# 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, March 18, 2021**

**Notes**

1. **Actions**

- All will email Rafi Silberblatt and/or Jessica Law if interested in viewing the Water Forum's draft spring pulse release proposal.
- Logan Day will include the link to the CA Fish webpage in the meeting handout. **(DONE)**
- Barb Byrne will send an email to Thuy Washburn regarding the temperature threshold used to report cold-water pool volume.
- Thuy Washburn will confirm accuracy of the isothermobath graph.
- Kearns & West
    - Include the link to the steelhead workshop materials in the meeting notes. **(DONE)**
    - Coordinate with Tracy Grimes and Felix Smith to prepare for a presentation/discussion on escapement mortality at the April ARG meeting.
    - Update the meeting agenda to reflect a single CVO update in the CVO section of the meeting handout.
    - Schedule an ad-hoc ARG meeting to further discuss spring pulse flow planning. **(DONE)**
    - Move the agenda item related to the framing of change order rationales to the April ARG meeting.

2. **Introductions**

- USBR: Thuy Washburn, Levi Johnson, Mike Wright, Ian Smith, Spencer Marshall, John Hannon, Zarela Guerrero, Darin Reintjes, & Liz Kiteck
- Water Forum: Jessica Law, Kat Perkins, Chris Hammersmark & Jeff Weaver
- SARA: Clyde McDonald & Felix Smith
- NMFS: Barbara Byrne
- USFW: Paul Cadrett
- CDFW: Gary Novak, Morgan Kilgour, Mike Healey, Duane Linander & Ken Kundargi
- SWRCB: Reza Ghasemizadeh, Michael Macon & Emily Fisher
- City of Roseville: Sean Bigley
- San Juan Water District: Paul Helliker & Greg Zlotnick
- Regional Water Authority: Michelle Banonis, Jim Peifer
- City of Folsom: Marcus Yasutake
- EBMUD: I-Pei Hsiu
- SMUD: Ansel Lundberg
- City of Sacramento: Anne Sanger, Brian Sanders
- DWR: Mike Ford
- Independent: Rod Hall
- WAPA: Mike Prowatzke
- Cramer Fish Sciences: Kirsten Sellheim & Avery Scherer
- Sacramento State Aquatic Center: Dede Birch
- Pacific States Marine Fisheries Commission: Logan Day
- Kearns & West: Rafi Silberblatt & Kai Walcott
- PCWA: Ben Barker
- Other: Kerry Schmitz, Tom Boardman, Ron Stork

3. **Presentation**

    - Avery Scherer (Cramer Fish Sciences) delivered a presentation titled "Sailor Bar: tested techniques and innovative ideas following the 2019 restoration."

**Questions/Comments**

- In response to questions from NMFS and CDFW, Avery Scherer noted the following:

- The data presented pertains to a subsample of juveniles (larger fish were excluded)
- The study did not include night snorkel surveys.
- Based on available data it's not possible to rule out a distance to edge effect (many types of cover are more prevalent in edge areas).
- Boulders are generally considered an upstream characteristic.

4. **Housekeeping**

- Meeting Notes
  - Meeting notes are being reformatted to provide a high-level summary of concerns, clarifications, and agreements (as opposed to a verbatim transcript of questions and responses).
- Announcements
  - Factsheets and recordings from the February 17-19 "Monitoring Steelhead Populations in the San Joaquin Basin" workshop are available on the Delta Stewardship Council event page at: https://deltacouncil.ca.gov/events
    - **[Action]** K&W will include the links to the steelhead workshop in the notes. **(DONE)**
  - The ARG annual reports of activities has been 508 remediated and the team should expect the final document by the end of the week.

5. **Fisheries Update**

- CDFW
  - Morgan Kilgour (CDFW) provided a fisheries update, noting that Tracy Grimes is on the American River helping to rescue Chinook salmon (roughly 50mm in size) from the stranded pools at River Bend. Approximately 300 fish have been rescued; the rescue was still ongoing at the time of the meeting.

**Questions/Comments**

  - Concern was noted regarding pre-spawn mortality rates (26% of the female Chinook salmon died before they spawned last year).
  - **[Action]** K&W will coordinate with Tracy Grimes and Felix Smith to prepare for a presentation/discussion on pre-spawn mortality at the April ARG meeting.

- CFS
  - Kirsten Sellheim, CFS, provided an update on steelhead spawning. See more details on page 3 of the meeting handout.
  - Redd Dewatering

        - In early March CFS inspected the 174 redd locations deemed most susceptible to being dry at the surface and observed that at 1,000 cfs there were 12 redds that were dry at the surface and 117 redds less than 30 cm deep (of which 21 were less than 10 cm deep).
    - This number falls between two previous projections:
        - A 1D model using reaches with greatest water surface reductions and historical redd distributions projected that no redds would be dewatered until flows dropped to 950 cfs.
        - In January, an analysis using a 2D hydraulic model of 2,335 observed redd locations from fall 2020 projected 45 dewatered redds.

**Questions/Comments**

- In response to questions from NMFS, CDFW and USBR it was noted that:
    - There are areas where the 2D model is more/less accurate. Nimbus Basin isn't well calibrated (largely due to the effects of the weir).
- This preliminary analysis focused on the shallowest redds; analysis was not conducted comparing modeled and observed water surface elevation for all observed redds.
- It's not possible to gauge whether 12 dewatered redds are still viable (i.e., have subsurface flow providing suitable incubation conditions) with currently available data.

- PSMFC
    - See page 4 in the meeting handout for more information.

**Question/Comments**

- In response to questions regarding trap efficiency, it was noted that:
    - Predation from a recent hatchery steelhead release likely contributed to the reduced efficiency observed in the second half of February; and
    - Predation likely occurred in both the trap and the river.
- In response to interest in using the traps to gain a better understanding of the impacts of pulse flows on outmigration, it was noted that:
    - The majority of juveniles out-migrate at night and traps are generally only run during the day for safety reasons. With sufficient notice (>8 hours) of the next pulse flow it would be possible to have traps set up in the morning, but the value of the data is not clear.
- **[Action]** Logan Day will include the link to the CA Fish webpage in the meeting handout. See link here: https://www.calfish.org/ProgramsData/ConservationandManagement/CentralValleyMonitoring/SacramentoValleyTributaryMonitoring/LowerAmericanRiver-RSTMonitoring.aspx

## 6. Operations Forecast

- SMUD
    - Ansel Lundberg, SMUD, provided an update on the Upper American River Project. See page 5 to 6 of the meeting handout for more details.
- PCWA
    - Ben Barker, PCWA, provided an update on the American River Operations Group. See page 7 of the meeting handout for more details.

**7. Central Valley Operations**

- Thuy Washburn provided an update on CVO operations.
- **[Action]** K&W will update the meeting agenda to reflect a single CVO update in the CVO section of the meeting handout.
- Temperature Management
    - Bottom and middle shutters are lowered.
    - The top shutters are raised and it's unlikely that they will be lowered until reservoir elevation reaches 428 ft.

**Question/Comments**

- NMFS expressed interest in using 56 degrees instead of 58 degrees as the threshold to use when reporting the volume of the cold-water pool.
- USBR noted that 58 degrees is the format that Peggy provided but it may be possible to provide a different/additional report if requested.
    - **[Action]** Barb Byrne may send an email to Thuy Washburn regarding the temperature threshold used to report cold-water pool volume.
- There was concern that the volume of water below 58 degrees doesn't match up with the isothermobath graph.
    - **[Action]** Thuy Washburn will confirm the accuracy of the isothermobath graph.

