BUREAU OF RECLAMATION

American River Group

1:30 PM – 3:30 PM
Conference Line: +1 (321) 209-6143; Access Code: 780 506 355#
Webinar: Join Microsoft Teams Meeting

Thursday, February 18, 2021

Notes

1. **Actions**

    a. Levi Johnson will reach out to K&W regarding troubleshooting the chat feature on MS Teams.

    b. Kirsten Sellheim will coordinate with Chris Hammersmark to identify the shallowest fall run Chinook redds and report on their status at the March ARG meeting.

    c. K&W will add "Discuss Spring Pulse Flows" to the March 18 ARG meeting agenda.

    d. Water Forum - prepare a straw proposal for the spring pulse flow (in coordination with USBR) to discuss at the March 18th ARG meeting.

    e. K&W will add an agenda item regarding the rationale/framing of flow changes as captured on change orders and in the ARG handouts.

2. **Introductions**

    a. USBR: Ian Smith, Sarah Perrin, Spencer Marshall, Levi Johnson, Thuy Washburn, John Hannon, & Carolyn Bragg

    b. Water Forum: Jessica Law, Kat Perkins, Jeff Weaver & Chris Hammersmark

    c. NMFS: Barbara Byrne

d. USFWS: Paul Cadrett, Craig Anderson

e. CDFW: Tracy Grimes, Morgan Kilgour, Gary Novak, Duane Linander, Mike Healey, Jason Julienne & Ken Kundargi

f. SWRCB: Emily Fisher

g. San Juan Water District: Paul Helliker & Greg Zlotnick

h. EBMUD: I-Pei Hsiu

i. PCWA: Benjamin Barker

j. SMUD: Ansel Lundberg

k. Westlands Water District: Tom Boardman

l. City of Sacramento: Brian Sanders, Shane Motley, Brett Ewart & Anne Sanger

m. WAPA: Michael Prowatzke

n. DWR: Mike Ford & Reza Ghasemizadeh

o. Cramer Fish Sciences: Kirsten Sellheim

p. PSMFC: Logan Day

q. SARA: Clyde MacDonald

r. Independent: Rod Hall

s. K&W: Kai Walcott & Rafi Silberblatt

3. Presentation

a. 2017 FMS Refresher (Jeff Weaver, HDR)

i. Jeff Weaver provided a presentation on the 2017 Flow Management Standard Minimum Releases Requirement. See meeting handout for more information and the Water Forum website for additional resources.

ii. Summary of Questions/Comments

1. CDFW expressed interest in further discussing and providing input on the FMS later in the water year (i.e., late spring/early summer).

4. Housekeeping

a. **[Action]** Levi Johnson will reach out to K&W regarding troubleshooting the chat feature on MS Teams.

5. Fisheries Update

a. CDFW

i. Tracy Grimes, CDFW, provided an update on Nimbus Hatchery and an overview of the '2020 Lower American River Fall-Run Chinook Salmon Escapement Survey Descriptive Statistics'. For more information see pages 3-5 of the meeting handout. Items to note include:

1. Sections 2 and 3 were not sampled during week 11. The peak detection for carcasses was week 10.

2. Regarding the graph on page 5 of the meeting packet: starting in 2011 the Cormack Jolly Seber estimate was used instead of the modified Schaefer estimate (which is known for overestimating) thus the light grey and black areas aren't directly comparable. CFS

ii. Kirsten Sellheim, Cramer Fish Sciences, provided a summary of steelhead spawning and stranding. For more information, see page 6 of the meeting handout.

iii. Summary of Questions/Comments

1. USBR expressed interest in the status of the shallowest redds.

a. No dewatered steelhead redds were detected after the flow reduction to 950 cfs.

b. **[Action]** Kirsten Sellheim will coordinate with Chris Hammersmark to identify the shallowest fall run Chinook redds and report on their status at the March ARG meeting.

b. PSMFC

i. Logan Day, Pacific States, provided an overview of the RST data at the Lower American River. For more information see page 7 of the meeting handout.

6. Operations Forecast

a. SMUD

i. Ansel Lundberg, SMUD, provided an update on the Upper American River Project. See pages 8 through 9 of the meeting handout.

ii. Summary of Questions/Comments

1. The market value of the energy lost during the power bypass last year was over $280,000. SMUD bore roughly one quarter of that cost.

b. PCWA

i. Ben Barker, PCWA, provided an update on the storage conditions. See pages 10 and 11 of the meeting handout.

c. CVO

i. Thuy Washburn, CVO, provided an overview of Folsom conditions:

1. Total February precipitation to date is 3.4 inches, up from 3.2 inches as noted in the handout.

2. See pages 12-18 of the meeting handout for additional information.

7. Central Valley Operations

a. Thuy Washburn, CVO, provided an overview of observed water temperatures, hydrological conditions, and the operations outlooks based the 50% and 90% exceedance forecasts.

i. The 90%: releases are at ~950 cfs for Feb, March, and April

ii. The 50% releases are also ~950 for Feb and march, but April is bumped to ~1900 cfs.

iii. While the storm in late January brought in additional snow, California is still experiencing very dry conditions relative to historical averages.

iv. The 8–14-day outlook for precipitation indicates a higher chance of below normal precipitation for the end of February and the start of March.

v. Summary of Questions/Comments

1. Reclamation indicated that releases through the upper shutters aren't possible at reservoir elevation less than 435 feet.

2. The 950 cfs assumed for February releases in the operations forecast is below the MRR of 1,246 cfs. Reclamation expressed concern about the impact of higher releases on Folsom storage, in consideration of impacts to diversions, cold water temperature management, and end of year storage. NMFS was notified of this, expressed no objection to that proposal for February, and are open to considering a similar proposal for March, depending on the forecast.

3. ARG members discussed options for implementing the spring pulse flow in the FMS if that is triggered by an MRR of >1,000 cfs based on the March forecast. There was general consensus to implement the spring pulse flow in early-to-mid-April, ideally coinciding with a rain event. Given the late spawning of fall-run Chinook salmon, this timing would likely be mobilizing fry that have absorbed their yolk sac and are out of the gravel.

    a. **[Action]** K&W – add "Discuss Spring Pulse Flow" to the March 18 ARG meeting agenda.

    b. The forecast provided by USBR did not include a spring pulse flow.

    c. **[Action]** Water Forum - prepare a straw proposal for the spring pulse flow (in coordination with USBR) to discuss at the March 18 ARG meeting.

4. NMFS expressed interest in receiving a full 12-month operations outlook. USBR indicated that their preference is to go by the standard (which is 3 months out) as the numbers are constantly changing.

5. NMFS expressed concern regarding the rationale for the current 950 cfs flow being listed as "fall run chinook spawning" on the first page of the handout. This rationale was carried over from previous months and was overlooked.

    a. **[Action]** K&W – Add an agenda item regarding the rationale/framing of flow changes as captured on change orders and in the ARG handouts.

8. Other Discussion

a. Diversion facility on the lower American is shut off for a couple of months for normal annual maintenance.

b. Ground water substitution transfer—17,102-acre feet were left in the lower American River to effect the ground water substitution transfer. Local agencies are discussing something similar for this year. No commitments at this point.

