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, January 21, 2021

Notes

1. Action Items

    a. ARG members should contact Barbara Byrne if interested in attending/participating in a May 13th presentation to the Interagency Ecological Program's Data Science Project WorkTeam on the SacPAS egg survival analysis conducted in support of the fall 2019 power bypass proposal.

    b. Ansel Lundberg

        i. Increase the size of the reservoir storage figure provided for the handout packet moving forward.

        ii. Prepare the forecast for the South Fork American.

    c. Chris Hammersmark will run the water surface elevation model based on the spatialdistribution of redds from the aerial redd survey analysis.

    d. John Hannon will provide a spreadsheet estimating weekly emergence based on spawningdate.

    e. Ken Kundargi will coordinate a presentation to the ARG regarding proposed changes to themark rate of hatchery fish.

    f. Kirsten Sellheim will provide a short summary of the steelhead surveys.

    g. Thuy Washburn

i. Discuss reducing releases to 900 cfs or leaving them at 950 cfs with CVO and will provide an update.

ii. Provide the forecast for the entire year.

iii. Coordinate with Barbara Byrne to prepare a table to include the RDPA and index basedMRR calculations.

h. Tracy Grimes will share a table of the pre-spawning mortality by the different sections of theriver.

i. K&W

i. Distribute Dana Lee's presentation.

ii. Aim to end future ARG meetings 15-minutes early to allow time for a passingperiod.

2. Introductions

a. USBR: John Hannon, Levi Johnson, Spencer Marshall, Sarah Perrin, Ian Smith, ThuyWashburn, Zarela Guerrero, Carolyn Bragg

b. Water Forum: Chris Hammersmark, Katherine Perkins, Jessica Law

c. SMUD: Ansel Lundberg

d. PCWA: Ben Barker

e. PSMFC: Logan Day

f. CDFW: Morgan Kilgour, Tracy Grimes, Gary Novak, Duane Linander, Ken Kundargi, MikeHealey, Jason Julienne

g. NMFS: Barb Byrne

h. USFWS: Paul Cadrett, Craig Anderson

i. SWRCB: Michael Macon, Emily Fisher

j. EBMUD: I-Pei Hsiu

k. WAPA: Mike Prowatzke

l. City of Sacramento: Brian Sanders

m. Cal State Sacramento: Dede Birch

n. Cramer Fish Sciences: Avery Scherer, Kirsten Sellheim

o. Fishbio: Dana Lee

p. Kearns & West: Kai Walcott, Rafi Silberblatt

q. Independent: Rod Hall

r. Westlands Water District: Tom Boardman

s. San Juan Water District: Paul Helliker

Jessica Law (Executive Director, Sacramento Water Forum) introduced herself.

3. Presentation

    a. Dana Lee (Fisheries Biologist, FISHBIO) provided a presentation regarding the impact of salmon harvest management on escapement goals in the Central Valley. Key points from the discussion areas follows:

        i. It is often necessary to rely on preseason ocean abundance forecasts because in-seasonestimates are not available for most stocks and harvest rates are difficult to estimate.

        ii. The Sacramento Index (based on the escapement of jacks the year prior) has beenoverestimated in 12 of the last 15 years.

        iii. Improvements in tagging and monitoring are needed for more accurate predictions.

        iv. Hatchery influence continues to mask the collapse of natural-area spawners with negativeconsequences to stock resiliency.

        v. Consider introducing mass-marking and other steps to ensure the salmon fishery is targetinghatchery fish.

        vi. Consider changes to SRFC ocean harvest management to be more consistent withpopulation goals.

    b. Questions/Comments

        i. Is there in-river harvesting on the San Joaquin system?

            1. There is very little in-river harvesting on the San Joaquin.

        ii. To what extent are wild fish contributing to the ocean harvest?

1. Based on Rachel Johnson's work, roughly 90% of ocean harvest was hatchery fish.

iii. Is it ocean and river harvest that's driving the lack of returns, or in-river conditions?

1. Not my intention to blame everything on harvest, just think it's important toconsider all aspects since our focus is often on the freshwater side.

iv. If we were to stop stocking hatchery fish, would more runs/species be consideredthreatened or endangered?

v. We would have to make an evaluation to see where we are.

c. Even without harvest, it seems like the wild population is in a tenuous position and thehatchery population is masking impacts.

4. Fisheries Update

a. CDFW

i. CDFW shared results of the brood year 2020 fall-run Chinook salmon Carcass Survey which usually ends by mid-January but was extended by one week. There were only a handful of fresh carcasses this past week. The preliminary estimate for in-river escapement in the Lower American River is 22,000. Peak spawning occurred 3-weeks later than the historical average. 42%of carcasses were located on or above the weir (this is lower than last month as more carcasses were recovered in sections below the weir once it was removed). Average pre-spawning mortality was 26%.

ii. As of this meeting, there is a 45% stray rate (note: this is different from the number reported inthe meeting packet).

iii. While the Nimbus egg collection goal fell short, it is predicted that Nimbus Hatchery will stillmeet the production goal. For additional details, see page two of the handout packet.

b. Questions/Comments

i. How does the stray rate compare to previous years?

1. It's a little bit higher than previous years (a stray rate of roughly 40% is typicalfrom the last few years).

ii. Does that mean 42% of escapement was above the weir? Would 42% of the 22,000 fishhave been above the weir?

1. The model doesn't have a spatial aspect.

2. Many of the fish get hung up on the weir, so the capture efficiency of getting a carcass is much higher when the weir is there (when it's not there the carcass canmove around, go in deep pools, etc.).

iii. Would like to look further into the 42% that were on or above the weir to better understand the pre-spawn mortality. Interested to see if that lends itself to other issuesor if the 26% is evenly distributed throughout the different reaches.

1. Based on the aerial images from Dec 29th, the fish are all across the riffle.

iv. Tracy Grimes will share a table of the pre-spawning mortality by the different sections ofthe river.

c. CFS

i. CFS shared that the first steelhead redd survey took place the first week of January. Crews havereported seeing both steelhead and Chinook redds in the system. Stranding surveys are also underway and data on redd stranding should be available if it occurred as a result of flow reduction. For additional details, see page three of the handout packet.

ii. Questions/Comments

1. Is there any chance preliminary stranding results might be available by our ad-hoc meetingnext Thursday?

a. Yes, at the very least we should have our data from the field available to share.