- CVP water supply reports
    - See page 13 for more details.
- Outlook
    - Note: On page 17, for 90% elevation it should say "399" - not "3993" as written.
- Projection for releases:

    - April: 1,500 cfs
    - May: releases lowered for storage conservation
    - June & August: releases raised for Delta standards and exports.
    - As in 2015, Oroville storage is so low that releases from Folsom will be needed to help meet Delta standards.
- USBR solicited input from the ARG regarding whether releases in March to meet Delta standards could be considered to satisfy the spring pulse flow requirement in the FMS. USBR noted that the decision to release water in March for Delta standards was made in real-time and there wasn't an opportunity to provide notification or coordinate beforehand.
    - CDFW indicated a desire for additional spring pulse flows in April as the increased flows in March were for Delta standards and too early to have much benefit for juvenile salmon emigration. CDFW also expressed interest in scheduling an ad-hoc meeting to further discuss spring pulse flow planning and noted that it would be ideal for USBR to provide notification prior to releases for exports and/or Delta standards so that CDFW can coordinate fish releases.
    - CDFW also noted that there was insufficient time allocated for this discussion and that for future meetings, especially meetings where ample discussion is warranted, presentations be moved to the end, or postponed.
    - The Water Forum developed a draft spring pulse release proposal with USBR which is available for ARG members to view.
        - **[Action]** All ARG members interested in viewing the Water Forum's draft spring pulse release proposal should email Rafi Silberblatt and/or Jessica Law.
- NMFS noted that based on the Spring Pulse Flow Guidance document, the water quality release may mean that USBR is no longer obligated to release a spring pulse flow. NMFS expressed a desire to further discuss this issue in an ad-hoc meeting.
- **[Action]** K&W will schedule an ad-hoc ARG meeting to further discuss spring pulse flow planning.
- **[Action]** K&W will move the agenda item related to the framing of change order rationales to the April ARG meeting.

BUREAU OF RECLAMATION

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**Agenda**

1. Introductions
2. Presentation
    a. Sailor Bar: Tested Techniques & Innovative Ideas (Avery Scherer, Cramer Fish Sciences)
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, April 15, 1:30-3:30pm

ARG MEETING CDFW FISHERIES UPDATE

March 18, 2021

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

## NIMBUS HATCHERY

The fish are all healthy. Salmon are being moved out of the Hatchery Building to the raceways. Tagging will start in two or three weeks. The new ladder is scheduled to be tested the first week of April.

CRAMER FISH SCIENCES®
*Oregon • California • Washington • Idaho • Alaska*

# 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 | Unknown | Test | Total |
|---|---|---|---|---|---|
| **Jan 6-8** | 14 | 7 | 0 | 0 | 21 |
| **Jan 20-22** | 4 | 1 | 1 | 0 | 6 |
| **Feb 3-5** | 19 | 0 | 0 | 3 | 22 |
| **Feb 17-19** | 14 | 0 | 0 | 0 | 14 |
| **Mar 2-3** | 2 | 0 | 0 | 0 | 2 |
| **Total** | **53** | **8** | **1** | **3** | **65** |

Spawning surveys are occurring this week (Mar 16, 18, 19).

## Stranding

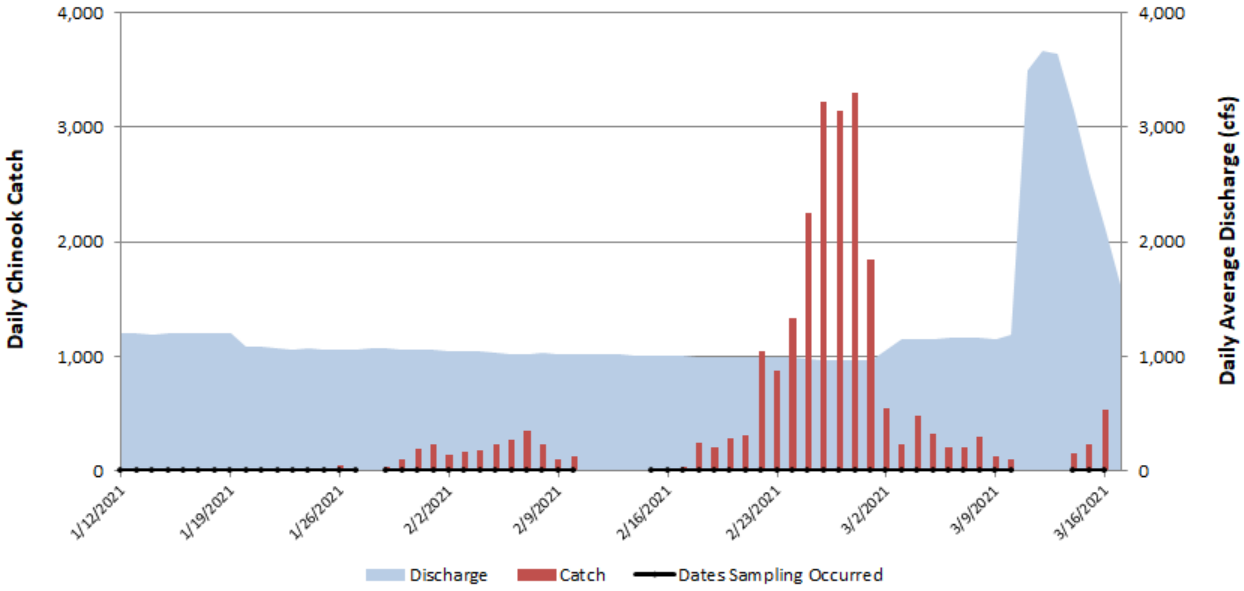
Juvenile stranding and redd dewatering surveys will be conducted when flows stabilize following a flow reduction from 3,500 cfs to 1,200 cfs.

Pacific States Marine Fisheries Commission
*Updated through 03/16*

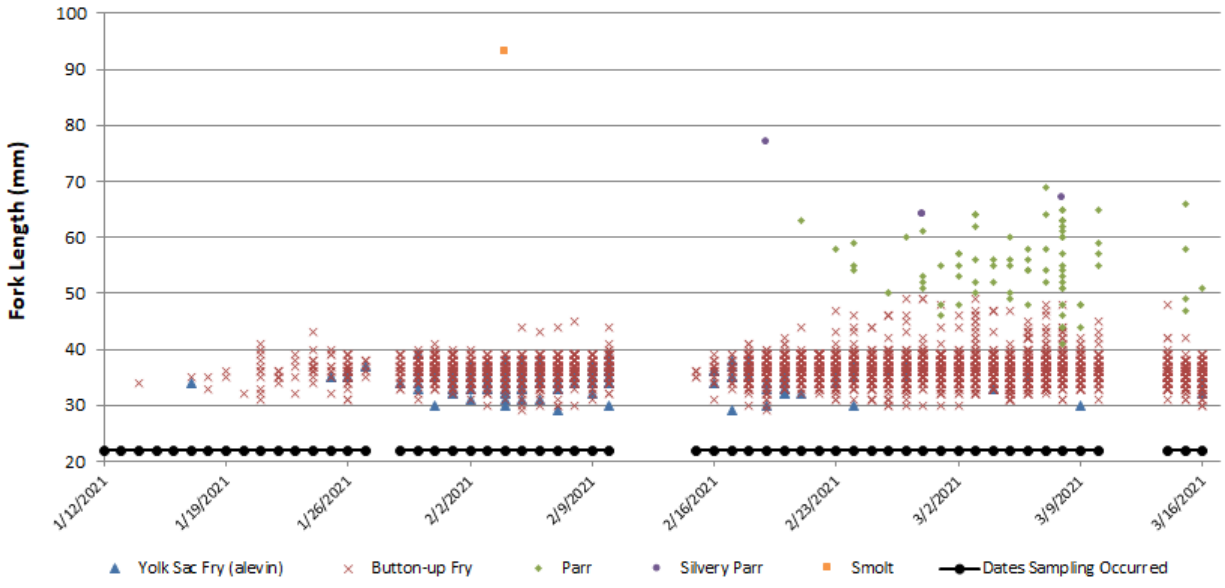
## Unmarked Juvenile Chinook Salmon (length-at-date):

