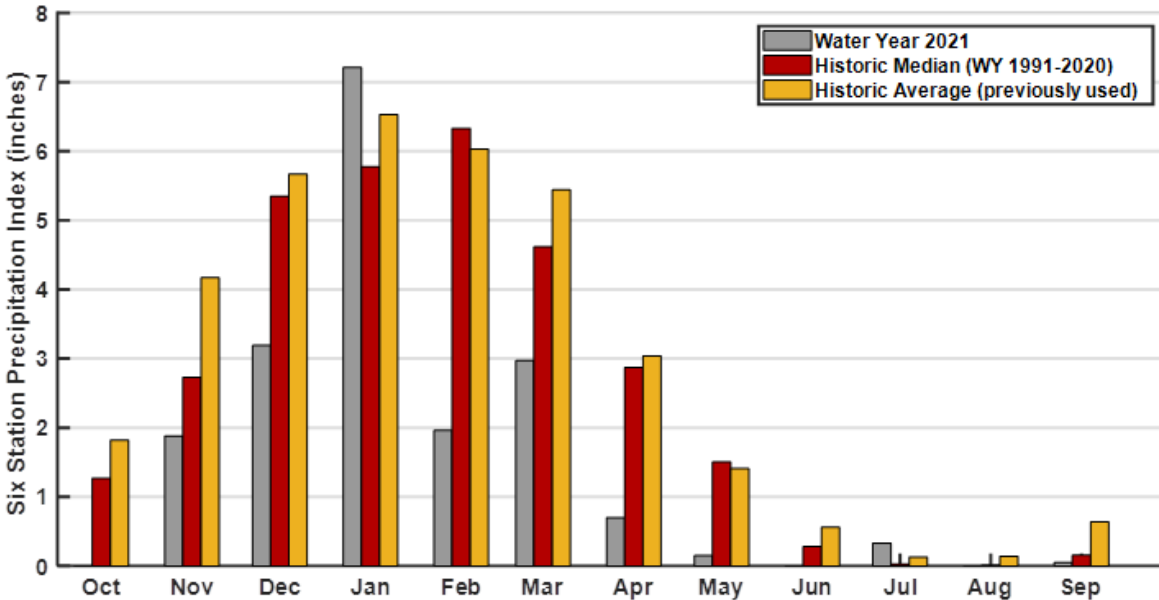


San Francisco Public Utilities Commission

Hydrological Conditions Report

September 2021

J. Chester, C. Graham, N. Waelty, October 15, 2021



Starting WY2022 the San Francisco Public Utilities Commission (SFPUC), including Hetch Hetchy Water and Power (HHWP), updated the long term medians to come into agreement with the National Oceanic and Atmospheric Administration (NOAA) use of thirty year [Climate Normals](#). The current NOAA Climate Normal is 1991-2020 and is updated every ten years. As you can see in our example graph shown here our Historic Median Six Station Index rain plot has shifted slightly with February being the wettest as opposed to March in the previously used Historic Average (1957-1997).

System Storage

Current Tuolumne System and Local Bay Area storage conditions are summarized in Table 1.

Table 1 Current System Storage as of October 1, 2021							
	Current Storage		Maximum Storage		Available Capacity		Percentage of Maximum Storage
	acre-feet	millions of gallons	acre-feet	millions of gallons	acre-feet	millions of gallons	
Tuolumne System							
Hetch Hetchy Reservoir ¹	240,430		360,360		119,930		67%
Cherry Reservoir ²	199,824		268,800		68,976		74%
Lake Eleanor ³	19,871		21,495		1,624		92%
Water Bank	361,808		570,000		208,192		63%
Tuolumne Storage	821,933		1,220,655		398,722		67%
Local Bay Area Storage							
Calaveras Reservoir	53,730	17,508	96,824	31,550	43,093	14,042	56%
San Antonio Reservoir	43,083	14,039	50,496	16,454	7,413	2,415	85%
Crystal Springs Reservoir	51,086	16,646	58,377	19,022	7,291	2,376	88%
San Andreas Reservoir	15,357	5,004	18,996	6,190	3,639	1,186	81%
Pilarcitos Reservoir	1,501	489	2,995	976	1,494	487	50%
Total Local Storage	164,757	53,686	227,688	74,192	62,930	20,506	72%
Total System	986,690		1,448,343		461,652		68%

¹ Maximum Hetch Hetchy Reservoir storage with drum gates activated.

² Maximum Cherry Reservoir storage with flash-boards out.

³ Maximum Lake Eleanor storage with flash-boards out.

