

**Addendum to the
State Water Project and Central Valley Project
Drought Contingency Plan
July 30, 2021**

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This Drought Contingency Plan (Drought Plan) Addendum has been prepared by the California Department of Water Resources (DWR) and the U.S. Bureau of Reclamation (Reclamation) to provide updated information about the operations forecast and various drought actions that are being taken given the current drought conditions. DWR and Reclamation operate the State Water Project (SWP) and the Central Valley Project (CVP), respectively, to the 2020 Record of Decision (ROD) as analyzed in the 2019 U.S. Fish and Wildlife Service (USFWS) Biological Opinion and 2019 National Marine Fisheries Service (NMFS) Biological Opinion on the Coordinated Long-Term Operation of the Central Valley Project and the State Water Project (collectively the 2019 Biological Opinions), and DWR also operates the SWP to the 2020 California Department of Fish and Wildlife (CDFW) Incidental Take Permit (ITP). This Addendum is being submitted by DWR to CDFW in response to Condition 8.21 of the ITP. Concurrently, this plan will be shared with the Water Operations Management Team (WOMT) which includes representatives from DWR, Reclamation, USFWS, NMFS, CDFW, and the State Water Resources Control Board (SWRCB) (collectively referred to as Agencies).

This Addendum includes the SWP and CVP (collectively referred to as Projects) July operations forecast, as well as updates on species status, the drought monitoring plan, and updates on planned drought actions that are known as of July 30, 2021.

DWR and Reclamation will continue to provide weekly condition and Project operations updates through WOMT and seek Agency input on how best to manage multiple needs for water supply. In addition, DWR and Reclamation will coordinate with the existing Long-term Operation Agency working groups and Drought Relief Year (DRY) Team to develop a robust drought monitoring program with updates to WOMT and other forums as necessary.

Hydrology Update

Conditions have continued to be extraordinarily dry. As noted in previous Drought Plans, Water Year (WY) 2021 is one of the driest on record. In addition, the April/May/June 2021 period was the warmest and driest since 1896.

As shown in blue on the following chart, the Northern Sierra Precipitation total as of July 28, 2021, is 23.2 inches and 46% of average to date.