| Fall | Late Fall | Spring | Winter |
|---|---|---|---|
| 23,984 | 0 | 20 | 2 |

**Lower American River at Watt Ave (RSTs):**
Daily catch of unmarked Chinook Salmon and daily average discharge at Fair Oaks during the 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.



SMUD Upper American River Project Update

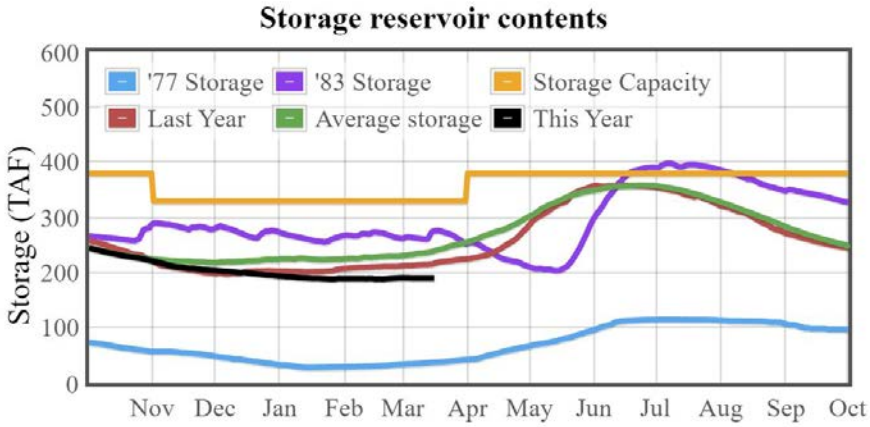
Conditions – 16 March 2021:

March precipitation through 3/16/2021 7:00:00 AM is 2.70 in., which is 30% of the March average of 9.06". Precip for the water year to date is 26.53" which is 62% of average to date (43.04") and 46% of the entire water year average of 57.32".

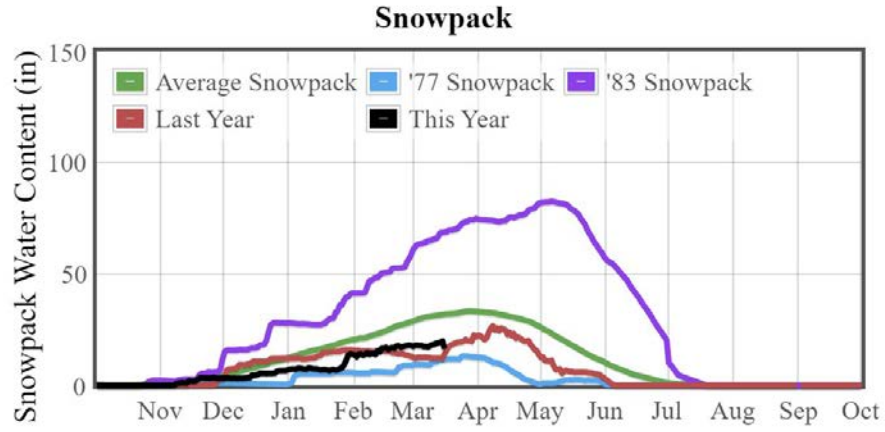
**Combined reservoir storage for Loon Lake, Union Valley and Ice House Reservoirs**

- 189,302 acre feet (Storage this time last month: 187,836 acre feet)
- 50% full
- 79% of historical average (16 March historical average: 239,081 AF / 63%)
- 0% decrease in storage since last week

**March 16, 2021 reservoir storage: (Figure 1)**




**March 16, 2021 snowpack: (Figure 2)**




Individual Reservoir Storage:

- Loon Lake: 30,198 AF
- Ice House: 24,947 AF (almost 100% of avg)
- Union Valley: 134,157 AF (76% of avg)

Last year (on March 16, 2020), storage was at 57.3% (217,403 AF). **Total winter capacity: 379,174 AF.*

**Chili Bar releases into the South Fork American River**

February 2021 releases:

- Daily average flow: 592 cfs
- Total releases: 32,888 AF

March 2021 releases (March 1-14):

- Daily average flow so far: 516 cfs
- Total releases so far: 14,342 AF

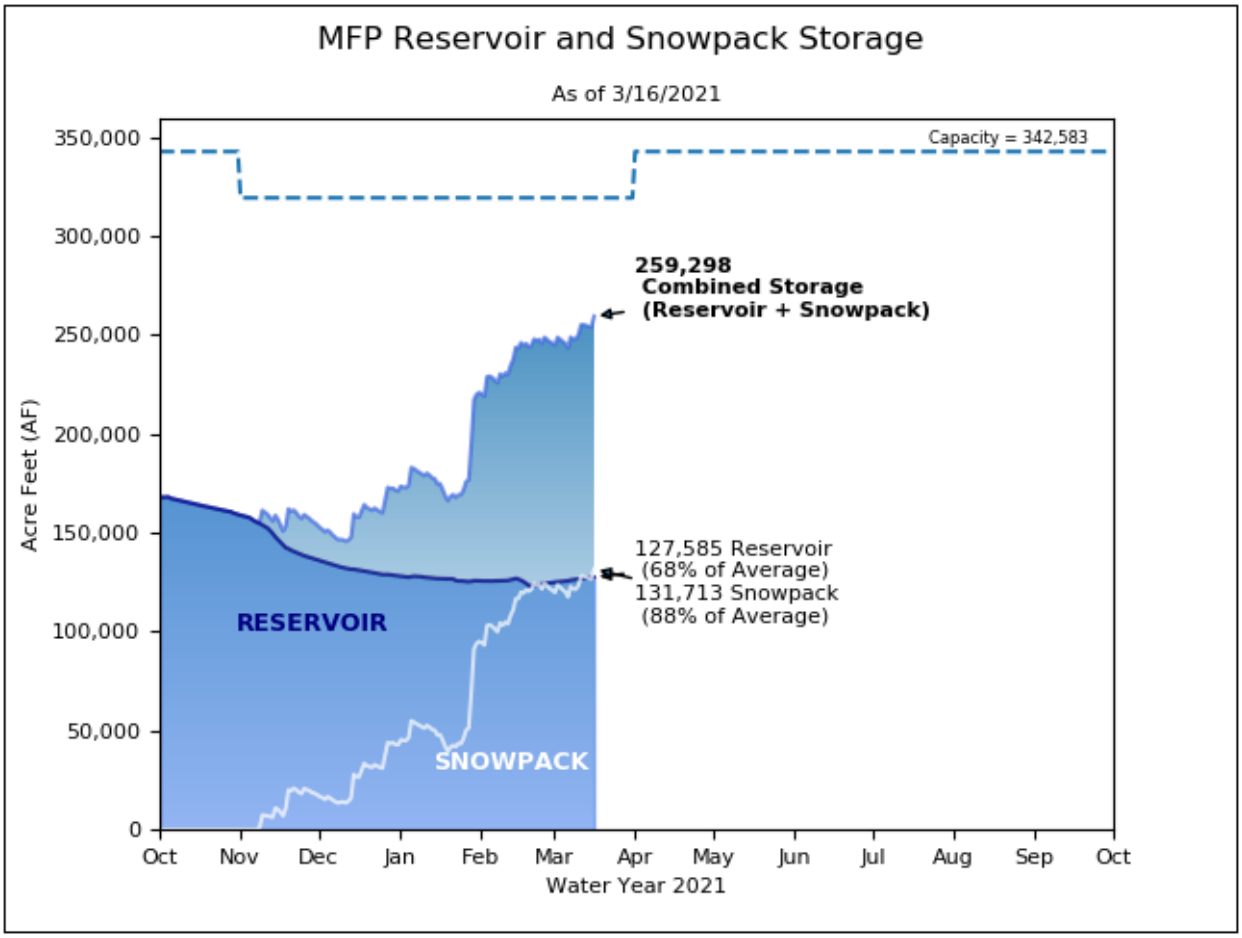
Runoff into the storage reservoir basins is 32% of median to date through Mar 15. The snowpack is 62% of average at selected snow sensors to date.