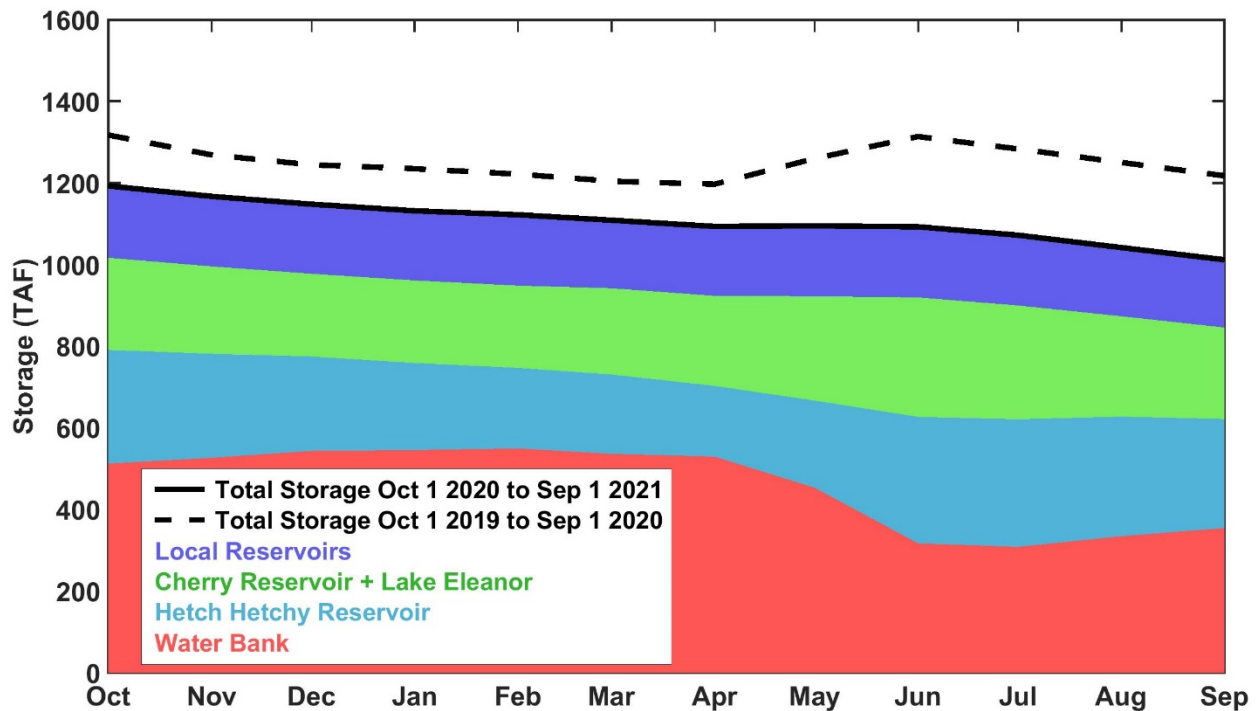


Figure 1: System storage for past 12 months in thousand acre-feet (TAF). Color bands show contributions to total system storage. Solid black line shows total system storage for the past 12 months. Dashed black line shows total system storage the previous 12 months.

Hetch Hetchy System Precipitation Index

Current Month: The September 2021 six-station precipitation index was 0.06 inches, or 17% of the average long-term index for the month. The precipitation index is computed as the average of six Sierra precipitation stations and is an indicator of the overall basin wetness.