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Agenda

1. Introductions
2. Presentation
    a. 2017 FMS Reminder (Jeffrey Weaver, HDR)
3. Housekeeping
4. Fisheries Update
    a. CDFW
    b. CFS
    c. PSMFC
5. Operations Forecast
    a. SMUD
    b. PCWA
    c. CVO
6. Central Valley Operations
    a. Temperature management
    b. Exceedance forecast & temperature schedules

7. Discussion
8. Next Meeting: Thursday, March 18, 1:30–3:30 p.m.

Links for the "2017 FMS Reminder" Presentation

- Information about the FMS from the Water Forum's website:

  https://www.waterforum.org/the-river/flow-management-standard/

- The Lower American River Modified Flow Management Standard brochure:

  https://www.waterforum.org/wp-content/uploads/2017/08/WF-Modified-FMS-10_8_final_Single.pdf

- Biological rationale:

  https://www.waterforum.org/wp-content/uploads/2017/12/ARWA-702-Biological-RationaleDevelopment-and-Performance-of-the-Modified-Flow-Management-Standard-00023990xE2E14.pdf

ARG Meeting CDFW Fisheries Update

February 18, 2021

Presented by Tracy Grimes, CDFW, 916-597-6913, tracy.grimes@wildlife.ca.gov

Nimbus Hatchery

- Brood year 2020 steelhead:
    - Nimbus Fish hatchery released approximately 440,000 brood year 2020 steelhead at the Sunrise Ave boat launch on February 10-12, 2021.
    - All fish were marked with an adipose clip
    - ~4.5 fish/lb
- Brood year 2021 steelhead:
    - Anticipate 900,000 eggs by end of season
- Fall-run Chinook:
    - Eggs have started to hatch

Table 1. 2020 Lower American River Fall-Run Chinook Salmon Escapement Survey Descriptive Statistics

Header name	Description

Season	• 15 weeks: Oct. 13, 2019 (Week 1) to Jan. 22, 2020 (Week 15)
	• Peak sampling: week 10, (Dec. 14-17; 2,528 carcasses processed)
	• Survey area: Nimbus Dam to Watt Ave, including Nimbus weir
	  ○ Surveying Nimbus weir ended Dec. 11
	  ○ Sections 2 and 3 were not surveyed during week 11 (Dec. 21-23)

H_2O Temps and Flows*	Temps: • Min: 49 °F (Jan. 21) • Max: 67 °F (Oct. 15) Flows: • Min: 1,010 cfs (Jan. 20) • Max: 1,800 cfs (Oct. 26)
Escapement Estimate	**22,046 in-river** (Cormack-Jolly-Seber, 90% CI: 21,464 to 23,254) Hatchery: 6,264 trapped
Carcass Tally	• Total processed: 13,032 • Heads collected: 3,322 • Chop tallies: 8,649 • Disk-tagged (recaptured): 995 (644) • Fresh: 12% (n=1,582) • Decayed: 88% (n=11,433)
Spatial Distribution	• Nimbus Basin (top of survey area): 35% (n=4,532) • Nimbus Weir**: 8% (n=986) • Section 1 (upper 4 mi): 53% (n=6,927) • Section 2 (middle 5 mi): 4% (n=535) • Section 3 (lower 4 mi): <1% (n=52)

Sex and Age Class	Total males: 49% (n=2,140)
	Total females: 51% (n=2,230)
	• Adults: 86% (n=3,789)
	  ○ Male: 44% (n=1,664)
	  ○ Female: 56% (n=2,116)
	  ○ Unknown: <1% (n=9)
	• Grilse: 14% (n=592)
	  ○ Male: 80% (n=476)
	  ○ Female: 19% (n=113)
	  ○ Unknown: 1% (n=3)

Fork Length	• Males: 46-110 cm
	  ○ Mean: 81 cm
	  ○ Mode: 85 cm
	  ○ Grilse cutoff: ≤70 cm
	• Females: 15-104 cm
	  ○ Mean: 78 cm
	  ○ Mode: 81 cm
	  ○ Grilse cutoff: ≤64 m

Egg Retention	• 1,978 females with spawn data
	  ○ 60% spawned (n=1,195)
	  ○ 13% partially spawned (n=264)
	  ○ 26% pre-spawn mortality (n=519)

Header name	Description
Adipose Fin Clips	• 13,032 evaluated for a fin clip ○ 25.5% ad-clipped (n= 3,325) *** ○ 72.5% not clipped (n= 9,449) ○ 2% skeletons and unknowns (n= 258)

* Temperature and flow data from USGS 11446500 American River Fair Oaks station

** Only adipose clipped fish are processed from the weir

*** The adipose clip proportion is inflated due to the sampling methodology on the weir. With the weir data removed, the adipose clip proportion is 19.4%.

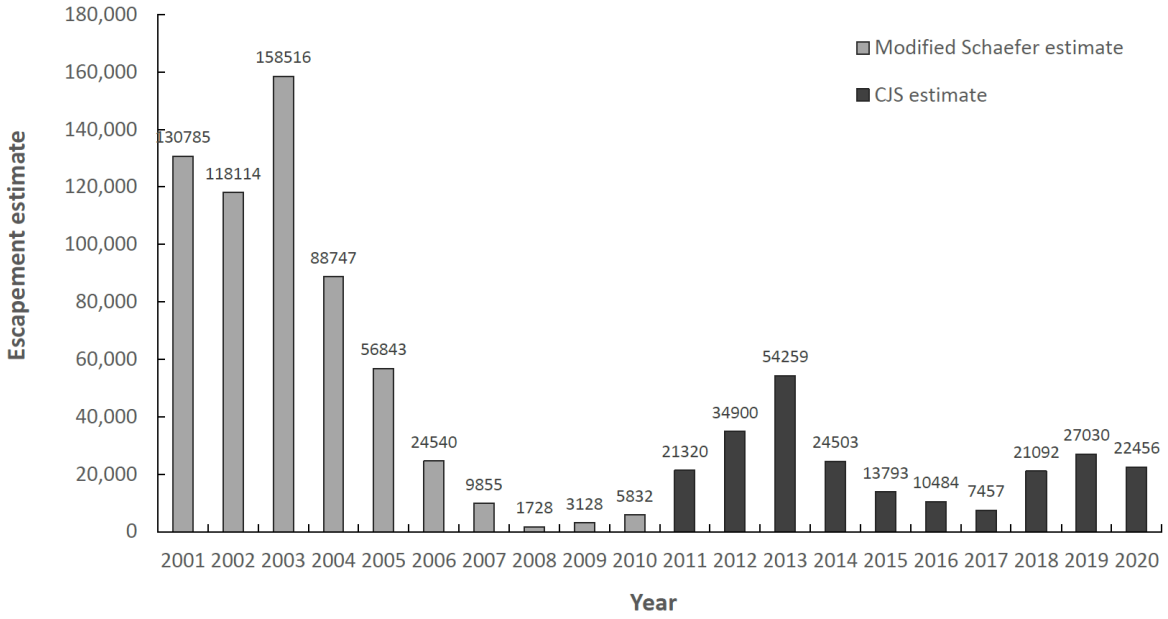


Figure 1. Comparison of fall-run Chinook salmon escapement estimates in the lower American River from 2001 to 2020

Lower American River 2021 Steelhead Spawning and Stranding Survey Summary

Spawning

Table 2. Steelhead, Chinook salmon, unknown, and test redd counts during 2021 spawning surveys.