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

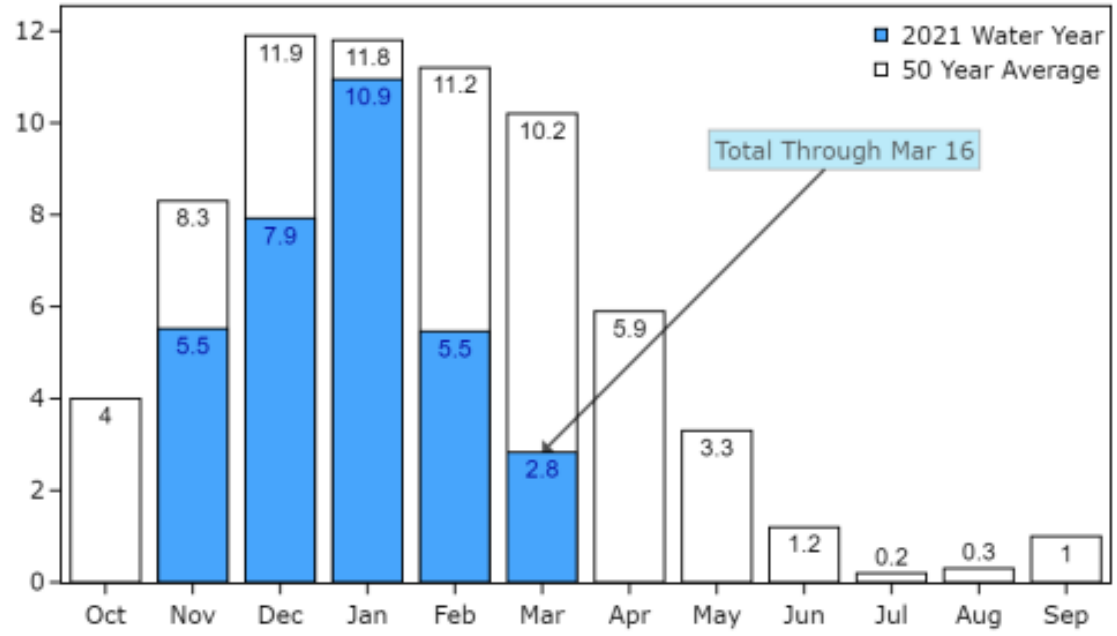
| ***BASIN*** | **Fri Mar 19** | **20-Mar** | **21-Mar** | **22-Mar** | **23-Mar** | **24-Mar** |
|---|---|---|---|---|---|---|
| SFA above Slab | 82.3 | 71.8 | 59.4 | 53.7 | 50.3 | 63.1 |
| Slab Creek | 301.5 | 102.1 | 62.8 | 59.8 | 60.5 | 64.6 |
| Combined South Fork | 384 | 174 | 122 | 114 | 111 | 128 |

# PCWA MFP OPERATIONS OVERVIEW for American River Operations Group (Real Time Data as of March 17, 2020)

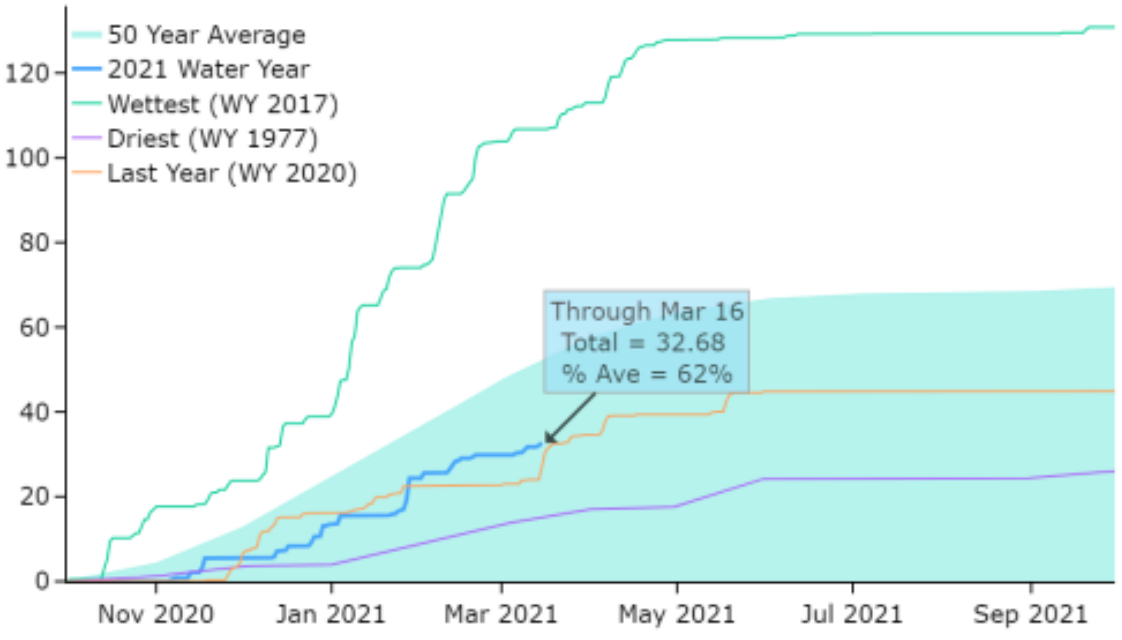
- **French Meadows Storage = 47,500 AF of 136,405 AF = 35% Capacity**
  - MFAR above FM Inflow (R24) = ~40 cfs
- **Hell Hole Storage = 80,000 AF of 207,590 AF = 38% Capacity**
  - Five Lakes Inflow (R23) = ~20 cfs
  - Rubicon Inflow (R22) = ~50 cfs
- **Combined Storage (FM+HH) = 127,500 AF/342,590 AF = 37% Capacity; ~68% of AVG**
- **MFAR @ <u>R11:</u>** 7 day daily average 400 cfs
- MFP in storage conservation - running Middle Fork/Ralston Units 1-2 hrs/day.