2. Are you taking the depth of the redds during the steelhead redd surveys?

a. Yes. The shallowest depth was 14 cm, but the average was deeper than that.Many were close to banks.

3. Based on today's survey with releases at 950 cfs, none of the subsample of locationscontained dewatered redds.

d. PSMFC

i. PSMFC shared that both RSTs were lowered, and fishing began on January 11th. As of Tuesday,January 19th, seven salmon (fry) were caught, and 11 more on Thursday, January 21st. By comparison, at this point last year 643 salmon had been caught. The debris load is moderate, and the traps are in the same location.

ii. The new CalFish webpage for the Lower American River Watt Avenue RST is still a work in progress but reports should soon be available. Any data requests can be directed to Logan Day(currently working a Wed-Sat schedule).

iii. For additional details, see page four of the handout packet.

5. Operations Forecast

a. SMUD

i. For details on the Upper American River SMUD Operations, including precipitation, reservoirstorage, releases, and runoff forecast, see page five of the handout packet.

ii. Following up on an action item from December's ARG meeting, boat ramp repair work is beingconducted at Yellowjacket Campground on Union Valley Reservoir. Construction should begin Q2 of 2021.

iii. <u>Action:</u>

1. Ansel Lundberg will increase the size of the reservoir storage figure provided for thehandout packet moving forward.

b. PCWA

i. For details on PCWA operations, including reservoir and snowpack storage, power production,and recreation flows, see pages five and six of the handout packet.

ii. PCWA noted that the water year total thus far is 15.6 inches, which is roughly 50% of average,and they are conserving storage as a result.

c. CVO

i. For details on January CVO operations, including releases, storage, inflow, accumulated precipitation, and temperature management measures, see pages eight through ten of thehandout packet.

ii. Regarding the "Daily CVP Water Supply Report", CVO staff noted that reservoirs are either at or moving toward their minimum releases

iii. CVO staff stated that there is a 10 – 15 % chance that Water Year 2021 will reach Normal Precipitation. Average precipitation for January is 8.9 inches, but there has only been 2 inches of precipitation thus far. Although a rain event is expected next weekend and another in the week following, both are only anticipated to bring a total of 4 inches. Thus, it is not expected that the average level of precipitation will be met this month.

iv. In accordance with the ad-hoc discussion regarding flows last week, releases were decreased to950 cfs on January 20th.

6. Central Valley Operations

   a. Temperature Management

   CVO staff referred to pages twelve through fourteen in the handouts and provided a very brief overview of water temperature management. Average air temperatures in December and Januarywere quite cold. The Folsom Reservoir cold water pool profile, which was run on January 11th, showed that there was a total of 277,000 acre-feet of water with temperatures lower than 58 °F. The volume of the lake was 275, 000 acre-feet at the time of the meeting.

7. Exceedance Forecasts

   a. For the 90% and 50% exceedance forecasts, refer to page fifteen of the handout packet.Hydrology is still, overall, trending nearer the 90% than the 50% forecast.

   b. 90% runoff exceedance outlook: The end-of-January storage is forecasted to be 274 TAF, whichis quite low.

   c 50% runoff exceedance outlook: The end -of-January storage is forecasted to be 391 TAF.

   d. Question/Comments

      i. It would be helpful if CVO included the full forecast, rather than just the 3-month outlook in the meeting packet.

         1. Sure. For the 90% exceedance by July, we're expected to be below 100,000 acre-feet, and then further decreasing to less

than 50,000 acre-feet by the end of summer. The water year type is beginning to resemble that of Water Year 2015,which is concerning. It's a drought year and conditions continue to be dry.

e. Actions

   i. In future handouts, Thuy Washburn will provide the forecast for the entire year.

8. Discussion

   a. January Flow Reduction

   The ARG continued discussing January flow reductions, following up on the actions and conversations had in the January 21st ad-hoc meeting. There will be another ad-hoc meeting onJanuary 28th, to discuss aerial imaging and revisit January releases.

   In the January 21st ad hoc meeting, it was agreed that flows would be decreased to 950 cfs. However, CVO staff stated that they would need to see if these releases could be sustained giventhe dry conditions. They continued by noting that while there's a chance that these releases can be held for a short period, this cannot be guaranteed as there are concerns about conserving storage considering the twelve-month forecast. As such, Reclamation would like to decrease flows to 850 cfs as soon as possible. Reclamation assumed releases of 850 cfs for February and March in the 90% operations forecast.

   NMFS acknowledged that the operations handouts note a January MRR of 850 cfs but noted that this represents the Index-based MRR. However, the redd dewatering protective adjustment(RDPA) for fall-run Chinook salmon in the 2017 FMS precludes an increase in MRR from December to January. Since the December MRR was 725 cfs, the RDPA-based MRR for January 2021 is 725 cfs. The MRR in effect for January 2021 is 725 cfs, not the 850 cfs noted inthe handouts. NMFS proposed that future ARG handouts include a table with both the Index- based MRR and the RDPA-based MRR, with a clear determination of which is controlling.

   When asked about releases potentially increasing (to help with Delta water quality) shortly aftertheir reduction to 850 cfs, CVO noted that such a circumstance is hard to predict. While it is likely that releases could stay at 850 cfs until March, a significant storm could cause Delta waterquality standards to increase and increase demands from Folsom. When asked if Reclamation would consider maintaining 950 cfs (potentially 900 cfs) until after the coming storm event, CVO replied that they didn't foresee the storm being of any great impact, since it is anticipatedto only bring 2 inches of rain, increasing January's total to 4 inches which is less than 50% of average.

Reclamation and DWR would take is to cut exports. Once that's at its minimum, upstream releases would be increased. Because of the Coordinated Operations Agreement (COA), federal reservoirs releasemore water to meet Delta standards, and much of that water would most likely come from Folsom.

Based on the storage at Folsom, Reclamation would like to issue a change order to 850 cfs as soon as it can be implemented, potentially with a small reduction from 950 cfs before the ad-hocmeeting next week. It was noted that entities diverting from Folsom Reservoir are very concerned about what forecasts are showing and want to avoid going into emergency mode.

They encouraged participants to be understanding and support Reclamation in taking actions topreserve storage in Folsom Reservoir. CDFW replied that, ultimately, this decision is Reclamation's, but noted that from a fisheries perspective, avoiding dewatering would benefit fish. The small amount of difference in releases is unlikely to have much of an effect on temperature management in the fall.

