



FRIANT WATER UPDATE

June 20, 2018

NOTE: Five ALERT items, on pages 1, 3-4, and 6.

Data current as of June 18, 2018, unless otherwise noted.

Meteorology, Climate, and Hydrology

Water Year 2018 Precipitation (Oct 2017 – Sep 2018)

- **Sacramento Valley:** 82% of normal for this week (Link: [HERE](#))
- **San Joaquin Valley:** 76% of normal for this week (Link: [HERE](#))
- **Tulare Lake Region:** 63% of normal for this week (Link: [HERE](#))

WY2018 Snow Accumulation (Link: [HERE](#))

- North Sierra: 1% of Apr 1 average; 9% of normal for this week
- Central Sierra: 0% of Apr 1 average; 0% of normal for this week
- South Sierra: 0% of Apr 1 average; 0% of normal for this week

Looking forward:

- No precipitation is forecast for the Central Valley and Sierra Nevada this week. See maps of the 6-day precipitation forecast (Link: [HERE](#) for Sacramento Basin and Eastside streams; [HERE](#) for San Joaquin Valley).
- May 1 **Water Supply Index Forecasts** were released on May 8 (Link: [HERE](#))
 - Sacramento River Unimpaired Runoff Forecast: 50% exceedance is 12.8 (72% of average)
 - Sacramento Valley Water Year Type Index (40-30-30): 50% exceedance is 7.2 (Below Normal)
 - San Joaquin Valley Water Year Type Index (60-20-20): 75% exceedance is 3.0 (Below Normal)
 - The 50% exceedance for the Sacramento and 75% exceedance for the San Joaquin are the values used to make the final water year determination under D-1641.
- The May 1 **Bulletin 120 Report** is available as of May 8 (Link: [HERE](#)). Detailed forecast breakdowns are available for major rivers (Link for Sacramento Basin: [HERE](#), link for San Joaquin Basin: [HERE](#)), as is a forecast discussion (Link: [HERE](#)). This is the last Bulletin 120 Report for the 2018 water year
- **ALERT:** A **Bulletin 120 Report** forecast update was posted on June 14 (Link: [HERE](#)). The update shows April-July runoff at the 50% exceedance probability as a percent of average for the following rivers:
 - Shasta Lake inflow: 71%
 - Feather River at Oroville: 75%
 - American River, below Folsom Lake: 88%
 - San Joaquin River, below Millerton Lake: 77%

Other resources:

- An authoritative California climate and meteorology blog (Link: [HERE](#)).
- Interactive, real-time meteorology updates available at Ventusky (Link: [HERE](#)).
- Weather updates from the National Weather Service Sacramento office are available (Link: [HERE](#)).

NASA Airborne Snow Observatory

- Airborne Snow Observatory (ASO) survey flights for the San Joaquin basin were flown on May 28-June 2. The ASO measures snow water equivalent from an airborne platform using a coupled imaging spectrometer and lidar system. Results for estimated snow-water equivalent (SWE) are 206 TAF for the entire watershed, with 75 TAF for the Main Fork San Joaquin, 129 TAF for the South Fork San Joaquin, and 1 taf in lower elevation watersheds (Jose and Willow Creek watersheds). This compares to 302, 306, and 79.5 TAF for the same sub-basins, and 688 TAF total, from the last survey on April 22-24. Total SWE is 17% of SWE at the same time last year.

North of Delta Reservoirs / Temperature Operations

- **CVP reservoirs:** all are fuller than normal with a total storage of 6,521 TAF. Trinity, Shasta, and Folsom are at 101%, 106%, and 115% of their 15-year average storages for this week, respectively. Shasta has been increasing releases since the end of April to meet demands in the Sacramento Valley, and flows below Keswick Dam are now 10,000 cfs. Releases from Nimbus Dam (below Folsom Reservoir) have been at 3,400 cfs since May 27 to help manage Delta salinity and meet X2 requirements.
- Reclamation's daily CVP water supply report is available (Link: [HERE](#)).
- **Oroville:** storage is at 2,349 TAF, which is 89% of its 15-year average. Storage has been kept lower than normal this year due to limitations on operations resulting from the condition of the spillway.
- Storage levels are lower compared to last week, with CVP North of Delta reservoir storage decreasing by 125 TAF and Oroville storage decreasing by 35 TAF.

Looking forward:

CVP Water Supply Allocation

- Reclamation updated the 2018 water supply allocation for the CVP north-of-Delta contractors on April 20 (Link: [HERE](#)), to 100% for Agricultural service contractors and M&I water service contractors (including in-Delta and the American River).

