

# Stanislaus Watershed Team

August 21, 2024

## Members Attending

- USBR: Cat Pien, Peggy Manza, Spencer Marshall, Zarela Guerrero
- USFWS: Bryan Matthias, Craig Anderson
- CDFW: Crystal Rigby, Gretchen Murphey, Ryan Kok, Steve Tsao, Travis Apgar
- NMFS: Barb Byrne, Sam Pyros
- DWR: Bryant Giorgi, John Ford
- SWRCB: Chris Carr, Yongxuan Gao
- PSMFC: Hunter Morris, Logan Day
- SSJID: N/A
- Fishbio: N/A
- Stockton East Water District (SEWD): N/A
- WAPA: N/A
- Herum/Crabtree/Suntag Attorneys: Lilliana Selke
- Kearns & West: Tom Fischer

## Action Items

1. Kearns & West
  - a. Correct the Vernalis chart in the meeting packet.
  - b. Email copy of the meeting handout to Lilliana Selke.
  - c. Distribute Bryan Matthias' presentation and contact information to the group.
2. All
  - a. Include Tom Patton, Reclamation ([tpatton@usbr.gov](mailto:tpatton@usbr.gov)) on all future SWT correspondence. Patton will be stepping in this fall as the new Stanislaus River operator.
  - b. Provide any feedback on the draft fall pulse flow plan to Gretchen Murphey, CDFW, and Zarela Guerrero, Reclamation, by COB 8/23/2024.

3. Gretchen Murphey, CDFW
  - a. Directly reach out to J.D. Wikert, USFWS, for feedback on the draft fall pulse flow plan. (Complete)
  - b. Send out flow schedules for other tributaries to the Fish Agencies Technical Team (FATT).
4. Peggy Manza, USBR
  - a. Share fall drawdown numbers with the SWT prior to our next meeting.

## **Announcements**

1. N/A

## **Operations Update and Forecasts/ Hydrology**

### **New Melones Reservoir Update**

1. There has been no new precipitation at the New Melones Reservoir during the previous few months, however there is potential for rain on 8/23/2024.
2. Storage is still at a healthy level for going into the next water year.
3. Outflow from New Melones is still higher than inflow, which is typical for the summer months.
4. Reclamation noted that releases from New Melones are usually higher than that of Goodwin Dam because New Melones is releasing for both Goodwin Dam and to supply the water rights holders and contractors whose water is diverted at Goodwin Dam.
5. New Melones is drawing down on a daily basis to supply Tulloch Dam.

### **Daily CVP Water Supply**

1. As of 8/18/2024, storage at New Melones is 1.893 MAF, or approximately 137% of the 15-year average.
2. Accumulated inflow at New Melones was 906 TAF as of 8/18/2024, or 88% of the 15-year average. Reclamation expects to end Water Year 2024 with close to 1 MAF of accumulated inflow.
3. Accumulated precipitation at New Melones remains at 28.92 inches, or 108% of average.

### **Tulloch Dam**

1. Tulloch releases are currently supplying the water rights holders, contractors, and Goodwin Dam releases.

2. Tulloch is the re-regulating reservoir and therefore a pattern of alternating positive and negative change is expected.
3. Reclamation will soon be developing the fall drawdown schedule for Tulloch. The schedule is expected to be a normal drawdown and will likely be shared in the next week.

### **Goodwin Dam**

1. On 8/18/2024, releases from Goodwin were 304 cfs. A change order on 8/19/2024 dropped releases to 250 cfs for the purpose of storage conservation.
2. Dissolved oxygen (DO) levels are currently good, and therefore releases higher than 250 cfs are not necessary for meeting the DO requirements at Ripon.
  - a. Ripon had recently been showing an unusually large swing in DO readings, ranging from 7.3 to 8.5 mg/l in one day.
  - b. Reclamation suspected that these readings were inaccurate and upon examination, found a buildup of sand and sediment in the pipe.
  - c. After attending to the issue, the DO readings show normal variation.
3. Reclamation noted a few errors in the July report. Staff at Goodwin likely calibrated the elevation gauge and then adjusted the data.

### **Current Conditions**

1. N/A

### **Questions and Comments**

1. The Water Board, which monitors the Ripon gauge, asked for clarification on the appropriate Reclamation contact to alert when DO drops below 7.0 mg/l. Is it still Liz Kiteck?
  - a. Peggy Manza, Reclamation, requested to be added to those emails, along with Tom Patton.
2. Reclamation reminded SWT members that every three years, the dam operators switch projects. This fall, Tom Patton will come on as the New Melones operator.

## **Water Temperature Updates**

1. Temperatures are suitable for juvenile rearing downstream to at least Orange Blossom Bridge.
2. Temperatures are unsuitable at Ripon.
3. At this time, NMFS is unaware of exactly at what location between Orange Blossom and Ripon on the Stanislaus the temperature reaches 65°F.

## Flow Planning

1. CDFW and Reclamation will package the draft fall pulse flow planning spreadsheet with an operations plan to submit for approval.
2. Reclamation requests any feedback on the draft plan by COB 8/23/2024.
3. Questions and Comments
  - a. The Water board requested the Vernalis estimate for October. In the past, there have been Tuolumne and Merced flows incorporated into the requirement.
    - i. CDFW is working on this and will send it out when ready, however, the Stanislaus estimate is usually done earlier than the estimates for the other tributaries. Since the Reclamation operator will be changing beginning 10/1/2024, there will be an effort to get these estimates in place before then.
    - ii. CDFW clarified that flow coordination typically happens within the fish agencies' technical teams, so flow schedules for other tributaries will likely be shared in that space. The San Joaquin Tributary Flow Planning spreadsheet is comprised of these schedules. CDFW was unsure if the SWT usually reviews other flow schedules or is included in that communication.
      1. Update- many SWT members are on the SJFATT e-mail list, but flow schedules for other tributaries aren't specifically shared with the SWT.
        - a. Members of fish agencies who want to be part of SJFATT and are not included- reach out to Gretchen Murphey, CDFW.
    - b. NMFS provided approval for the Stanislaus draft flow plan. Alternatively, they would also support shifting the schedule to a week earlier to stretch out the volume of water and provide a longer period of attraction cues for adult fall-run Chinook salmon.

## Stanislaus River Forum (SRF) Call Review

1. There were no comments or questions received from members of the public at the SRF August meeting.
2. Reclamation will revise the meeting agenda link.

# Fish Monitoring

## CDFW Fish Monitoring

1. Chinook salmon carcass surveys
  - a. CDFW plans to begin the 2024 Escapement Survey in October.
2. Steelhead *O. mykiss* redd surveys
  - a. Surveys will start in January 2025.

## Mossdale Trawl

1. CDFW and USFWS are cooperatively operating the trawl through October.
2. Salmonid catch is updated through the week of 8/12/2024, however, zero salmonids had been caught the previous two months.

## FISHBIO Monitoring

1. N/A

## PSMFC Monitoring

1. N/A

## Presentation on Juvenile Steelhead Survival & Migration Rates in the Stanislaus River

1. Bryan Matthias (Matthias), USFWS, presented collaborative work conducted by USFWS, UCSC, NOAA, Cramer Fish Sciences, Reclamation, and FishBio on juvenile steelhead and *O. mykiss* on the Stanislaus River over the previous few years. Funding has been provided by Reclamation. Highlights from the presentation include:
2. Overview on *Oncorhynchus mykiss* (*O. mykiss*)
  - a. *O. mykiss* are slightly more diverse than most salmonids, and fall into one of the following life history categories:
    - i. Anadromous – called steelhead
      1. Spend their lives in both freshwater and the ocean
    - ii. Freshwater residents – called rainbow trout
      1. Spend their entire lives in freshwater
    - iii. Partial migration
      1. Outmigrate only as far as the Bay-Delta before returning to their natal stream

- b. Central Valley steelhead, a distinct population segment, were listed as Threatened in 1998 under the Endangered Species Act.
- 3. Project Objectives Covered
  - a. Validate the findings from the 2022 PIT tagging study
  - b. Estimate the rate that *O. mykiss* initiate migration
  - c. Monitor migratory movements and rates
- 4. 2023 Tagging Project
  - a. *O. mykiss* between 150-325 mm were dual-tagged with PIT tags and acoustic transmitters
  - b. Used a combination of passive and active tracking methods
  - c. Employed a multistate mark recapture model to estimate movement rates, detection, and survival
    - i. Time-based model used upstream of Valley Oak
    - ii. Space-for-time substitution used along the outmigration corridor
  - d. Tagged 198 *O. mykiss* from March to April
    - i. Of those, 146 tags were detected after release
      - 1. 136 upstream of Valley Oak
      - 2. 10 downstream of Valley Oak
      - 3. 4 left the Stanislaus River
- 5. 2024 Efforts and Updates
  - a. 198 tagged by Cramer Fish Sciences
  - b. 178 tagged by USFWS and other partners
  - c. [CalFishTrack](#) – updated as of 8/20/2024
  - d. Expanded tracking to habitats near Goodwin Dam and Two-Mile Bar, restoration areas, and ten fixed receiver locations
  - e. Conducted detection trials to determine the effectiveness of tag detection
- 6. Water Year 2025 Plans
  - a. USFWS plans to tag 300 *O. mykiss* from fall to spring

- b. Cramer Fish Sciences will tag *O. mykiss* in the fall
- c. Improved monitoring at habitat restoration areas and around the flow changes

## 7. Conclusions

- a. 574 *O. mykiss* have been tagged with acoustic transmitters in 2023-2024
- b. 2023 data showed a 15% outmigration rate
- c. It is known that more fish left the system in Water Year 2024; these are still being actively tracked
- d. Working to develop independent estimates of detection that will theoretically lead to better estimates of survival

## 8. Questions and Comments

- a. NMFS asked if some fish move upstream to cooler conditions as temperatures warm in the summer.
  - i. Matthias responded that this is something that can be gleaned from the data, but its investigation was not an original objective of the study. Matthias explained that the way scientists generally perform mark recapture studies in the Central Valley is to put fish out and then monitor them during outmigration with fixed receivers. Since wild *O. mykiss* do not have to leave, active tracking is necessary to detect them and better understand what's going on with resident fish. They get to see movement through the system as well as patterns of movement. Matthias noted that in 2023, temperatures were fairly consistent, so it could be hard to tell if temperature was a factor in their movements, however, they should be able to see if there appears to be a correlation between temperature and movement.
- b. NMFS asked how Matthias would compare the PIT and acoustic tags.
  - i. Matthias responded that Cramer Fish Sciences would be better able to answer this question, but based on the technology, the detection range on a receiver with acoustic transmitters is approximately 10-100 meters. Detection trials would be needed to really determine this. PIT tags, on the other hand, have a detection range of 1-2 feet, but the batteries are long-lasting and much less expensive.
- c. CDFW asked if there are plans to continue the PIT tag arrays so that if any of the fish return, they'll be detected, and their full set of data can be collected.

- i. Matthias responded that Cramer Fish Sciences was responsible for maintaining the PIT tag arrays and hoped that data would become available.

## **Restoration Project Updates**

1. The Goodwin gravel addition project is postponed until next year. The amount of gravel for the project will be doubled.
2. The Tortuga and Mohler projects are still taking place, although construction has not yet started.

## **Other Discussion Items**

### **Curtailments**

1. N/A

### **SWRCB Updates**

1. N/A

### **Items to elevate to WOMT**

1. N/A

## **Next Meeting**

1. Wednesday, September 18, 10:00 am –12:00 pm. The meeting will be virtual.





## Stanislaus Watershed Team

10:00 a.m. – 12:00 p.m.