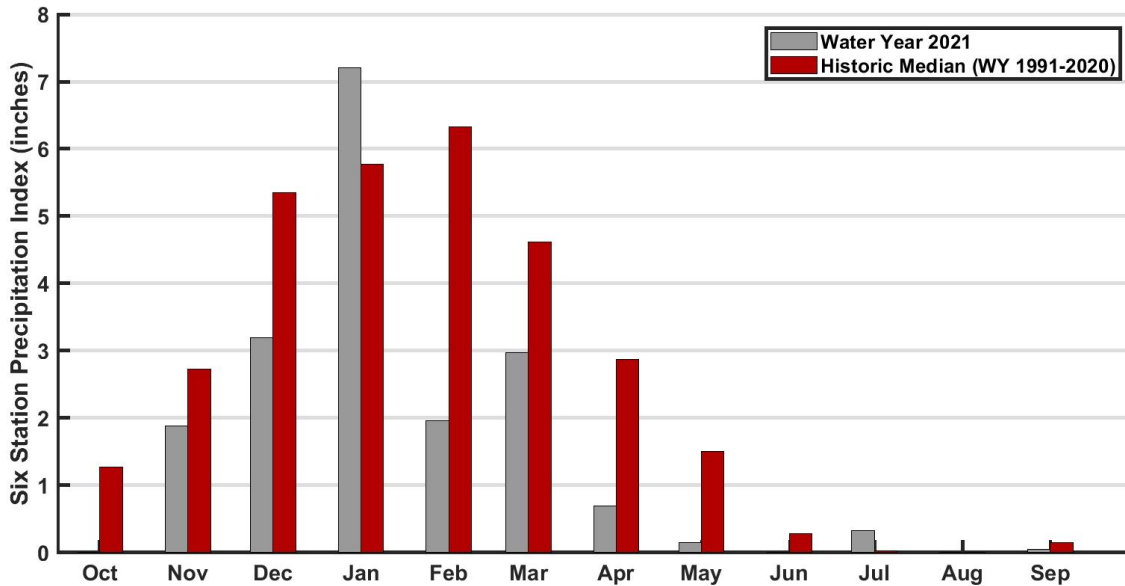


Figure 2: Monthly distribution of the six-station precipitation index relative to the monthly precipitation averages. The precipitation index is computed as the average of six Sierra precipitation stations and is an indicator of the overall basin wetness.

Cumulative Precipitation to Date: As of September 30, the six-station precipitation index for Water Year (WY) 2021 was 18.41 inches, which is 50% of the average annual water year total and the second driest in 91 years of record. The Hetch Hetchy Weather Station received 0.08 inches of precipitation in September resulting in a total of 19 inches for WY 2021, or 52% of average to-date. The cumulative WY 2021 Hetch Hetchy precipitation is shown in Figure 3 in red.

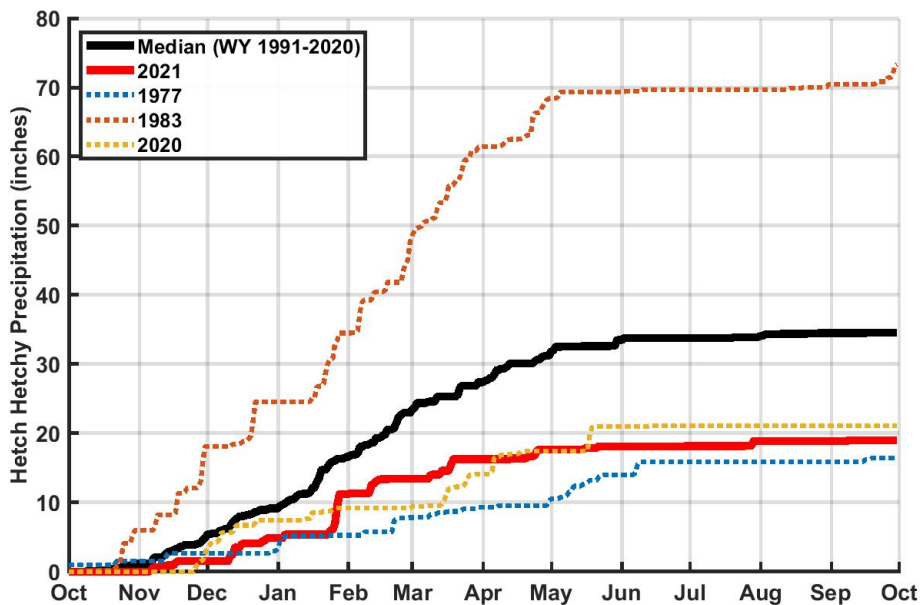


Figure 3: Water Year 2021 cumulative precipitation measured at Hetch Hetchy Weather Station. Median cumulative precipitation measured at Hetch Hetchy Weather Station and example wet and dry years are included with Water Year 2020 for comparison purposes.

Tuolumne Basin Unimpaired Inflow

Unimpaired inflow to SFPUC reservoirs and the Tuolumne River at La Grange for September 2021 and the water year to date is summarized below in Table 2.

Table 2 Calculated Reservoir Inflows and Water Available to City								
* All flows are in acre-feet	September 2021				October 1, 2020 through September 30, 2021			
	Observed Flow	Median ¹	Mean ¹	Percent of Mean	Observed Flow	Median ¹	Mean ¹	Percent of Mean
Inflow to Hetch Hetchy Reservoir	0	1,669	3,314	0%	273,155	703,970	762,304	36%
Inflow to Cherry Reservoir and Lake Eleanor	0	1,537	1,969	0%	177,732	465,619	508,322	35%
Tuolumne River at La Grange	4,685	8,681	12,079	39%	611,290	1,664,299	1,942,410	31%
Water Available to City	0	0	5	0%	56,864	580,260	870,173	7%

¹Hydrologic Record: 1991-2020

Hetch Hetchy System Operations

Hetch Hetchy Reservoir power draft and stream releases during the month totaled 26,412 acre-feet. Hetch Hetchy Reservoir minimum instream release requirements for September 1-14 were 75 cfs and decreased to 50 cfs for September 15-30. Total precipitation for Water Year 2021 has resulted in a Water Year Type C for Hetch Hetchy Reservoir. Hetch Hetchy Reservoir instream releases will decrease to 35 cfs for October and will remain 35 cfs through the end of the calendar year.