CVP Reservoir and Temperature Operations

- Reclamation's forecasted operations under a May 90% exceedance forecast are for storages in Shasta, Trinity, and Folsom to be 2,365, 1,376, and 384 TAF at the end of September, for a total North-of-Delta storage of 4,125 TAF. Forecasted storages under a May 50% exceedance forecast are 2,648, 1,416, and 602 TAF for Shasta, Trinity, and Folsom, respectively, for a total of 4,666 TAF (Link: [HERE](#)). For comparison, the 15-year average end of September storage in these three reservoirs is 4,726 TAF.
- On May 15, NMFS concurred with Reclamation's 2018 Final Sacramento River Temperature Management Plan (Link: [HERE](#)). The Plan specifies a temperature control point on the Sacramento River at Balls Ferry, where daily average temperatures are required to not exceed 56° F from May 15-October 31. Sacramento River temperature operations are governed under NMFS RPA Actions I.2.1-I.2.4.
- The Sacramento River Temperature Task Group met on May 24 and discussed forecasted Shasta operations and temperature management. Meeting handouts are available (Link: [HERE](#)). Modeling of operations under a 90% exceedance forecast shows that monthly average temperatures will be at or below 56° F, however model results show exceedances on a daily basis. As of June 12 Shasta had about 2,300 TAF of cold water pool (<52° F), which is very similar to the cold water pool volume at that date in 2016 and 2017 (Link: [HERE](#)). The Shasta Temperature Control Device (TCD) is releasing primarily from the upper levels of the reservoir, from five upper gates and three middle gates (Link: [HERE](#)).
- The American River Group met on May 17 and discussed forecasted Folsom operations and temperature management. Reclamation's forecasted end-of September storage in Folsom is 384 TAF under a 90% exceedance forecast and 602 TAF under a 50% exceedance forecast. At the April 19 meeting

temperature management scenarios were presented that showed the ability to meet a target of 65° F at Watt Ave through September under both exceedance forecasts, and identical or lower targets after that. Meeting handouts are available (Link for May 17: [HERE](#); Link for April 19: [HERE](#)). American River temperature operations are governed under NMFS RPA Action II.2.

Delta/South of Delta Operations

Flow values in this section are rounded to the nearest 100 cfs.

- **Controlling Factor(s) in the Delta:** Delta Outflow X2 (per [DWR Delta Ops report](#))
 - The D-1641 X2 requirement at Collinsville is currently being met by keeping the 14-day average X2 position at < 81 km. X2 position has been moving gradually eastward over the last two weeks due to decreasing Delta inflow, and on June 19 exports will be cut to continue to meet the standard. This X2 standard will be in place until the end of June.
 - Two other restrictions are currently active, but are not controlling at this time:
 - FWS OMR Action 3 to protect juvenile Delta Smelt, which restricts 14-day average OMR flows to no more negative than -5,000 cfs.
 - The D-1641 E/I ratio export cap of 35%. The ratio is currently at 23% (3-day average).
 - Current daily X2 location: > 81 km.
 - Current OMR 14-day average flows: -4,041 cfs.
 - The Delta is currently in Balanced conditions. Reclamation's COA accounting report currently shows the SWP in debt to the CVP by 17,900 cfs of exports (Link: [HERE](#)). COA debt is typically settled up later in the year, but it can also be zeroed out if storage in the major reservoir (Shasta or Oroville) of the project that is owed water hits its flood pool. Currently both Shasta and Oroville are well below their flood pools.
- Daily Delta outflow is 5,800 cfs, down from 7,600 cfs last week.
- Delta inflow is 14,000 cfs, down from 14,900 cfs last week. Inflow is 10,900 cfs on the Sacramento River at Freeport, 1,600 cfs on the San Joaquin River at Vernalis, and 600 cfs from Eastside streams.
- Jones pumping is at a 2-unit operation of 1,600 cfs, having reduced pumping on Tuesday, June 19 to meet X2 requirements.
- Banks pumping is currently at 800 cfs, and is at reduced levels because of lining repairs on the California Aqueduct (CA). These repairs will continue through late June. Additional SWP water may be pumped through Jones or moved through the DMC/CA Intertie during this outage. As of noon Monday June 11, the Intertie is not being used. There is 0 cfs pumping at Banks for the Cross Valley Canal.
- CVP San Luis storage is at 604 TAF, down from last week's storage of 622 TAF. This is below its capacity of 966 TAF, and is 123% of its 15-year average.
- CVP San Luis storage includes 2018 Recapture water that has been accumulating in San Luis since March 1. Recapture has been occurring at Mendota Pool and at Patterson and Banta-Carbona irrigation districts.
- SWP San Luis storage is 758 TAF, down from last week's storage of 797 TAF.
- Salinities at compliance locations in the Delta are all well below applicable standards (Link: [HERE](#)).
- Reclamation South of Delta daily operations report is available (Link: [HERE](#)).