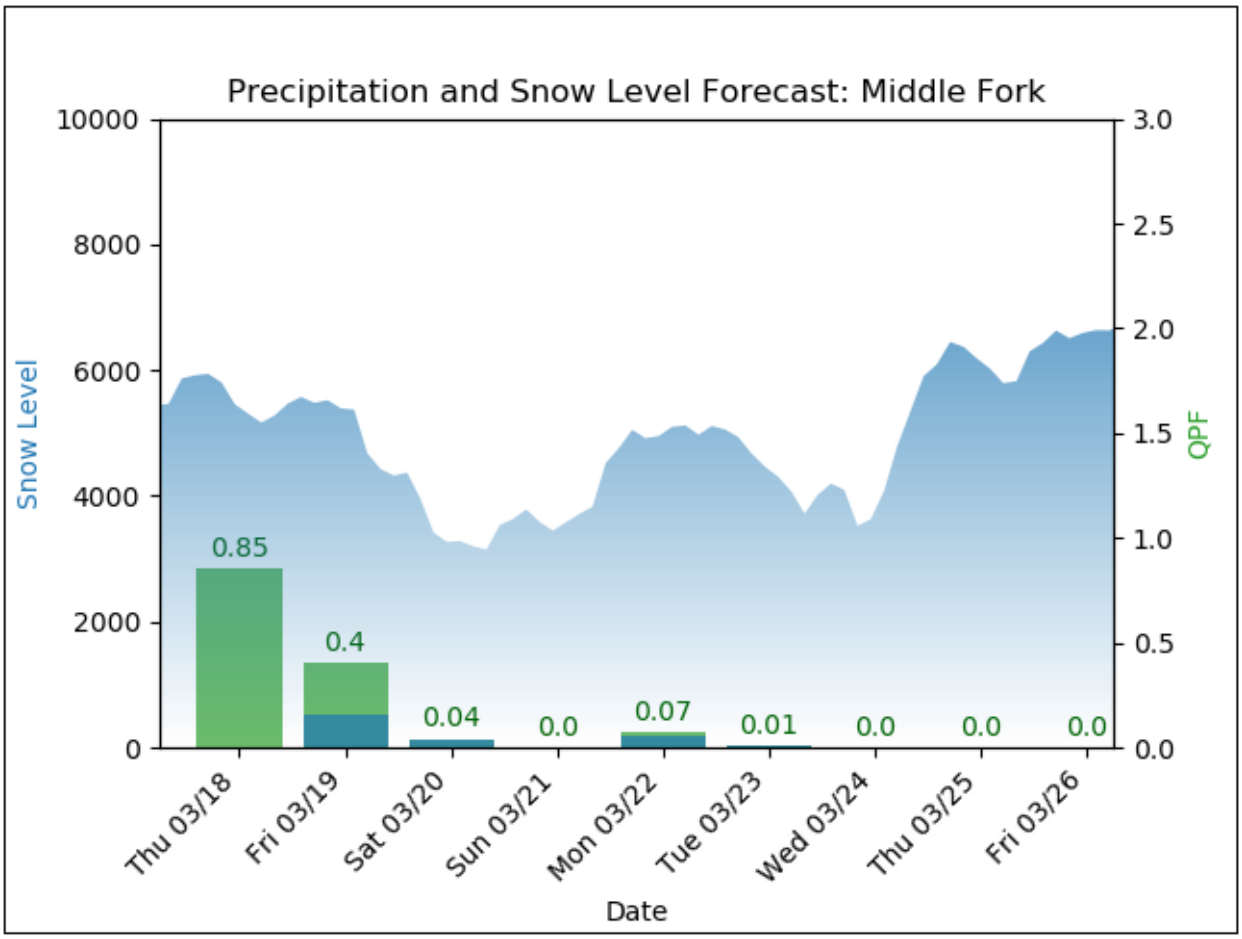


## Lake Spaulding Precipitation: Water Year 2021



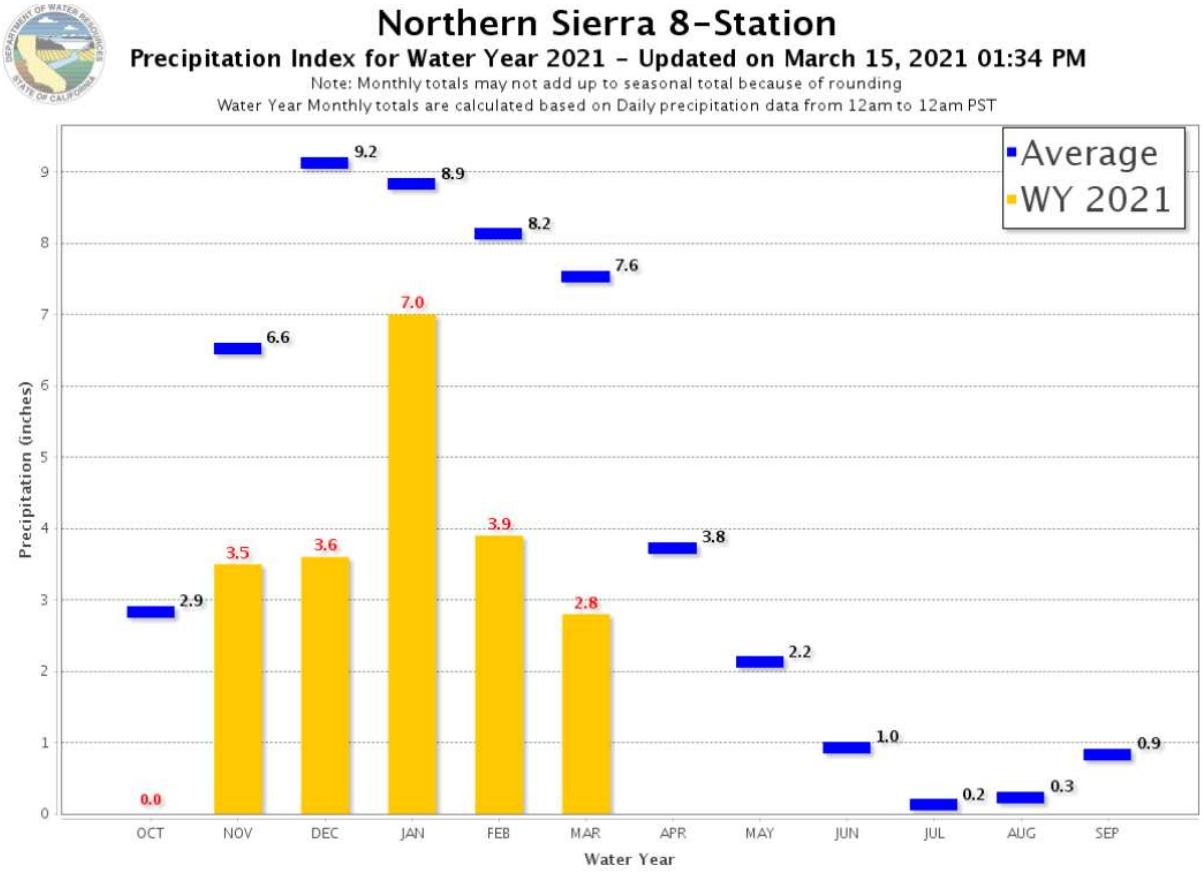

## Lake Spaulding Precipitation: Water Year 2021




Precipitation and Snow Level Forecast: Middle Fork
Snow Level
QPF
Date
10000
8000
6000
4000
2000
0
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0.85
0.4
0.04
0.0
0.07
0.01
0.0
0.0
0.0
Thu 03/18
Fri 03/19
Sat 03/20
Sun 03/21
Mon 03/22
Tue 03/23
Wed 03/24
Thu 03/25
Fri 03/26

## American River Summary Conditions – March (On-going)

- March has been dry, a few small precipitation events this month, not much on the horizon. The total precipitation is 2.8" to date compared to a 7.6" average for the month of March. Currently categorized as a critical year on the Sacramento Valley WY Type Index 40-30-30 under both 90% and 50% exceedance.