Conference Line: 1 (321) 209-6143; Meeting ID: 901 988 581#

Webinar: [Join Microsoft Teams Meeting](#)

Wednesday, August 21, 2024

### Agenda

1. Introductions
2. Ground Rules<sup>1</sup>
3. Announcements
  - a. Meeting will be recorded for notetaking purposes – Tom Fischer, Kearns & West
4. Operations Update and Forecasts/Hydrology – Peggy Manza, USBR
5. Temperature Updates – Barbara Byrne, NMFS
6. Flow Planning – Zarela Guerrero, USBR and Gretchen Murphey, CDFW
  - a. Provide any additional feedback via email to Gretchen and Zarela
7. Stanislaus River Forum (SRF) Call Review – Zarela Guerrero, USBR

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<sup>1</sup> The Stanislaus Watershed Team's Ground Rules are as follows:

- Seek to understand and respect opposing views and suggestions for change (w/in the parameters of the Guidance Document).
- Seek to leverage collective expertise (including from agencies' & stakeholders' consultants).
- Hold questions/discussion at the discretion of the presenter.
- Honor time limits - keep comments and discussion succinct and focused on meeting objectives as needed.
- Make constructive proposals and suggestions to seek mutually agreeable solutions for all parties.
- Keep a record of discussion and dialogue.
- One speaker at a time
- Take space/make space

8. Fish Monitoring and Studies – CDFW, FISHBIO, NMFS, PSMFC
  - a. Presentation on Steelhead Tagging, Bryan Matthias, USFWS
9. Restoration Project Updates
  - a. Restoration Tracker – JD (John Wikert, USFWS)
  - b. Caterina Pien, USBR
10. Other Discussion Items
  - a. SWRCB Updates
  - b. Items to elevate to WOMT
11. Review Action Items – Tom Fischer, Kearns & West
12. Next Meeting: September 18 , 2024 (10 a.m. – 12 p.m.)

# Tables for BDO

United States Department of the Interior  
 Bureau of Reclamation  
 Central Valley Project – California Daily CVP Water Supply Report

August 18, 2024  
 Run Date: August 19, 2024

Table 1. Reservoir Releases in Cubic Feet Per Second

| Reservoir   | Dam            | WY 2023 | WY 2024 | 15-Year Median |
|-------------|----------------|---------|---------|----------------|
| Trinity     | Lewiston       | 543     | 446     | 451            |
| Sacramento  | Keswick        | 9,944   | 11,554  | 9,944          |
| Feather     | Oroville (SWP) | 4,500   | 0       | 5,500          |
| American    | Nimbus         | 4,033   | 3,389   | 2,746          |
| Stanislaus  | Goodwin        | 1,275   | 304     | 279            |
| San Joaquin | Friant         | 352     | 0       | 352            |

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

| Reservoir       | Capacity | 15-Yr Avg | WY 2023 | WY 2024 | % O 15 Yr Avg |
|-----------------|----------|-----------|---------|---------|---------------|
| Trinity         | 2,448    | 1,476     | 1,373   | 1,868   | 127           |
| Shasta          | 4,552    | 2,789     | 3,663   | 3,173   | 114           |
| Folsom          | 977      | 550       | 782     | 541     | 98            |
| New Melones     | 2,420    | 1,382     | 1,966   | 1,893   | 137           |
| Fed. San Luis   | 966      | 310       | 806     | 0       | 0             |
| Total North CVP | 11,363   | 6,507     | 8,590   | 7,475   | 115           |
| Millerton       | 521      | 314       | 394     | 0       | 0             |
| Oroville (SWP)  | 3,538    | 1,966     | 3,008   | 0       | 0             |

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

| Reservoir   | Current WY 2024 | WY 1977 | WY 1983 | 15-Yr Avg | % O 15 Yr Avg |
|-------------|-----------------|---------|---------|-----------|---------------|
| Trinity     | 1,523           | 675     | 1,981   | 1,094     | 139           |
| Shasta      | 5,376           | 3,285   | 8,679   | 4,586     | 117           |
| Folsom      | 2,209           | 1,038   | 5,904   | 2,555     | 86            |
| New Melones | 906             | N/A     | 2,100   | 1,028     | 88            |
| Millerton   | 1,751           | 700     | 2,871   | 1,609     | 109           |

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

| Reservoir                    | Current WY 2024 | WY 1977 | WY 1983 | Avg (N Yrs) | % of Avg | Last 24 Hours |
|------------------------------|-----------------|---------|---------|-------------|----------|---------------|
| Trinity at Fish Hatchery     | 35.44           | 23.81   | 40.07   | 30.17 (64)  | 117      | 0.16          |
| Sacramento at Shasta Dam     | 63.69           | 38.25   | 86.50   | 58.84 (69)  | 108      | 0.07          |
| American at Blue Canyon      | 50.63           | 3.53    | 113.32  | 63.87 (50)  | 79       | 0.00          |
| Stanislaus at New Melones    | 28.92           | N/A     | 36.75   | 26.81 (47)  | 108      | 0.00          |
| San Joaquin at Huntington LK | 32.28           | 11.90   | 67.10   | 40.00 (51)  | 81       | 0.00          |

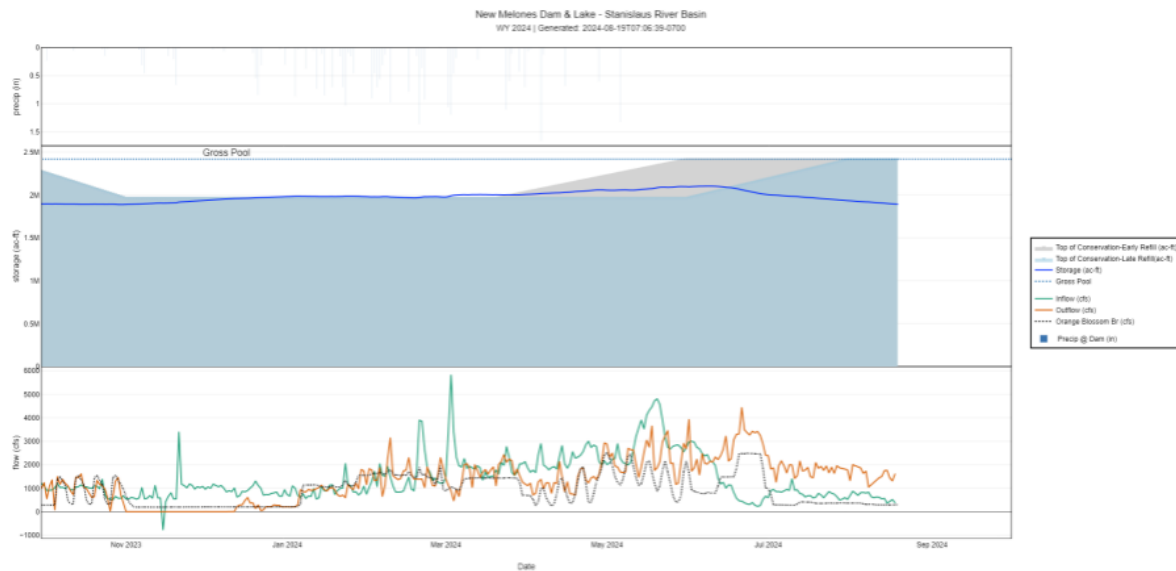


Figure 1. Flow (cfs), storage (ac-ft) and precipitation (in) for New Melones Dam and Lake at Stanislaus River Basin from November 2023 to September 2024.

Figure 1 is a line graph showing the flow, storage, and precipitation for New Melones Dam and Lake from November 2023 to September 2024. The graph shows storage of around 2M ac-ft from December to June, with flow staying at 1,000 cfs, except for peaks in early December at approximately 3,000 cfs and in March at approximately 6,000 cfs. After March, there is a gradual increase to over 2,000 cfs up until July and a gradual decrease between July and September.

United States Department of the Interior  
 Bureau of Reclamation – Central Valley Project – California

New Melones Lake Daily Operations, August 2024, Run Date: 08/19/2024

| Day           | Elev     | Storage<br>1000-<br>Acre-<br>Feet in<br>Lake | Storage<br>1000-<br>Acre-<br>Feet<br>Change | Com-<br>puted<br>Inflow<br>C.F.S. | Release<br>C.F.S.<br>Power | Release<br>C.F.S.<br>Spill | Release<br>C.F.S.<br>Outlet | Evap.<br>C.F.S. | Evap.<br>Inches | Precip<br>Inches |
|---------------|----------|--|---|-----------------------------------|----------------------------|----------------------------|-----------------------------|-----------------|-----------------|------------------|
| N/A           | N/A      | 1,933.4                                      | N/A   | N/A                               | N/A                        | N/A                        | N/A                         | N/A             | N/A             | N/A              |
| 1             | 1,045.96 | 1,930.9                                      | -2.5  | 875                               | 2,003                      | 0                          | 0                           | 130             | 0.37            | 0.00             |
| 2             | 1,045.69 | 1,928.0                                      | -2.9  | 793                               | 2,118                      | 0                          | 0                           | 147             | 0.42            | 0.00             |
| 3             | 1,045.48 | 1,925.7                                      | -2.3  | 696                               | 1,750                      | 0                          | 0                           | 91              | 0.26            | 0.00             |
| 4             | 1,045.26 | 1,923.4                                      | -2.4  | 813                               | 1,866                      | 0                          | 0                           | 147             | 0.42            | 0.00             |
| 5             | 1,045.08 | 1,921.4                                      | -1.9  | 820                               | 1,634                      | 0                          | 0                           | 168             | 0.48            | 0.00             |
| 6             | 1,044.89 | 1,919.4                                      | -2.1  | 798                               | 1,727                      | 0                          | 0                           | 105             | 0.30            | 0.00             |
| 7             | 1,044.82 | 1,918.6                                      | -0.8  | 829                               | 1,048                      | 0                          | 0                           | 161             | 0.46            | 0.00             |
| 8             | 1,044.60 | 1,916.2                                      | -2.4  | 639                               | 1,688                      | 0                          | 0                           | 147             | 0.42            | 0.00             |
| 9             | 1,044.35 | 1,913.5                                      | -2.7  | 596                               | 1,797                      | 0                          | 0                           | 157             | 0.45            | 0.00             |
| 10            | 1,044.16 | 1,911.5                                      | -2.0  | 630                               | 1,513                      | 0                          | 0                           | 150             | 0.43            | 0.00             |
| 11            | 1,043.98 | 1,909.6                                      | -1.9  | 614                               | 1,446                      | 0                          | 0                           | 146             | 0.42            | 0.00             |
| 12            | 1,043.78 | 1,907.4                                      | -2.1  | 547                               | 1,501                      | 0                          | 0                           | 129             | 0.37            | 0.00             |
| 13            | 1,043.54 | 1,904.8                                      | -2.6  | 569                               | 1,751                      | 0                          | 0                           | 118             | 0.34            | 0.00             |
| 14            | 1,043.26 | 1,901.8                                      | -3.0  | 365                               | 1,764                      | 0                          | 0                           | 118             | 0.34            | 0.00             |
| 15            | 1,043.05 | 1,899.6                                      | -2.3  | 438                               | 1,443                      | 0                          | 0                           | 132             | 0.38            | 0.00             |
| 16            | 1,042.88 | 1,897.7                                      | -1.8  | 521                               | 1,312                      | 0                          | 0                           | 128             | 0.37            | 0.00             |
| 17            | 1,042.63 | 1,895.1                                      | -2.7  | 382                               | 1,604                      | 0                          | 0                           | 128             | 0.37            | 0.00             |
| 18            | 1042.40  | 1,892.6                                      | -2.5  | 443                               | 1,577                      | 0                          | 0                           | 107             | 0.31            | 0.00             |
| Totals        | N/A      | N/A  | -40.9                                       | 11,368                            | 29,542                     | 0                          | 0                           | 2,409           | 6.91            | 0.00             |
| Acre-<br>Feet | N/A      | N/A  | -40,900                                     | 22,548                            | 58,597                     | 0                          | 0                           | 4,778           | N/A             | N/A              |

Comments:

\* Computed inflow is the sum of change in storage, releases, and evaporation.