Looking forward:

- **ALERT:** Reclamation updated the 2018 water supply allocation for the CVP south-of-Delta contractors on June 15 (Link: [HERE](#)), which is:
 - Agricultural water service contractors: 50% (increased from the 45% allocation issued on May 25)
 - M&I water service contractors: 75% (unchanged from May 25)
- Jones pumping will increase slightly to a 2-unit operation of 1,950 cfs on Saturday, June 23.
- Reclamation's forecasted operations for CVP San Luis are for end of September storage to be 141 TAF under the May 90% exceedance forecast and 194 TAF under the May 50% exceedance forecast (Link: [HERE](#)). For comparison, the 15-year average end of September storage in CVP San Luis is 243 TAF.

- Reclamation announced that if there is available capacity at Banks pumping plant this summer, the CVP will be moving water for Cross Valley Canal Contractors during July-September.
- FWS OMR Action 3 to protect Delta Smelt is in effect and will continue until the average water temperature at Clifton Court Forebay reaches 25° C for three consecutive days or on June 30, whichever is earlier. Clifton Court Forebay temperatures are currently 23.4° C.
- DWR increased the allocation for the vast majority of SWP contractors to 35% on May 21, from the April 24 allocation of 30% (Link: [HERE](#)).
- Delta Cross Channel gates will be closed during the week but open on weekends during the summer.

Friant Division Operations

- Friant Water Supply Allocation and use for WY 2018-19 as of 5/11/18:
 - Class 1 85%
 - Class 2 Limited Uncontrolled Season: 130 TAF was moved through May 10
 - Unreleased Restoration Flows (URF) 38 TAF used during April; 51 TAF available thru May 28
- 96 TAF of 2017 allocation was carried over into 2018 WY
- Millerton Lake daily operations report (Link: [HERE](#)), CDEC information (Link: [HERE](#)), and Water Year accumulation plot (Link: [HERE](#))

Looking forward:

Water supply scenarios discussed below were reported by Reclamation SCCAO at multiple water supply meetings and conference calls, including the two most recent meetings on May 15 and May 22.

- **ALERT:** The Class 1 allocation remains at 85%. It is currently anticipated based on current conditions that the Class 1 allocation could still increase, but the potential for reaching 100% is uncertain. Reclamation is scheduled to update its water supply projections on July 13.
- **ALERT:** It appears that Millerton reservoir may have peaked at 478,680 AF on June 13, approximately the time predicted by SCCAO operators. Storage in Millerton was 476,667 AF on June 19, a decrease of approximately 2 TAF since June 13.
- Inflow forecasts for Millerton are available from DWR's Bulletin 120 (Link: [HERE](#)) and from NWS (Link: [HERE](#)). SCCAO and SJRRP agreed on an 80%/20% meld of DWR forecast and NWS forecast data, respectively, for the purpose of preparing the water supply scenarios.

San Joaquin River Settlement Implementation

Restoration Flow Releases

- As of May 22, the allocated Restoration Flows now total 280,258 AF for the 2018-19 water year. The allocation of Restoration Flows is based on a prescribed formula related primarily to total projected runoff, without regard to timing or rates of runoff. It is expected that this will be the last change in the SJRRP allocation this year regardless of runoff variability through the end of June. These flows are subject to the prescriptive Restoration Flow Guidelines required by the Settlement.
- The current schedule calls for a Gravelly Ford target flow of 195 cfs (190 cfs of Restoration Flows) through June, and is expected to match Exhibit B target levels through October based on the updated and approved schedule submitted by the Restoration Administrator.

Recapture/Recirculation

- **@ Mendota Pool:** Restoration releases in March through May have resulted in approximately 1,666 AF recapture at Mendota Pool. Future recapture will be zero or minimal, dependent on seepage conditions and groundwater levels downstream of Sack Dam

- **@ Patterson ID and Banta Carbona ID:** The water currently available for recapture is all being picked up by PID and BCID. Total recapture at PID and BCID for May was 3,900 AF. Expected PID/BCID recapture in June is 3,100 AF, an increase of 650 AF since the last projection.
- **Current Recaptured Supplies in San Luis Reservoir:** Accumulation of recaptured water in SLR began in March. There is currently no risk that recaptured water could be lost to spill.
- Water recaptured since March 1 has not been distributed to Friant districts because it is not yet clear whether water supply reductions are impacting Class 1 or Class 2 supplies in the current contract water year.