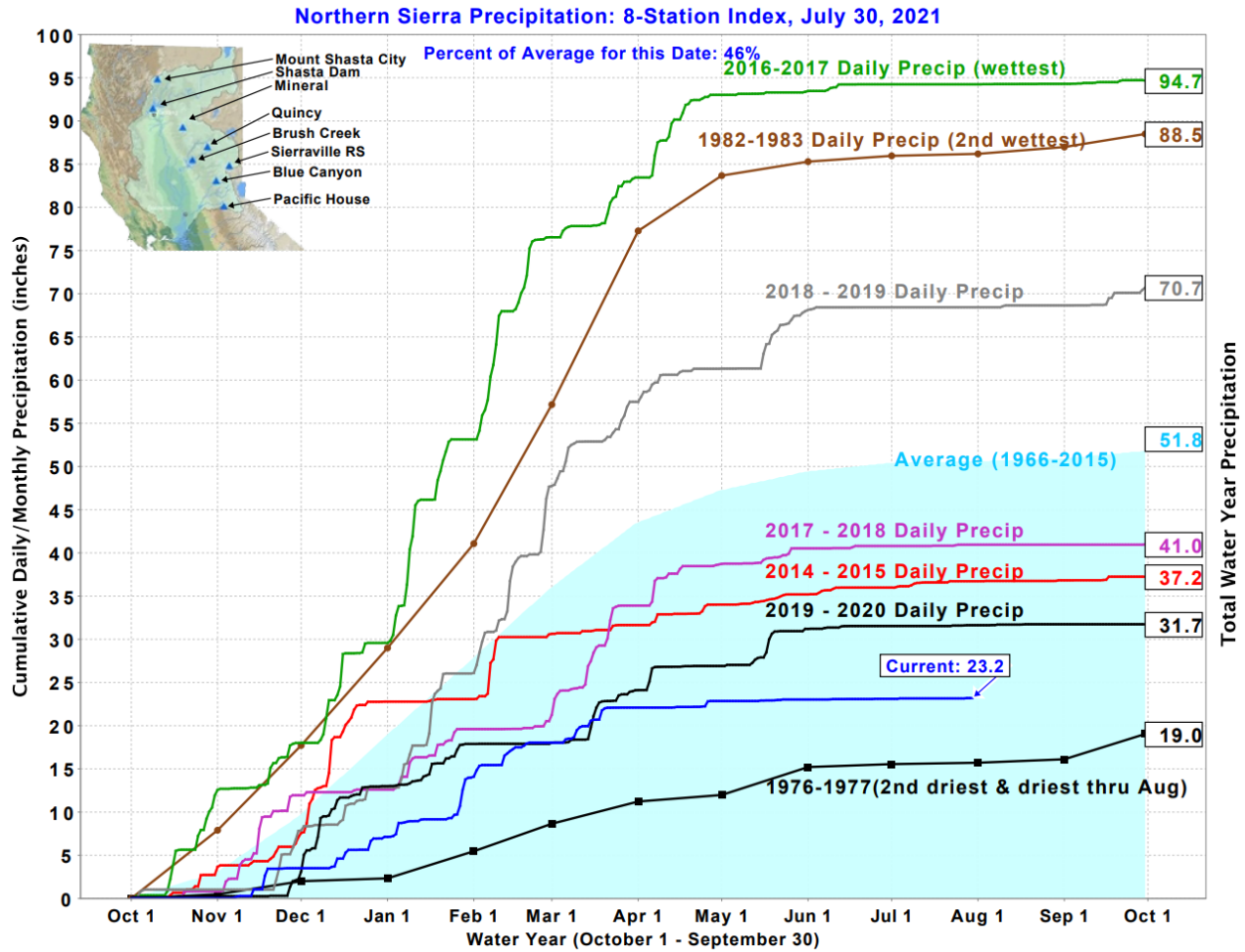


Figure 1. Northern Sierra Precipitation: 8-Station Index through July 30, 2021

State Water Project (SWP) and Central Valley Project (CVP) - Operations Update

Modified D-1641 Objectives

On June 1, the SWRCB issued a Conditional Approval to the Temporary Urgency Change Petition (TUCP) submitted by DWR and Reclamation on May 17, 2021, requesting modifications to Delta outflow and relocation of the Western Delta salinity compliance location from Emmaton to Threemile Slough. Even accounting for these modifications, with increasing depletions and very warm temperatures, throughout June and into July the Projects were challenged in managing upstream storage while maintaining compliance with modified D1641 objectives. Water quality at Threemile Slough was exceeded from June 28 to July 14, 2021 and at Jersey Point from July 2 to July 8, 2021. The actions that were taken by the Projects to meet these objectives in June and July are described below.

Exports

Minimal project exports are going toward municipal and industrial water, refuge water, and senior water rights deliveries. This volume, described in more detail below, has been well below the limit of 1,500 cfs included in the June 1, 2021, Temporary Urgency Change Order.

From June 1 through June 9, the Projects maintained minimum Delta exports of about 300 cfs at Clifton Court Forebay and about 800 cfs (one unit) at Jones Pumping Plant.

Beginning on June 10, 2021 through July 14, 2021, DWR and Reclamation implemented a new operations approach of a one-facility export operation. During this operation, the Projects used the Delta-Mendota Canal (DMC)-California Aqueduct (CA) Intertie (DCI) to help distribute exports from Jones Pumping Plant or Banks Pumping Plant. Through this operation, the Projects reduced combined exports by about 250 cfs per day. Beginning July 15, 2021, the Projects ceased the one-facility operation, and exports resumed at each facility. Since July 15, 2021, CVP exports have been approximately 800 cfs, which includes about 250 cfs of transfer water, and the SWP exports have been approximately 350 cfs, which includes about 240 cfs of transfer water.

Releases

In addition to the single facility operation, in June and July, the Projects increased upstream releases above what was identified in the May 28, 2021 Drought Plan. The increased releases were necessary for outflow and salinity requirements in the Delta. These increased releases were due to higher-than-forecasted tidal cycles caused by the summer solstice as well as increased depletions encountered during June on both the Sacramento and San Joaquin Rivers.