Dates	Steelhead	Chinook	Unknown	Test	Total
January 6–8	14	7	0	0	21
January 20–22	4	1	1	0	6
February 3–5	19	0	0	3	22
Total	37	8	1	3	49

Spawning surveys are occurring this week (Feb 17-19).

Stranding

Juvenile stranding and redd dewatering surveys were conducted following the flow reduction to ~950 cfs (Jan 20-22). No isolated pools or dewatered redds were encountered during these surveys.

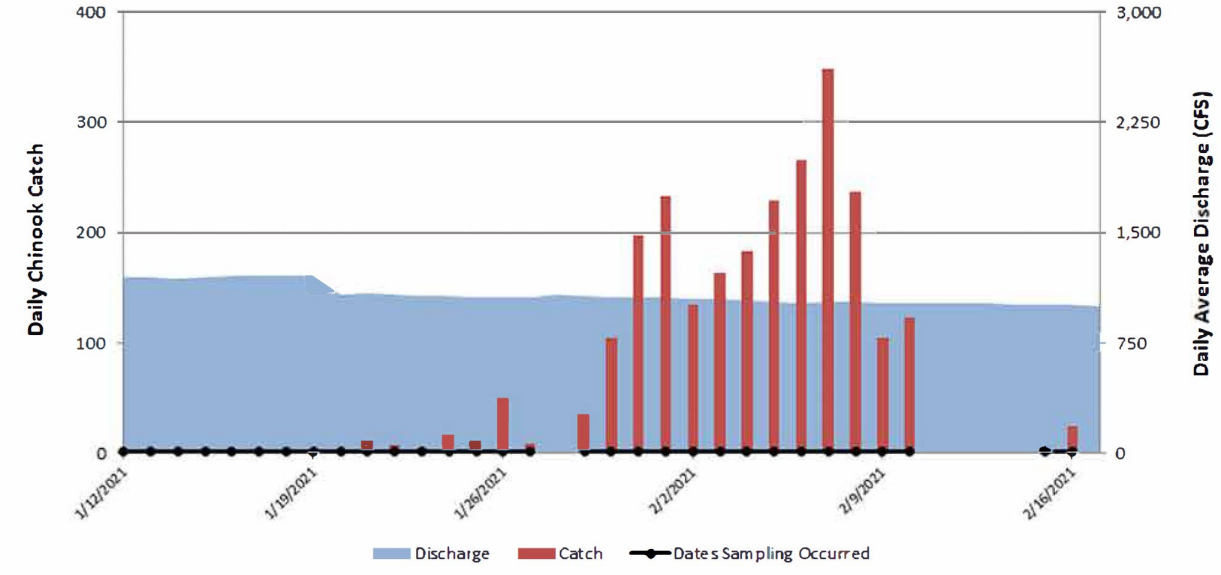


Figure 2. Lower American River at Watt Ave (RSTs): Daily catch of unmarked Chinook Salmon and daily average discharge at Fair Oak s during the 2021; Lower American River rotary screw trap survey season.

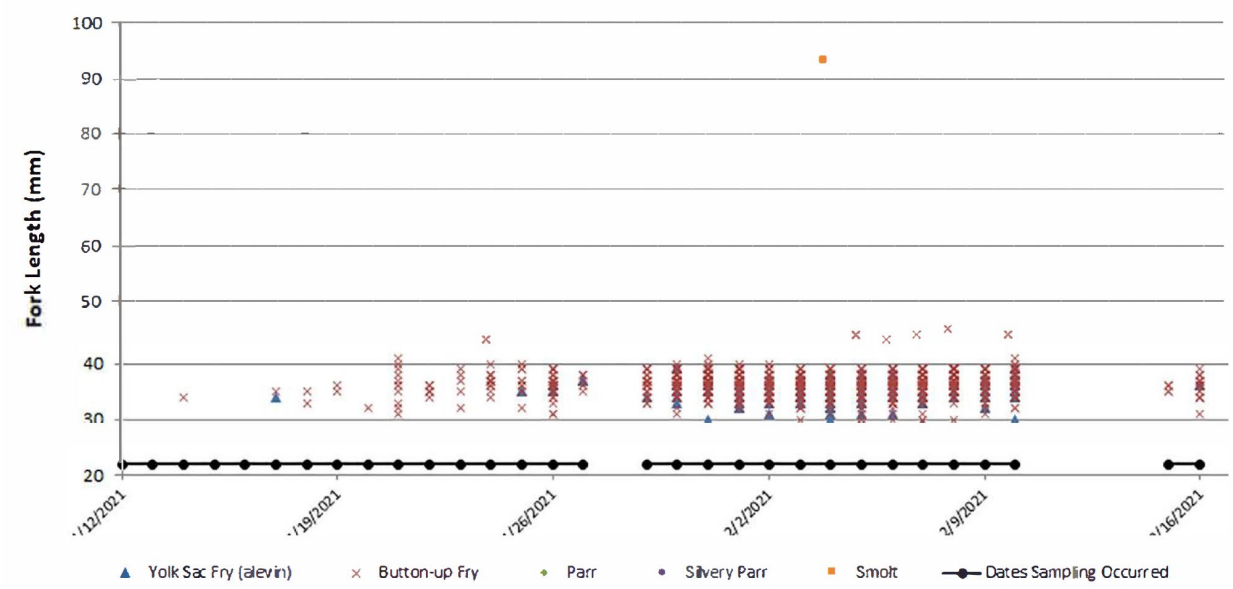


Figure 3. Lower American River at Watt Ave (RSTs): Daily fork length distribution by life stage of unmarked Chinook Salmon measured during the 2021; Lower American River rotary screw trap survey season.

SMUD Upper American River Project Update

Conditions – 16 February 2021:

- February precipitation through 2/16/2021 7:00:00 AM is 6.54 in., which is 69% of the February average of 9.50". Precip for the water year to date is 23.11" which is 67% of average to date (34.29") and 40% of the entire water year average of 57.32".

Combined reservoir storage for Loon Lake, Union Valley and Ice House Reservoirs

- 187,836 acre feet (January 19, 2020 storage: 198,312 acre feet) • 49.5% capacity
- 82% of historical average (16 February historical average: 227,854 AF / 60.1%)
- 0% decrease in storage since last week

