BUREAU OF
RECLAMATION

American River Group

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

Thursday, April 15, 2021

Notes

1. Action Items
    a. Tracy Grimes
        i. Share Pre-Spawn Mortality PPT Presentation. (DONE)
        ii. Compare pre-spawning mortality across the Central Valley.
    b. Kirsten Sellheim
        i. Provide a map of steelhead spawning spatial distribution and the numberof steelhead redds for this year compared to last year.
    c. Chris Hammersmark
        i. Run some alternative scenarios using the Iterative Coldwater Pool ManagementModel (iCPMM)
    d. Morgan Kilgour
        i. Follow up with Jason Julienne re: use of chillers. (DONE)
    e. Thuy Washburn
        i. Assess implications (including power and cost differentials) of decreasing elevationof Lake Natoma and reach out to Chris re: feasibility.
        ii. Follow up on the meaning of "B" on the shutter position table.

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f. John Hannon

    i. Share Lake Natoma temperature study reports. (DONE)

g. K&W

    i. Reschedule "change order rationale" agenda item to summer.

2. Introductions

    a. USBR: Sarah Perrin, Levi Johnson, Zarela Guerrero, Thuy Washburn, Ian Smith, JohnHannon, Drew Loney, Brad Hubbard & Carolyn Bragg

    b. Water Forum: Chris Hammersmark & Kat Perkins

    c. NMFS: Barb Byrne

    d. USFWS: Paul Cadrett

    e. CDFW: Tracy Grimes, Mike Healey, Morgan Kilgour, Jason Julienne, Duane Linander, JoelCraven

    f. SWRCB: Emily Fisher, Michael Macon, Reza Ghasemizadeh

    g. San Juan Water District: Paul Helliker

    h. EBMUD: I-Pei Hsiu

    i. PCWA: Ben Barker

    j. SMUD: Ansel Lundberg, Christine Giannini

    k. Westlands Water District: Tom Boardman

    l. City of Sacramento: Brian Sanders, Anne Sanger

    m. DWR: Mike Ford

    n. WAPA: Michael Prowatzke

    o. Cramer Fish Sciences: Kirsten Sellheim

    p. PSMFC: Logan Day

q. SARA: Clyde MacDonald, Felix Smith

r. Independent: Rod Hall

s. Sacramento State Aquatic Center: Dede Birch

t. K&W: Kai Walcott, Rafi Silberblatt

3. Presentation

    a. Tracy Grimes, CDFW, provided a presentation on pre-spawn mortality of fall-run Chinooksalmon in the American River.

    b. Questions/Comments

        i. CDFW expressed interest in seeing a comparison of the American River to otherCentral Valley rivers in regard to pre-spawn mortality.

4. Housekeeping

    - No updates.

5. Fisheries Update

    a. Tracy Grimes provided an update for California Department of Fish and Wildlife. Seehandout for details.
    b. Kirsten Sellheim provided an update for Cramer Fish Sciences. Sellheim clarified that the steelhead redd count is similar to last year's and has been pretty low over the last five years.Steelhead spawning is distributed broadly (i.e., both upstream and in lower sections). See handout for details.
    c. Logan Day provided an update for Pacific States Marine Fisheries Commission. Day clarifiedthat there has only been one adult natural origin steelhead observed past Watt Avenue. The steelhead fry are 26 mm on average, the largest observed was 38 mm. See the handout for details.

6. Operations Forecast

    a. Christine Giannini provided an update on Sacramento Municipal Utility District operations. Giannini clarified that the hydrology forecast is based on 39 different scenarios derived fromhistorical water years. The 10% forecast represents highly unlikely wet years. See handout fordetails.

    b. Ben Barker provided an update on Placer County Water Agency operations. See handout fordetails.

7. Central Valley Operations

a. Thuy Washburn, USBR, provided an update on Central Valley Operations. See handout fordetails.

b. Temperature Management

    i. Critical year classification for both the 90% and 50% exceedance forecasts.

    ii. Increased releases on April 8th from 1750 to 2000 cfs, flows will most likely stay at

    iii. ~2000 cfs for the rest of the month.

    iv. Shutters are set the same as last month (bottom and middle are closed).

    v. Mean daily air temperatures recently reached above 60 degrees.

    vi. Delta exports are expected to be at minimum pumping through the summer, such that Folsom releases will not be exported in the south Delta

c. Questions/Comments

    i. SJWD expressed surprise that reservoir storage increased slightly in August and September in the 90% forecast and expressed interest in further conversation oncethe full systems operation spreadsheets are finalized.

        1. USBR attributed this to inflow coming in from upstream reservoirs slightlyexceeding releases.

    ii. The Water Forum expressed concern about exceeding 72 degrees at Watt Avenueduring much of the summer.

        1. USBR noted that current modeling based on median temperature suggestsfive exceedances at Watt Avenue.

        2. NMFS also expressed concern about projected water temperatures, especiallysince the model's assumptions mean that this may be a best-case scenario.

    iii. SARA expressed concern about negative impacts to steelhead at high temperatures.

    iv. NMFS noted that temperature at Watt Avenue is not representative of the entireriver.

v. NMFS noted that according to the 2019 BiOp, take is exceeded if water temperatureis above 68 degrees at Hazel.

vi. NMFS noted that there isn't sufficient storage to buffer temperatures with watermass.

vii. The group discussed some trade-offs between releasing cold water in the summerand fall.

    1. The Water Forum suggested that keeping summer temperatures at 72 degreesrather than 74 degrees would be unlikely to help steelhead and won't leave any cold water for fall-run Chinook.

    2. SARA suggested that the best solution would be to get steelhead out of theriver as early as possible and reserve cold water until early October for fall-run Chinook spawners.

    3. CDFW noted that steelhead coming out of the gravel don't migrate to the ocean during their first year. Understanding the spatial distribution of redds will provide a better idea of whether they can survive various water temperature scenarios.

    4. The Water Forum agreed to develop a model run in which no additional temperature shutters were pulled until the fall.

viii. SARA expressed interest in exploring whether Nimbus can be operated as run of river to reduce residence time and minimize water heating up there.

ix. Rod Hall expressed concern about cold water needs for Nimbus Hatchery and wasinterested to know whether chillers are in place for steelhead.

    1. USBR noted that there are chillers in the hatchery building but not in theraceways.

x. The Water Forum expressed interest in running Lake Natoma at a lower elevation(acknowledging that this would lead to power loss at Nimbus Dam).

    1. USBR agreed to raise this with management but indicated that it raises somemajor issues (e.g., conflicts with recreational interests, power losses and differentials, flow fluctuation impacts on the lower American River) so costsand benefits would need to be more clearly understood.

a. The Water Forum and CDFW agreed to help model and assessbenefits, respectively.

b. Rod Hall noted a previous USBR report that analyzed various waysof transporting Lake Natoma water might provide some useful insights.

c. CDFW expressed interest in better understanding the elevation at which Lake Natoma stops generating power and determining the optimal time to reduce the water volume to maximize cooler watertemperatures.

2. NMFS noted their intention to discuss take issues with USBR over the nextfew weeks given temperatures are anticipated to increase to the high 60's bythe end of May.

3. The Water Forum expressed interest in exploring the possibility of deganging **t**eshutters of the TCD.

    a. USBR indicated that they are already exploring this option but thatthe lake may be too low to see a benefit.

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Agenda

1. Introductions
2. Presentation
    a. Escapement mortality (Tracy Grimes, CDFW)
3. Housekeeping
4. Fisheries Update
    a. CDFW
    b. CFS
    c. PSMFC
5. Operations Forecast
    a. SMUD
    b. PCWA
6. Central Valley Operations
    a. Temperature management
    b. Exceedance forecast & temperature schedules.
7. Discussion
    a. Framing of change order rationale
8. Next Meeting: Thursday, May 20, 1:30-3:30pm

ARG Meeting CDFW Fisheries Update

April 15, 2021

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

Nimbus Hatchery

- Half-way done with tagging fish
- First release will occur 4/20/2021
- All fish (~4 million) will be released in the bay with 6 planned releases through the end of May

Steelhead

- Fish are currently healthy but there is concern with water temperatures becoming too warm and fish becoming sick in the summer months.

New fish ladder

- Testing planned to occur next month.

Lower American River 2021 Steelhead Spawning and Stranding Survey Summary

Spawning

Table 1. Steelhead, Chinook salmon, unknown, and test redd counts during 2021 spawning surveys.