NMFS staff also noted that if steelhead are spawning it would be good to get to a sustainable flow now. Sooner is better assuming it can be sustained. Given the late Chinook spawning, theoverlap of the two species is more than has been in the past and creates more conflict than usual. The end of year projections shared last week were sobering.

Regarding Chinook, Cramer Fish Sciences suggested doing a short (24-hour) pulse when embryos are ready to emerge, to give them a boost and reconnect detached side channel habitat.This suggestion was followed by one from NMFS, to interchange releases between 950 cfs and 850 cfs, which could help float alevins out while partially conserving water. However, CVO noted that given the storage situation, it would probably be unlikely to accommodate a pulse. Further, CDFW disagreed with using a pulse flow without further evidence that it's an effective approach as measured by fry emergence. They noted that the pulse flow last year confused thefish and asked that the 'yo-yo' approach be avoided.

Since it appears that this will be a drought year, Reclamation is beginning to prepare contingency plans regarding pumping plants, given that they might be affected by the low water of the reservoir. The City of Sacramento noted that a similar discussion was had in 2015 and reminded the team that 500 cfs flow is the operational limit for their facility on the lower American River (i.e., the limit for their diversions to work).

a. Actions:

    i. Thuy Washburn and Barbara Byrne will prepare a table to include the RDPA- and index-based MRR calculations.

ii. John Hannon will provide a spreadsheet on weekly emergence based on spawning date.

b. Second ad-hoc meeting

i. The ARG will prepare the following items for the second ad-hoc meeting, scheduled forThursday, January 28th.

1. John Hannon will provide a spreadsheet estimating weekly emergence based on spawningdate. Kirsten Sellheim will provide a short summary of the steelhead surveys.

2. Chris Hammersmark will run the water surface elevation model based on the spatialdistribution of redds from the aerial redd survey analysis.

3. Ansel Lundberg will prepare the forecast for the South Fork American.

4. Thuy Washburn will discuss reducing releases to 900 cfs or leaving them at 950 cfs withCVO and will provide an update.

c. Annual Report Update

i. USBR is currently working on incorporating new BiOp reporting requirements into the WY2020 Annual Report and anticipates being ready to share a draft for review by next week.

d. Action:

i. Reclamation will share the Draft Annual Report (the week of 1/25)

2. Next ARG Meetings:

a. Ad-hoc meeting: Thursday January 28, 2021 from 12:00 PM – 2:00 PM

b. Regularly scheduled meeting: Thursday, Feb 18, 2021 from 1:30 PM – 3:30 PM

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Agenda

1. Introductions
    a. Jessica Law, Executive Director, Sacramento River Forum
2. Presentation
    a. Shining a Light on Ocean Management: How Salmon Harvest and Ocean Management Effect Escapement Goals in the Central Valley (Dana Lee, Fisheries Biologist, FISHBIO)
3. Housekeeping
4. Fisheries Update
    a. CDFW
5. Operations Forecast
    a. SMUD
    b. PCWA
    c. Central Valley Operations
6. Central Valley Operations
    a. Temperature management
    b. Exceedance forecast & temperature schedules

7. Discussion
    a. 2020 Annual Report update
8. Next Meeting: Thursday, February 18, 1:30-3:30pm

ARG Meeting CDFW Fisheries Update

January 21, 2021

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

Fall-Run Chinook Carcass Survey

- Survey began 10/13/2020, currently in final week (week 15)
- Total carcasses processed through 1/14 is 12,811
    - Peak detection occurred week 11 (Dec. 21-23)
    - 42% of carcasses located on or above the weir
    - Pre-spawn mortality average is 26% for 1,972 females examined
- Stray rate of hatchery fish is ~54% based on preliminary coded wire tag data
    - Most strays are from the Mokelumne River Hatchery
    - Other hatcheries: Merced, Feather

Nimbus Hatchery

- Last fall-run Chinook salmon spawn on 12/14/20
    - ~7.1 million fall-run Chinook salmon eggs collected
    - Percentage surviving to eyed stage is ~93%
- Steelhead spawning started 12/29/20

Lower American River 2021 Steelhead Spawning Survey Summary

Spawning

Table 1. 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

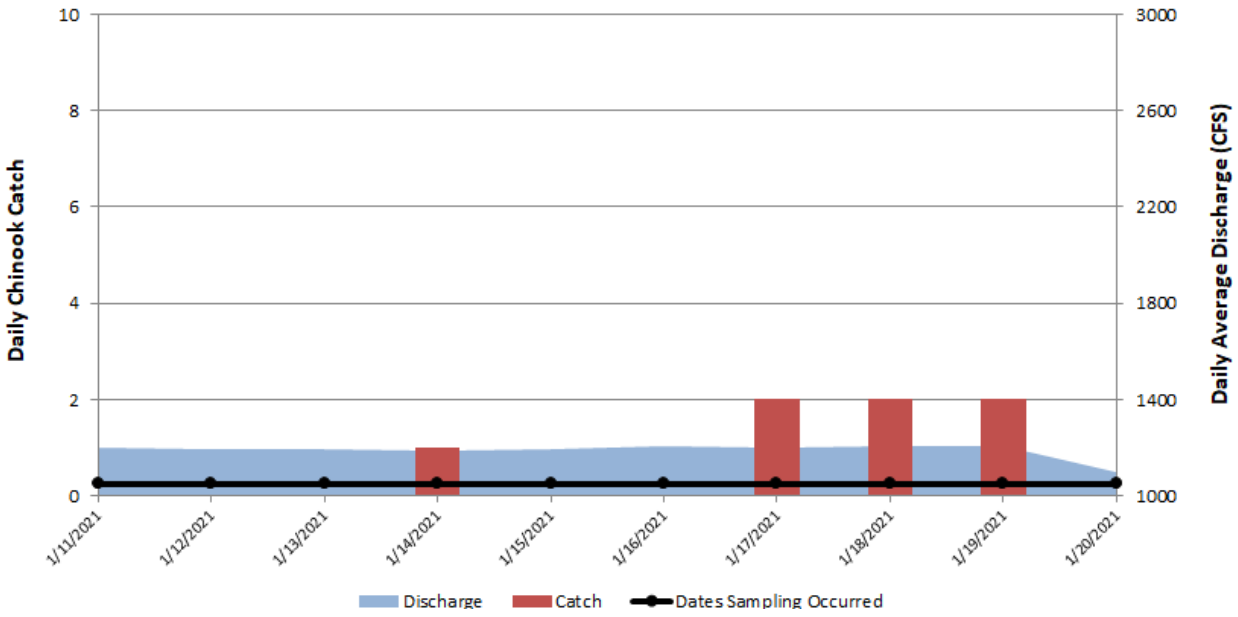
Spawning surveys are occurring this week (Jan 20-22).