Summary Precipitation

This Month 0.00  
 October 01, 2023 to Date 28.92

Summary: Release (acre- feet)

|                     |               |
|---------------------|---------------|
| Release (acre-feet) | N/A           |
| Power               | 58,597        |
| Spill               | 0             |
| Outlet              | 0             |
| <b>Total</b>        | <b>58,597</b> |

United States Department of the Interior  
 Bureau of Reclamation – Central Valley Project – California

New Melones Lake Daily Operations, July 2024, Run Date: 08/15/2024

| Day | Elev     | Storage<br>1000-<br>Acre-Feet in<br>Lake | Storage<br>1000-<br>Acre-<br>Feet<br>Change | Compu-<br>ted<br>Inflow<br>C.F.S. | Release<br>C.F.S.<br>Power | Re-<br>lease<br>C.F.S.<br>Spill | Re-<br>lease<br>C.F.S.<br>Outlet | Evap.<br>C.F.S. | Evap.<br>Inches | Precip.<br>Inches |
|-----|----------|--|---|-----------------------------------|----------------------------|---------------------------------|----------------------------------|-----------------|-----------------|-------------------|
| N/A | N/A      | 2,004.3                                  | N/A   | N/A                               | N/A                        | N/A                             | N/A                              | N/A             | N/A             | N/A               |
| 1   | 1,052.47 | 2,002.2                                  | -2.1  | 903                               | 1,821                      | 0                               | 0                                | 143             | 0.40            | 0.00              |
| 2   | 1,052.28 | 2,000.1                                  | -2.1  | 947                               | 1,868                      | 0                               | 0                                | 140             | 0.39            | 0.00              |
| 3   | 1,052.18 | 1,999.0                                  | -1.1  | 856                               | 1,264                      | 0                               | 0                                | 150             | 0.42            | 0.00              |
| 4   | 1,051.95 | 1,996.5                                  | -2.5  | 862                               | 1,966                      | 0                               | 0                                | 179             | 0.50            | 0.00              |
| 5   | 1,051.68 | 1,993.5                                  | -3.0  | 834                               | 2,165                      | 0                               | 0                                | 171             | 0.48            | 0.00              |
| 6   | 1,051.46 | 1,991.1                                  | -2.4  | 888                               | 1,955                      | 0                               | 0                                | 157             | 0.44            | 0.00              |
| 7   | 1,051.30 | 1,989.3                                  | -1.8  | 949                               | 1,653                      | 0                               | 0                                | 186             | 0.52            | 0.00              |
| 8   | 1,051.07 | 1,986.8                                  | -2.5  | 910                               | 1,997                      | 0                               | 0                                | 193             | 0.54            | 0.00              |
| 9   | 1,050.93 | 1,985.2                                  | -1.5  | 1,395                             | 1,991                      | 0                               | 0                                | 182             | 0.51            | 0.00              |
| 10  | 1,050.81 | 1,983.9                                  | -1.3  | 916                               | 1,417                      | 0                               | 0                                | 164             | 0.46            | 0.00              |
| 11  | 1,050.67 | 1,982.4                                  | -1.5  | 932                               | 1,537                      | 0                               | 0                                | 171             | 0.48            | 0.00              |
| 12  | 1,050.39 | 1,979.3                                  | -3.1  | 774                               | 2,153                      | 0                               | 0                                | 174             | 0.49            | 0.00              |
| 13  | 1,050.18 | 1,977.0                                  | -2.3  | 747                               | 1,734                      | 0                               | 0                                | 178             | 0.50            | 0.00              |
| 14  | 1,049.95 | 1,974.4                                  | -2.5  | 628                               | 1,772                      | 0                               | 0                                | 131             | 0.37            | 0.00              |
| 15  | 1,049.71 | 1,971.8                                  | -2.6  | 682                               | 1,887                      | 0                               | 0                                | 121             | 0.34            | 0.00              |
| 16  | 1,049.54 | 1,969.9                                  | -1.9  | 684                               | 1,493                      | 0                               | 0                                | 131             | 0.37            | 0.00              |
| 17  | 1,049.36 | 1,968.0                                  | -2.0  | 587                               | 1,447                      | 0                               | 0                                | 135             | 0.38            | 0.00              |
| 18  | 1,049.07 | 1,964.8                                  | -3.2  | 619                               | 2,087                      | 0                               | 0                                | 135             | 0.38            | 0.00              |
| 19  | 1,048.85 | 1,962.4                                  | -2.4  | 781                               | 1,849                      | 0                               | 0                                | 145             | 0.41            | 0.00              |
| 20  | 1,048.60 | 1,959.7                                  | -2.7  | 714                               | 1,932                      | 0                               | 0                                | 159             | 0.45            | 0.00              |
| 21  | 1,048.36 | 1,957.0                                  | -2.6  | 594                               | 1,764                      | 0                               | 0                                | 152             | 0.43            | 0.00              |
| 22  | 1,048.11 | 1,954.3                                  | -2.7  | 727                               | 1,945                      | 0                               | 0                                | 159             | 0.45            | 0.00              |
| 23  | 1,047.95 | 1,952.6                                  | -1.7  | 858                               | 1,660                      | 0                               | 0                                | 78              | 0.22            | 0.00              |
| 24  | 1,047.72 | 1,950.1                                  | -2.5  | 790                               | 1,894                      | 0                               | 0                                | 159             | 0.45            | 0.00              |
| 25  | 1,047.53 | 1,948.0                                  | -2.1  | 749                               | 1,637                      | 0                               | 0                                | 155             | 0.44            | 0.00              |
| 26  | 1,047.26 | 1,945.0                                  | -2.9  | 639                               | 1,959                      | 0                               | 0                                | 162             | 0.46            | 0.00              |
| 27  | 1,046.98 | 1,942.0                                  | -3.0  | 501                               | 1,873                      | 0                               | 0                                | 165             | 0.47            | 0.00              |

| Day           | Elev     | Storage<br>1000-<br>Acre-Feet in<br>Lake | Storage<br>1000-<br>Acre-<br>Feet<br>Change | Compu-<br>ted<br>Inflow<br>C.F.S. | Release<br>C.F.S.<br>Power | Re-<br>lease<br>C.F.S.<br>Spill | Re-<br>lease<br>C.F.S.<br>Outlet | Evap.<br>C.F.S. | Evap.<br>Inches | Precip.<br>Inches |
|---------------|----------|--|---|-----------------------------------|----------------------------|---------------------------------|----------------------------------|-----------------|-----------------|-------------------|
| 28            | 1,046.81 | 1,940.2                                  | -1.8  | 531                               | 1,345                      | 0                               | 0                                | 116             | 0.33            | 0.00              |
| 29            | 1,046.58 | 1,937.7                                  | -2.5  | 602                               | 1,748                      | 0                               | 0                                | 112             | 0.32            | 0.00              |
| 30            | 1,046.33 | 1,934.9                                  | -2.7  | 524                               | 1,787                      | 0                               | 0                                | 105             | 0.30            | 0.00              |
| 31            | 1,046.19 | 1,933.4                                  | -1.5  | 691                               | 1,327                      | 0                               | 0                                | 130             | 0.37            | 0.00              |
| Totals        | N/A      | N/A                                      | <b>-70.5</b>                                | <b>23,814</b>                     | <b>54,927</b>              | 0                               | 0                                | <b>4,638</b>    | <b>13.07</b>    | <b>0.00</b>       |
| Acre-<br>Feet | N/A      | N/A                                      | <b>-70,500</b>                              | <b>47,235</b>                     | <b>108,948</b>             | 0                               | 0                                | <b>9,199</b>    | N/A             | N/A               |

Comments:

\* Computed inflow is the sum of change in storage, releases, and evaporation.

### Summary Precipitation

|                         |       |
|-------------------------|-------|
| This Month              | 0.00  |
| July 1, 2021 to Date    | N/A   |
| October 1, 2021 to Date | 28.92 |

### Summary: Release (acre-feet)

|                     |                |
|---------------------|----------------|
| Release (acre-feet) | N/A            |
| Power               | 108,948        |
| Spill               | 0              |
| Outlet              | 0              |
| <b>Total</b>        | <b>108,948</b> |



United States Department of the Interior  
 Bureau of Reclamation – Central Valley Project – California

Tulloch Reservoir Daily Operations, August 2024, Run Date: 08/19/2024

| Day              | Elev       | Storage (Acre Feet) Reservoir | Storage (Acre-Feet) Change | Computed Inflow C.F.S. | New Melones Release | Release C.F.S. Power | Release C.F.S. Spill | Release C.F.S. Outlet | Evap. C.F.S. (1) |
|------------------|------------|-------------------------------|----------------------------|------------------------|---------------------|----------------------|----------------------|-----------------------|------------------|
| N/A              | N/A        | 63,265                        | N/A                        | N/A                    | N/A                 | N/A                  | N/A                  | N/A                   | N/A              |
| 1                | 507.36     | 63,713                        | 448                        | 2,272                  | 2,003               | 2,032                | 0                    | 0                     | 14               |
| 2                | 507.96     | 64,441                        | 728                        | 2,435                  | 2,118               | 2,051                | 0                    | 0                     | 17               |
| 3                | 507.87     | 64,331                        | -110                       | 2,017                  | 1,750               | 2,062                | 0                    | 0                     | 10               |
| 4                | 508.26     | 64,809                        | 478                        | 2,146                  | 1,866               | 1,888                | 0                    | 0                     | 17               |
| 5                | 508.47     | 65,068                        | 259                        | 1,890                  | 1,634               | 1,740                | 0                    | 0                     | 19               |
| 6                | 508.86     | 65,548                        | 480                        | 1,998                  | 1,727               | 1,744                | 0                    | 0                     | 12               |
| 7                | 507.63     | 64,041                        | -1,507                     | 1,139                  | 1,048               | 1,881                | 0                    | 0                     | 18               |
| 8                | 507.62     | 64,028                        | -13                        | 1,947                  | 1,688               | 1,937                | 0                    | 0                     | 17               |
| 9                | 507.97     | 64,453                        | 425                        | 2,090                  | 1,797               | 1,858                | 0                    | 0                     | 18               |
| 10               | 507.72     | 64,150                        | -303                       | 1,723                  | 1,513               | 1,859                | 0                    | 0                     | 17               |
| 11               | 507.47     | 63,847                        | -303                       | 1,658                  | 1,446               | 1,795                | 0                    | 0                     | 16               |
| 12               | 507.38     | 63,738                        | -109                       | 1,736                  | 1,501               | 1,777                | 0                    | 0                     | 14               |
| 13               | 507.54     | 63,931                        | 193                        | 1,997                  | 1,751               | 1,887                | 0                    | 0                     | 13               |
| 14               | 507.89     | 64,356                        | 425                        | 2,137                  | 1,764               | 1,910                | 0                    | 0                     | 13               |
| 15               | 507.64     | 64,053                        | -303                       | 1,644                  | 1,443               | 1,782                | 0                    | 0                     | 15               |
| 16               | 507.18     | 63,495                        | -558                       | 1,498                  | 1,312               | 1,765                | 0                    | 0                     | 14               |
| 17               | 507.36     | 63,713                        | 218                        | 1,840                  | 1,604               | 1,716                | 0                    | 0                     | 14               |
| 18               | 507.56     | 63,956                        | 243                        | 1,807                  | 1,577               | 1,672                | 0                    | 0                     | 12               |
| <b>Totals</b>    | <b>N/A</b> | <b>N/A</b>                    | <b>691</b>                 | <b>33,974</b>          | <b>29,542</b>       | <b>33,356</b>        | <b>0</b>             | <b>0</b>              | <b>270</b>       |
| <b>Acre-Feet</b> | <b>N/A</b> | <b>N/A</b>                    | <b>691</b>                 | <b>67,387</b>          | <b>58,597</b>       | <b>66,162</b>        | <b>0</b>             | <b>0</b>              | <b>536</b>       |

Comments:

\* Computed inflow is the sum of change in storage, releases, and evaporation.

(1) Evaporation records taken from New Melones Pan.

