405	0	0	95,832	0	0	0	0	0	0	0	0	300	287,237	No

Table 3
Tuolumne River Flow Schedule
 Based on DWR Values, 60-20-20 Index for 2023, Hydrologic Conditions
 Schedule For 2023-2024 Fish Flow Year

DATE	From:	To:	Number of DAYS	BASE FLOW ¹			PULSE FLOW ¹			INTERPOLATION FLOW			Other Adjusted Flow			TOTAL FERCC FLOW		Agreed Upon	
				CFS	AF	ACCUM. A.F.	CFS	AF	ACCUM. A.F.	CFS	AF	ACCUM. A.F.	CFS	AF	ACCUM. A.F.	CFS	ACCUM. A.F.		
22-Mar-2024	Fri	22-Mar-2024	Fri	1	300	595	192,000	0	0	0	0	0	0	0	0	0	300	287,832	No
23-Mar-2024	Sat	23-Mar-2024	Sat	1	300	595	192,595	0	0	0	0	0	0	0	0	0	300	288,427	No
24-Mar-2024	Sun	24-Mar-2024	Sun	1	300	595	193,190	0	0	0	0	0	0	0	0	0	300	288,922	No
25-Mar-2024	Mon	25-Mar-2024	Mon	1	300	595	193,785	0	0	0	0	0	0	0	0	0	300	289,518	No
26-Mar-2024	Tue	26-Mar-2024	Tue	1	300	595	194,380	0	0	0	0	0	0	0	0	0	300	290,213	No
27-Mar-2024	Wed	27-Mar-2024	Wed	1	300	595	194,975	0	0	0	0	0	0	0	0	0	300	290,808	No
28-Mar-2024	Thu	28-Mar-2024	Thu	1	300	595	195,570	0	0	0	0	0	0	0	0	0	300	291,403	No
29-Mar-2024	Fri	29-Mar-2024	Fri	1	300	595	196,165	0	0	0	0	0	0	0	0	0	300	291,998	No
30-Mar-2024	Sat	30-Mar-2024	Sat	1	300	595	196,760	0	0	0	0	0	0	0	0	0	300	292,593	No
31-Mar-2024	Sun	31-Mar-2024	Sun	1	300	595	197,355	0	0	0	0	0	0	0	0	0	300	293,188	No
01-Apr-2024	Mon	01-Apr-2024	Mon	1	300	595	197,950	0	0	0	0	0	0	0	0	0	300	293,783	No
02-Apr-2024	Tue	02-Apr-2024	Tue	1	300	595	198,545	0	0	0	0	0	0	0	0	0	300	294,378	No
03-Apr-2024	Wed	03-Apr-2024	Wed	1	300	595	199,140	0	0	0	0	0	0	0	0	0	300	294,973	No
04-Apr-2024	Thu	04-Apr-2024	Thu	1	300	595	199,736	0	0	0	0	0	0	0	0	0	300	295,568	No
05-Apr-2024	Fri	05-Apr-2024	Fri	1	300	595	200,331	0	0	0	0	0	0	0	0	0	300	296,163	No
06-Apr-2024	Sat	06-Apr-2024	Sat	1	300	595	200,926	0	0	0	0	0	0	0	0	0	300	296,758	No
07-Apr-2024	Sun	07-Apr-2024	Sun	1	300	595	201,521	0	0	0	0	0	0	0	0	0	300	297,353	No
08-Apr-2024	Mon	08-Apr-2024	Mon	1	300	595	202,116	0	0	0	0	0	0	0	0	0	300	297,948	No
09-Apr-2024	Tue	09-Apr-2024	Tue	1	300	595	202,711	0	0	0	0	0	0	0	0	0	300	298,543	No
10-Apr-2024	Wed	10-Apr-2024	Wed	1	300	595	203,306	0	0	0	0	0	0	0	0	0	300	299,138	No
11-Apr-2024	Thu	11-Apr-2024	Thu	1	300	595	203,901	0	0	0	0	0	0	0	0	0	300	299,733	No
12-Apr-2024	Fri	12-Apr-2024	Fri	1	300	595	204,496	0	0	0	0	0	0	0	0	0	300	300,328	No
13-Apr-2024	Sat	13-Apr-2024	Sat	1	300	595	205,091	0	0	0	0	0	0	0	0	0	300	300,923	No
No. of days				365															

1 cfs day = 1,983,471 acre-feet (af)

- Total accumulation amount pertains to 2023-2024 Fish Year only.
- The pulse flows are a target that represents a daily average target. The actual operational data will be adjusted to attain the annual requirement. Based on an hourly calculation schedule for the target flows. This represents a daily average.

Case	60-20-20 Index	60-20-20 Index Scheduled Above Difference	Base Total	Pulse Total	Interpolation Total	Adjustment Total	FERCC Total
90%	6,232,187		205,091	95,832	-	-	300,923
			205,091	95,832	-	-	300,923
			0	(0)	-	-	(0)