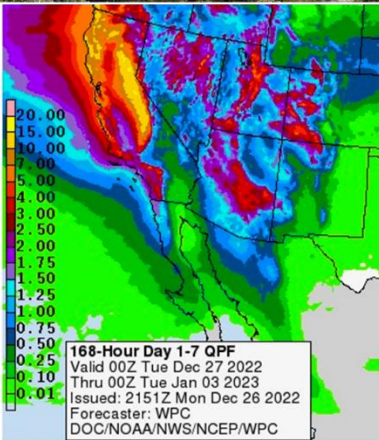


San Francisco Public Utilities Commission Hydrological Conditions Report January 2023

J. Chester, C. Graham, N. Waeltly, H. Forrester February 15, 2023



Numerous waterfalls poured off the North Rim of Hetch Hetchy Valley following an intense rainstorm in early January (top). Early January 7-day total quantitative precipitation forecasts called for 10-15 inches of precipitation in the Upper Tuolumne Watershed (lower left), observed precipitation during this period was 10 – 12 inches at high elevation snow sensors (lower middle). Manual snow surveys at the end of January indicated year to date snow water equivalent (SWE) around 200% of normal or over 100% of April 1 normal (lower right).

System Storage

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

Table 1. Current System Storage as of February 1, 2023							
	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	300,135		340,830		40,695		88%
Cherry Reservoir ²	225,389		268,800		43,411		84%
Lake Eleanor ³	19,239		21,495		2,256		90%
Water Bank	563,258		570,000		6,742		99%
Tuolumne Storage	1,108,021		1,201,125		93,104		92%
Local Bay Area Storage⁴							
Calaveras Reservoir	94,062	30,650	101,728	33,148	7,666	2,498	93%
San Antonio Reservoir	52,506	17,109	52,506	17,109	0	0	100%
Crystal Springs Reservoir	61,028	19,886	73,159	23,839	12,131	3,953	83%
San Andreas Reservoir	16,362	5,332	18,899	6,158	2,537	827	83%
Pilarcitos Reservoir	2,527	823	3,125	1,018	599	195	87%
Total Local Storage	226,484	73,800	249,417	81,272	22,932	7,472	91%
Total System	1,334,505		1,445,728		111,223		92%

¹ Maximum Hetch Hetchy Reservoir storage with drum gates deactivated.

² Maximum Cherry Reservoir storage with flash-boards removed.

³ Maximum Lake Eleanor storage with flash-boards removed.

⁴ Local Reservoir values being updated, subject to change, best available values presented.

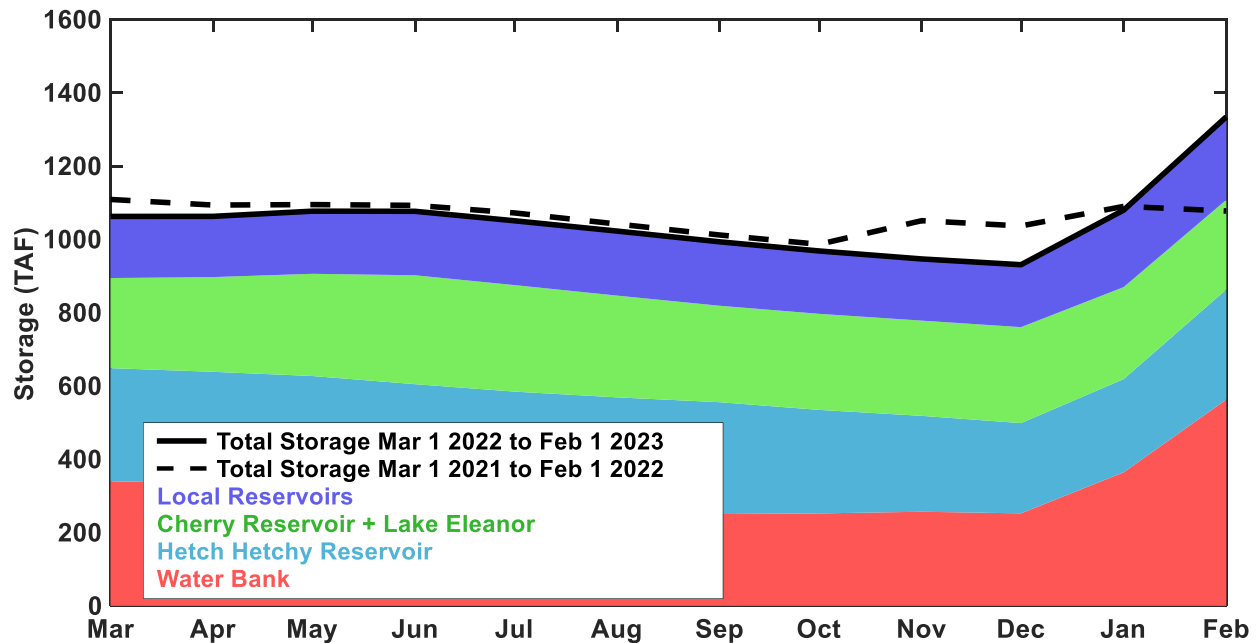


Figure 1: Local and Upcountry Reservoir storage. Color bands show contributions to total system storage. Solid black line shows total system storage for the past 12 months. Dashed black line shows total system storage the previous 12 months.