Summary: Release (acre-feet)

|                     |               |
|---------------------|---------------|
| Release (acre-feet) | N/A           |
| Power               | 66,162        |
| Spill               | 0             |
| Outlet              | 0             |
| <b>Total</b>        | <b>66,162</b> |

United States Department of the Interior  
 Bureau of Reclamation – Central Valley Project – California

Tulloch Reservoir Daily Operations, July 2024, Run Date: 08/10/2024

| Day | Elev   | Storage (Acre Feet) Res. | Storage (Acre-Feet) Change | Computed Inflow C.F.S. | New Melones Release | Release C.F.S. Power | Release C.F.S. Spill | Release C.F.S. Outlet | Evap. C.F.S. (1) |
|-----|--------|--------------------------|----------------------------|------------------------|---------------------|----------------------|----------------------|-----------------------|------------------|
| N/A | N/A    | 65,265                   | N/A                        | N/A                    | N/A                 | N/A                  | N/A                  | N/A                   | N/A              |
| 1   | 508.59 | 65,215                   | -50                        | 2,067                  | 1,821               | 2,076                | 0                    | 0                     | 16               |
| 2   | 508.80 | 65,474                   | 259                        | 2,155                  | 1,868               | 2,008                | 0                    | 0                     | 16               |
| 3   | 507.66 | 64,077                   | -1,397                     | 1,436                  | 1,264               | 2,123                | 0                    | 0                     | 17               |
| 4   | 507.76 | 64,198                   | 121                        | 2,248                  | 1,966               | 2,167                | 0                    | 0                     | 20               |
| 5   | 508.20 | 64,735                   | 537                        | 2,468                  | 2,165               | 2,178                | 0                    | 0                     | 19               |
| 6   | 508.41 | 64,994                   | 259                        | 2,268                  | 1,955               | 2,120                | 0                    | 0                     | 17               |
| 7   | 508.05 | 64,551                   | -443                       | 1,893                  | 1,653               | 2,095                | 0                    | 0                     | 21               |
| 8   | 508.52 | 65,129                   | 578                        | 2,307                  | 1,997               | 1,994                | 0                    | 0                     | 22               |
| 9   | 508.86 | 65,548                   | 419                        | 2,295                  | 1,991               | 2,064                | 0                    | 0                     | 20               |
| 10  | 508.21 | 64,748                   | -800                       | 1,616                  | 1,417               | 2,001                | 0                    | 0                     | 18               |
| 11  | 507.62 | 64,028                   | -720                       | 1,731                  | 1,537               | 2,075                | 0                    | 0                     | 19               |
| 12  | 508.27 | 64,821                   | 793                        | 2,482                  | 2,153               | 2,063                | 0                    | 0                     | 19               |
| 13  | 508.20 | 64,735                   | -86                        | 1,999                  | 1,734               | 2,022                | 0                    | 0                     | 20               |
| 14  | 508.29 | 64,846                   | 111                        | 2,045                  | 1,772               | 1,974                | 0                    | 0                     | 15               |
| 15  | 508.62 | 65,252                   | 406                        | 2,159                  | 1,887               | 1,940                | 0                    | 0                     | 14               |
| 16  | 508.08 | 64,587                   | -665                       | 1,716                  | 1,493               | 2,036                | 0                    | 0                     | 15               |
| 17  | 507.27 | 63,604                   | -983                       | 1,626                  | 1,447               | 2,107                | 0                    | 0                     | 15               |
| 18  | 507.73 | 64,162                   | 558                        | 2,405                  | 2,087               | 2,109                | 0                    | 0                     | 15               |
| 19  | 507.70 | 64,125                   | -37                        | 2,103                  | 1,849               | 2,106                | 0                    | 0                     | 16               |
| 20  | 507.90 | 64,368                   | 243                        | 2,197                  | 1,932               | 2,056                | 0                    | 0                     | 18               |
| 21  | 507.88 | 64,344                   | -24                        | 2,016                  | 1,764               | 2,011                | 0                    | 0                     | 17               |
| 22  | 508.34 | 64,908                   | 564                        | 2,281                  | 1,945               | 1,977                | 0                    | 2                     | 18               |
| 23  | 508.05 | 64,551                   | -357                       | 1,854                  | 1,660               | 2,025                | 0                    | 0                     | 9                |
| 24  | 508.29 | 64,846                   | 295                        | 2,170                  | 1,894               | 2,003                | 0                    | 0                     | 18               |
| 25  | 508.12 | 64,637                   | -209                       | 1,880                  | 1,637               | 1,968                | 0                    | 0                     | 17               |
| 26  | 508.35 | 64,920                   | 283                        | 2,267                  | 1,959               | 2,106                | 0                    | 0                     | 18               |

| Day       | Elev   | Storage (Acre Feet) Res. | Storage (Acre-Feet) Change | Computed Inflow C.F.S. | New Melones Release | Release C.F.S. Power | Release C.F.S. Spill | Release C.F.S. Outlet | Evap. C.F.S. (1) |
|-----------|--------|--------------------------|----------------------------|------------------------|---------------------|----------------------|----------------------|-----------------------|------------------|
| 27        | 508.44 | 65,031                   | 111                        | 2,139                  | 1,873               | 2,064                | 0                    | 0                     | 19               |
| 28        | 507.70 | 64,125                   | -906                       | 1,521                  | 1,345               | 1,965                | 0                    | 0                     | 13               |
| 29        | 507.84 | 64,295                   | 170                        | 2,025                  | 1,748               | 1,926                | 0                    | 0                     | 13               |
| 30        | 507.89 | 64,356                   | 61                         | 2,030                  | 1,787               | 1,987                | 0                    | 0                     | 12               |
| 31        | 506.99 | 63,265                   | -1,091                     | 1,549                  | 1,327               | 2,085                | 0                    | 0                     | 14               |
| Totals    | NA     | NA                       | <b>-2,000</b>              | <b>62,948</b>          | <b>54,927</b>       | <b>63,431</b>        | <b>0</b>             | <b>2</b>              | <b>520</b>       |
| Acre-Feet | NA     | NA                       | <b>-2,000</b>              | <b>124,857</b>         | <b>108,948</b>      | <b>125,815</b>       | <b>0</b>             | <b>4</b>              | <b>1,031</b>     |

Comments:

\* Computed inflow is the sum of change in storage, releases, and evaporation.

(1) Evaporation records taken from New Melones Pan.

Summary: Release (acre-feet)

|                     |                |
|---------------------|----------------|
| Release (acre-feet) | N/A            |
| Power               | 125,815        |
| Spill               | 0              |
| Outlet              | 4              |
| <b>Total</b>        | <b>125,819</b> |

Oakdale Irrigation District South San Joaquin Irrigation  
 District Tri Dams Project-California

Goodwin Reservoir Daily Operations, August 2024, Run Date: 08/19/2024

| Day              | Elev   | Storage<br>(1000<br>Acre-<br>Feet) in<br>Lake | Storage<br>(1000<br>Acre-Feet)<br>Change | Tulloch<br>Release | Release<br>C.F.S. –<br>River<br>Outlet | Release<br>C.F.S. –<br>Spill | Canals-<br>Joint<br>Main | Canals –<br>South<br>Main |
|------------------|--------|---|--|--------------------|--|------------------------------|--------------------------|---------------------------|
| N/A              | N/A    | 534   | N/A                                      | N/A                | N/A                                    | N/A                          | N/A                      | N/A                       |
| 1                | 359.95 | 534   | 0  | 2,032              | 0                                      | 355                          | 1,011                    | 436                       |
| 2                | 359.95 | 534   | 0  | 2,051              | 0                                      | 355                          | 1,026                    | 446                       |
| 3                | 359.95 | 534   | 0  | 2,062              | 0                                      | 353                          | 1,019                    | 484                       |
| 4                | 359.95 | 534   | 0  | 1,888              | 0                                      | 356                          | 975                      | 360                       |
| 5                | 359.90 | 530   | -4                                       | 1,740              | 0                                      | 314                          | 883                      | 347                       |
| 6                | 359.90 | 530   | 0  | 1,744              | 0                                      | 340                          | 869                      | 371                       |
| 7                | 359.90 | 530   | 0  | 1,881              | 0                                      | 302                          | 916                      | 452                       |
| 8                | 359.90 | 530   | 0  | 1,937              | 0                                      | 306                          | 968                      | 462                       |
| 9                | 359.90 | 530   | 0  | 1,858              | 0                                      | 303                          | 964                      | 411                       |
| 10               | 359.90 | 530   | 0  | 1,859              | 0                                      | 305                          | 957                      | 431                       |
| 11               | 359.90 | 530   | 0  | 1,795              | 0                                      | 303                          | 913                      | 431                       |
| 12               | 359.89 | 529   | -1                                       | 1,777              | 0                                      | 303                          | 920                      | 407                       |
| 13               | 359.90 | 530   | 1  | 1,887              | 0                                      | 302                          | 940                      | 482                       |
| 14               | 359.89 | 529   | -1                                       | 1,910              | 0                                      | 304                          | 939                      | 392                       |
| 15               | 359.89 | 529   | 0  | 1,782              | 0                                      | 301                          | 929                      | 357                       |
| 16               | 359.89 | 529   | 0  | 1,765              | 0                                      | 303                          | 869                      | 371                       |
| 17               | 359.90 | 530   | 1  | 1,716              | 0                                      | 303                          | 866                      | 326                       |
| 18               | 359.90 | 530   | 0  | 1,672              | 0                                      | 304                          | 817                      | 337                       |
| <b>Totals</b>    | N/A    | N/A   | <b>-4</b>                                | <b>33,356</b>      | <b>0</b>                               | <b>5,712</b>                 | <b>16,781</b>            | <b>7,303</b>              |
| <b>Acre-Feet</b> | N/A    | N/A   | <b>-4</b>                                | <b>66,162</b>      | <b>0</b>                               | <b>11,330</b>                | <b>33,285</b>            | <b>14,486</b>             |

Joint Main Operated by SSJID and OID.

Summary: Release (acre-feet)

|                  |               |
|------------------|---------------|
| Joint Main Canal | 33,285        |
| South Main Canal | 14,486        |
| Outlet           | 0             |
| Spill            | 11,330        |
| <b>Total</b>     | <b>59,100</b> |

Oakdale Irrigation District South San Joaquin Irrigation  
 District Tri Dams Project-California

Goodwin Reservoir Daily Operations, July 2024, Run Date: 08/10/2024

| Day | Elev   | Storage<br>(1000 Acre-<br>Feet) in Lake | Storage<br>(1000<br>Acre-Feet)<br>Change | Tulloch<br>Release | Release<br>C.F.S. –<br>River<br>Outlet | Release<br>C.F.S. –<br>Spill | Canals–<br>Joint<br>Main | Canals–<br>South<br>Main |
|-----|--------|---|--|--------------------|--|------------------------------|--------------------------|--------------------------|
| N/A | N/A    | 559                                     | N/A                                      | N/A                | N/A                                    | N/A                          | N/A                      | N/A                      |
| 1   | 359.95 | 534                                     | -25                                      | 2,076              | 0                                      | 653                          | 878                      | 370                      |
| 2   | 359.96 | 534                                     | 0  | 2,008              | 0                                      | 401                          | 959                      | 442                      |
| 3   | 359.95 | 534                                     | 0  | 2,123              | 0                                      | 401                          | 1,001                    | 492                      |
| 4   | 359.96 | 534                                     | 0  | 2,167              | 0                                      | 401                          | 996                      | 501                      |
| 5   | 359.98 | 536                                     | 2  | 2,178              | 0                                      | 404                          | 996                      | 502                      |
| 6   | 359.96 | 534                                     | -2                                       | 2,120              | 0                                      | 403                          | 995                      | 455                      |
| 7   | 359.98 | 536                                     | 2  | 2,095              | 0                                      | 403                          | 996                      | 446                      |
| 8   | 359.98 | 536                                     | 0  | 1,994              | 0                                      | 404                          | 965                      | 397                      |
| 9   | 359.98 | 536                                     | 0  | 2,064              | 0                                      | 400                          | 963                      | 490                      |
| 10  | 359.98 | 536                                     | 0  | 2,001              | 0                                      | 400                          | 963                      | 413                      |
| 11  | 359.98 | 536                                     | 0  | 2,075              | 0                                      | 401                          | 962                      | 452                      |
| 12  | 359.99 | 536                                     | 0  | 2,063              | 0                                      | 401                          | 958                      | 453                      |
| 13  | 359.98 | 536                                     | 0  | 2,022              | 0                                      | 406                          | 958                      | 438                      |
| 14  | 359.96 | 534                                     | -2                                       | 1,974              | 0                                      | 403                          | 952                      | 393                      |
| 15  | 359.96 | 534                                     | 0  | 1,940              | 0                                      | 401                          | 921                      | 382                      |
| 16  | 359.96 | 534                                     | 0  | 2,036              | 0                                      | 402                          | 937                      | 475                      |
| 17  | 359.93 | 532                                     | -2                                       | 2,107              | 0                                      | 368                          | 1,041                    | 486                      |
| 18  | 359.33 | 490                                     | -42                                      | 2,109              | 0                                      | 353                          | 1,032                    | 495                      |
| 19  | 359.93 | 532                                     | 42                                       | 2,106              | 0                                      | 354                          | 1,026                    | 492                      |
| 20  | 359.93 | 532                                     | 0  | 2,056              | 0                                      | 355                          | 1,046                    | 436                      |
| 21  | 359.93 | 532                                     | 0  | 2,011              | 0                                      | 351                          | 1,015                    | 436                      |
| 22  | 359.93 | 532                                     | 0  | 1,979              | 0                                      | 351                          | 1,005                    | 406                      |
| 23  | 359.93 | 532                                     | 0  | 2,025              | 0                                      | 354                          | 976                      | 480                      |
| 24  | 359.93 | 532                                     | 0  | 2,003              | 0                                      | 354                          | 980                      | 432                      |
| 25  | 359.93 | 532                                     | 0  | 1,968              | 0                                      | 354                          | 944                      | 431                      |
| 26  | 359.93 | 532                                     | 0  | 2,106              | 0                                      | 353                          | 1,014                    | 492                      |
| 27  | 359.93 | 532                                     | 0  | 2,064              | 0                                      | 354                          | 1,033                    | 451                      |