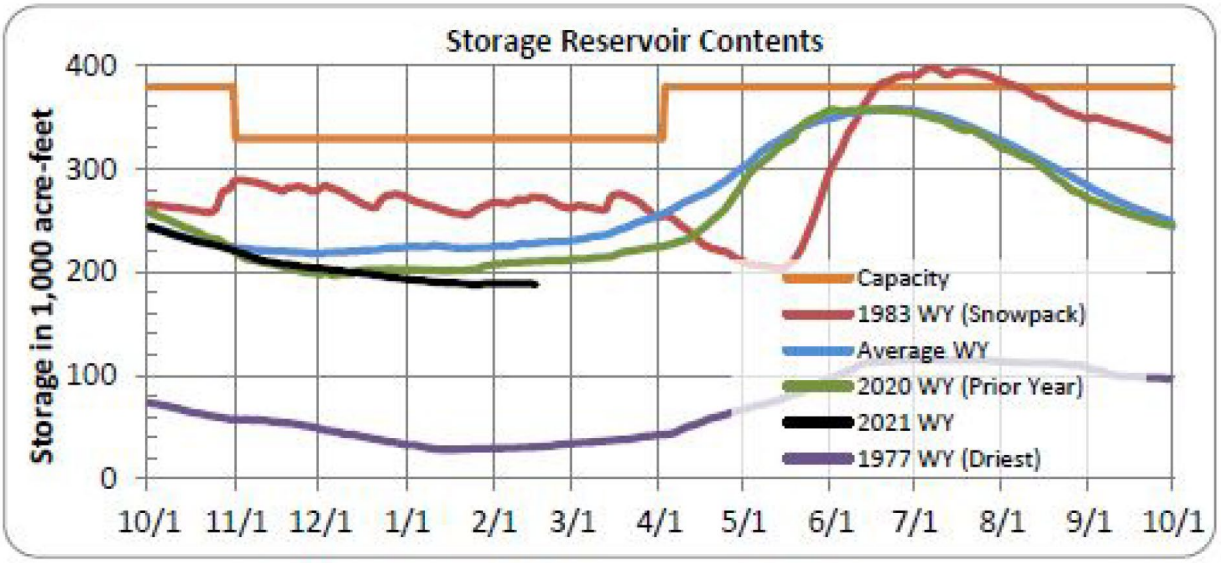


Figure 4. February 16, 2021 reservoir storage

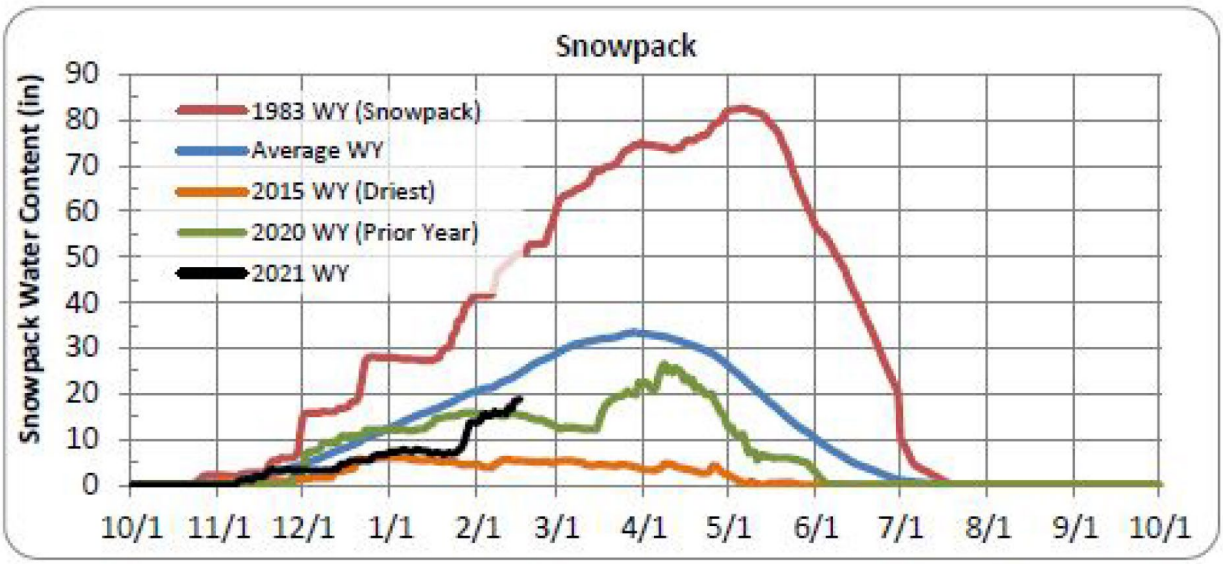


Figure 5. February 16, 2021 snowpack

Individual Reservoir Storage:

- Loon Lake: 31,734 AF
- Ice House: 24,849 AF
- Union Valley: 131,253 AF

Last year (on February 16, 2020), storage was at 55.4% (210,212 AF). **Total winter capacity: 379,174 AF.*

Chili Bar releases into the South Fork American River

- January 2021 releases:
    - Daily average flow: 379 cfs
    - Total releases: 23,335 AF
- February 2021 releases (Feb 1-15):
    - Daily average flow so far: 589 cfs
    - Total releases so far: 17,535 AF

Runoff into the storage reservoir basins is 33% of median to date through Feb 15. The snowpack is 77% of average at selected snow sensors.

Table 3. South Fork American River Runoff Forecast (in cfs, daily average forecasted flow, forecast 2021-2-16)

Basin	Friday, Feb. 19	Feb. 20	Feb. 21	Feb.22	Feb.23	Feb.24
SFA Above Slab	103.1	50.8	39.5	42.8	56.3	55.4
Slab Creek	149	122.7	72.0	66.2	68.8	70.0

Basin	Friday, Feb. 19	Feb. 20	Feb. 21	Feb.22	Feb.23	Feb.24
Combined South Fork	103.1	174	112	109	125	125

Federal End of the Month Storage/Elevation (TAF/Feet)

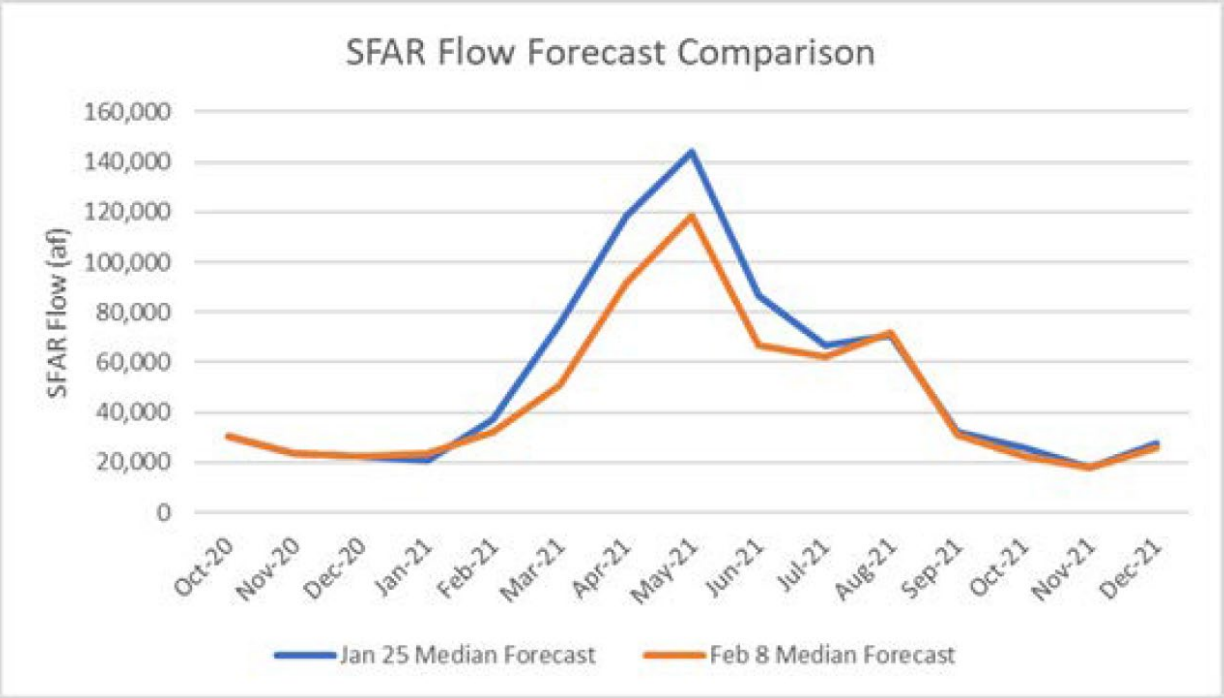


Figure 6. Comparison: South Fork American Releases Forecast January 25, 2021 vs February 8, 2021