Dates	Steelhead	Chinook	Lamprey	Unknown	Test	Total
January 6–8	14	7	0	0	0	21
January 20–22	4	1	0	1	0	6
February 3–5	19	0	0	0	3	22
February 17-19	14	0	0	0	0	14
March 2-3	2	0	0	0	0	2
March 16-18	7	0	1	0	0	8
March 31- April 2	0	0	20	0	0	20
Total	60	8	21	1	3	93

Spawning surveys are occurring April and April 15.

Stranding

Isolated pool data for 2020 standing surveys.

Survey data

Data from stranding surveys conducted 18-19 March. Fish counts included here are estimates from a combination of seining, dip-netting, and visual observation.

Table 2. Salmonids and environmental conditions in isolated pools during the 18-19 March 2021 stranding surveys

Location	Specie Chinook	Species Steelhead	Total Pool Area (m²)	Density (# fish/m²)	Average Temperature (°C)	Average DO (mg/L)	Average Turbidity (NTU)
Upper Sunrise above Side Channel (21)	199	18	466	0.5	12.7	10.8	2.3
Upper Sunrise Side Channel (21)	373	0	2,332	0.2	13.8	11.3	2.5
Lower Sunrise side channel (19)	present	unknown	16	NA	14.8	9.1	0.6
Lower Riverbend side channel, Arden Rapids (13) #1	228	0	199	1.1	12.1	11.9	5.6
Lower Riverbend side channel, Arden Rapids (13) #2	99	0	365	0.3	12.0	11.0	1.9
Total	899	18	3,378				

All fish captured during the were rescued and returned to the river with assistance from CDFW staff.

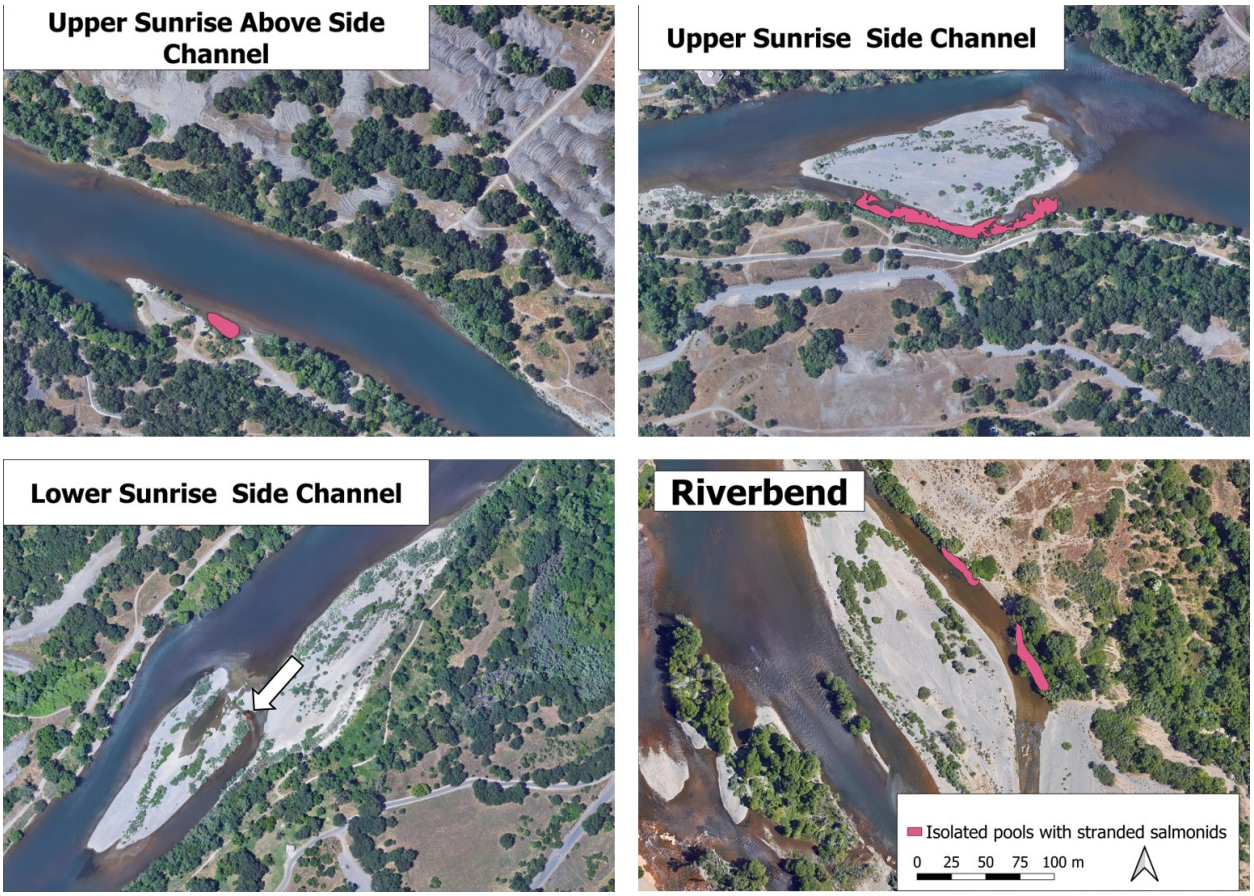
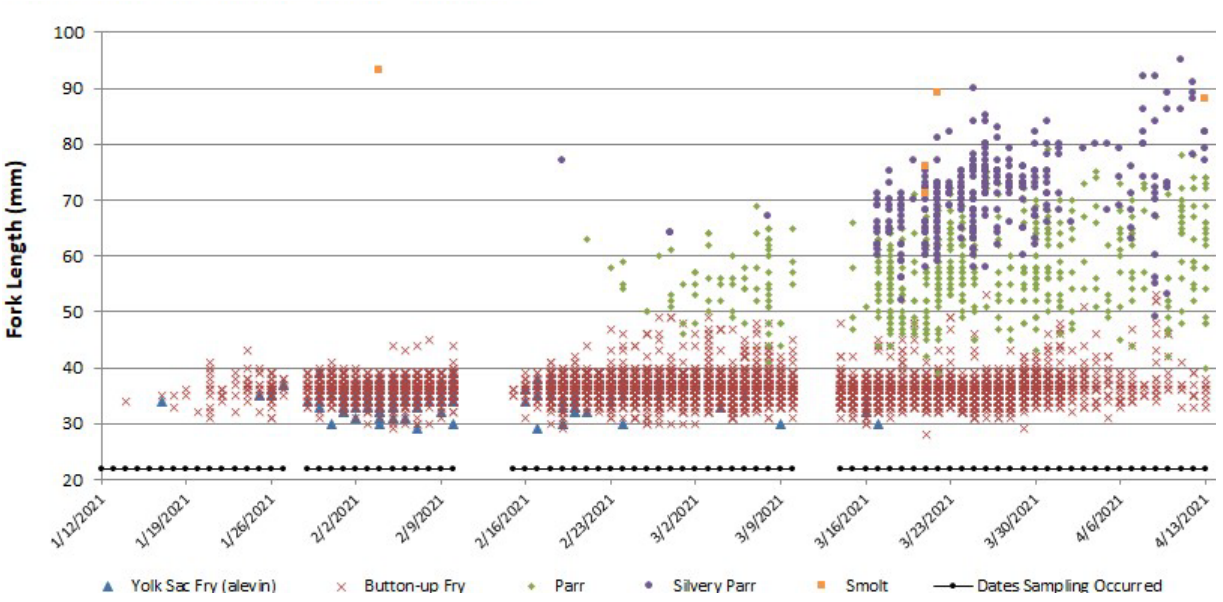