| Day       | Elev   | Storage<br>(1000 Acre-<br>Feet) in Lake | Storage<br>(1000<br>Acre-Feet)<br>Change | Tulloch<br>Release | Release<br>C.F.S. –<br>River<br>Outlet | Release<br>C.F.S. –<br>Spill | Canals–<br>Joint<br>Main | Canals–<br>South<br>Main |
|-----------|--------|---|--|--------------------|--|------------------------------|--------------------------|--------------------------|
| 28        | 359.95 | 534                                     | 2  | 1,965              | 0                                      | 354                          | 1,036                    | 381                      |
| 29        | 359.93 | 532                                     | -2                                       | 1,926              | 0                                      | 353                          | 1,034                    | 361                      |
| 30        | 359.95 | 534                                     | 2  | 1,987              | 0                                      | 351                          | 1,020                    | 442                      |
| 31        | 359.95 | 534                                     | 0  | 2,085              | 0                                      | 354                          | 1,017                    | 495                      |
| Totals    | N/A    | N/A                                     | <b>-25</b>                               | <b>63,433</b>      | <b>0</b>                               | <b>11,997</b>                | <b>30,619</b>            | <b>13,817</b>            |
| Acre-Feet | N/A    | N/A                                     | <b>-25</b>                               | <b>125,819</b>     | <b>0</b>                               | <b>23,796</b>                | <b>60,733</b>            | <b>27,406</b>            |

Joint Main Operated by SSJID and OID.

Summary: Release (acre-feet)

|                  |                |
|------------------|----------------|
| Joint Main Canal | 60,733         |
| South Main Canal | 27,406         |
| Outlet           | 0              |
| Spill            | 23,796         |
| <b>Total</b>     | <b>111,935</b> |

# August 2024 Water Temperature Update

## Year-to-Date Flows

Goodwin releases since October 1, 2023, are shown in Figure 1.

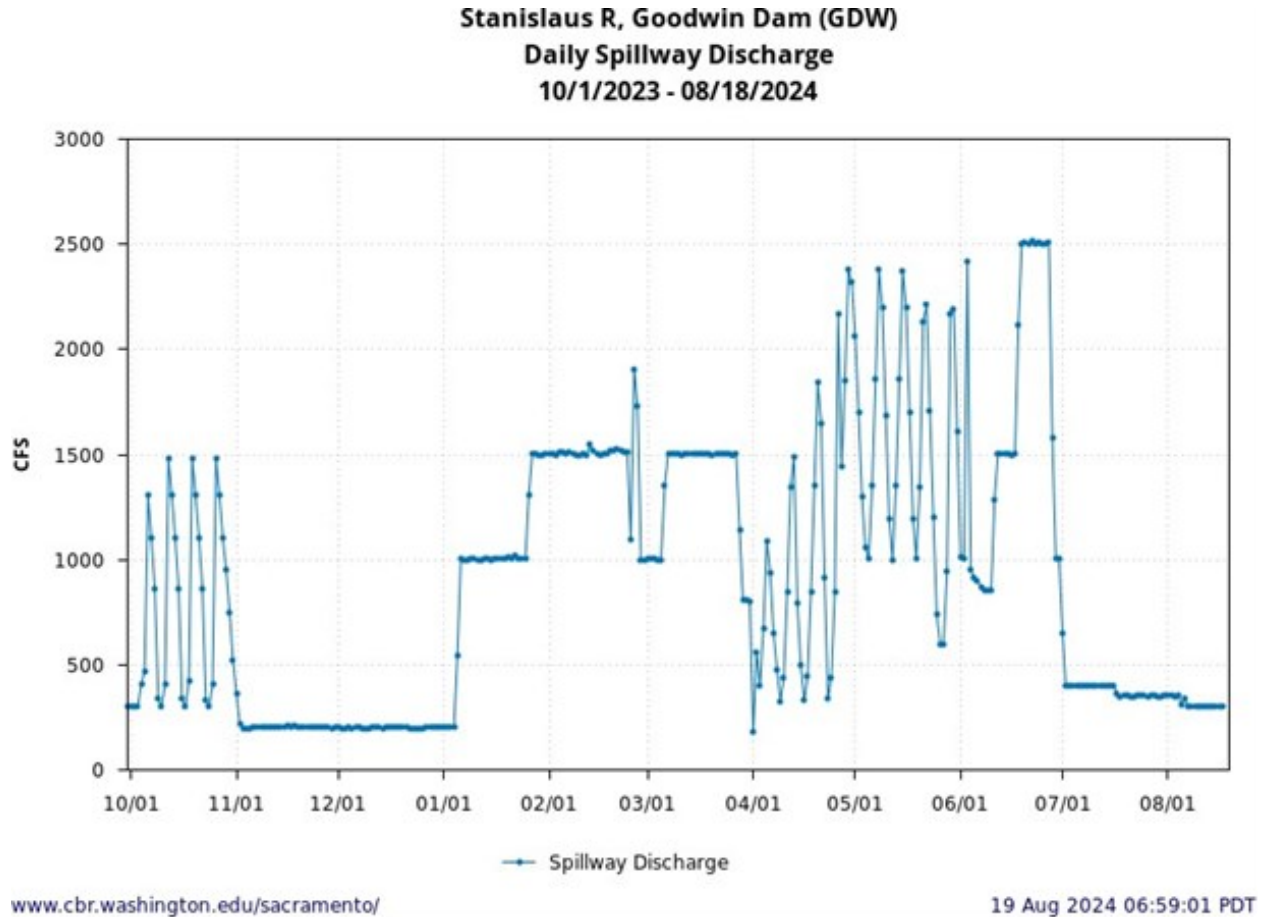


Figure 1. Goodwin (daily) releases to the Stanislaus River since October 1, 2022. Data from GDW station on CDEC.

Figure 1 is a line graph showing Goodwin Dam daily spillway discharge. The graph shows a peak of 2,500 at the end of June 2024, and several periods of oscillating discharge April to June 2024.

## Water Temperature

The temperature thresholds included in Figures 2-9, below, are the thresholds used in the 2019 NMFS LTO BiOp (see Incidental Take Statement on p. 807) to define the extent of take anticipated from water temperature effects in the Stanislaus River. It is important to note that many of the temperature figures provide subdaily information or information at locations other than Orange Blossom Bridge and thus don't reflect the specific metrics for take in the 2019 NMFS LTO BiOp. Temperature thresholds have been added to these figures at the request of Stanislaus Watershed Team members to provide a general reference of water temperature suitability.



Water temperatures in the Stanislaus River since June 2024 are shown below at Goodwin Canyon (Figure 2), Orange Blossom Bridge (Figure 3), and at Ripon (Figure 4). Water temperatures in the San Joaquin River since July 2023 are shown below at Vernalis (Figure 5). Current-year water temperatures are plotted along with historical temperatures for Orange Blossom Bridge (Figure 6), Ripon (Figure 7), and Vernalis (Figure 8). A compilation of Stanislaus River water temperatures and Goodwin releases for water year 2023 is provided in Figure 9.