PCWA MFP Operations Overview for American River Operations Group (Real Time Data as of February 17, 2020)

- French Meadows Storage = 47,000 AF of 136,405 AF = 35% Capacity
    - MFAR above FM Inflow (R24) = ~100 cfs
- Hell Hole Storage = 78,000 AF of 207,590 AF = 37% Capacity
    - Five Lakes Inflow (R23) = ~50 cfs
    - Rubicon Inflow (R22) = ~100 cfs
- Combined Storage (FM+HH) = 126,000 AF/342,590 AF = 37% Capacity; ~70% of AVG
- MFAR @ R11: 7 day daily average 932 cfs
- MFP generation has increased significantly in near term with spike in energy prices.

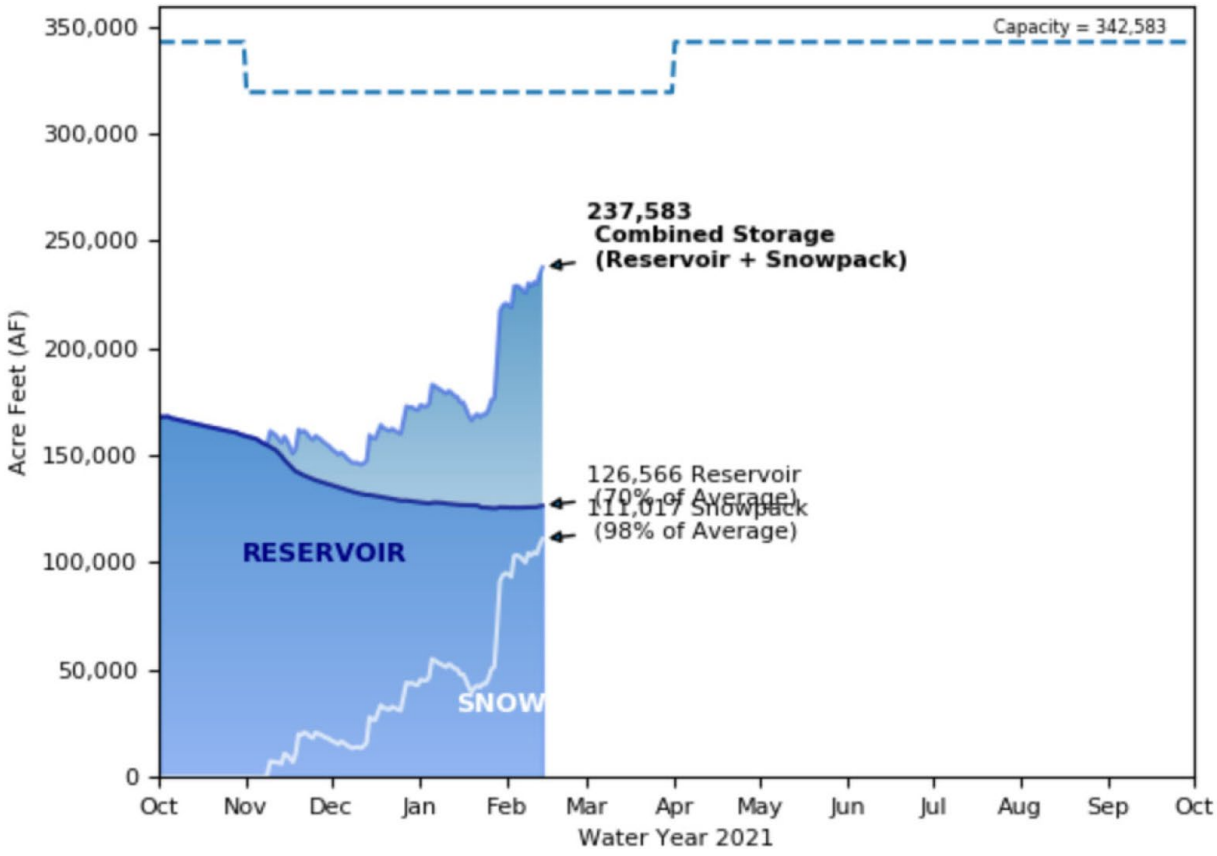


Figure 7. MFP Reservoir and Snowpack Storage (as of 2-13-21)

2021 Water Year Dashboard

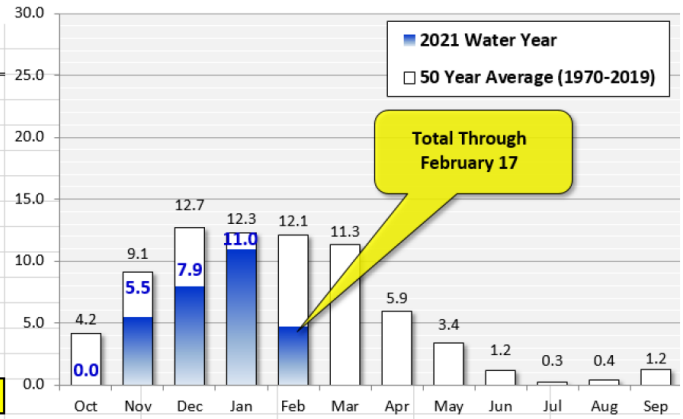
PCWA

Updated through: February 17, 2021

Lake Spaulding Precipitation

Monthly Totals (values in inches of precipitation):

	Historical Average[2/]	Actual This Year	Percent of Average
October	4.17	0.00	0%
November	9.07	5.52	61%
December	12.70	7.92	62%
January	12.26	10.95	89%
February	12.11	4.70	39%
March	11.31	--	--
April	5.94	--	--
May	3.41	--	--
June	1.18	--	--
July	0.25	--	--
August	0.37	--	--
September	1.23	--	--
October		29.1 inches	



Cumulative Totals (values in inches of precipitation):

Through Month of:	Historical Cumulative Average[2/]	Accumulation to Date	% of Average to Date
October	4.17	0.00	0%
November	13.24	5.52	42%
December	25.94	13.44	52%
January	38.20	24.39	64%
February	50.32	29.09	58%
March	61.63	--	--
April	67.57	--	--
May	70.99	--	--
June	72.16	--	--
July	72.42	--	--
August	72.79	--	--
September	74.02	--	--

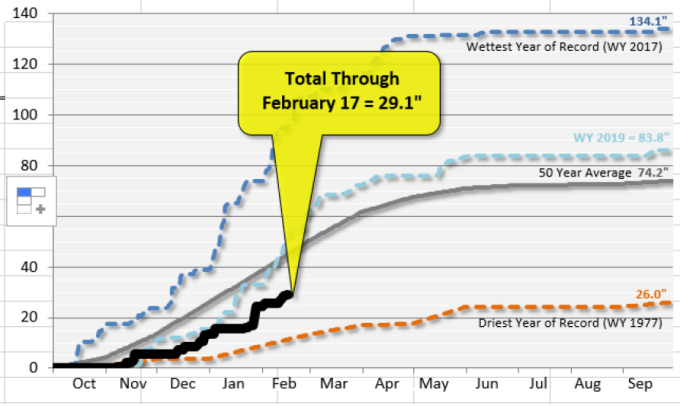


Figure 8. 2021 Water Year Dashboard

The Feb 1 AVG Snow Water Equivalent (SWE) for PCWA's four (4) snow courses is 18.4" – the AVG SWE for PCWA's four (4) courses measured Saturday, January 30th was 16.6" – which is 90% of the historical AVG.