Stranding surveys will be conducted during the next spawning survey to monitor potential stranding areasfollowing the flow reduction to ~950 cfs.

Pacific State Marine Fisheries Commission Update

Lower American River at Watt Ave (RSTs)

Daily catch of natural origin Chinook Salmon and daily average discharge at Fair Oak during the 2021 Lower American River rotary screw trap survey season.



The new CalFish webpage for the LAR Watt Ave RSTs: https://www.calfish.org/ProgramsData/ConservationandManagement/CentralValleyMonitoring/Sacram entoValleyTributaryMonitoring/LowerAmericanRiver-RSTMonitoring.aspx

SMUD Upper American River Project Update

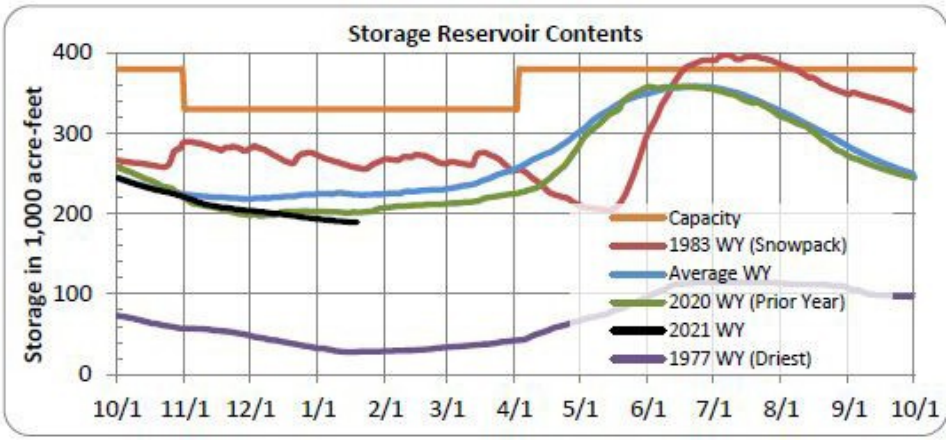
Conditions – 19 February 2021:

January precipitation through 1/19/2021 7:00:00 AM is 2.20 in., which is 23% of the January average of 9.55". Precipfor the water year to date is 12.51" which is 50% of average to date (25.16") and 22% of the entire wateryear average of 57.32".

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

- 198,312 acre feet (December 15, 2020 storage: 199,580 acre feet)
- 49.9% capacity
- 85% of historical average (19 January historical average: 223,228 AF / 59%)
- 0% decrease in storage since last week

Figure 1. January 19, 2021 reservoir storage



Loon Lake: 33,846 AF

Ice House: 24,683 AF

Union Valley: 130,782 AF

Last year (January 19, 2020), storage was at 53.1% (201,357 AF). *Total non-winter capacity: 379,174 AF.

Chili Bar releases into the South Fork American River

- December 2020 releases:
  - Daily average flow: 365 cfs
  - Total releases: 22,473 AFJanuary 2021 releases (Jan 1-18):
- January 2021 releases (Jan 1-18):
  - Daily average flow so far: 350 cfs
  - Total releases so far: 12,505 AF

Runoff into the storage reservoir basins is 30% of median to date through Jan 18. The snowpack is 50% of average atselected snow sensors.

Table. Runoff Forecast (in cfs, daily average forecast, forecast 2021-1-1)

Basin	**Fri Jan 22**	**23-Jan**	**24-Jan**	**25-Jan**	**26-Jan**	**27-Jan**
SFA above Slab	28.3	25.7	25.1	24.6	24.3	23.9
Slab Creek	7.0	6.7	6.3	7.2	6.1	8.8
Combined South Fork	35	32	31	32	30	33

PCWA MFP OPERATIONS OVERVIEW for American River Operations Group (Real Time Data as of January 20, 2020)

- French Meadows Storage = 48,000 AF of 136,405 AF = 35% Capacity
  - MFAR above FM Inflow (R24) = ~25 cfs
- Hell Hole Storage = 78,000 AF of 207,590 AF = 37% Capacity
  - Five Lakes Inflow (R23) = ~10 cfs
  - Rubicon Inflow (R22) = ~25 cfs
- Combined Storage (FM+HH) = 126,000 AF/342,590 AF = 37% Capacity; ~73% of AVG
- **MFAR @ R11:** 7 day daily average ~200 cfs

2021 Water Year Dashboard

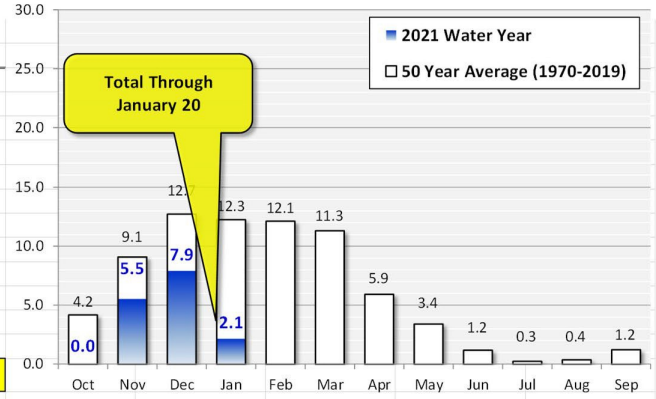
PCWA

Updated through: January 20, 2021

Lake Spaulding Precipitation

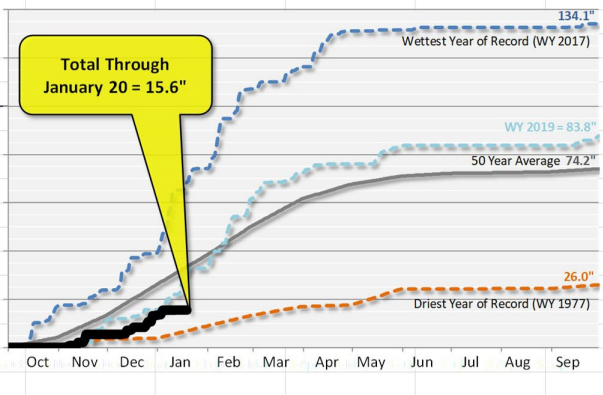
Monthly Totals (values in inches of precipitation):