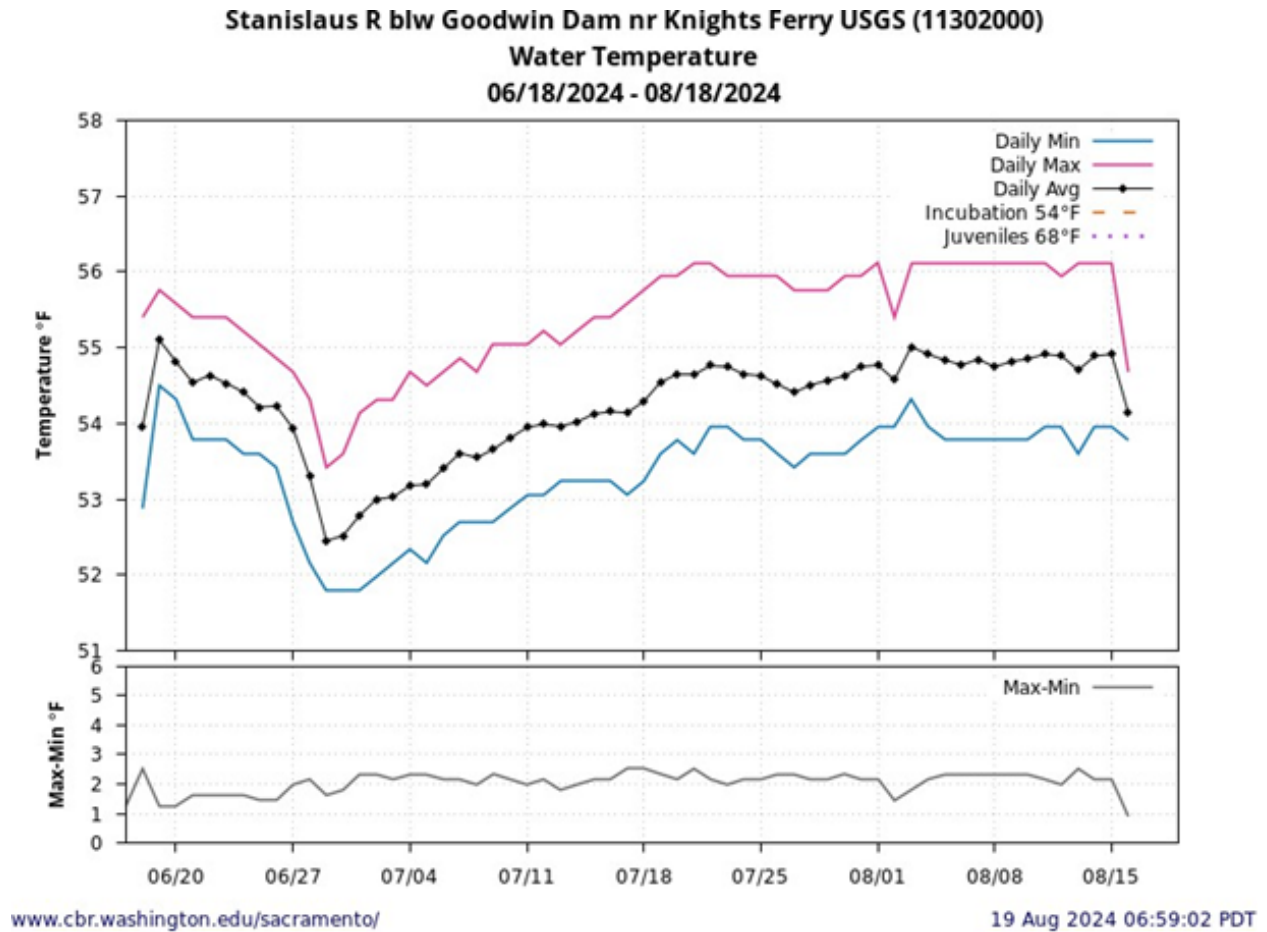
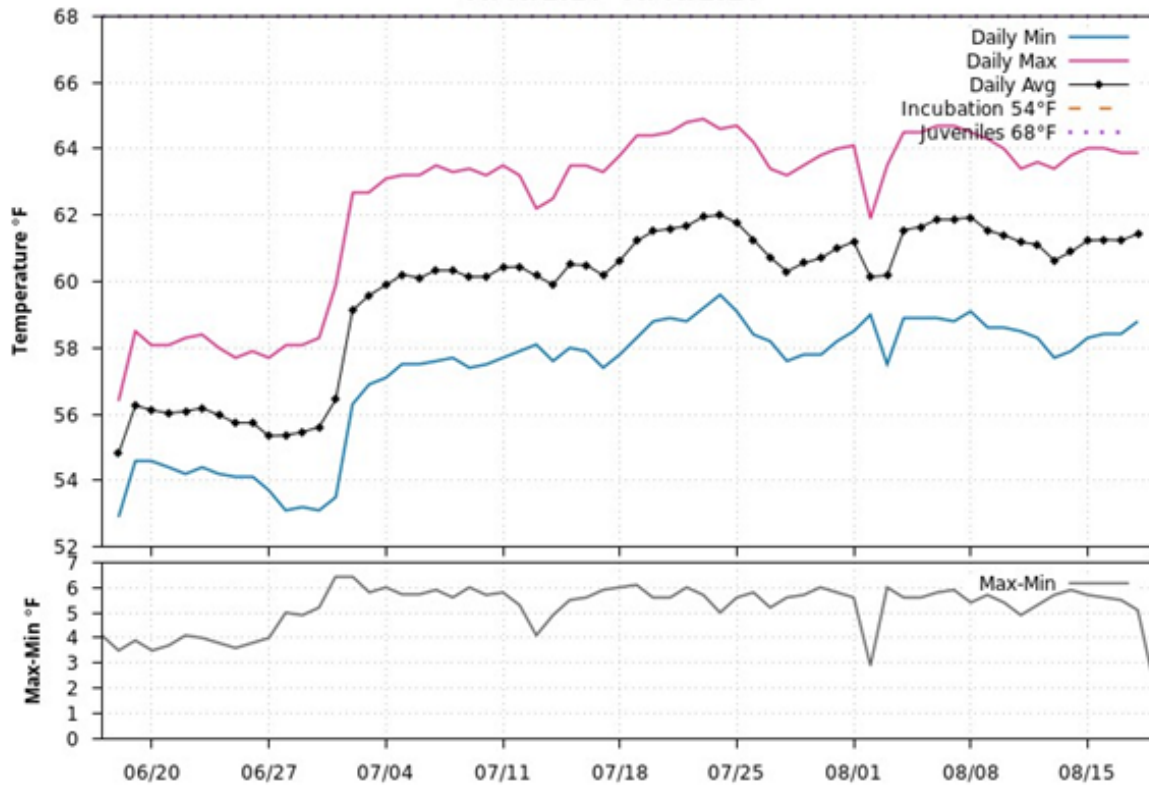


Figure 2. Daily water temperatures on the Stanislaus River upstream of Knights Ferry since June 18, 2024. Data from USGS gage 11302000 on NWIS; temperature threshold reference line added by SWT.

Chart: Stacked chart for daily water temperatures Stanislaus River upstream of Knights Ferry for current 60 days period. Top chart: Daily Min, Max and average water temperatures (in degrees Fahrenheit). Bottom chart: Daily difference between Max and Min measured water temperature in degrees Fahrenheit. Data from OBB station retrieved from CDEC; figure generated by SacPAS (including date-based water temperature threshold reference lines).

**Stanislaus R at Orange Blossom Bridge (OBB)  
Water Temperature  
06/18/2024 - 08/18/2024**



[www.cbr.washington.edu/sacramento/](http://www.cbr.washington.edu/sacramento/)

19 Aug 2024 06:59:02 PDT

Figure 3. Stanislaus (hourly) water temperatures at Orange Blossom Bridge since June 18, 2024.

Chart: Stacked chart for daily water temperatures Stanislaus River at Orange Blossom Bridge for current 60 days period. Top chart: Daily Min, Max and average water temperatures (in degrees Fahrenheit). Bottom chart: Daily difference between Max and Min measured water temperature in degrees Fahrenheit. Data from OBB station retrieved from CDEC; figure generated by SacPAS (including date-based water temperature threshold reference lines).

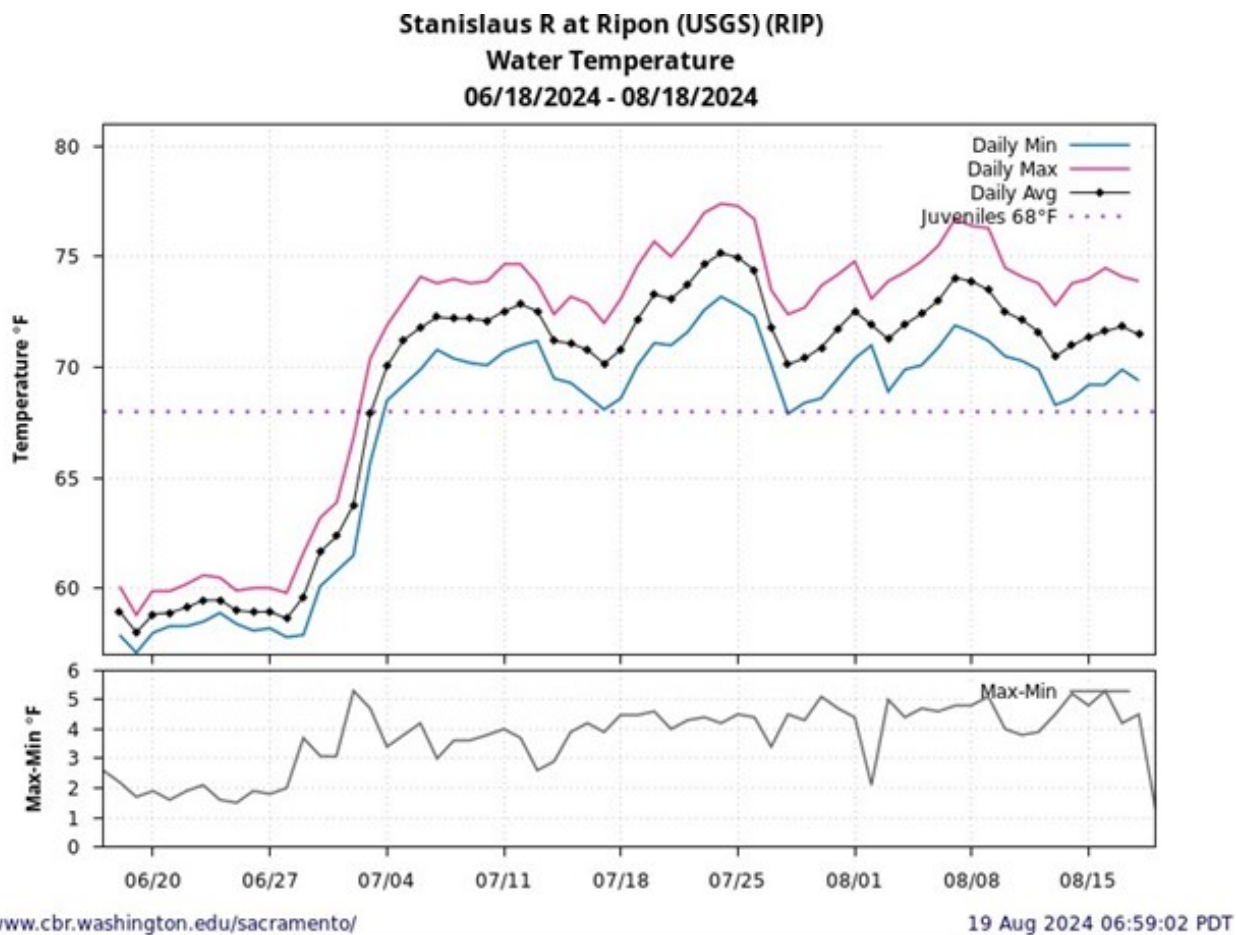
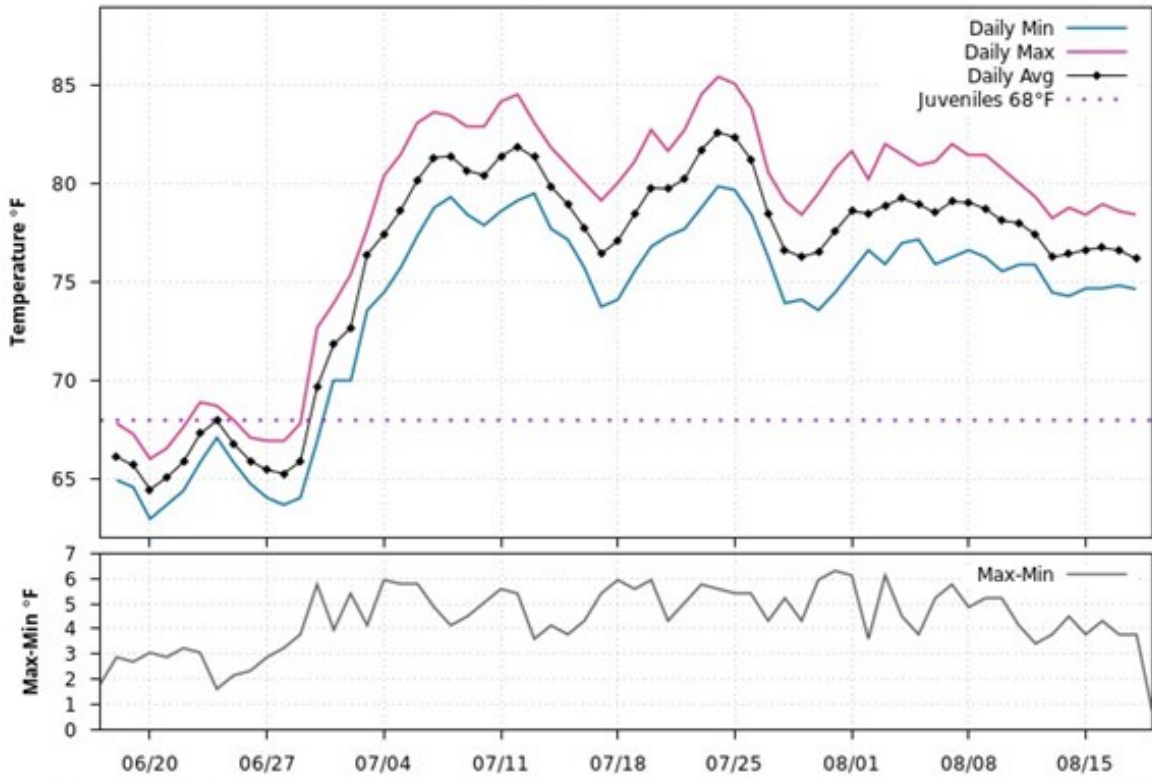


Figure 4. Stanislaus water temperatures at Ripon since June 18, 2024. Data from RIP station on CDEC.

Chart: Stacked chart for daily water temperatures Stanislaus River at Ripon for current 60 days period. Top chart: Daily Min, Max and average water temperatures (in degrees Fahrenheit). Bottom chart: Daily difference between Max and Min measured water temperature in degrees Fahrenheit. Data from OBB station retrieved from CDEC; figure generated by SacPAS (including date-based water temperature threshold reference lines).