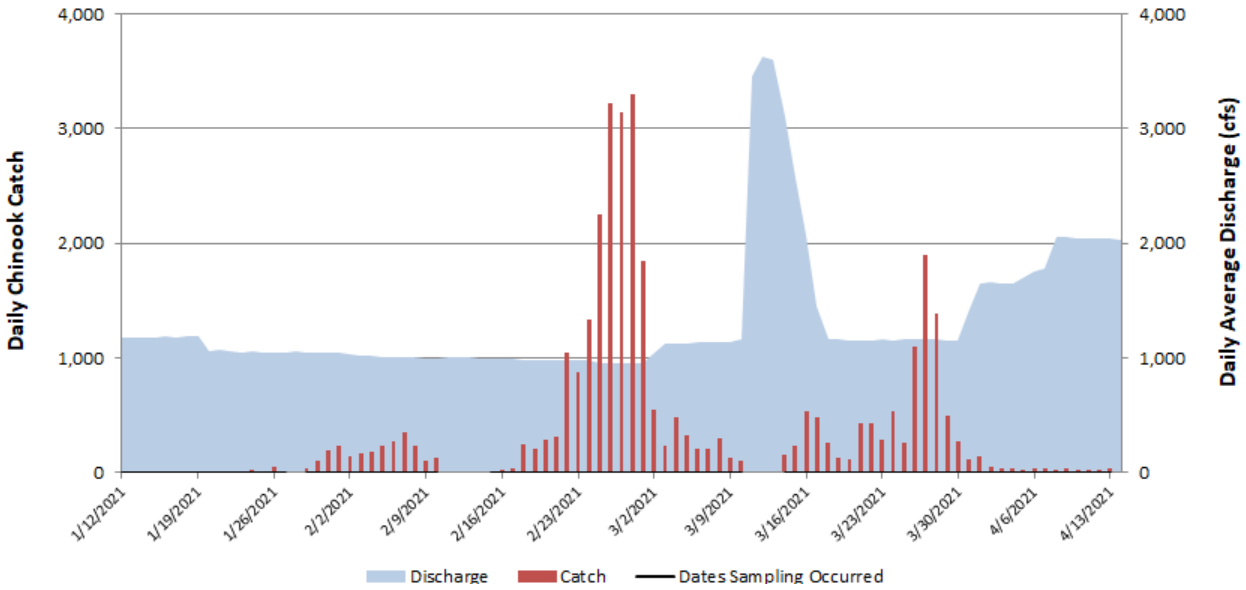
Figure 1. Locations of stranding pools observed on the Lower American River on 18-19 March 2021.

Unmarked Juvenile Chinook Salmon (length-at-date)

Fall	Late Fall	Spring	Winter
32,406	18	236	3

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





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.

Lower American River RST CalFish webpage:
https://www.calfish.org/ProgramsData/ConservationandManagement/CentralValleyMonitoring/SacramentoV alleyTributaryMonitoring/LowerAmericanRiver-RSTMonitoring.aspx

SMUD Upper American River Project Update

Conditions – 13 April 2021:

- April precipitation at Fresh Pond through 4/13/2021 is 0 inches. The April average of 4.84". Precip for the wateryear to date is 28.72" which is 58% of average to date (49.52") and 50% of the entire water year average of 57.32".

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

- 214,991 acre feet (Storage this last month; 189,302 acre feet)
- 56.7 % full
- 79% of historical average (13 April historical average: 271,208 AF / 71.5%)
- 3% increase in storage since last week

Figure 1. April 13, 2021, reservoir storage

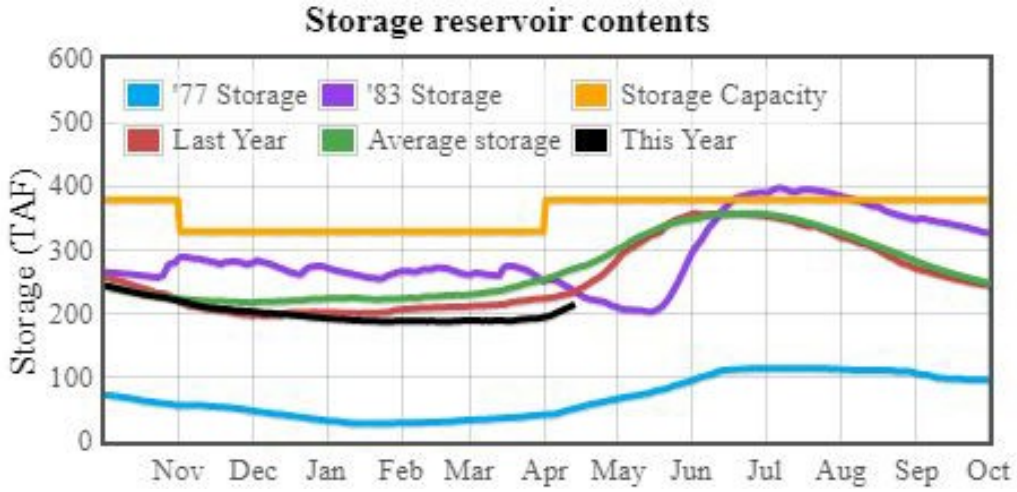
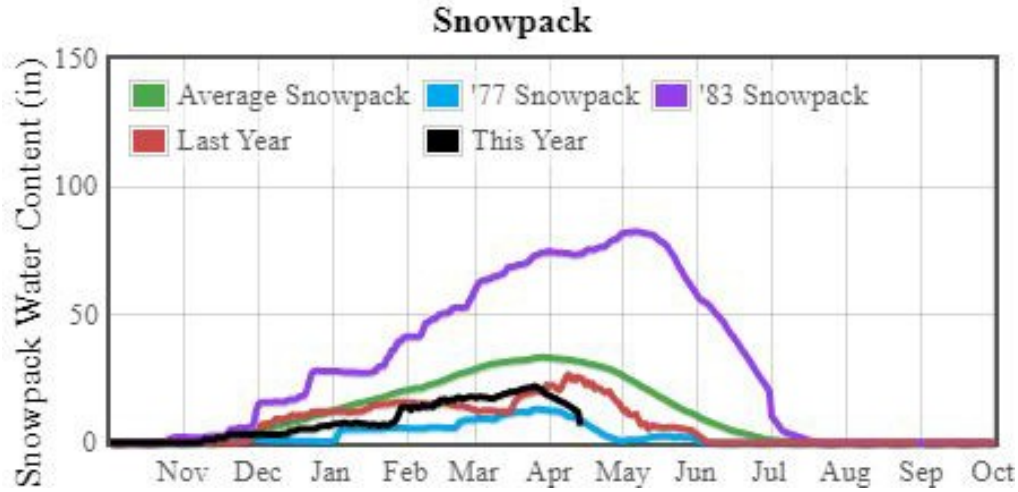


Figure 2. April; 13, 2021 snowpack



Individual Reservoir Storage:

- Loon Lake: 36, 163 AF
- Ice House: 26,820 AF
- Union Valley: 152,008 AF (75%of avg)

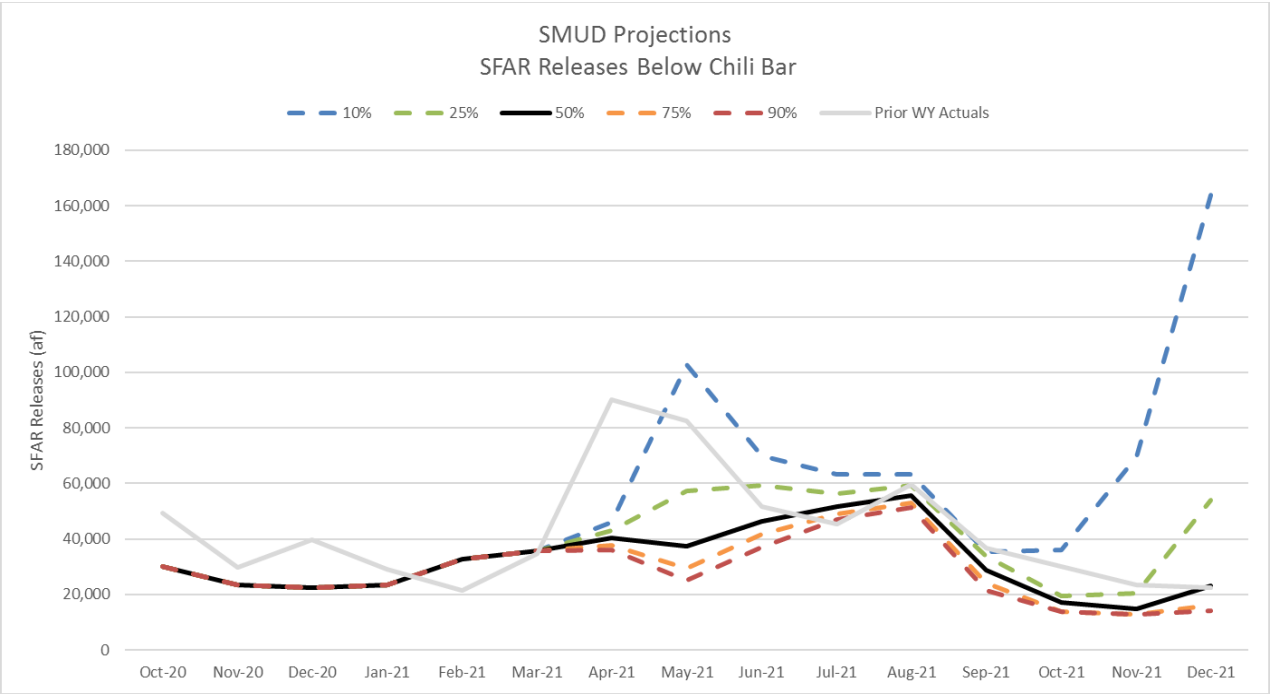
Last year (on April 13, 2020), storage was at 62.6.% (237,364 AF). **Total capacity: 379,174 AF.*