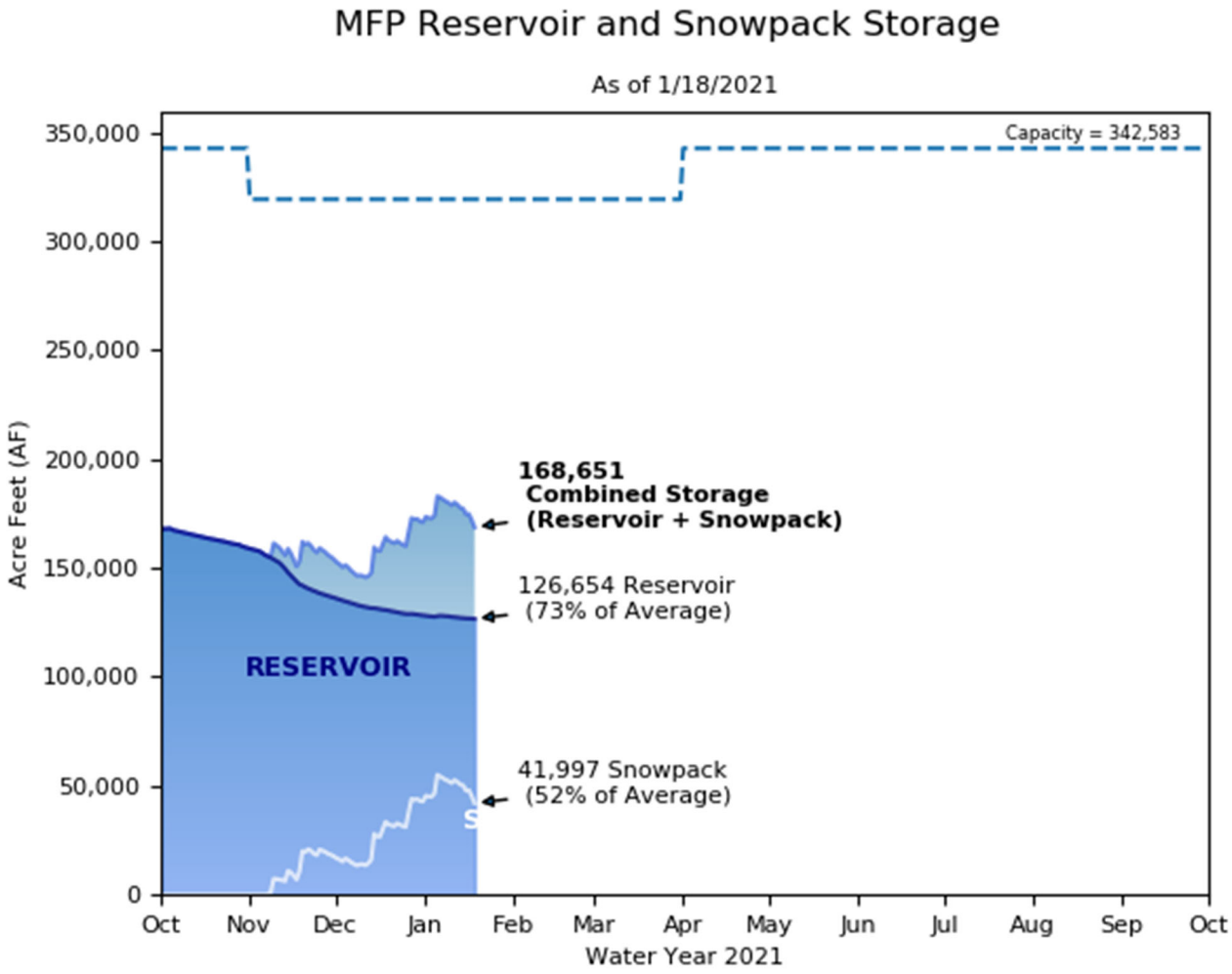
	Historical Average[2/]	Actual This Year	Percent of Average
October	4.17	0.00	0%
November	9.07	5.52	61%
December	12.70	7.92	62%
January	12.26	2.14	17%
February	12.11	--	--
March	11.31	--	--
April	5.94	--	--
May	3.41	--	--
June	1.18	--	--
July	0.25	--	--
August	0.37	--	--
September	1.23	--	--
October		15.6 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	55%
January	38.20	15.58	--
February	50.32	--	--
March	61.63	--	--
April	67.57	--	--
May	70.99	--	--
June	72.16	--	--
July	72.42	--	--
August	72.79	--	--
September	74.02	--	--




MFP Reservoir and Snowpack Storage
As of 1/18/2021
Capacity = 342,583
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
Acre Feet (AF)
168,651
Combined Storage
(Reservoir + Snowpack)
126,654 Reservoir
(73% of Average)
RESERVOIR
41,997 Snowpack
(52% of Average)
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Water Year 2021

American River Summary Conditions – January (On-going)

- January has been dry, one small precipitation event to date, not much on the horizon. Currently categorized as a critical year on the Sacramento Valley WY Type Index 40-30-30 under both 90% and 50% exceedance.

- 10%-15% Odds of Water Year 2021 reaching Normal Precipitation.

Storage/Release Management Conditions

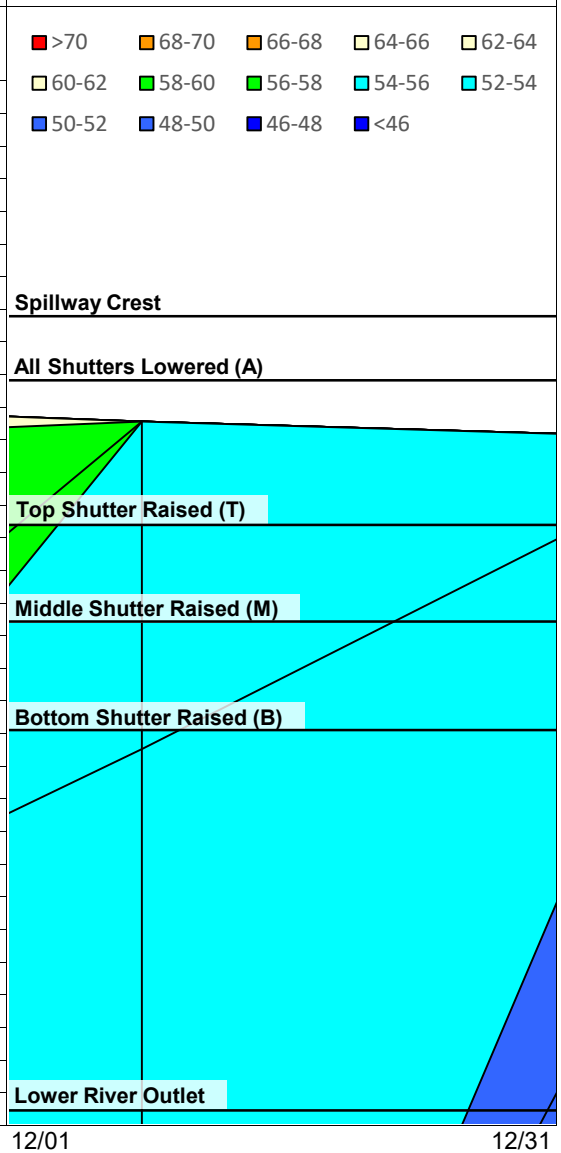
- Releases currently at 950 cfs for Fall Run Chinook Salmon spawning in the American River.