**San Joaquin R nr Vernalis (VNS)  
Water Temperature  
06/18/2024 - 08/18/2024**



[www.cbr.washington.edu/sacramento/](http://www.cbr.washington.edu/sacramento/)

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Figure 5. San Joaquin River (15-minute) water temperatures at Vernalis since June 18, 2024. Data from VNS station on CDEC. Note that, unlike in the previous figures, temperature is reported in degrees Celsius. 8°C=46.4°F; 10°C=50°F; 12°C=53.6°F; 14°C=57.2°F; 16°C=60.8°F; 18°C=64.4°F; 20°C=68.0°F; 22°C=71.6°F; 24°C=75.2°F; 26°C=78.8°F; 28°C=82.4°F.

Chart: Stacked chart for daily water temperatures Stanislaus River at Vernalis for current 60 days period. Top chart: Daily Min, Max and average water temperatures (in degrees Fahrenheit). Bottom chart: Daily difference between Max and Min measured water temperature in degrees Fahrenheit. Data from OBB station retrieved from CDEC; figure generated by SacPAS (including date-based water temperature threshold reference lines).

**Stanislaus R at Orange Blossom Bridge (OBB)  
2001-2024 Daily Average Water Temperature  
Observed Range 36.3-73.1  
06/20 - 10/18**

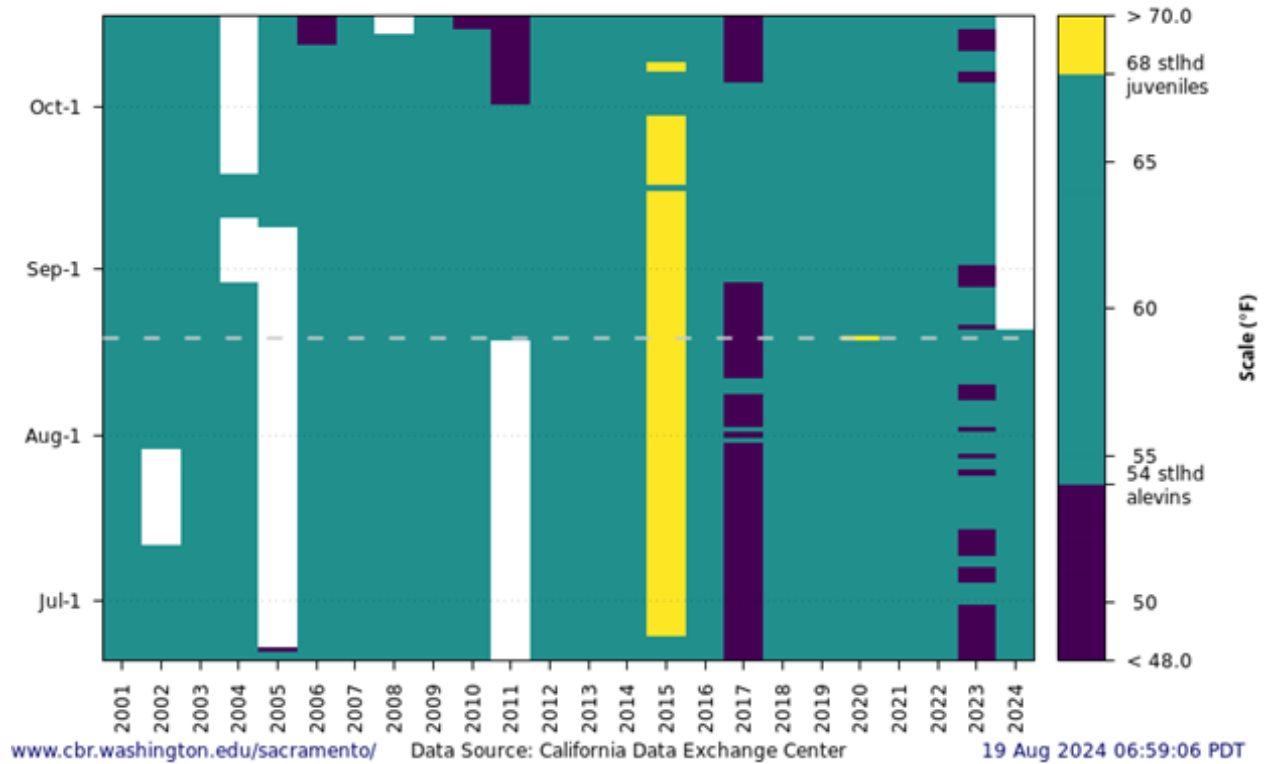


Figure 6. Stanislaus River water temperatures at Orange Blossom Bridge for WY 2001 to present. Data from [SacPAS](https://www.sacpas.org/); website temperature threshold reference lines added by SWT.

Figure 6 is a bar chart showing water temperatures at Orange Blossom Bridge for WY 2001 to present for August to November. The chart shows that during this time, the daily average water temperature was mostly between 54 and 68 degrees Fahrenheit with 2015 being mostly above 68 degrees Fahrenheit.

**Stanislaus R at Ripon (USGS) (RIP)**  
**2012-2024 Daily Average Water Temperature**  
**Observed Range 53.6-82.4**  
**06/20 - 10/18**

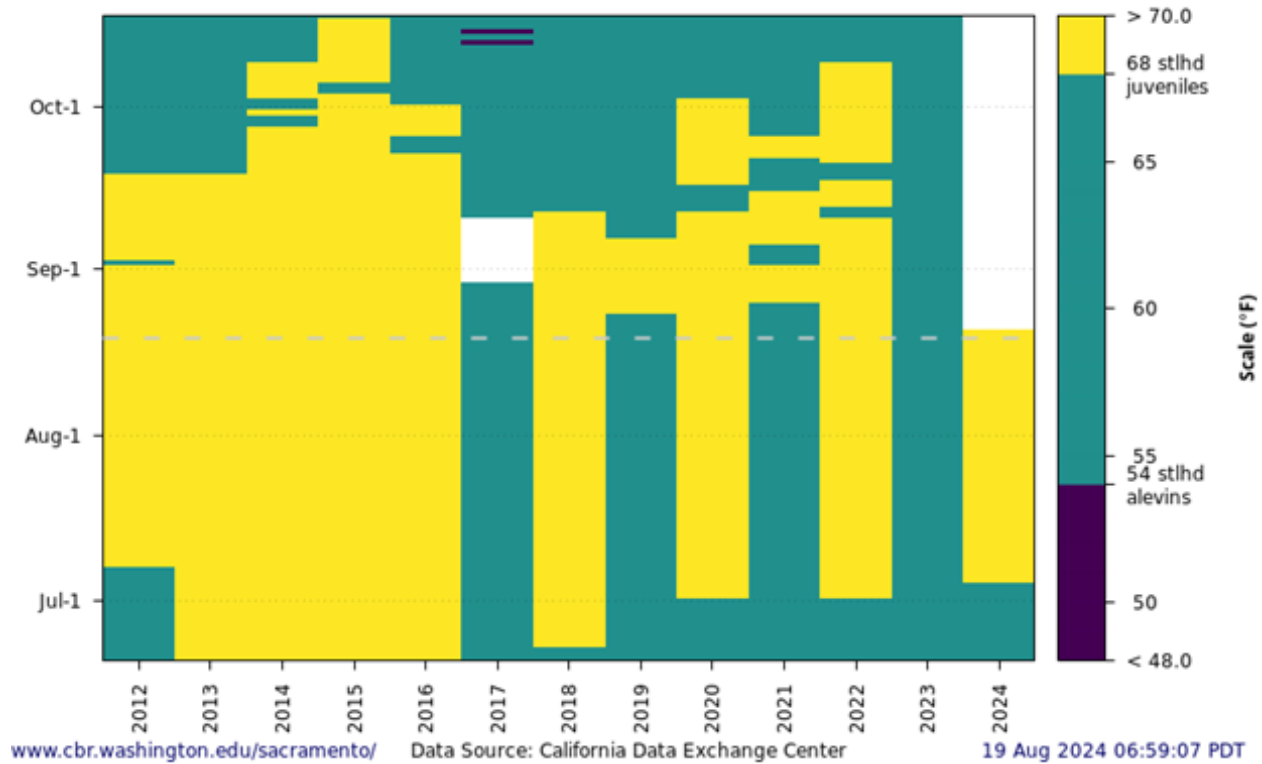


Figure 7. Stanislaus River water temperatures at Ripon for WY 2012 to present. Figure from [SacPAS website](http://SacPAS website) using RIP station data from CDEC; temperature threshold reference line added by SWT.

Figure 7 is a bar chart showing water temperatures at Ripon for WY 2012 to present for August to November. The chart shows that during this time, the daily average water temperature was mostly above 68 degrees Fahrenheit with WY2017 being the only year where water temperature remained below 68 degrees Fahrenheit.

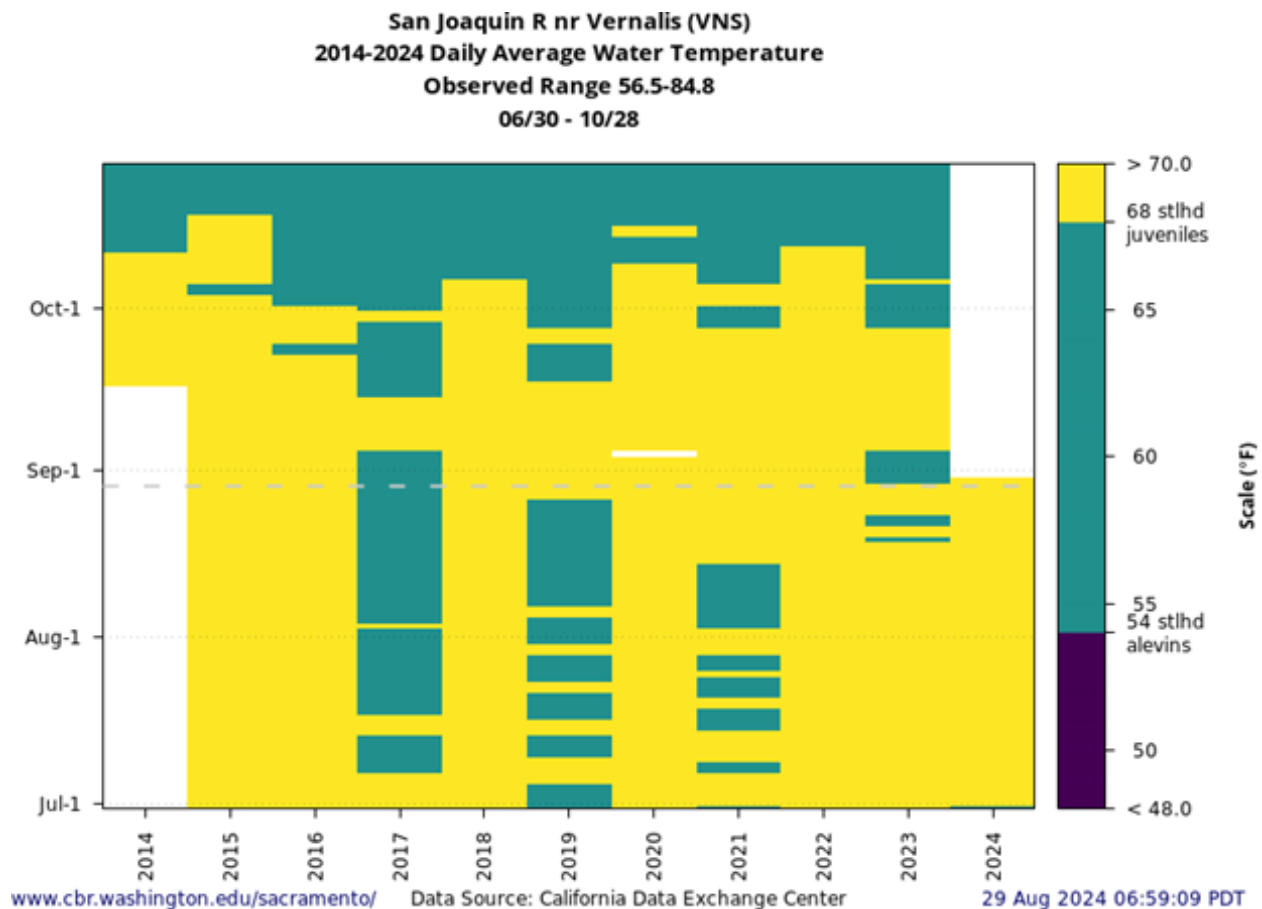


Figure 8. San Joaquin River water temperatures at Vernalis for WY 2012 to present. Figure from [SacPAS website](http://www.sacpas.org) using VNS station data from CDEC; temperature threshold reference line added by SWT.