Chili Bar releases into the South Fork American River

- March 2021 releases:
    - Daily average flow: 579 cfs
    - Total releases: 35,559 AF
- April 2021 releases (April 1-12):
    - Daily average flow so far: 690 cfs
    - Total releases so far: 16,424 AF

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

Basin	Friday, Apr 16	April 17	April 18	April 19	April 20	April 21
SFA Above Slab	324.4	371.7	492.2	604.8	620.6	540.0
Slab Creek	66.5	59.6	58.2	57.5	56.1	53.6
Combined South Fork	391	431	550	662	677	594

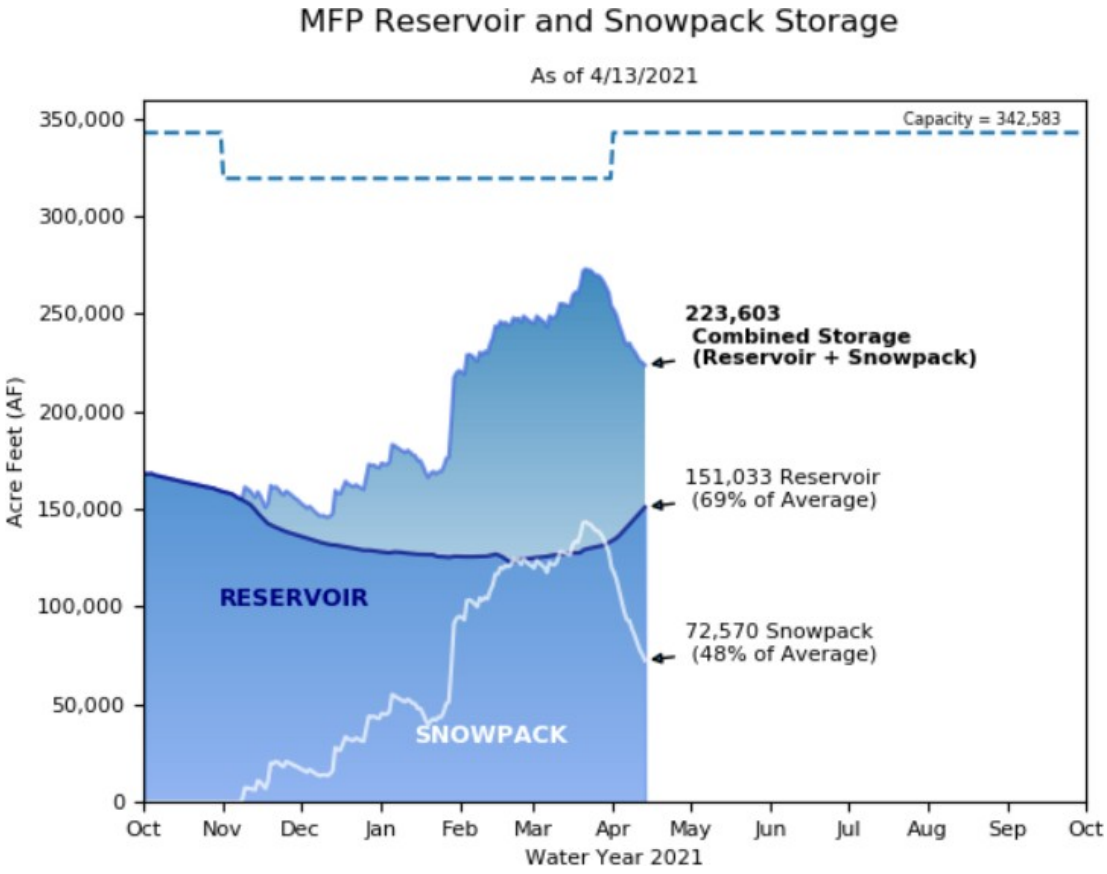


Runoff into the storage reservoir basins is 43% of median to date through Apr 12. The snowpack is 21% of average at selected snow sensors.

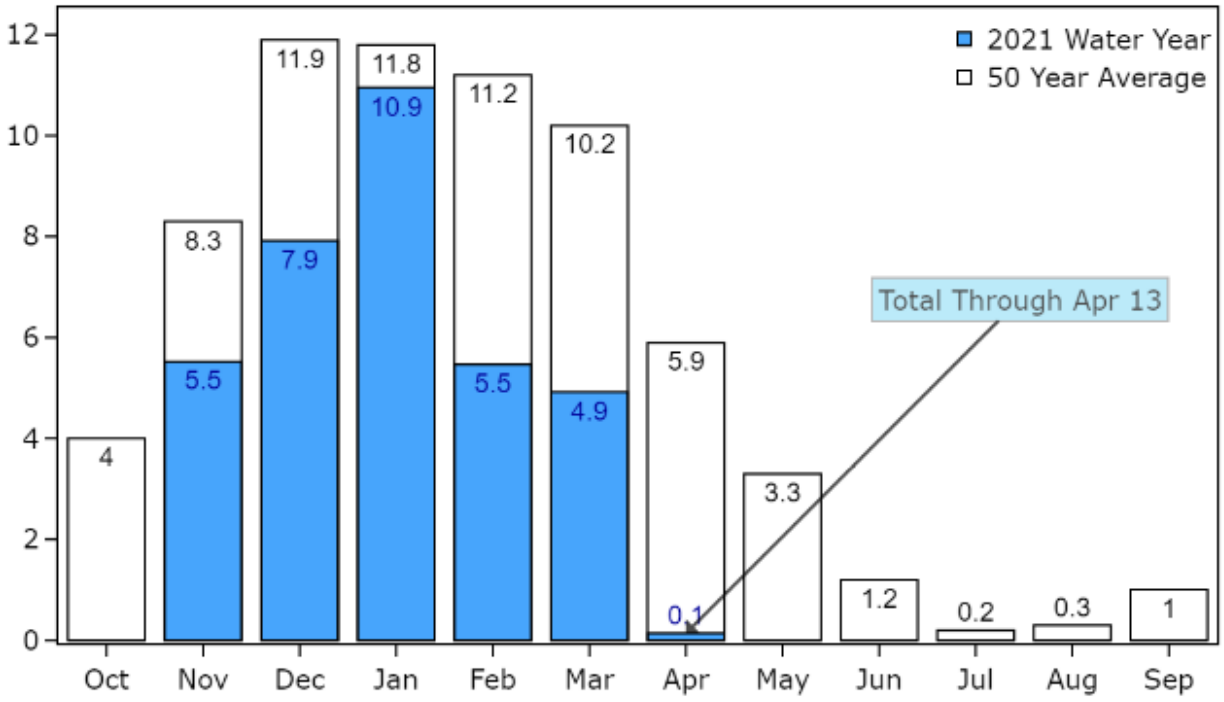
Figure 3. South Fork American River Releases Forecast, updated 2021/4/12

PCWA MFP Operations Overview for American River Operations Group (Real Time Data as of April 14, 2021)