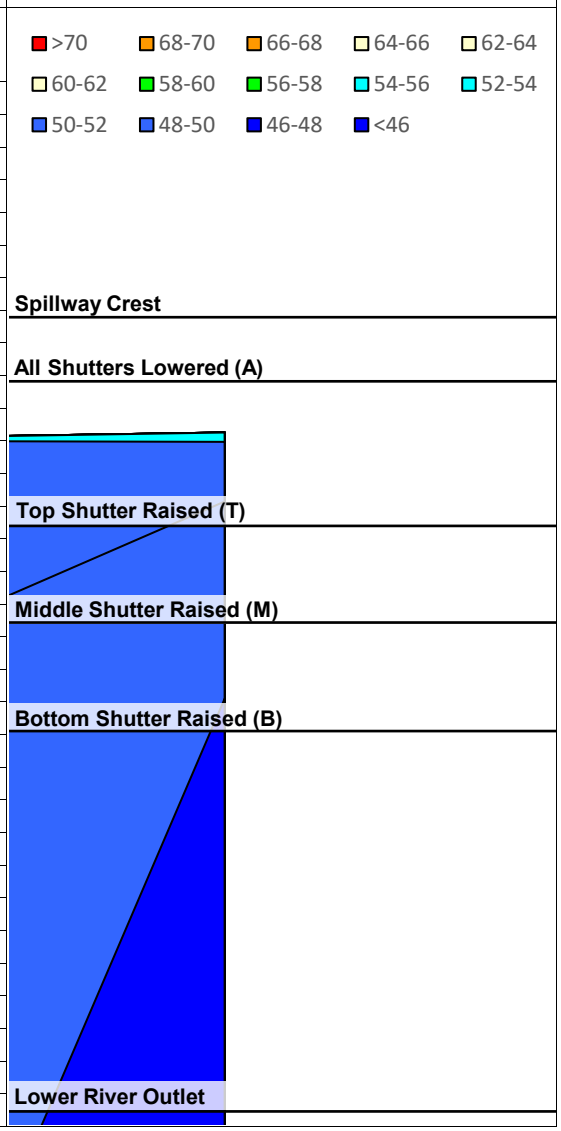

## Storage/Release Management Conditions

- Releases currently at 1200 cfs to comply with the SWRCB D1641
  - Increase releases on March 2, 2021 from 950 cfs to 1200 cfs
  - Increase release on March 11, 2021 from 1200 cfs to 3500 cfs
  - Start ramp down on March 14, 2021 at a deduction rate of 500 cfs per day

## 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 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | 47.2 | 48.2 | 48.4 | 50.5 | 51.5 | 52.1 | 52.5 | 976 | 302 | B | 46 | B | 49 | B | 5 |
| 02/13 | 47.5 | 46.5 | 48.1 | 50.9 | 52.1 | 52.8 | 55.8 | 987 | 307 | B | 29 | B | 69 | B | 2 |
| 02/14 | 46.9 | 44.7 | 48.4 | 51.4 | 51.0 | 51.3 | 50.0 | 978 | 311 | B | 45 | B | 53 | B | 1 |
| 02/15 | 46.6 | 45.0 | 47.9 | 51.0 | 51.3 | 51.4 | 51.5 | 983 | 316 | B | 13 | B | 86 | B | 2 |
| 02/16 | 46.7 | 46.1 | 48.4 | 50.7 | 51.5 | 51.8 | 50.4 | 984 | 322 | B | 39 | B | 53 | B | 8 |
| 02/17 | 46.0 | 46.0 | 48.4 | 50.6 | 50.7 | 51.3 | 51.0 | 984 | 327 | B | 65 | B | 32 | B | 2 |
| 02/18 | 44.7 | 44.5 | 48.4 | 50.4 | 50.5 | 50.7 | 50.0 | 986 | 331 | B | 49 | B | 32 | B | 19 |
| 02/19 | 45.3 | 45.8 | 47.9 | 50.3 | 51.0 | 51.6 | 51.8 | 986 | 333 | B | 2 | B | 2 | B | 96 |
| 02/20 | 45.9 | 46.6 | 48.1 | 50.3 | 50.9 | 51.4 | 50.2 | 990 | 335 | B | 85 | B | 13 | B | 2 |
| 02/21 | 46.1 | 45.8 | 48.1 | 50.6 | 51.1 | 51.6 | 50.6 | 990 | 338 | B | 2 | B | 66 | B | 33 |
| 02/22 | 46.5 | 46.6 | 49.3 | 50.6 | 51.7 | 52.3 | 53.2 | 984 | 339 | B | 20 | B | 62 | B | 18 |
| 02/23 | 47.2 | 47.0 | 50.2 | 51.0 | 52.0 | 52.9 | 58.6 | 991 | 340 | B | 38 | B | 19 | B | 43 |
| 02/24 | 46.8 | 46.8 | 50.1 | 51.4 | 51.8 | 52.4 | ? 54.1 | 985 | 342 | B | 22 | B | 55 | B | 23 |
| 02/25 | 46.2 | 45.7 | 49.5 | 51.1 | 51.1 | 51.3 | 52.7 | 984 | 343 | B | 39 | B | 32 | B | 30 |
| 02/26 | 46.0 | 45.6 | 49.5 | 51.4 | 51.9 | 52.2 | 51.2 | 970 | 344 | B | 24 | B | 35 | B | 41 |
| 02/27 | 46.1 | 45.8 | 49.7 | 51.5 | 51.9 | 52.4 | 52.8 | 958 | 345 | B | 15 | B | 70 | B | 15 |
| 02/28 | 45.9 | 45.6 | 49.6 | 51.7 | 52.2 | 52.4 | 52.4 | 962 | 346 | B | 26 | B | 64 | B | 10 |
| - | | | | | | | | | | | | | | | |
| - | | | | | | | | | | | | | | | |
| - | | | | | | | | | | | | | | | |
| Feb | 46.0 | 45.9 | 48.5 | 50.7 | 51.1 | 51.6 | 52.1 | 978 | | | | | | | |
| | | | | | | Total AF | | 54289 | | | | | | | |




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]