River Settlement, Restoration Area Conditions:

- Over the last 10 days, daily water temperatures recorded at gaging sites within the San Joaquin River reflect influence from seasonally warm air temperatures. The following conditions have been reported by California DFW for aquatic habitat conditions along the San Joaquin River within the Restoration Area (Friant Dam to the Merced River Confluence). For near maximum daily water temperatures observed Sunday, June 17, Friant Dam release temperatures remain Optimal for all relevant Chinook life stages for the month of June (i.e. Adult Migration, Adult Holding, In-River & Floodplain Fry/Juvenile Rearing, and Juvenile Outmigration). In general, maximum daily temperatures increase downstream from Friant Dam. These temperatures, where flow is observed, relate to SJRRP objectives for spring-run and fall-run Chinook salmon as follows:
 - Adult Migration (Reaches 1-5) – Temperatures observed are Optimal to above Optimal within upper Reach 1A (upstream of Hwy 41), above Optimal to Lethal within lower Reach 1A (Hwy 41 to Hwy 99), and Lethal within Reaches 1B, 2, 3, 4, 5, and the Eastside Bypass. Lethal temperatures are observed downstream of the Merced River confluence at Crows Landing.
 - Adult Holding (Reach 1) – Temperatures observed are Optimal to above Optimal within upper Reach 1A (upstream of Hwy 41), above Optimal to Lethal within lower Reach 1A (Hwy 41 to Hwy 99), and Lethal within Reach 1B.
 - In-River & Floodplain Fry/Juvenile Rearing (Reaches 1-5) – Temperatures observed are Optimal to above Critical within Reach 1A, above Critical to Lethal within Reach 1B, and Lethal in most of Reaches 2, 3, 4, 5, and the Eastside Bypass. Temperatures decrease slightly below Mendota Pool in Reach 3, but remain Lethal. Temperatures at the Eastside Bypass are observed as above Critical (73.2°F), but Lethal at both upstream and downstream stations. Lethal temperatures are observed downstream of the Merced River confluence at Crows Landing.
 - Outmigration (Reaches 1-5) – Temperatures observed are Optimal to above Critical within Reach 1A, above Critical to Lethal within Reach 1B, and Lethal in most of Reaches 2, 3, 4, 5, and the Eastside Bypass. Temperatures decrease slightly below Mendota Pool in Reach 3, but remain Lethal. Temperatures at the Eastside Bypass are observed as above Critical (73.2°F), but Lethal at both upstream and downstream stations. Lethal temperatures are observed downstream of the Merced River confluence at Crows Landing.
- Based on preliminary estimates, the San Joaquin River Restoration Program has captured 864 juvenile young-of-year spring-run and 15 yearling fall-run Chinook salmon at four rotary screw traps (RSTs) installed in Reaches 1 and 2, as of June 17. 2 fish were captured in the week ending June 10. The juveniles are from 55 adult females and 60 adult males that were released into the river this summer as extra brood stock fish from the fish conservation facility at Friant Dam.

Looking forward:

Chinook Salmon Holding and Spawning Habitat Study

- The California Department of Fish and Wildlife, as part of the SJRRP, will release approximately 180 adult spring-run Chinook salmon into Reach 1 of the Restoration Area as part of a holding and spawning habitat use study. Monitoring efforts for the study will continue until juvenile spring-run Chinook emergence is complete. This study will assist the SJRRP in identifying potential limitations in the available

spawning habitat and inform managers of the need, or lack thereof, to implement spawning habitat restoration actions.

Recapture supplies in San Luis Reservoir:

- **ALERT:** If the Class 1 allocation is increased to 100%, recaptured water will be made available to Class 2 contractors, since it would then be clear that all water supply reductions due to SJRRP are to Class 2 supplies. An updated decision on Class 1 and Class 2 supplies is slated to be announced on July 13. If Class 1 allocation remains below 100%, Recaptured water will be distributed to Class 1 and Class 2 contractors based on relative water supply reductions caused by SJRRP. Tables with distribution of recaptured water will be reintroduced into the Water Update when 2018 recapture water has been allocated to the districts.