Hetch Hetchy System Precipitation Index

Current Month: The January 2023 six-station precipitation index was 14.91 inches, or 260% of median for the month.

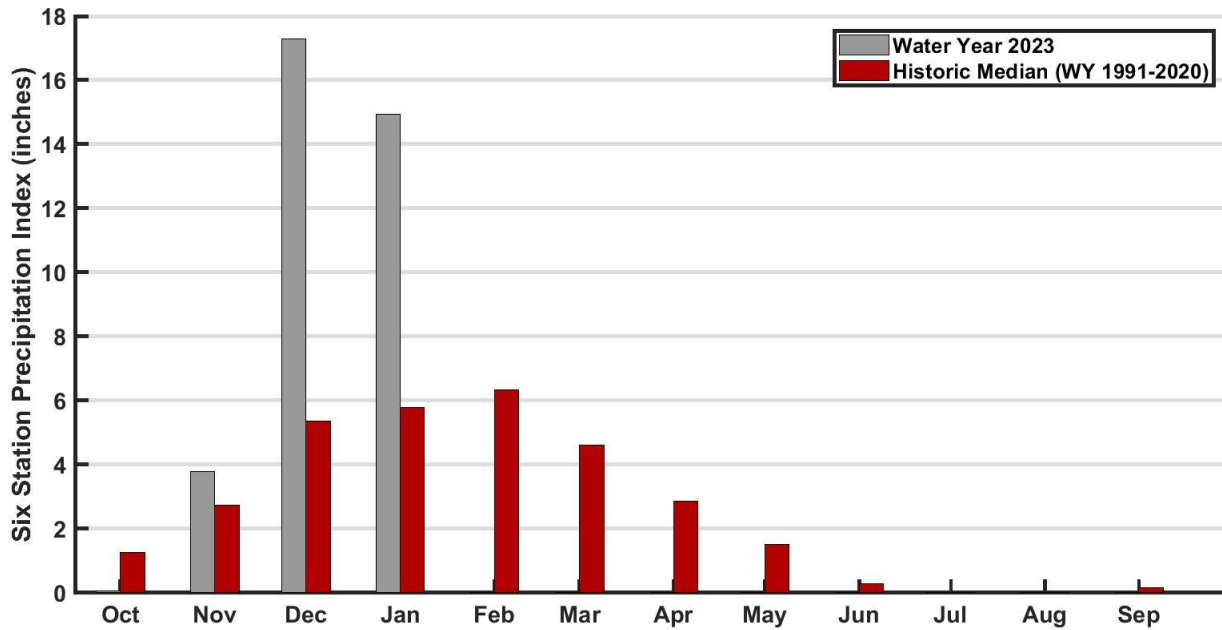


Figure 2: Monthly distribution of the six-station precipitation index relative to the monthly precipitation medians. The precipitation index is computed as the average of six Sierra precipitation stations and is an indicator of the overall basin wetness.

Cumulative Precipitation to Date: As of February 1, the six-station precipitation index for Water Year (WY) 2023 was 36.03 inches, which is 240% of the median total to date. The Hetch Hetchy Weather Station received 13.94 inches of precipitation in January resulting in a total of 34.99 inches for WY 2023, or 211% of median to date. The cumulative WY 2023 Hetch Hetchy precipitation is shown in Figure 3 in red.

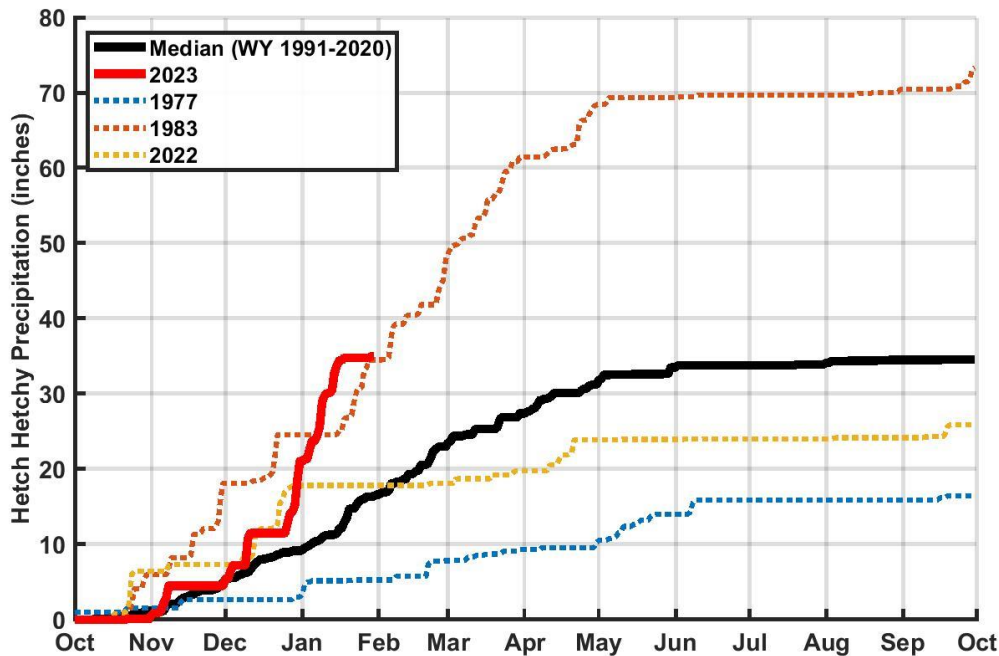


Figure 3: Water Year 2023 cumulative precipitation measured at Hetch Hetchy Weather Station. Median cumulative precipitation measured at Hetch Hetchy Weather Station and example wet and dry years are included with Water Year 2023 for comparison purposes.