DCC

Lastly, on June 17, 2021, Reclamation opened the Delta Cross Channel (DCC) gates to assist with the interior Delta salinity. The DCC gates were closed for a few days—June 29 to July 2—in response to real-time salinity conditions at Threemile Slough.

Project Coordination

Project operators meet daily to assess real-time conditions and coordinate next steps as appropriate. Because of limited water supply storage upstream, Project operators have limited knobs to turn to manage real-time conditions in the Delta such as barometric pressure changes that influence tidal conditions and salinity intrusion. In addition to DCC gate operations, typically exports will be modified in real-time for salinity management. However, because the Projects are at minimum exports, it is difficult to manage salinity in real-time without expending significant upstream storage, especially in light of the higher-than-forecasted tides, which pushed seawater into the interior Delta and greatly elevated salinity for about a week.

SWP and CVP Operations Forecasts

DWR and Reclamation have updated the attached operational forecasts through December 31, 2021. Although the final official Water Supply Index Bulletin 120 forecast was issued on May 1, 2021, the forecasts provided have been adjusted to account for observed conditions in June and part of July, and they assume very dry conditions through December. The forecasted inflows and depletions for October through December were further reduced below the conservative dry forecast that was included in the May Drought Plan.

Oroville

The projected end-of-September storage in Lake Oroville is 727 TAF, nearly a 125 TAF decrease as compared to the May forecast. The reduction of carryover storage is primarily attributed to the increased releases needed in June and July for Delta standards and a slight reduction of projected inflow. Based on current conditions, generation at Hyatt Powerplant is likely to cease because of the low lake levels by late July or August. In addition, during the first week of August, Oroville Lake levels are projected to fall below the historical minimum experienced on September 7, 1977, of 882 TAF at 645 feet in elevation. Current releases to the Feather River are 2,000 cfs and are assessed daily for opportunities to reduce and conserve storage for future needs.

Shasta

Inflows into Shasta for July through September were adjusted down by 15 TAF since the May forecast was issued, and Shasta releases have been increased by 110 TAF for that same period. Shasta storage was also adjusted to align with actual storage at the end of June given the lower May and June inflows. Reclamation is now forecasting an end-of-September carryover target of 1.1 MAF, below the target of 1.25 MAF expected in May. However, the Projects continue to assess actions that can be taken to help preserve storage in Shasta above the 1.1 MAF projection. A key component of the 1.1 MAF end-of-September storage is the assumption that the transfer water made available by the SRSCs for south-of-Delta purchasers would be released for export in October. Should a portion of this water be moved into September for improving fishery conditions, the Shasta end-of-September storage could be reduced below 1.1 MAF.

Folsom

Inflows into Folsom for July through September have been adjusted down by 40 TAF since the May forecast was issued, and Folsom releases have been decreased by 75 TAF for that same period. Folsom storage was also adjusted to align with actual storage at the end of June given the lower May and June inflows. Reclamation is targeting a minimum end-of-September storage of 200 TAF.

Based on this dry forecast, the projected low storage of each north of Delta reservoir and their associated historical low points are provided in the following table:

Reservoir	Lowest Storage and Timeline	% Historical Average	Historical Low Point and Date
Shasta	850 TAF end of October	32%	563 TAF 9/13/1977
Oroville	700 TAF end of October	33%	882 TAF 9/7/1977
Folsom	145 TAF end of December	30%	135 TAF 12/4/2015

Depletions

Sacramento Valley depletions are the net difference between the combined releases from Shasta, Oroville, and Folsom and the flow into the Delta measured at Freeport. The depletions essentially represent the losses upstream of the Delta attributed to the very dry conditions and system diversions.

The May forecasts included depletions at levels seen in 2014 and 2015 with adjustments for additional drought actions that did not occur in 2014 and 2015. However, depletions in 2021 have been trending higher than was estimated for the May forecasts. Consequently, the forecasts incorporate adjusted depletion values 150 TAF higher for July through September.

Delta Operations

The forecasts include exports for Yuba transfers, transfers made available by Contra Costa Water District, and continued increased releases from New Melones in July and August.