Cherry Reservoir valve and power draft releases totaled 2,202 acre-feet for the month and were used to maintain seasonal target elevations. The required minimum instream release from Cherry Reservoir for September was 15 cfs and will decrease to 5 cfs in October. Lake Eleanor required release for September 1- 15 was 20 cfs and decreased to 10 cfs for September 16 – October 31.

San Joaquin Pipeline average deliveries were 230 MGD for the month of September.

Regional System Treatment Plant Production

The Harry Tracy Water Treatment Plant average production rate for September was 9.22 MGD. The Sunol Valley Water Treatment Plant production for the month was 13 MGD.

Local System Water Delivery

The average September delivery rate was 214 MGD, which is a 2% decrease below the August delivery rate of 219 MGD.

Local Precipitation

The rainfall summary for September 2021 is presented in Table 3.

Weather Station Location	September		October 1, 2020 through September 30, 2021	
	Total (inches)	Percent of Mean for the Month	Total (inches)	Percent of Mean for the Year-To-Date
Pilarcitos Reservoir	0.15	150%	18.96	56%
Lower Crystal Springs Reservoir	0.02	67%	11.97	54%
Calaveras Reservoir	0.00	0%	10.19	57%

*Mean Period = WY 1991-2020

Water Supply and Planned Water Supply Management

Hetch Hetchy Reservoir WY2021 inflows were the 4th driest on record (n=91) with a total of 273,445 acre-feet. For the April to July seasonal period, inflow totaled 232,378 acre-feet, the 5th driest on record.

The calculated unimpaired flow at La Grange and the allocation of flows between the Districts and the City are shown in Figure 5. For Water Year 2021, there was 56,864 ac-ft water available to the City, 7% of average. These flow volumes were well below the 50% of average precipitation that was observed at Tuolumne gauges. The discrepancy between precipitation and inflows has been attributed to the very dry soils held over from the previous dry year 2020. Those dry soils are expected going into the fall, increasing expectations for a muted response to whatever hydrologic conditions are seen in WY 2022.

Hetch Hetchy Reservoir is drafting via SJPL deliveries and instream releases. Cherry Reservoir is drafting with instream releases and no scheduled generation at Holm Powerhouse. Lake Eleanor is drafting with instream release. Water Bank is increasing slightly as upcountry releases exceed full natural flows. Storage at all upcountry reservoirs will be maximized going into the winter season.

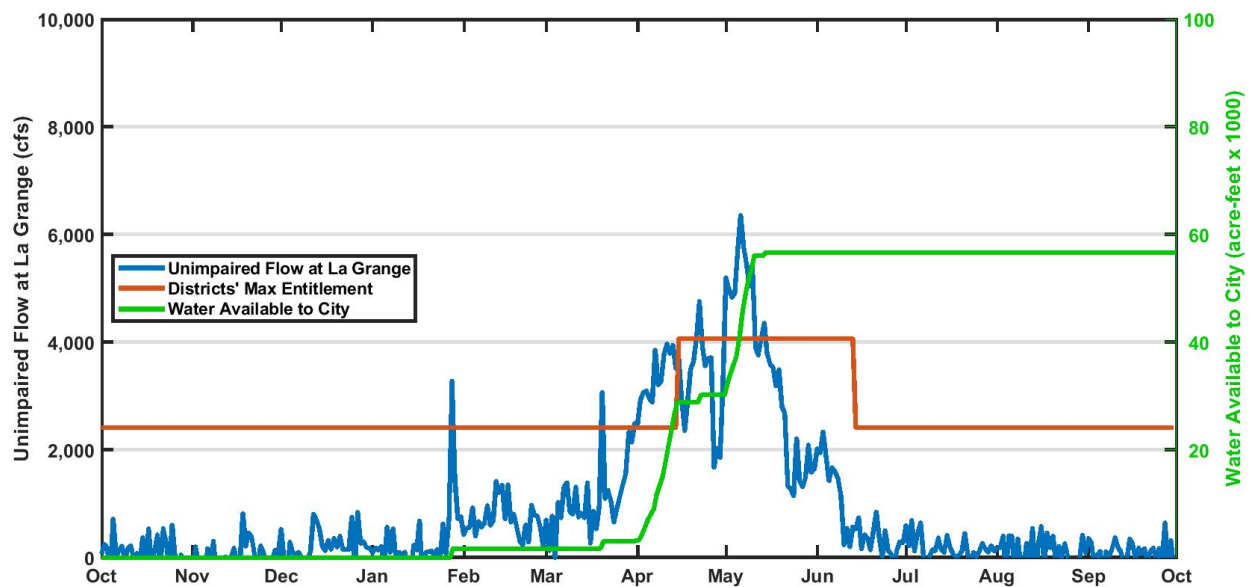


Figure 5: Calculated unimpaired flow at La Grange and the allocation of flows between the Districts and the City.