American River Summary Conditions – January (On-going)

February has been dry, a few small precipitation events this month, not much on the horizon. The total precipitation is 3.2' to date compared to an 8.2' average for the month of February. Currently categorized as a critical year on the Sacramento Valley WY Type Index 40-30-30 under both 90% and 50% exceedance.

Storage/Release Management Conditions

Releases currently at 950 cfs for Fall Run Chinook Salmon spawning in the American River.

Temperature Management

All shutters are pulled on all three units.

United States Department of the Interior
Bureau of Reclamation, Central Valley Project – California
Daily CVP Water Supply Report
February 14, 2021
Run Date: February 15, 2021

Table 4. Reservoir Releases in Cubic Feet/Second

Reservoir	Dam	WY 2020	WY 2021	15-Year Median
Trinity	Lewiston	298	312	306
Sacramento	Keswick	4,049	3,265	3,361
Feather	Oroville (SWP)	1,750	1,250	1,750
American	Nimbus	1,751	978	1,751
Stanislaus	Goodwin	250	601	353
San Joaquin	Friant	517	300	200

Table 5. Storage in Major Reservoirs in Thousands of Acre-Feet

Reservoir	Capacity	15-Year Average	WY 2020	WY 2021	% of 15-Year Average
Trinity	2,448	1,511	2,017	1,264	84
Shasta	4,552	2,929	3,536	2,218	76
Folsom	977	462	476	311	67
New Melones	2,420	1,467	1,962	1,555	106
Fed. San Luis	966	650	568	450	69
Total North CVP	11,363	7,020	8,559	5,798	83
Millerton	520	281	304	161	57
Oroville (SWP)	3,538	1,947	2,245	1,298	67

Table 6. Accumulated Inflow for Water Year to Date in Thousands of Acre-Feet

Reservoir	Current WY 2021	WY 1977	WY 1983	15-Year Average	% of 15-Year Average
Trinity	83	48	605	295	28
Shasta	1,018	1,034	3,486	1,778	57
Folsom	274	146	1,977	753	36
New Melones	146	-	671	268	54
Millerton	167	91	985	271	61

Table 7. Accumulated Precipitation for Water Year to Date in Inches

Reservoir	Current WY 2021	WY 1977	WY 1983	Avg (N Years)	% of Avg	Last 24 Hours
Trinity at Fish Hatchery	11.82	4.63	30.05	20.37 (59)	58	0.02
Sacramento at Shasta Dam	17.36	6.22	59.61	37.71 (64)	46	0.20
American at Blue Canyon	23.62	8.21	63.70	39.14 (46)	60	0.09
Stanislaus at New Melones	13.08	-	27.19	16.29 (43)	80	0.05
San Joaquin at Huntington LK	13.02	5.20	50.90	23.77 (46)	55	0.40

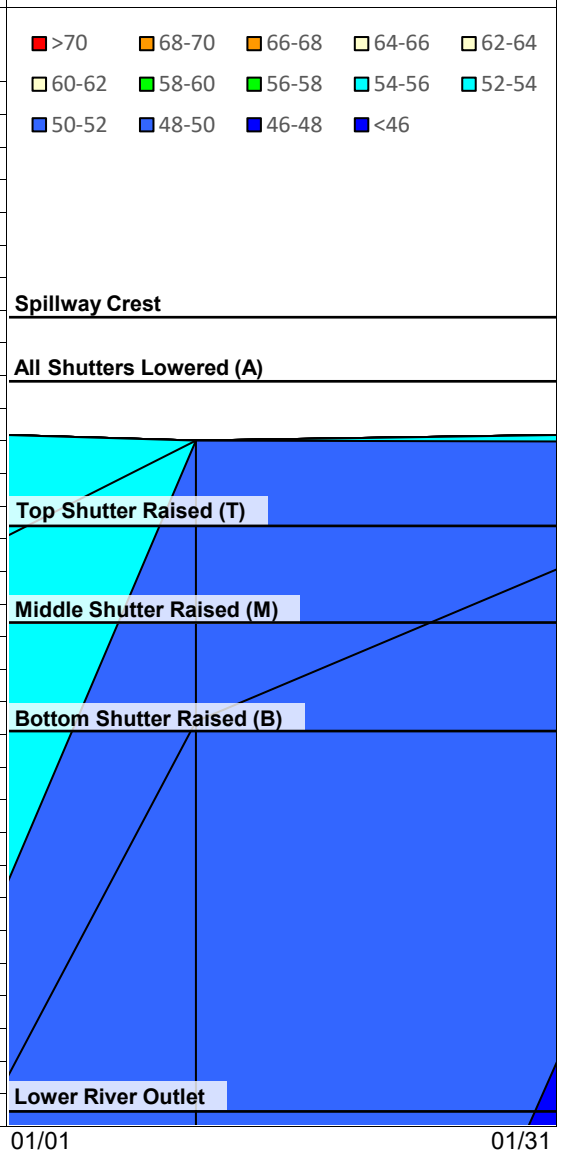
Folsom Cold Water Pool

Folsom Reservoir: Cold Water Volume

Profile Date:	2-09-21
Volume less than 58 °F (TAF):	294.0
Penstock Elevation (ft):	327
Volume (TAF):	60
Approximate Max. Temp (°F):	50.2