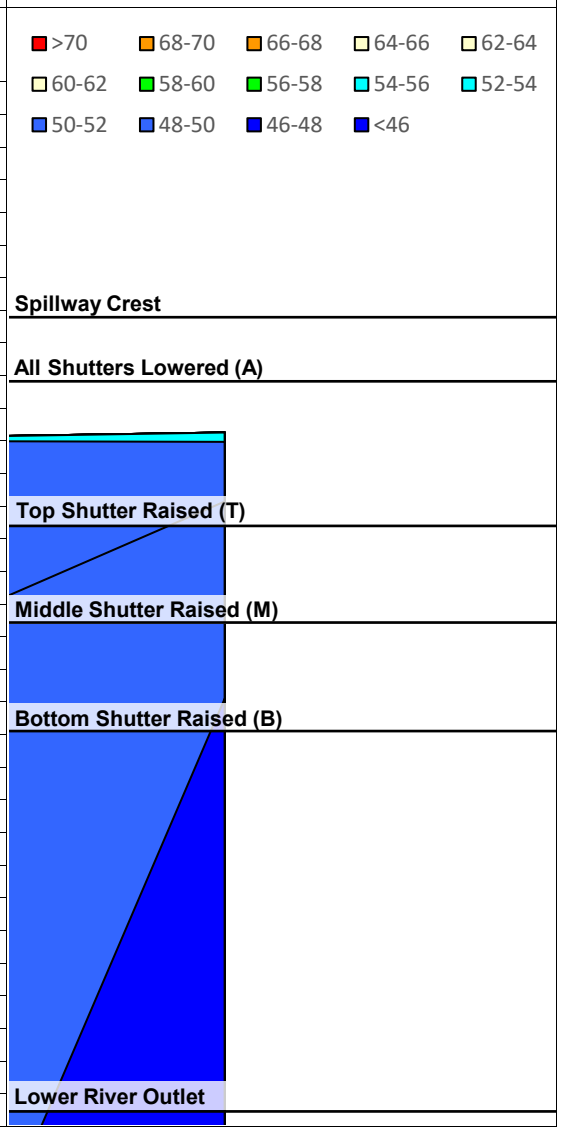
[3]

[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 | | | | | | |
| 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 | | | | | | | | | | | | | | | |
| 03/16 | | | | | | | | | | | | | | | |
| 03/17 | | | | | | | | | | | | | | | |
| 03/18 | | | | | | | | | | | | | | | |
| 03/19 | | | | | | | | | | | | | | | |
| 03/20 | | | | | | | | | | | | | | | |
| 03/21 | | | | | | | | | | | | | | | |
| 03/22 | | | | | | | | | | | | | | | |
| 03/23 | | | | | | | | | | | | | | | |
| 03/24 | | | | | | | | | | | | | | | |
| 03/25 | | | | | | | | | | | | | | | |
| 03/26 | | | | | | | | | | | | | | | |
| 03/27 | | | | | | | | | | | | | | | |
| 03/28 | | | | | | | | | | | | | | | |
| 03/29 | | | | | | | | | | | | | | | |
| 03/30 | | | | | | | | | | | | | | | |
| 03/31 | | | | | | | | | | | | | | | |
| Mar | 47.6 | 47.1 | 49.8 | 51.9 | 52.3 | 52.8 | 50.9 | 1820 | | | | | | | |
| | | | | | | Total AF | | 50537 | | | | | | | |

## 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]

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA

# DAILY CVP WATER SUPPLY REPORT

**MARCH 14, 2021**

RUN DATE: March 15, 2021

## RESERVOIR RELEASES IN CUBIC FEET/SECOND

| RESERVOIR | DAM | WY 2020 | WY 2021 | 15 YR MEDIAN |
|---|---|---|---|---|
| TRINITY | LEWISTON | 303 | 310 | 303 |
| SACRAMENTO | KESWICK | 4,549 | 3,479 | 3,810 |
| FEATHER | OROVILLE (SWP) | 1,750 | 1,050 | 1,550 |
| AMERICAN | NIMBUS | 1,752 | 3,088 | 1,756 |
| STANISLAUS | GOODWIN | 203 | 403 | 317 |
| SAN JOAQUIN | FRIANT | 253 | 252 | 252 |

## 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 | 1,616 | 2,025 | 1,280 | 79 |
| SHASTA | 4,552 | 3,271 | 3,526 | 2,312 | 71 |
| FOLSOM | 977 | 524 | 425 | 337 | 64 |
| NEW MELONES | 2,420 | 1,512 | 1,883 | 1,542 | 102 |
| FED. SAN LUIS | 966 | 676 | 467 | 452 | 67 |
| TOTAL NORTH CVP | 11,363 | 7,599 | 8,326 | 5,923 | 78 |
| MILLERTON | 520 | 298 | 278 | 170 | 57 |
| OROVILLE (SWP) | 3,538 | 2,194 | 2,253 | 1,376 | 63 |

## 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 | 124 | 64 | 1,064 | 426 | 29 |
| SHASTA | 1,279 | 1,260 | 5,860 | 2,474 | 52 |
| FOLSOM | 381 | 179 | 2,986 | 1,048 | 36 |
| NEW MELONES | 178 | ---- | 976 | 360 | 49 |
| MILLERTON | 206 | 103 | 1,368 | 372 | 55 |

## 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 | 14.77 | 7.15 | 44.80 | 24.72 ( 59) | 60 | 0.00 |
| SACRAMENTO AT SHASTA DAM | 20.47 | 8.18 | 89.31 | 47.54 ( 64) | 43 | 0.00 |
| AMERICAN AT BLUE CANYON | 28.05 | 13.73 | 84.48 | 50.66 ( 46) | 55 | 0.38 |
| STANISLAUS AT NEW MELONES | 14.53 | ---- | 36.67 | 20.97 ( 43) | 69 | 0.00 |
| SAN JOAQUIN AT HUNTINGTON LK | 15.39 | 9.10 | 66.00 | 30.97 ( 46) | 50 | 0.00 |