Species Status

During June, no actions set forth in the 2020 Incidental Take Permit (ITP) for DWR's long-term operation of the SWP or the 2019 Biological Opinions issued by National Marine Fisheries Service and US Fish and Wildlife Service for the long-term operations of the CVP and SWP were triggered. In addition, daily calculated Old and Middle River (OMR) flow averaged approximately -700 cfs, well below any minimum flow threshold outlined in the ITP. OMR restrictions under 8.4.2 for the protection of larval Longfin Smelt were not triggered by 20mm surveys in June. Similarly, no larval Delta Smelt were detected in the south Delta or at station 716 (which would trigger Barker Slough Pumping Plant restrictions). Due to less negative OMR flows this month, the Smelt Monitoring Team did not provide any OMR recommendations for the protection of either smelt species. There was no salvage of larval Longfin or Delta Smelt at either facility on or after June 1. OMR management for both smelt species officially off-ramped on June 22 after three consecutive days of water temperatures >25°C in Clifton Court Forebay.

Very little salmon loss has occurred at the south Delta facilities, well below annual and daily thresholds for both the State ITP and the NMFS Biological Opinion. Daily loss thresholds were never triggered for winter-run, and annual cumulative loss thresholds for salmon will not be triggered this WY. Natural winter-run cumulative annual loss is currently at 8.2 (0.4% of the annual allowance), and only one spring-run hatchery surrogate group has seen loss, putting it at 2% of the annual allowance. All other protected salmon groups are currently at 0% of annual allowances, with no further take expected. The Salmon Monitoring Team interpretation of current monitoring data and historic migration patterns is that smaller than expected numbers of salmon entered the Delta this year due to extended rearing in the Sacramento River, and associated high mortality there.

Updates on 2021 Drought Actions

Sacramento River Temperature Management

Forecasted conditions have not improved at Shasta Reservoir since the May Drought Plan. In an effort to support better temperature management in the summer and fall months, Reclamation implemented a significant warm-water power bypass from April 18 through May 24 to release warmer water through the higher river outlet gates and preserve the colder water for later use in the summer. This bypass included flows up to 100% of the releases from Shasta up to the point where the Sacramento River did not exceed temperature metrics determined

appropriate by the State and Federal fishery agencies. Initially, the fishery agencies determined 60°F (daily average) at the Clear Creek confluence gauge (CCR) was an appropriate maximum temperature. The temperature was adjusted to 57°F at the Sacramento River upstream of Highway 44 gauge (SAC) on May 15 due to adverse effects to the fishery conditions from the warmer release. This action conserved approximately 300 TAF of colder water for use later in the summer.

Additional actions taken or currently being evaluated to support Shasta storage with a potential to improve temperature management are listed below:

- Sacramento River Settlement Contractors (SRSC) scheduled diversions and transfers to other Sacramento Valley Water Users for 2021 are 1,117,000 AF, an amount that is less than the volumes diverted and transferred in 2015. Diversions and transfers are 65% of Settlement Contract totals, an additional 10% reduction from the 75% shortage provisions.
- Reduction of CVP allocations to municipal and industrial contractors to 25% to primarily meet public health and safety.
- Reduction of storage at Whiskeytown Reservoir – Reclamation released a public draft Environmental Assessment on July 22 to analyze reducing the storage in Whiskeytown Reservoir to preserve Shasta storage. If implemented, this action is expected to take place in September.
- Additional groundwater pumping - Reclamation is reviewing comments on an Environmental Assessment to fund additional groundwater actions by the Sacramento River Settlement Contractors to 1.) reduce the reliance on surface diversions and retain more water in Shasta; and 2.) support strategically flooding fields for the Pacific Flyway. A Finding of No Significant Impact (FONSI) is anticipated early next week. The action will depend upon the availability of appropriations.
- Reclamation and DWR are actively working on water purchases and re-operation agreements to provide additional flexibility within the system and preserve storage in upstream reservoirs, including Shasta Reservoir.
- Requests for additional voluntary reductions from senior water right holders – Reclamation has been working continuously with the senior water right holders within the Sacramento Valley to identify and implement any additional reduction in diversions (beyond the 10% listed above). These actions are difficult to define in advance, but may result in lower diversions in the late summer.
- Coordination with the Water Board for consideration of additional curtailments – Reclamation and DWR will continue to coordinate with the Water Board and support curtailments where appropriate based on water availability throughout this summer to conserve upstream storage for both water years 2021 and 2022.