Figure 8 is a bar chart showing water temperatures at Vernalis for WY 2012 to present for September to July. The chart shows that during this time, the daily average water temperature was mostly above 68 degrees Fahrenheit with WY2017 and 2019 being the only years where water temperature mostly remained below 68 degrees Fahrenheit.



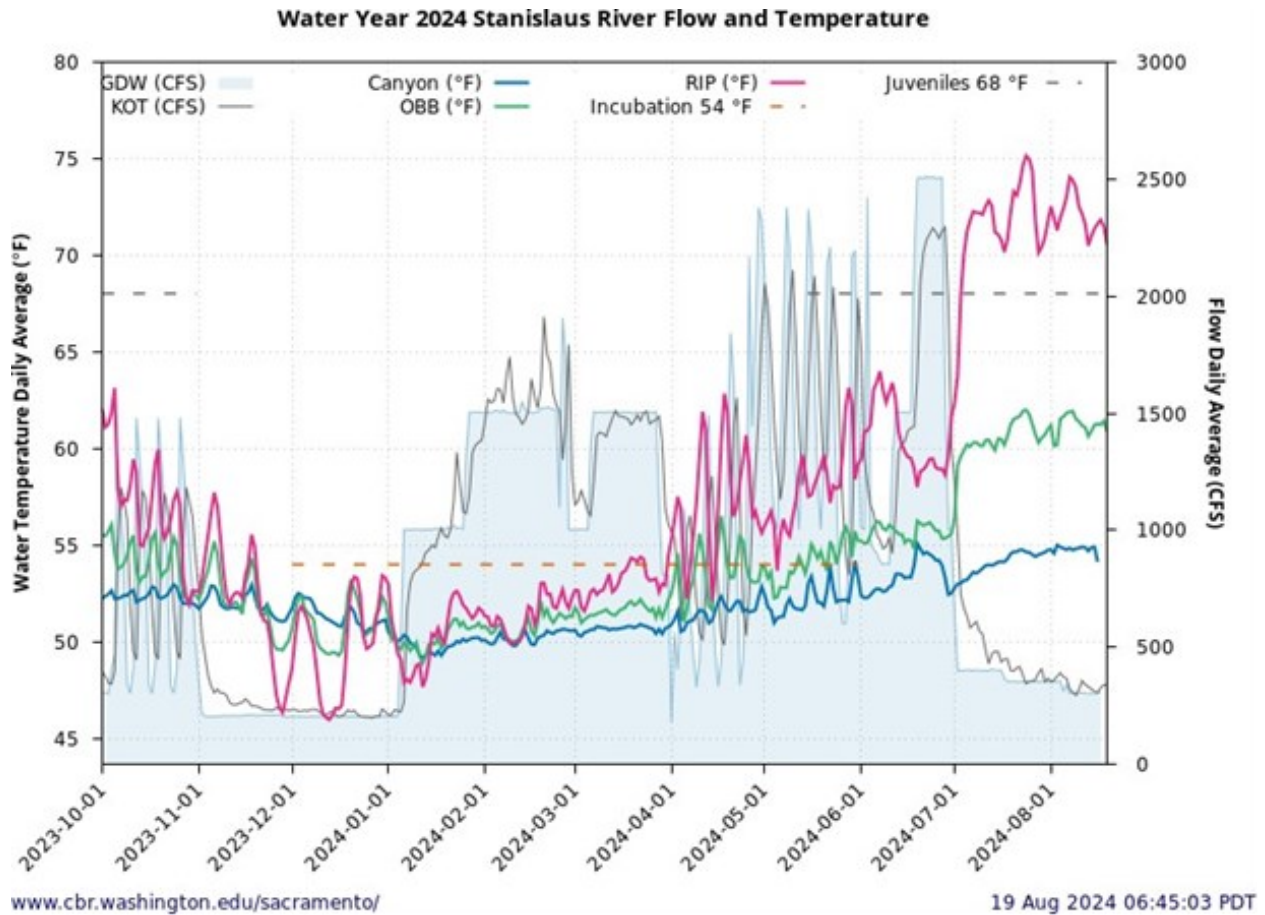


Figure 9. Stanislaus River flow and water temperatures from October 1, 2023 to August 19, 2024. Data (including temperature threshold reference lines) from the [SacPAS website](https://www.sacpas.com).

Figure 9 is a line chart showing river flow and water temperatures on the Stanislaus River. The graph shows slowly decreasing temperatures and flow October 2023 – December 2023 and increasing temperatures April – July 2024.

## Flow Planning

### CDFW & USBR

No advance updates provided for the 8/21/24 meeting.

## Stanislaus River Forum (SRF) Call Review

### USBR

Receive live update from USBR staff on the 8/20/24 call.



## CDFW Update

### Update on Fish Monitoring (Adults)

#### *Chinook carcass and redd surveys*

CDFW plans to start the 2024 Escapement Survey in October.

#### *Steelhead redd surveys*

CDFW plans to start the 2025 survey in January.

### Update on Fish Monitoring (Juveniles)

#### *Mossdale Trawl*

Cooperative trawling with CDFW and USFWS began 7/1/2024.

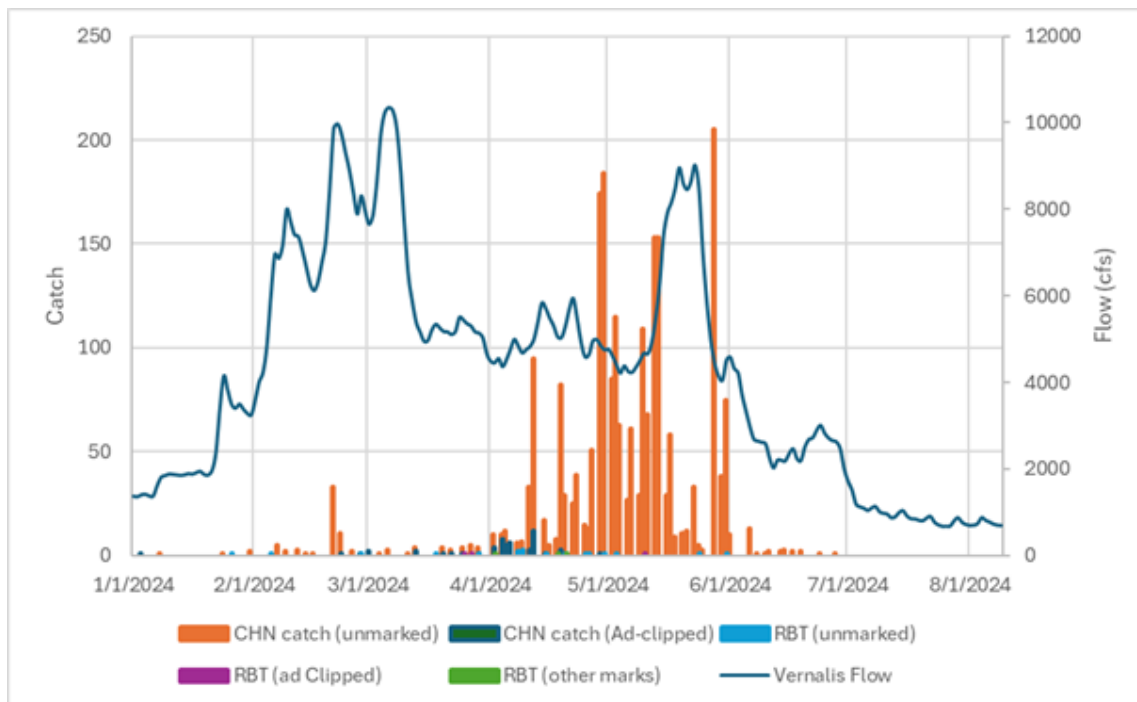


Figure 10. Graph of Chinook catch and temperature at Mossdale and flow at Vernalis since January 1, 2024. No trawl identifies day trawl was suspended due to river stage (does not denote scheduled "off" days).

Figure 10 is a line chart showing river flow water temperature, and unexpanded catch of Chinook salmon. The majority of Chinook catch occurred from January - August 2024.

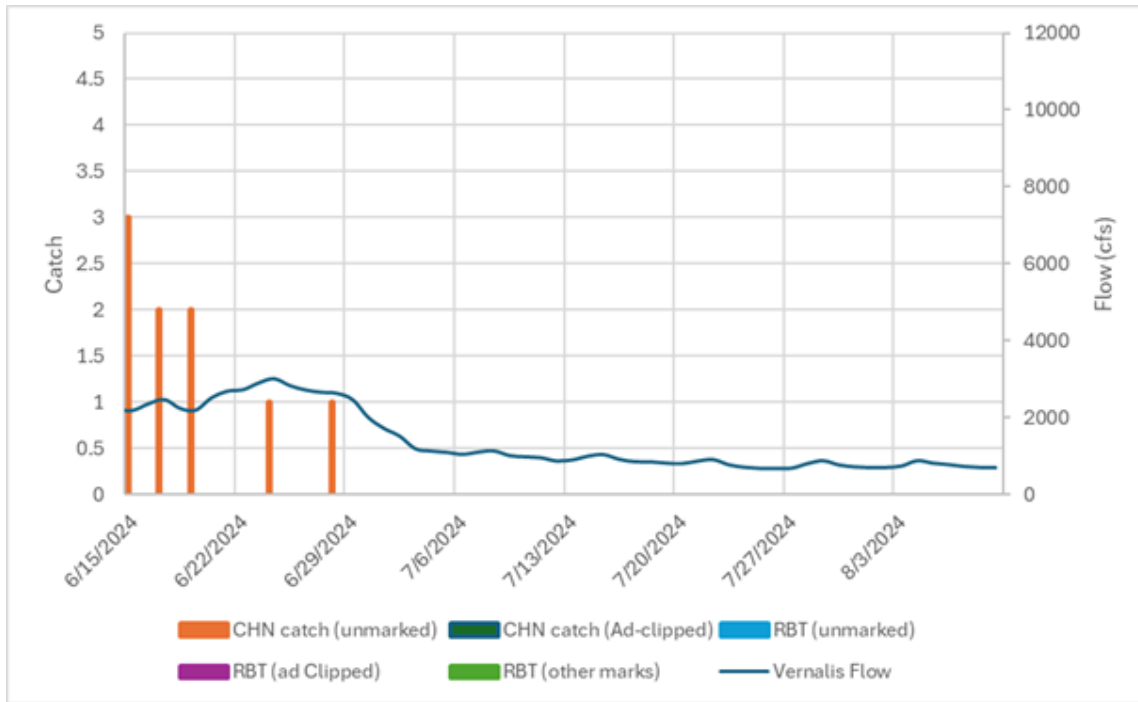


Figure 11. Graph of salmonid catch at Mossdale and flow at Vernalis from June 15 – August 8, 2024. No trawl identifies day trawl was suspended due to river stage (does not denote scheduled “off” days).

Figure 11 is a line chart showing river flow water temperature, and unexpanded catch of Chinook salmon. The majority of Chinook catch occurred from June 15 - August 8, 2024.

## FishBio Update

No updates or field work for August 2024.

## PSMFC Update

No updates or field work for August 2024. Archived information can be found at the [Caswell RST CalFish webpage](#), which includes catch spreadsheets, annual reports, and other project information.

## Restoration Project Updates

No updates in advance of the 8/21/2024 meeting.