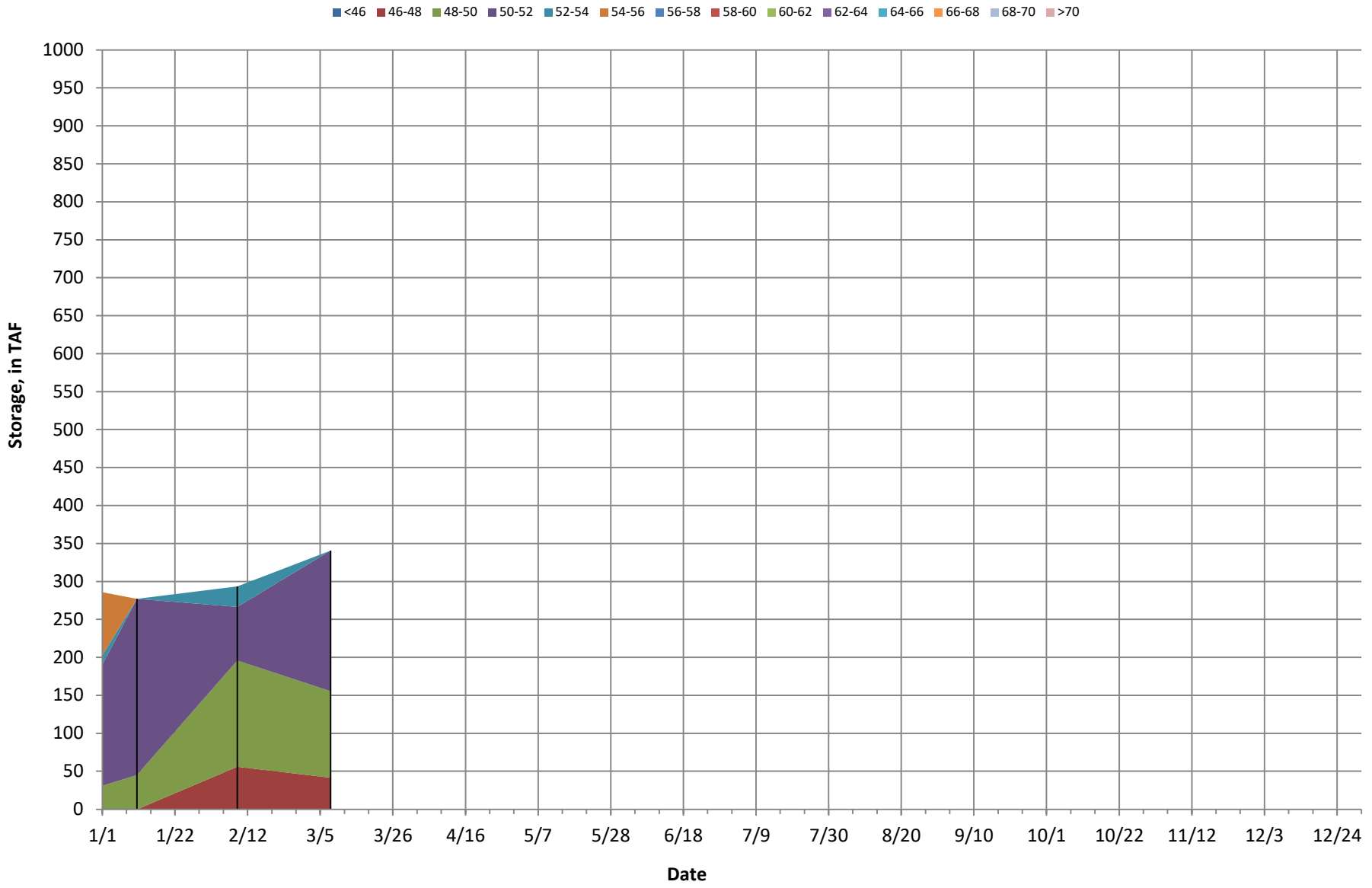
## Folsom Cold Water Pool

Folsom Reservoir: Cold Water Volume

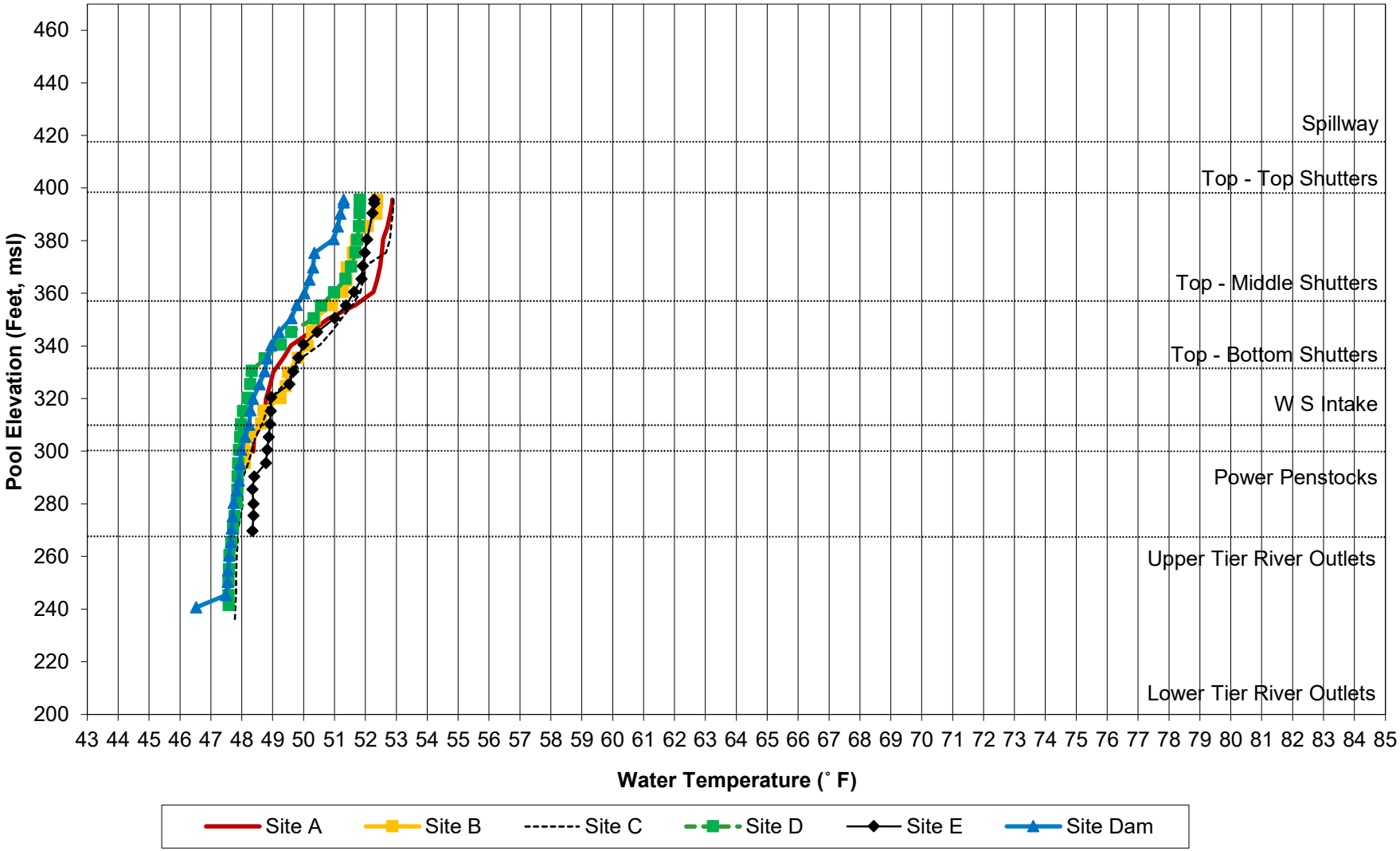
| Profile Date | Volume less than 58°F (TAF) |
|---|---|
| 3/08/21 | 293.0 |

| Penstock Elevation (ft) | Volume (TAF) | Approximate Max. Temp (F) |
|---|---|---|
| 327 | 83 | 48.5 |

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



# Folsom Lake Temperature Profiles: 08-Mar-2021



# DRAFT March 2021

## 90% Runoff Exceedance Outlook:

Inflow based on 90% exceedance forecast

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

| | | Mar | Apr | May | | | |
|---|---|---|---|---|---|---|---|
| Folsom | 346 | 343 | 370 | 412 | | | |
| Elev. | | 394 | 3993 | 405 | | | |

### Monthly River Releases (cfs)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| American | | 1550 | 2056 | 967 | | | |
| MRR | 1063 | | | | | | |

## 50% Runoff Exceedance Outlook:

Inflow based on 50% exceedance forecast

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

| | | Mar | Apr | May | | | |
|---|---|---|---|---|---|---|---|
| Folsom | 346 | 341 | 461 | 500 | | | |
| Elev. | | 394 | 412 | 417 | | | |

### Monthly River Releases (cfs)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| American | | 1553 | 1771 | 2501 | | | |
| MRR | 1063 | | | | | | |

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.