Temperature Management

- All shutters are pulled on all three units.

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						
Nov	50.6	48.4	56.9	56.8	56.4	56.1	51.5	1261							
12/01	45.3	44.6	55.4	55.3	54.4	53.9	46.8	1274	320	B	45	B	54	B	1
12/02	45.1	44.9	55.2	55.1	54.5	53.9	47.1	1262	319	B	42	B	56	B	1
12/03	45.2	44.5	55.1	55.1	54.5	53.9	48.1	1244	318	B	44	B	39	B	18
12/04	45.3	44.6	54.9	55.0	54.4	53.9	48.3	1250	316	B	29	B	32	B	38
12/05	45.3	44.6	54.7	54.9	54.2	53.6	48.1	1247	314	B	21	B	50	B	28
12/06	45.2	45.0	54.5	54.7	53.9	53.4	47.8	1247	313	B	25	B	34	B	41
12/07	44.9	44.4	54.3	54.6	54.0	53.4	56.8	1250	312	B	1	B	1	B	97
12/08	44.8	43.9	53.9	54.3	53.8	53.4	49.3	1245	310	B	1	B	1	B	97
12/09 ?	44.9	43.7	53.9	54.2	53.6	53.2	48.7	1248	309	B	22	B	22	B	56
12/10	44.8	43.6	53.6	54.0	53.4	53.0	49.1	1252	307	B	29	B	29	B	43
12/11	44.2	43.2	53.3	53.6	52.9	52.3	45.4	1249	306	B	31	B	45	B	24
12/12	45.5	45.1	53.3	53.6	53.3	53.0	48.4	1260	306	B	27	B	28	B	45
12/13	46.9	46.0	52.9	53.4	53.0	52.7	49.2	1273	305	B	19	B	19	B	62
12/14	47.2	45.8	53.0	53.1	52.6	52.3	44.0	1271	304	B	15	B	51	B	34
12/15	46.2	45.3	52.8	52.8	52.2	51.7	44.2	1274	303	B	28	B	27	B	46
12/16	46.3	45.1	52.6	52.7	52.2	51.8	46.6	1274	302	B	31	B	38	B	31
12/17	47.3 ?	46.3	52.5	52.8	52.7	52.6	50.3	1274	302	B	31	B	44	B	25
12/18	46.5 #	-	52.3	52.7	52.0	51.7	45.8	1274	301	B	29	B	40	B	31
12/19	45.2 #	-	52.2	52.5	52.0	50.8	44.0	1272	301	B	45	B	28	B	28
12/20	44.9 #	-	52.0	52.4	51.8	51.4	42.8	1274	300	B	28	B	35	B	37
12/21	44.6 #	-	51.8	52.1	51.5	51.2	41.6	1274	299	B	45	B	27	B	28
12/22	44.2	43.6	51.8	52.1	51.7	51.3	45.9	1273	298	B	41	B	25	B	33
12/23	43.8	43.1	51.5	51.8	51.1	50.8	41.2	1273	297	B	31	B	45	B	25
12/24	42.9	42.5	51.3	51.7	51.1	50.7	41.5	1273	296	B	24	B	27	B	49
12/25	43.1	43.7	51.1	51.5	51.1	50.9	48.5	1273	295	B	41	B	25	B	34
12/26	45.0	45.1	51.1	51.6	51.8	51.8	51.8	1273	294	B	22	B	43	B	35
12/27	45.3	44.4	51.0	51.5	51.1	51.0	46.6	1273	294	B	34	B	41	B	24
12/28	45.3	44.9	51.0	51.7	51.6	51.4	48.0	1273	293	B	33	B	34	B	34
12/29	45.0	44.2	50.8	51.4	51.1	50.8	44.8	1275	292	B	40	B	30	B	30
12/30	44.1	42.9	50.6	51.2	50.7	50.3	45.9	1275	291	B	24	B	47	B	30
12/31	44.5	44.3	50.6	51.4	51.4	51.4	49.2	1272	290	B	33	B	25	B	41
Dec	45.1	44.4	52.7	53.1	52.6	52.2	47.0	1265							
						Total AF		77793							

Isobath Plot



Legend

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A	= All Shutters Lowered
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Notes