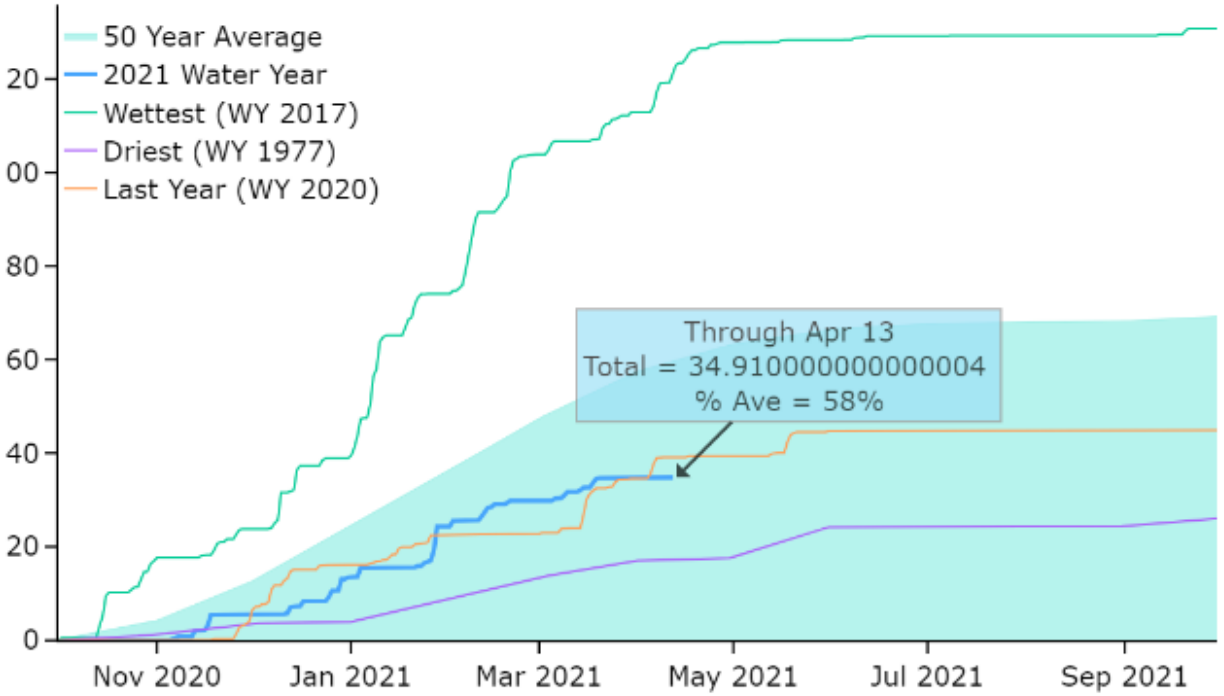
- French Meadows Storage = 56,000 AF of 136,405 AF = 41% Capacity
    - MFAR above FM Inflow (R24) = 7 day AVG ~300
- Hell Hole Storage = 96,000 AF of 207,590 AF = 46% Capacity
    - Five Lakes Inflow (R23) = 7 day AVG ~100 cfs
    - Rubicon Inflow (R22) = 7 day AVG ~200 cfs
- Combined Storage (FM+HH) = 152,000 AF/342,590 AF = 44% Capacity; ~70% of AVG
    - 7 Day Change = +11,000 AF
- MFAR @ R11: 7 day daily average 932 cfs
- MFP generation has increased significantly in near term with spike in energy prices.



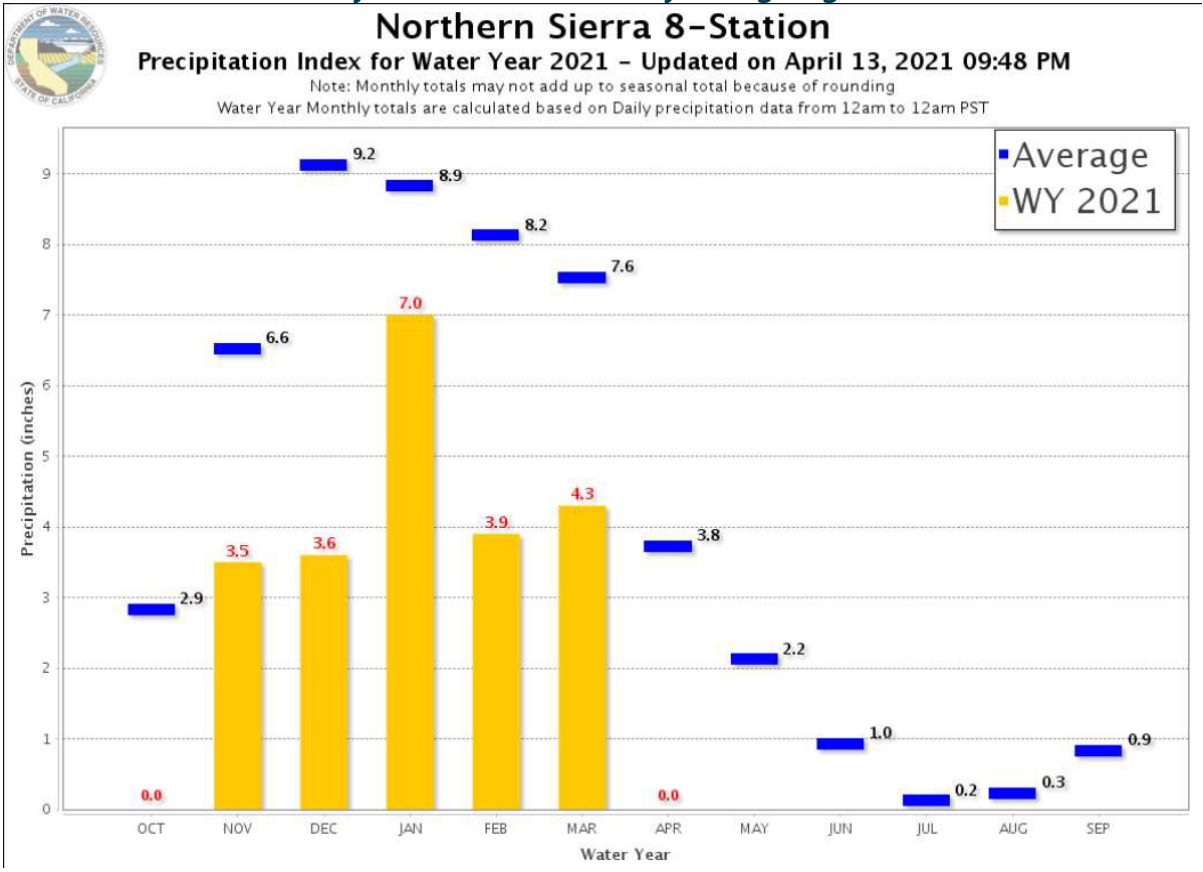
Lake Spaulding Precipitation: Water Year 2021



Lake Spaulding Precipitation: Water Year 2021



American River Summary Conditions – January (On-going)



Currently the conditions for the April have been dry, with no precipitation event projected for the next two weeks. The average precipitation for the month of April is 3.8". The Sacramento Valley WY Type Index 40-30-30 under both the 90% and 50% exceedance is categorized as a Critical Year.

Storage/Release Management Conditions

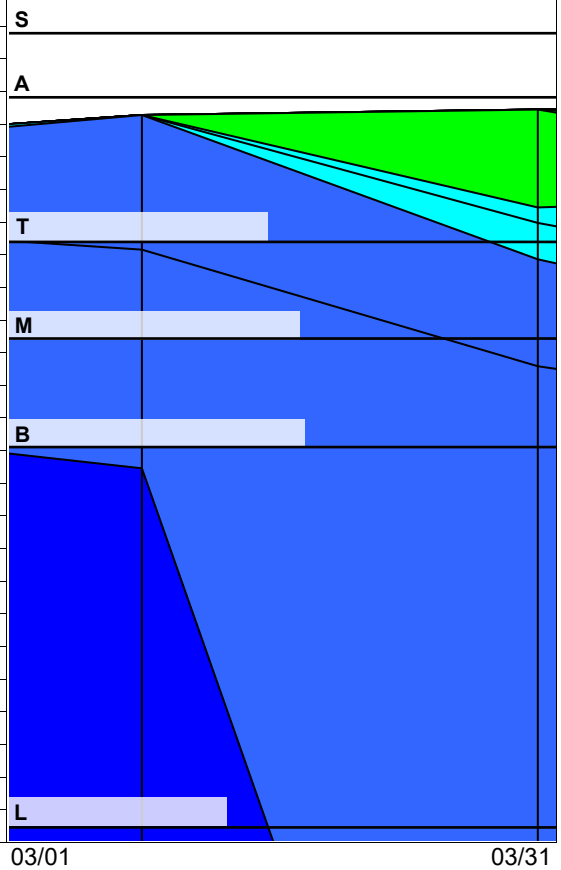
Releases currently at 2000 cfs to comply with the SWRCB D1641.