Temporary Urgency Change Petition (TUCP)

The Projects continue to assess whether a TUCP will be necessary for a modification of the Rio Vista flow requirement this fall. The need for a TUCP, particularly in the month of October, is heavily dependent on the pattern of released stored transfer water to south-of-Delta purchasers.

Pacific Flyway Program

Due to the extreme dry conditions experienced in 2021, some of the rice fields were fallowed and there will likely be limited surface water for rice decomposition flooding. Migratory birds along the Pacific Flyway that rely on these flooded fields in fall/winter will have very limited habitats for their journey, which could be harmful to the bird population. The Districts along the Feather River have proposed using groundwater to support rice stubble decomposition to provide a portion of flooding water to create Pacific flyway habitat that will be lost this year due to the drought.

Transfers

DWR and Reclamation are currently working with various water agencies across the state to facilitate water transfers to meet minimal water needs throughout the basin. The Projects are planning to export Yuba Accord transfer water that is currently being released (during July through September), and expect to release stored Yuba transfer water beginning in October.

Reclamation is also planning to facilitate the transfers between Contra Costa Water District and various buyers July through September.

Reclamation is coordinating with the Sacramento River Settlement Contractors to facilitate large water transfers to be delivered to buyers south of the Delta. This water is being made available over the summer but will not be delivered until the fall in order to help support Sacramento River temperature management. Currently this water is expected to be released in October, although the pattern of release is being reviewed through the Sacramento River Temperature Task Group and/or the Upper Sacramento Scheduling Team to determine if a different release schedule would provide increased fish protection.

Emergency Drought Salinity Barrier

Construction of this rock-filled channel closure, across West False River from Jersey Island to Bradford Island, began on June 3, 2021. The contractor worked seven days a week, 24 hours a day, and completed the installation on June 22 (about ten days early). Removal of the barrier will begin by October and require about 60 days; the barrier is expected to be fully removed no later than November 30, 2021.

In addition to helping manage the current drought emergency with the TUCO and emergency drought barrier, DWR is working to get all environmental approvals, through standard non-emergency processes, to allow for up to two additional installations of the West False River barrier between 2022 and 2031.

Drought Monitoring

DWR provided the latest draft monitoring plan with the Drought Plan submitted on May 28, 2021. Monitoring is on-going, and DWR will synthesize the findings from the monitoring into an annual monitoring report in February 2022. Per the TUCO, DWR will also provide a status report on the studies regarding the impact of the emergency drought barrier on harmful algal blooms and aquatic weeds on December 15, 2021, with a final report to follow in April 2022.

Next Steps

DWR and Reclamation continue to coordinate real-time and anticipated summer and fall operations with the SWRCB, CDFW, NMFS, USFWS, and other stakeholders through various weekly and monthly meetings.

MODELED FORECAST RESULTS

For the 2021 Drought Action Plan

Dry Hydrology

END OF MONTH STORAGES (TAF)						
RESERVOIRS	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Shasta	1,417	1,173	1,102	850	849	850
Folsom	248	215	200	175	154	145
Oroville	875	772	727	696	700	700
New Melones	1,027	923	872	822	819	818
MONTHLY AVERAGE RELEASES (CFS)						
RIVERS	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Sacramento	9,200	7,850	5,200	7,550	3,350	3,250
American	1,000	900	550	550	550	550
Feather	3,000	1,350	1,400	950	950	950
Stanislaus	1,500	700	400	635	200	200
DELTA SUMMARY (CFS)						
	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Sac River at Freeport	7,450	6,800	6,150	8,200	5,800	6,050
SJ River at Vernalis	1,300	1,000	550	800	350	400
Computed Outflow	3,650	3,050	3,300	3,600	4,100	4,000
Combined Project Pumping	1,200	1,200	1,200	4,350	1,800	2,300