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

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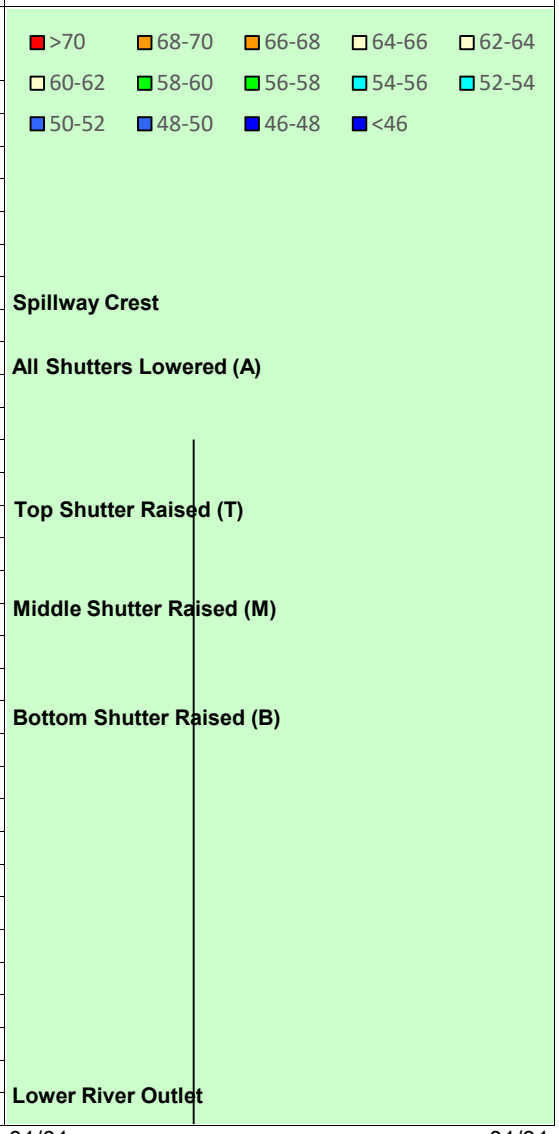
DATE	Mean Daily Temperatures (°F)							Release (CFS)	Storage (TAF)	Unit Shuter Position / Load Percentage					
	Water						Air			Unit 1		Unit 2		Unit 3	
	NFA	ARP	AFD[1]	AHZ	AWP	AWB	CSU	Nimbus	Folsom						
Dec	45.1	44.4	52.7	53.1	52.6	52.2	47.0	1265							
01/01	44.0	44.1	50.4	51.1	50.6	50.4	45.6	1215	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															
01/21															
01/22															
01/23															
01/24															
01/25															
01/26															
01/27															
01/28															
01/29															
01/30															
01/31															
Jan	45.0	44.7	49.9	50.8	50.7	50.7	49.4	1210							
						Total AF		45614							

Isobath Plot



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UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA
DAILY CVP WATER SUPPLY REPORT
January 19, 2021
Run date: January 20, 2021

Table 1. Reservoir Releases in Cubic Feet/Second

RESERVOIR	DAM	WY 2020	WY 2021	15 YR MEDIAN
Trinity	Lewiston	300	313	304
Sacramento	Keswick	5,000	3,236	3,500
Feather	Oroville (SWP)	2,000	1,250	1,750
American	Nimbus	1,809	1,212	1,675
Stanislaus	Goodwin	807	202	244
San Joaquin	Friant	423	361	361

Table 2. Storage in Major Reservoirs in Thousands of Acre-Feet

Reservoir	Capacity	15 Yr Avg	WY 2020	WY 2021	% of 15 Yr. Avg
Trinity	2,448	1,419	1,961	1,251	88
Shasta	4,552	2,617	3,351	2,084	80
Folsom	977	382	479	275	72
New Melones	2,420	1,410	1,982	1,548	110
Fed. San Luis	966	588	516	384	65
Total North CVP	11,363	6,416	8,289	5,542	86
Millerton	520	266	303	172	65
Oroville (SWP)	3,538	1,744	2,127	1,219	70

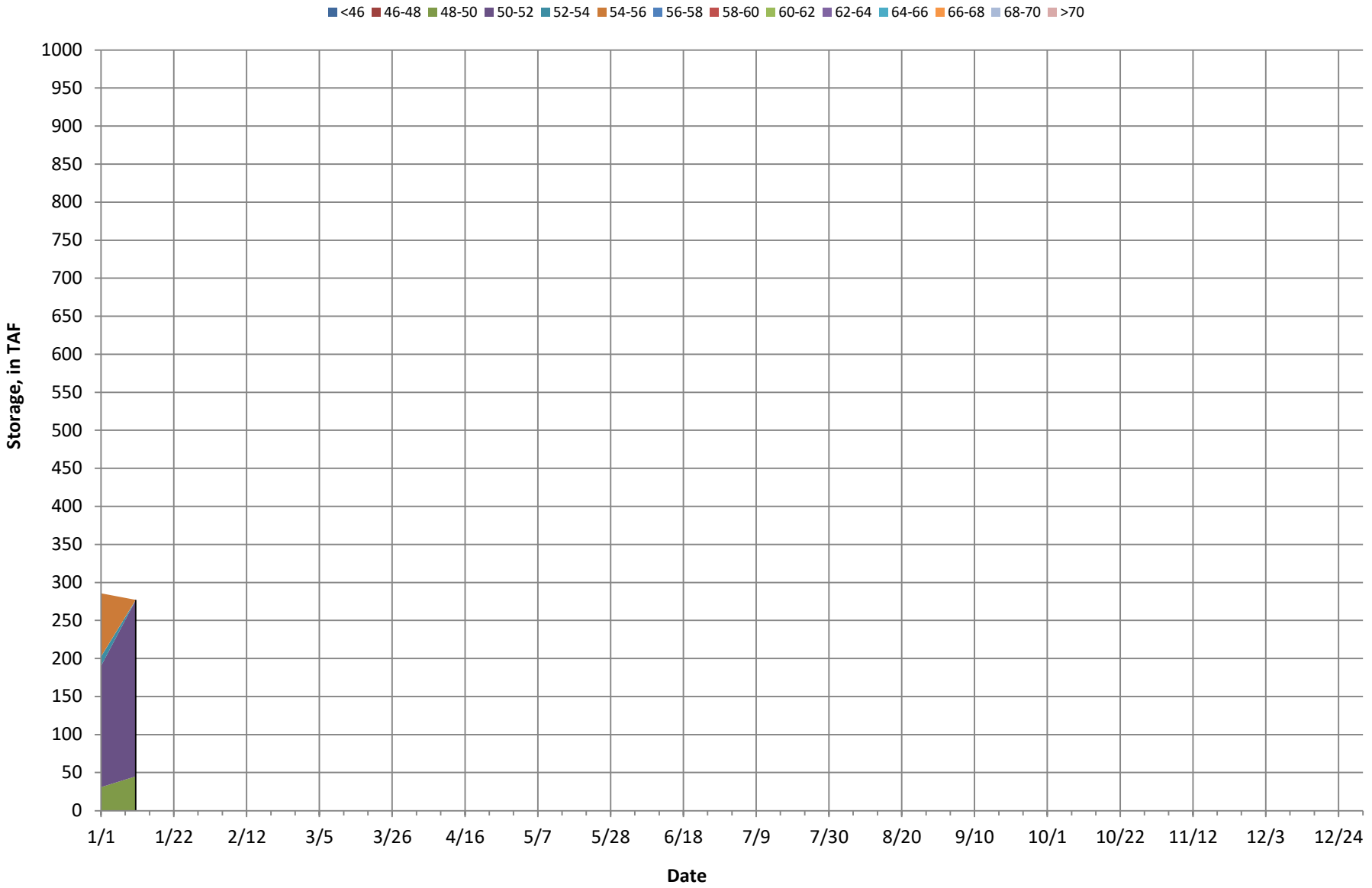
Table 3. Accumulated Inflow for Water Year to Date in Thousands of Acre-Feet