- Increase releases on April 8, 2021, from 1750 cfs to 2000

Temperature Management

- Top Shutters: Units 1, 2, & 3 – raised *(elev. 428 to lower)*
- Middle Shutters: Units 1, 2, & 3 – lowered
- Bottom Shutters: Units 1, 2, & 3 - lowered

DATE	Mean Daily Temperatures (°F)							Release (CFS)	Storage (TAF)	Unit Shuter Position / Load Percentage						Isobath Plot
	Water						Air			Unit 1		Unit 2		Unit 3		
	NFA	ARP	AFD[1]	AHZ	AWP	AWB	CSU	Nimbus	Folsom							
Feb	46.0	45.9	48.5	50.7	51.1	51.6	52.1	978								
03/01	46.3	46.2	49.6	51.5	52.6	53.2	53.7	967	346	B	22	B	4	B	74	
03/02	46.5	46.2	49.8	51.8	52.6	53.3	54.2	1103	347	B	55	B	21	B	24	
03/03	46.9	46.6	49.6	52.0	52.1	52.4	51.8	1226	347	B	29	B	28	B	43	
03/04	47.2	46.4	49.4	52.1	52.7	52.9	52.9	1224	347	B	43	B	38	B	20	
03/05	47.6	47.2	49.7	52.2	53.1	53.8	54.2	1229	348	B	41	B	29	B	30	
03/06	48.9	48.7	49.7	52.2	53.2	54.2	51.5	1230	349	B	33	B	43	B	24	
03/07	48.7	47.8	50.3	52.7	53.2	53.8	51.1	1227	349	B	36	B	38	B	26	
03/08	48.9	47.4	49.5	52.5	52.9	53.5	51.0	1227	350	B	39	B	41	B	20	
03/09	48.2	46.9	49.9	52.2	52.4	52.6	48.4	1228	351	B	43	B	29	B	28	
03/10	47.5	46.5	49.7	52.0	51.7	52.1	45.3	1267	352	B	35	B	24	B	42	
03/11	47.5	46.9	50.3	51.6	51.6	51.8	46.6	3396	349	B	61	B	21	B	18	
03/12	47.7	47.6	50.3	51.5	51.6	52.0	52.0	3533	345	B	44	B	37	B	19	
03/13	47.9	47.7	50.1	51.9	52.1	52.4	50.9	3534	341	B	19	B	44	B	36	
03/14	47.2	46.8	49.2	51.0	50.9	50.9	49.7	3088	337	B	21	B	50	B	29	
03/15	47.7	47.4	49.8	51.2	? 51.3	51.6	45.7	2583	335	B	20	B	63	B	17	
03/16	47.4	46.6	50.2	51.3	51.6	51.8	47.5	2089	335	B	26	B	44	B	30	
03/17	47.1	47.4	50.4	51.5	51.4	51.6	49.1	1558	334	B	25	B	30	B	45	
03/18	47.6	47.7	50.4	51.8	52.1	52.4	52.4	1267	335	B	42	B	31	B	27	
03/19	48.0	48.8	50.3	52.1	53.0	53.5	55.0	1270	339	B	38	B	36	B	26	
03/20	47.9	48.0	50.3	52.5	53.1	53.5	50.3	1260	344	B	30	B	32	B	38	
03/21	47.7	48.2	51.2	53.1	53.7	54.3	53.2	1259	347	B	26	B	38	B	36	
03/22	48.0	48.4	50.8	53.3	53.9	54.6	53.1	1264	350	B	29	B	38	B	33	
03/23	48.8	48.7	51.6	53.3	54.1	55.0	56.5	1271	352	B	35	B	36	B	29	
03/24	48.7	48.9	51.1	53.7	54.5	54.8	56.4	1273	353	B	37	B	32	B	32	
03/25	49.3	49.9	50.6	53.6	54.7	55.7	54.0	1277	354	B	24	B	39	B	37	
03/26	49.7	49.7	51.7	54.1	55.1	55.8	57.7	1277	355	B	51	B	21	B	28	
03/27	50.9	50.7	51.4	54.5	55.9	56.7	59.5	1268	356	B	42	B	28	B	30	
03/28	52.1	51.8	51.7	54.7	56.3	57.5	63.0	1266	357	B	32	B	40	B	28	
03/29	52.8	52.4	52.4	55.0	56.4	57.7	59.8	1257	358	B	31	B	37	B	32	
03/30	53.2	52.0	53.0	55.9	56.5	57.3	62.5	1250	360	B	29	B	30	B	42	
03/31	53.8	51.5	52.7	55.4	57.1	58.0	63.8	1556	361	B	43	B	33	B	23	
Mar	48.6	48.3	50.5	52.7	53.3	53.9	53.3	1604								
						Total AF		98626								



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]

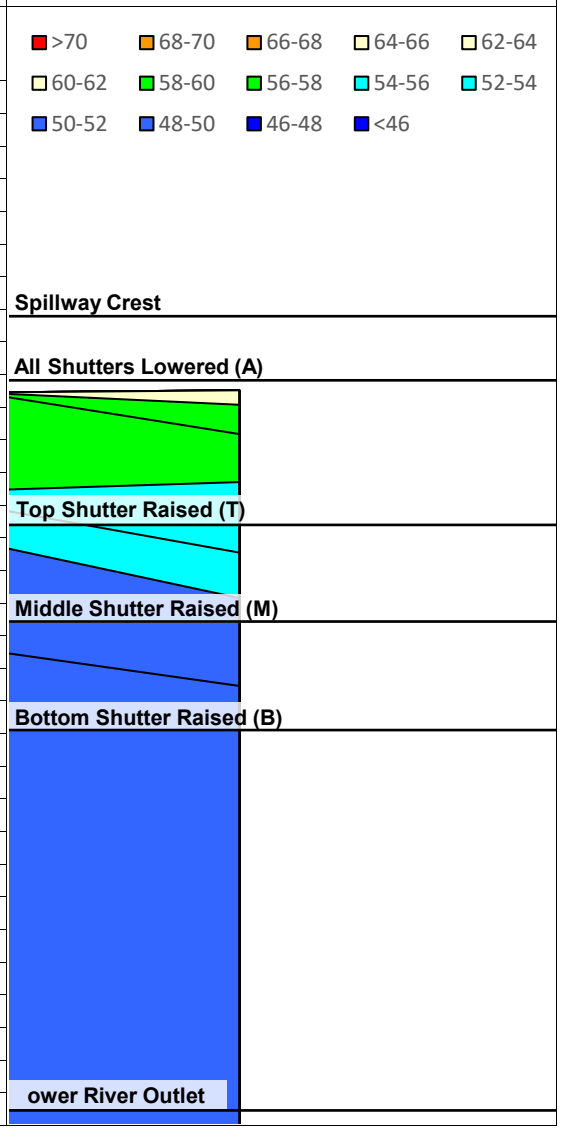
[3]

[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						
Mar	48.6	48.3	50.5	52.7	53.3	53.9	53.3	1604							
04/01	54.1	53.6	53.2	55.9	57.2	58.3	66.4	1790	361	B	43	B	34	B	23
04/02	54.2	53.9	53.0	56.1	57.3	58.3	65.0	1806	362	B	33	B	45	B	22
04/03	54.3	53.6	52.4	55.9	57.0	57.8	55.9	1786	362	B	30	B	39	B	30
04/04	54.4	53.4	52.9	56.1	56.9	57.5	54.8	1784	363	B	43	B	38	B	19
04/05	54.5	53.7	53.1	55.7	56.9	57.7	56.1	1875	363	B	37	B	40	B	22
04/06	54.9	53.0	53.5	55.8	57.1	58.0	58.4	1896	365	B	31	B	42	B	27
04/07	55.2	55.0	52.9	56.0	57.1	57.9	55.8	1804	365	B	35	B	37	B	27
04/08	55.0	52.4	54.0	56.6	57.5	58.1	58.3	2039	365	B	34	B	36	B	30
04/09	55.1	54.4	54.0	56.1	57.4	58.4	59.5	2034	365	B	39	B	31	B	30
04/10	55.3	55.0	54.3	56.8	57.6	58.2	59.2	2035	365	B	30	B	44	B	26
04/11	55.7	55.3	54.9	57.0	58.4	59.3	63.1	2035	365	B	12	B	73	B	15
04/12	56.0	55.9	55.0	57.4	58.5	59.3	64.1	2035	363	B	41	B	31	B	29
04/13	56.1	56.2	54.3	57.5	58.5	59.2	59.5	2034	363	B	41	B	32	B	28
04/14															
04/15															
04/16															
04/17															
04/18															
04/19															
04/20															
04/21															
04/22															
04/23															
04/24															
04/25															
04/26															
04/27															
04/28															
04/29															
04/30															
-															
Apr	55.0	54.3	53.7	56.4	57.5	58.3	59.7	1919							
						Total AF		49493							

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]

Table 4. Reservoir Releases in Cubic Feet/Second

Reservoir	Dam	WY 2020	WY 2021	15-Year Median
TRINITY	LEWISTON	298	294	303
SACRAMENTO	KESWICK	4,472	5,485	5,389
FEATHER	OROVILLE (SWP)	1,550	1,300	1,900
AMERICAN	NIMBUS	1,491	2,034	1,757
STANISLAUS	GOODWIN	1,180	840	1,180
SAN JOAQUIN	FRIANT	290	325	325

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	1,754	1,965	1,310	75
SHASTA	4,552	3,597	3,729	2,387	66
FOLSOM	977	654	588	363	55
NEW MELONES	2,420	1,530	1,908	1,512	99
FED. SAN LUIS	966	696	593	424	61
TOTAL NORTH CVP	11,363	8,232	8,783	5,996	73
MILLERTON	520	298	287	190	64
OROVILLE (SWP)	3,538	2,457	2,391	1,478	60