DATE	Mean Daily Temperatures (°F)							Release (CFS)	Storage (TAF)	Unit Shuter Position / Load Percentage					
	Water						Air			Unit 1		Unit 2		Unit 3	
	NFA	ARP	AFD[1]	AHZ	AWP	AWB	CSU	Nimbus	Folsom						
Dec	45.1	44.4	52.7	53.1	52.6	52.2	47.0	1265							
01/01	44.0	44.1	50.4	51.1	50.6	50.4	45.6	1215	289	B	36	B	24	B	40
01/02	44.3	43.9	50.3	51.3	51.1	51.0	49.0	1209	289	B	29	B	26	B	45
01/03	45.6	45.3	50.3	51.3	51.6	51.6	50.3	1210	288	B	52	B	24	B	24
01/04	46.3	45.7	50.0	51.3	51.3	51.5	51.9	1208	287	B	24	B	44	B	32
01/05	46.0	45.5	50.3	51.3	50.9	50.6	44.8	1213	287	B	28	B	36	B	36
01/06	44.8	44.4	50.3	51.0	50.5	50.2	44.3	1209	286	B	25	B	43	B	31
01/07	44.4	43.5	49.9	50.6	50.3	50.2	44.4	1211	285	B	21	B	40	B	39
01/08	44.3	43.6	49.9	50.4	50.3	50.1	46.5	1210	285	B	41	B	29	B	30
01/09	44.6	43.6	49.7	50.3	50.0	50.0	43.5	1211	284	B	45	B	27	B	28
01/10	43.8	43.2	49.7	50.3	49.8	49.6	45.0	1211	284	B	51	B	25	B	24
01/11	43.8	43.7	49.6	50.3	50.1	50.0	46.3	1212	283	B	21	B	57	B	22
01/12	44.1	43.7	49.6	50.2	50.1	50.1	49.8	1212	282	B	30	B	24	B	46
01/13	45.3	45.2	49.6	50.5	51.0	51.1	54.0	1210	280	B	30	B	32	B	38
01/14	45.8	46.0	49.5	50.6	50.5	50.7	48.3	1209	280	B	39	B	31	B	30
01/15	45.5	45.4	49.7	50.8	50.8	50.6	50.7	1210	278	B	41	B	33	B	25
01/16	45.7	45.7	49.5	51.0	51.3	51.5	53.9	1209	278	B	45	B	23	B	31
01/17	45.8	45.4	49.5	51.1	51.3	51.5	54.1	1208	277	B	14	B	54	B	32
01/18	45.9	45.5	50.2	51.2	51.3	51.6	59.9	1208	276	B	28	B	43	B	29
01/19	45.0	45.1	50.1	50.9	50.5	50.4	56.5	1212	275	B	3	B	53	B	44
01/20	43.8	43.7	49.6	50.6	50.4	50.2	49.5	1006	274	B	4	B	50	B	47
01/21	43.4	43.0	49.5	50.3	49.9	49.9	48.6	968	273	B	5	B	36	B	60
01/22	43.5	43.9	49.3	50.4	50.2	50.2	48.0	968	272	B	23	B	57	B	21
01/23	44.4	44.6	49.5	50.6	50.7	50.6	46.6	963	272	B	40	B	58	B	1
01/24	44.0	43.5	49.2	50.2	49.6	49.5	43.6	973	272	B	32	B	40	B	28
01/25	43.8	44.1	49.2	50.2	50.2	50.0	44.5	966	271	B	38	B	39	B	23
01/26	43.2	42.8	49.0	49.6	48.7	48.5	40.9	965	271	B	50	B	2	B	48
01/27	43.2	43.2	48.7	49.0	48.0	47.4	45.6	967	272	B	67	B	3	B	30
01/28	44.1	44.7	48.7	49.0	48.8	48.7	48.5	976	280	B	86	B	2	B	11
01/29	43.9	44.7	48.6	48.8	48.8	48.9	46.3	968	287	B	46	B	3	B	51
01/30	44.3	44.6	48.4	49.0	49.1	49.2	48.7	966	289	B	54	B	45	B	2
01/31	44.8	45.5	48.3	49.7	50.2	50.6	54.8	969	290	B	56	B	1	B	42
Jan	44.6	44.4	49.6	50.4	50.2	50.2	48.5	1118							
						Total AF		68731							

Isobath Plot



Legend

?	= 1-9 hours of data missing
!	= 10 or more hours of data missing
#	= Station out of service
	= Monthly Averages

A	= All Shutters Lowered
T	= Top Shutter Raised
M	= Middle Shutter Raised
B	= Bottom Shutter Raised
O	= Unit Outage

Notes

[1] AFD is a weighted average based on hourly flow values, including generation, bypass and spill.

[2]

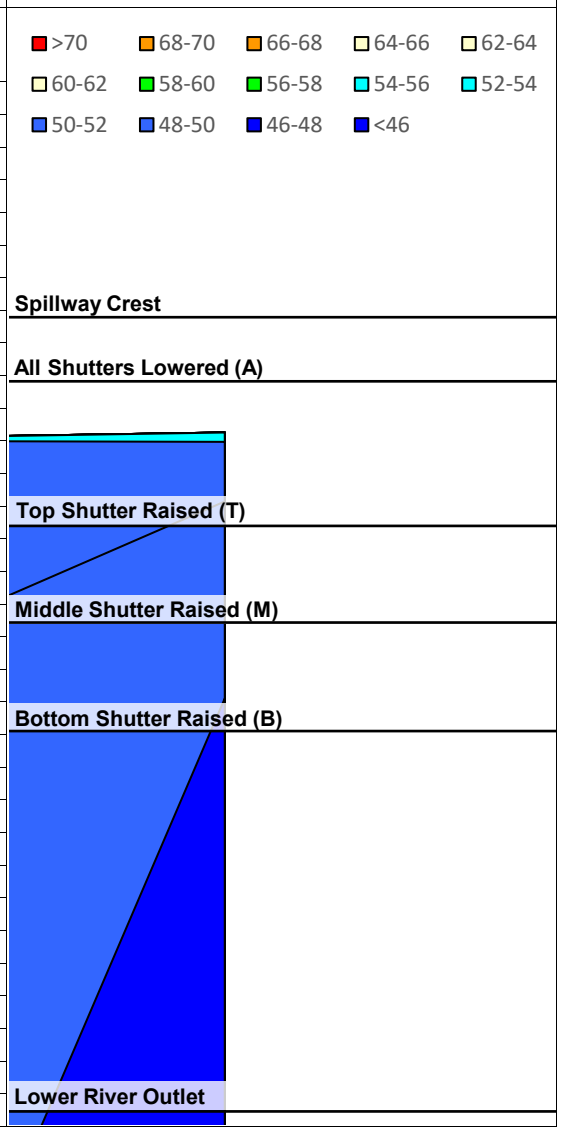
[3]

[4]

[5]

DATE	Mean Daily Temperatures (°F)							Release (CFS)	Storage (TAF)	Unit Shuter Position / Load Percentage					
	Water						Air			Unit 1		Unit 2		Unit 3	
	NFA	ARP	AFD[1]	AHZ	AWP	AWB	CSU	Nimbus	Folsom						
Jan	44.6	44.4	49.6	50.4	50.2	50.2	48.5	1118							
02/01	45.6	46.6	48.2	50.1	50.7	51.3	56.1	972	290	B	2	B	96	B	2
02/02	46.1	47.2	48.3	50.6	50.9	51.4	52.5	970	291	B	21	B	41	B	38
02/03	46.0	46.4	48.1	50.4	50.4	50.5	47.6	967	293	B	72	B	19	B	9
02/04	45.2	44.5	48.3	50.2	50.4	50.5	48.1	980	294	B	64	B	18	B	18
02/05	44.8	44.3	48.0	50.1	50.4	50.6	48.8	975	295	B	2	B	10	B	88
02/06	44.8	44.1	48.1	50.0	50.4	50.8	49.5	967	295	B	3	B	95	B	2
02/07	45.0	44.1	48.2	50.1	50.5	50.9	51.2	972	296	B	20	B	59	B	20
02/08	44.8	44.3	48.0	50.2	50.4	50.8	51.6	977	296	B	4	B	94	B	2
02/09	46.2	46.4	48.0	50.3	51.4	52.1	57.6	970	297	B	2	B	96	B	2
02/10	47.0	48.2	47.9	50.6	51.7	52.6	55.9	971	297	B	15	B	83	B	2
02/11	46.4	47.8	48.1	50.4	50.7	51.5	52.2	972	297	B	73	B	26	B	1
02/12															
02/13															
02/14															
02/15															
02/16															
02/17															
02/18															
02/19															
02/20															
02/21															
02/22															
02/23															
02/24															
02/25															
02/26															
02/27															
02/28															
-															
-															
-															
Feb	45.6	45.8	48.1	50.3	50.7	51.2	51.9	972							
						Total AF		21209							

Isobath Plot



Legend

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Notes

[1] AFD is a weighted average based on hourly flow values, including generation, bypass and spill.