Reservoir	Current WY 2021	WY 1977	WY 1983	15 Yr. Avg	% of 15 Yr. Avg
Trinity	45	36	316	184	24
Shasta	737	842	1,761	1,217	61
Folsom	184	133	1,264	492	37
New Melones	113	----	442	187	60
Millerton	150	78	626	195	77

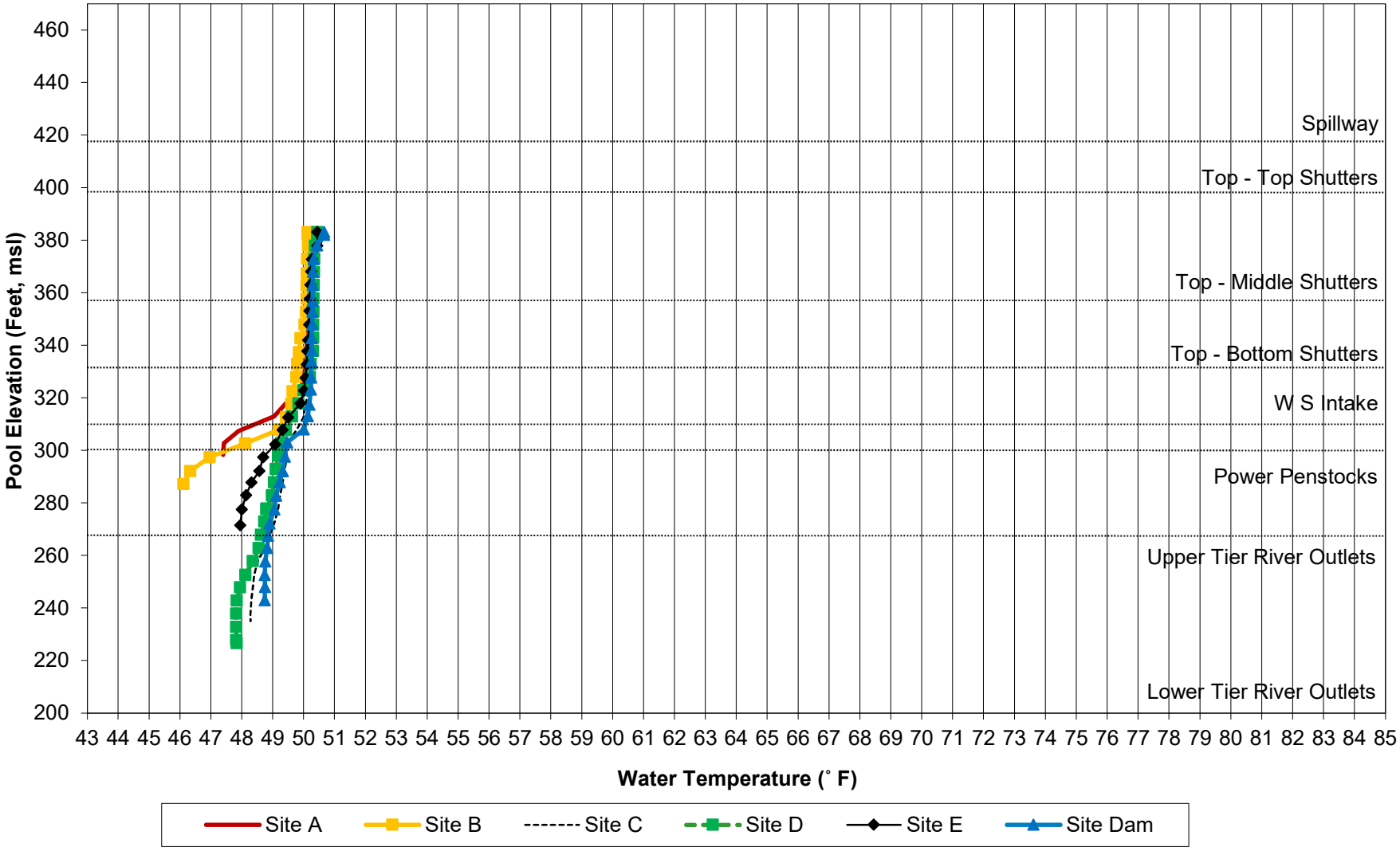
Table 4. Accumulated Precipitation for Water Year to Date in Inches

Reservoir	Current WY 2021	WY 1977	WY 1983	Avg (N Yrs.)	% of Avg	Last 24 hrs
Trinity at Fish Hatchery	7.41	4.40	20.41	15.89 (59)	47	0.00
Sacramento at Shasta Dam	9.83	5.34	33.43	28.33 (64)	35	0.00
American at Blue Canyon	12.23	7.61	42.29	30.02 (46)	41	0.00
Stanislaus at New Melones	4.42	----	15.88	11.92 (43)	37	0.00
San Joaquin at Huntington LK	4.06	4.80	31.50	17.58 (46)	23	0.00

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



Folsom Lake Temperature Profiles: 11-Jan-2021



Folsom Cold Water Pool

Folsom Reservoir: Cold Water Volume

Profile Date:	1-11-21
Volume less than 58 °F (TAF):	277.0
Penstock Elevation (ft):	327
Volume (TAF):	83
Approximate Max. Temp (°F):	50.2

Draft January 2019

90% Runoff Exceedance Outlook

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

	Jan	Feb	Mar
Folsom 290	274	331	421
Elev.	383	392	400

Monthly River Releases (cfs)

	Jan	Feb	Mar
American	1145	850	850
MRR	850		

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

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

	Jan	Feb	Mar
Folsom 290	391	552	754
Elev.	402	423	445

Monthly River Releases (cfs)

	Jan	Feb	Mar
American	1145	800	1500
MRR	850		

Please note:

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

CVP operational forecasts or outlooks consider general system-wide dynamics and do not necessarily address specific watershed/tributary details.CVP releases represent monthly averages.

CVP operations are updated monthly as new hydrology information is made available December through May.

Shaded area represents less confident hydrologic inputs of the future water year.