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	195	93	1,331	606	32
SHASTA	1,570	1,482	7,562	3,200	49
FOLSOM	513	208	3,811	1,424	36
NEW MELONES	224	----	1,209	477	47
MILLERTON	253	114	1,752	501	51

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	15.62	9.27	50.70	27.83 (59)	56	0.00
SACRAMENTO ATSHASTA DAM	23.04	11.04	103.04	54.55 (64)	42	0.00
AMERICAN AT BLUE CANYON	30.73	15.64	94.93	58.39 (46)	53	0.00
STANISLAUS ATNEW MELONES	16.65	----	41.62	24.52 (43)	68	0.00
SAN JOAQUIN ATHUNTINGTON LK	17.32	11.50	74.10	36.31 (46)	48	0.00

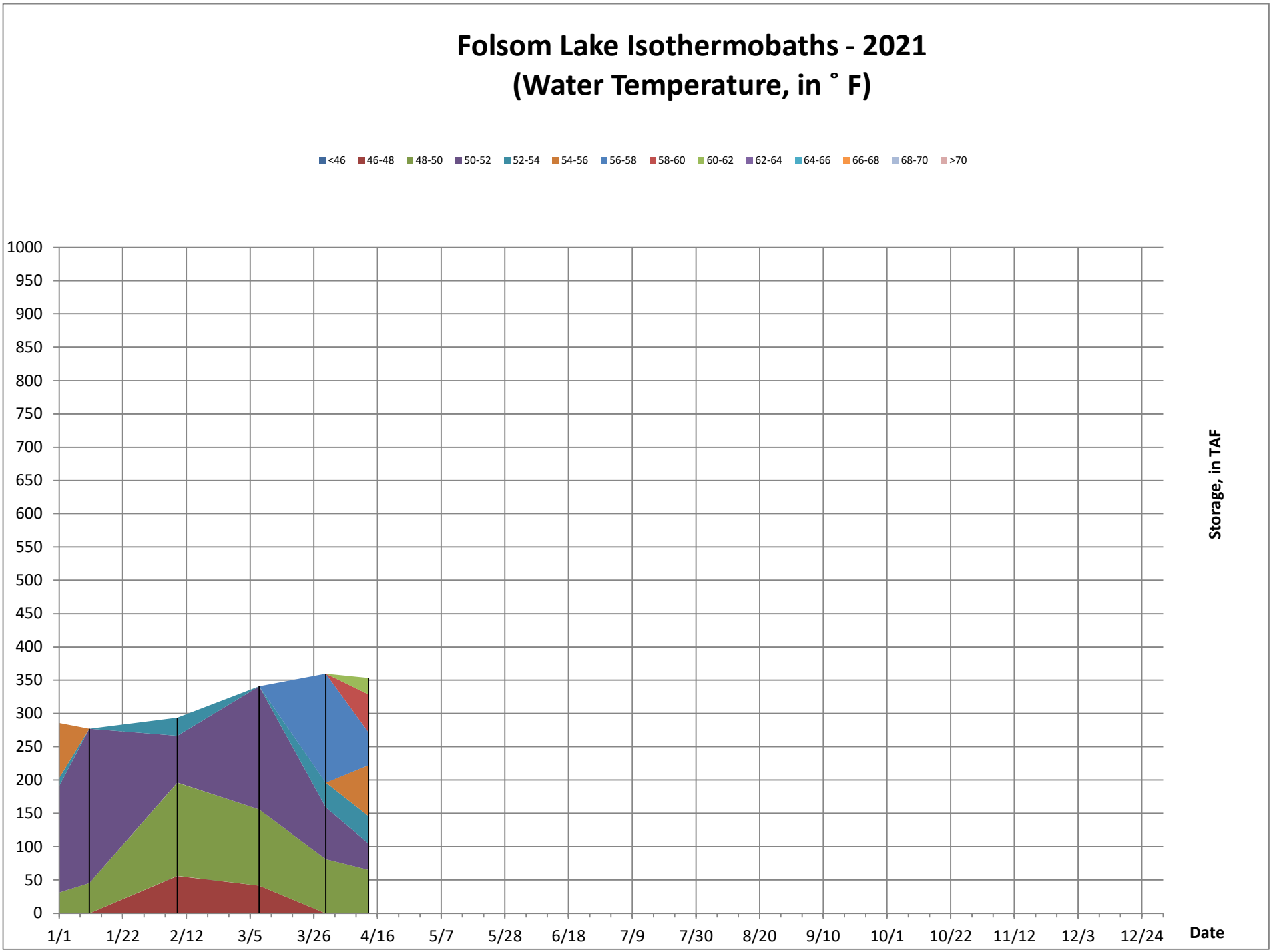
Folsom Cold Water Pool

Folsom Reservoir: Cold Water Volume

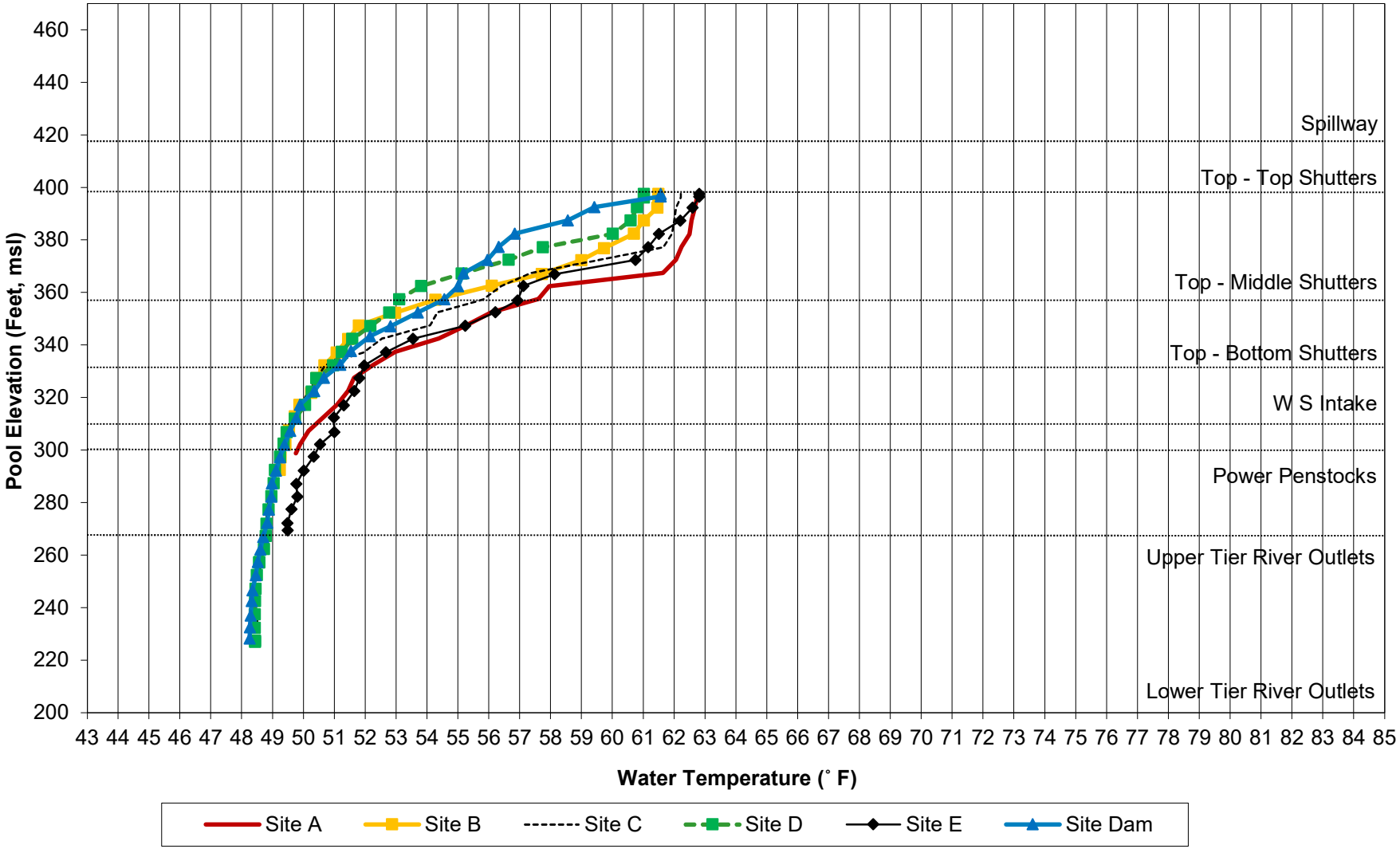
Profile Date: 4-13-21
Volume less than 58 °F (TAF): 272.8

Penstock Elevation (ft): 327
Volume (TAF): 83
Approximate Max. Temp (°F): 50.2

Folsom Lake Isothermobaths - 2021
(Water Temperature, in ˚ F)



Folsom Lake Temperature Profiles: 13-Apr-2021



Draft April 2021

90% Runoff Exceedance Outlook:

Inflow based on 90% exceedance forecast.