[2]

[3]

[4]

[5]

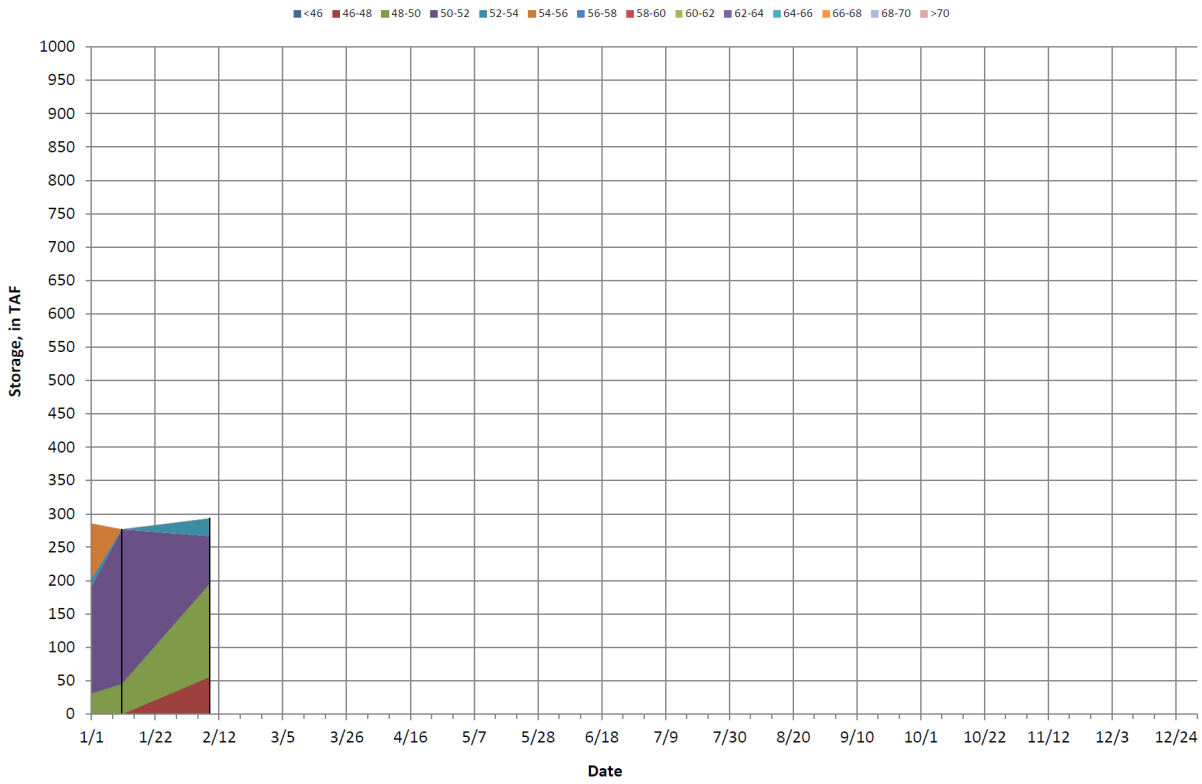

Figure 9. Folsom Lake Isothermobaths - 2021 (Water Temperature, in °F)

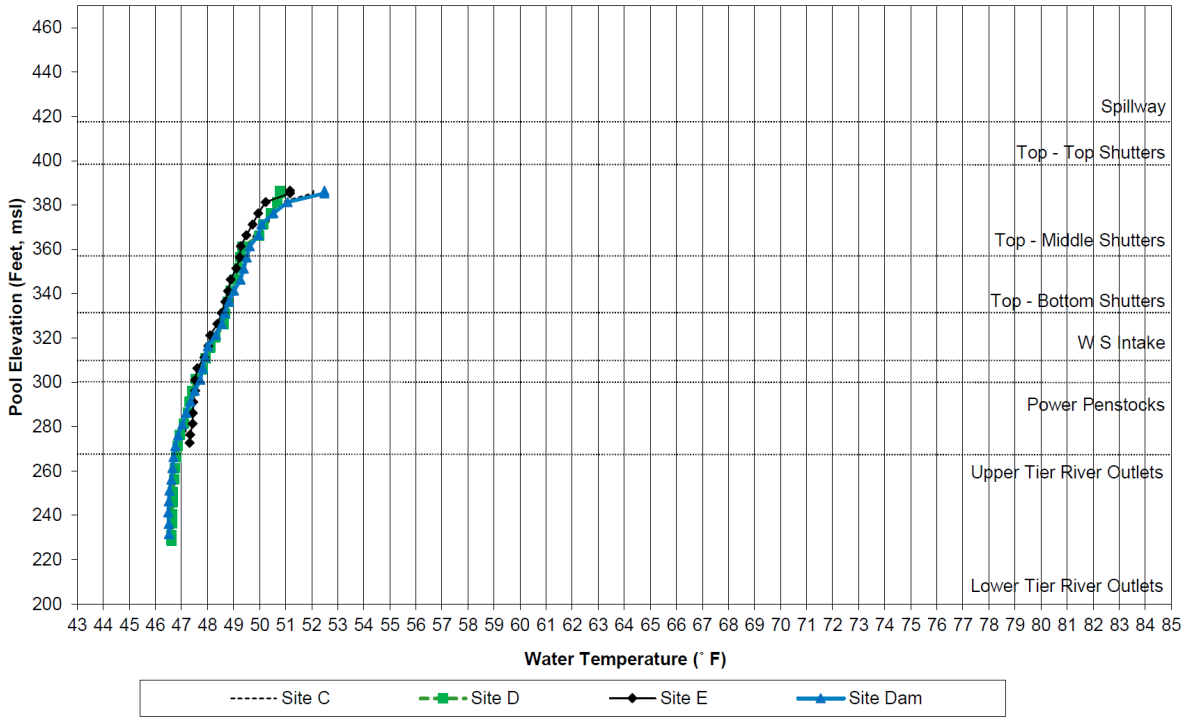

Figure 10. Folsom Lake Temperature Profiles: 09-Feb-2021

Federal End of the Month Storage/Elevation (TAF/Feet)

	Feb	May	Apr
Folsom 290	364	487	587
Elev.	398	415	427

Monthly River Releases (cfs)

	Feb	May	Apr
American	953	950	950
MRR	1246		

50% Runoff Exceedance Outlook (Inflow based on 50% exceedance forecast

Federal End of Month Storage/Elevation (TAF/Feet)

	Feb	May	Apr
Folsom 290	429	680	749
Elev.	407	432	444

Monthly River Releases (cfs)

	Feb	May	Apr
American	950	958	1972
MRR	1246		

Please note:

CVP actual operations do not follow any forecasted operation or outlook; actual operations are based on real-time

CVP operational forecasts or outlooks consider general system-wide dynamics and do not necessarily address CVP releases represent monthly averages. CVP operations are updated monthly as new hydrology information is made available December through May.

Numbers other than MRR represents less confident hydrologic inputs of the future water year.