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

	Apr	May	Jun	July	Aug	Sep
Folsom 361	378	417	343	248	250	251
Elev.	400	406	378	378	378	378

Monthly River Releases (cfs)

	Apr	May	Jun	July	Aug	Sep
American	2013	1256	2290	2406	955	804
MRR	858					

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

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

	Apr	May	Jun	July	Aug	Sep
Folsom 361	375	476	501	410	360	322
Elev.	399	416	417	404	397	391

Monthly River Releases (cfs)

	Apr	May	Jun	July	Aug	Sep
American	2000	1250	2461	1831	1560	
MRR	858					

Please note:

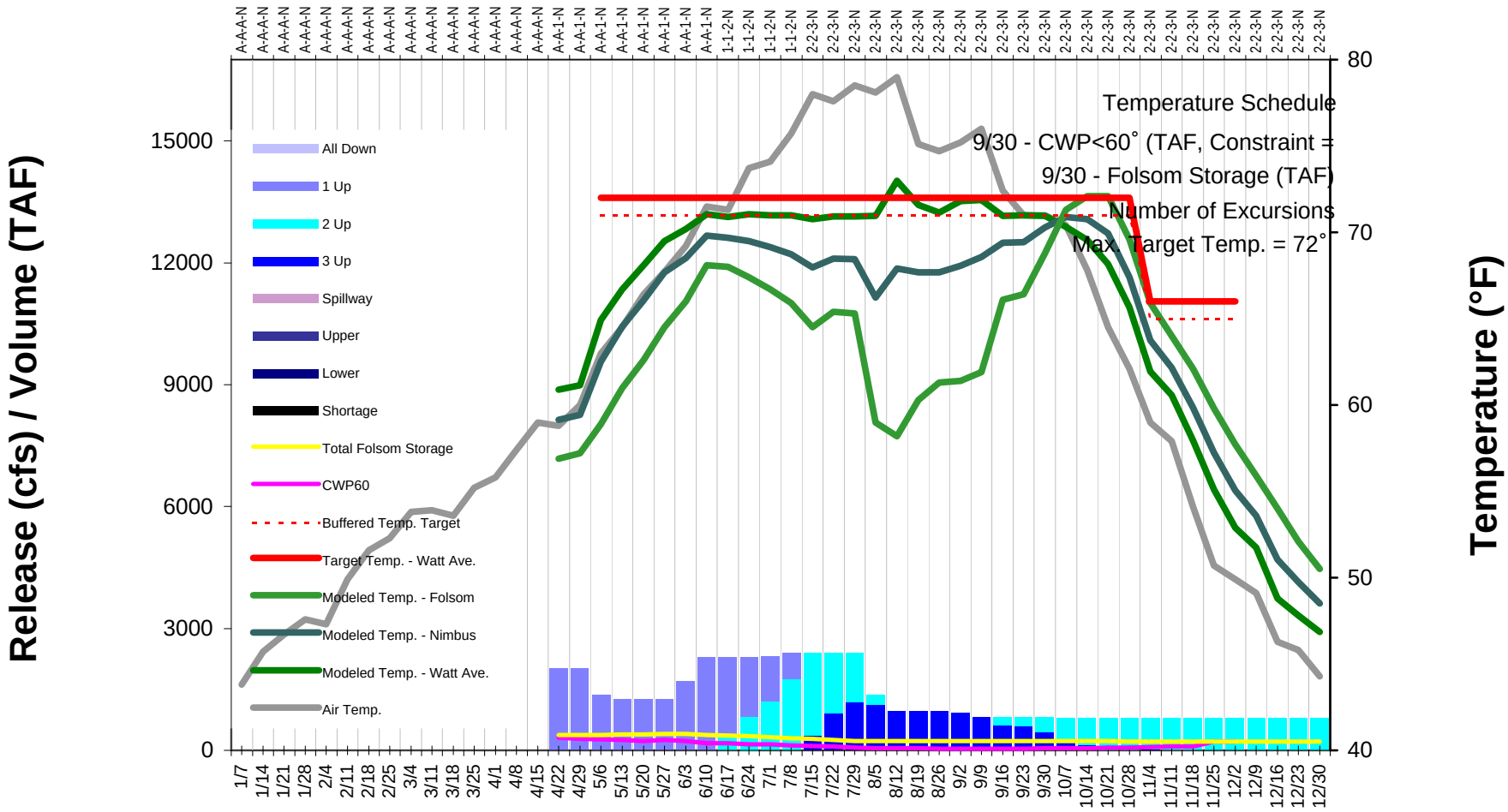
CVP actual operations do not follow any forecasted operation or outlook; actual operations are based on real-time

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.

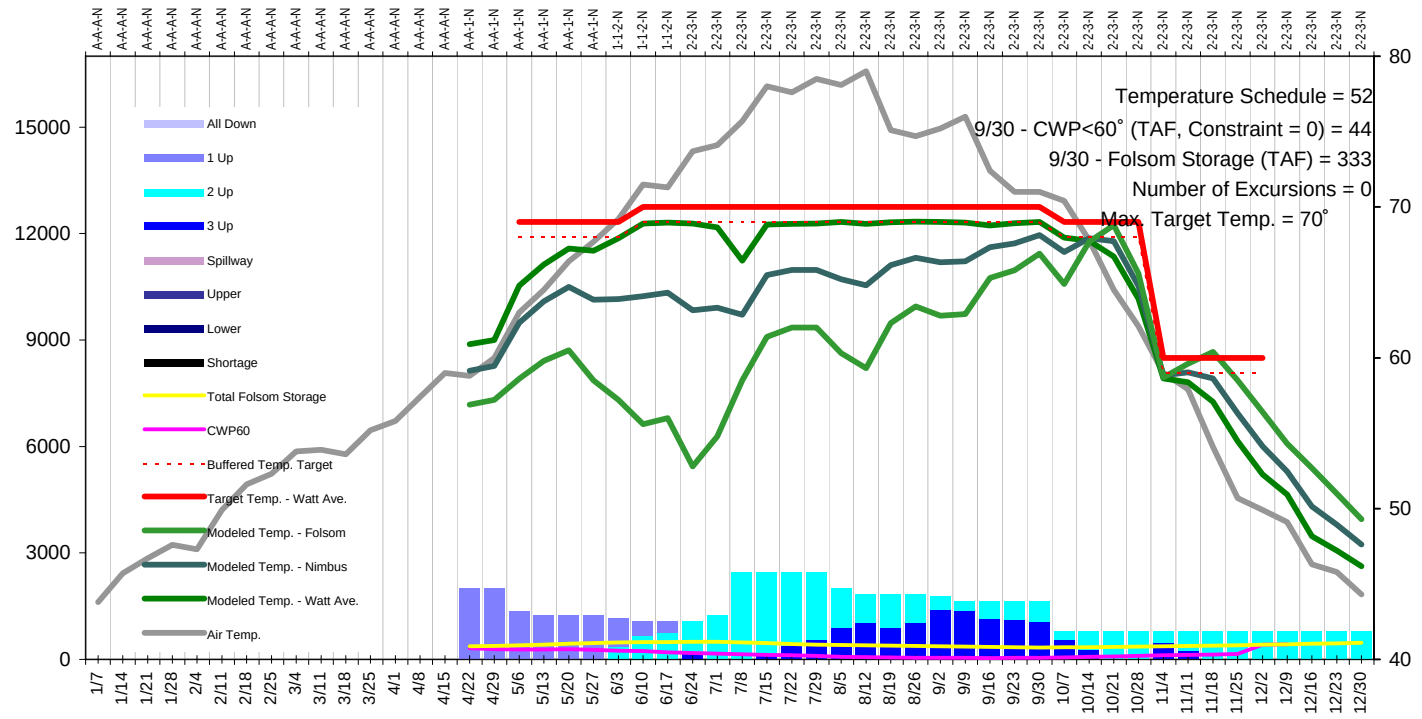
April 13 Run

USBR Pred.



Apr 50% 2021

USBR Pred.



Release (cfs) / Volume (TAF)