Tuolumne Basin Unimpaired Inflow

Unimpaired inflow to SFPUC reservoirs and the Tuolumne River at La Grange for January 2023 and Water Year 2023 is summarized below in Table 2.

Table 2. Calculated reservoir inflows and Water Available to City								
* All flows are in acre-feet	January 2023				October 1, 2022 through January 31, 2023			
	Observed Flow	Median ¹	Mean ¹	Percent of Mean	Observed Flow	Median ¹	Mean ¹	Percent of Mean
Inflow to Hetch Hetchy Reservoir	72,778	21,575	29,978	243%	108,998	50,739	66,135	165%
Inflow to Cherry Lake and Lake Eleanor	88,729	29,420	35,949	247%	149,154	67,321	83,834	178%
Tuolumne River at LaGrange	530,102	94,090	157,807	336%	771,937	200,027	295,425	261%
Water Available to City	382,518	13,089	79,875	479%	510,357	41,905	122,120	418%

¹Hydrologic Record: 1991-2020

Hetch Hetchy System Operations

Water deliveries via the San Joaquin Pipeline increased from 80 MGD to 125 MGD on January 3 and then reduced to 80 MGD on January 11. The HHWP Winter Shutdown began on January 24 and is scheduled to end on March 14 – deliveries to the SJPL will be 0 MGD during this period.

Hetch Hetchy Reservoir power draft and stream releases during the month totaled 27,731 acre-feet. Hetch Hetchy Reservoir minimum instream release requirements for January were 50 cfs. As of February 1, WY 2023 total precipitation has kept Hetch Hetchy Reservoir instream releases at a type A (median to wet) year. Stream releases increased to 60 cfs on January 31.

Cherry Reservoir power draft and stream releases totaled 59,369 acre-feet for the month of January. The required minimum instream release from Cherry Reservoir for January was 5 cfs and will remain at 5 cfs until June 30, 2023. Lake Eleanor required release for January was 5 cfs and will remain 5 cfs until February 28, 2023.

The Cherry Reservoir - Lake Eleanor pumps were operated from January 1 through January 15 and January 18 through January 31. A total of 8,479 acre-feet of water was transferred from Lake Eleanor to Cherry Reservoir in January.

Regional System Treatment Plant Production

The Harry Tracy Water Treatment Plant average production rate for January was 34 MGD. The Sunol Valley Water Treatment Plant production rate for the month was 39 MGD.

Regional System Water Delivery

The average December and January delivery rates were near equal for this reporting period at 143 MGD.

Local Precipitation

The rainfall summary for January 2023 is presented in Table 3.

Weather Station Location	January 2023		October 1, 2022 through January 31, 2023	
	Total (inches)	Percent of Mean for the Month	Total (inches)	Percent of Mean for the Year-To-Date
Pilarcitos Reservoir	12.88	207%	35.47	199%
Lower Crystal Springs Reservoir	10.03	231%	26.91	228%
Calaveras Reservoir	9.60	280%	26.10	281%

*Mean Period = WY 1991-2020

Snowpack, Water Supply and Planned Water Supply Management

Due to a series of significant precipitation events in December and January, the current snowpack (Figure 4) is already nearly 150% of April 1st normal or 200% of the February 1 normal.

Cumulative Water Available to the City (WAC) for WY 2023 was 510,357 acre-feet on February 1 (Figure 5). The inflows into upcountry reservoirs and intervening flows to Don Pedro Reservoir were sufficient to fill Water Bank in January. Expected high inflows above and below SFPUC storage reservoirs will maintain a full Water Bank throughout the runoff period, and allow for filling of Cherry Reservoir, Lake Eleanor and Hetch Hetchy Reservoir.

Hetch Hetchy Reservoir is drafting via minimum instream releases and Kirkwood Powerhouse Draft. Cherry Reservoir and Lake Eleanor are drafting via minimum instream releases and Holm Powerhouse Draft. Operations are drafting Cherry Reservoir to manage upcoming runoff. Water Bank credited extensively in January as storm driven flows on the Tuolumne River exceeded the Districts Raker Act Entitlements.

Discretionary releases from Hetch Hetchy Reservoir are being planned for Spring months, as forecasted inflows will exceed the volume needed to fill. SFPUC staff is working with Yosemite National Park staff to plan these releases in the most environmentally beneficial manner, as part of the Upper Tuolumne River Ecosystem Program (UTREP).

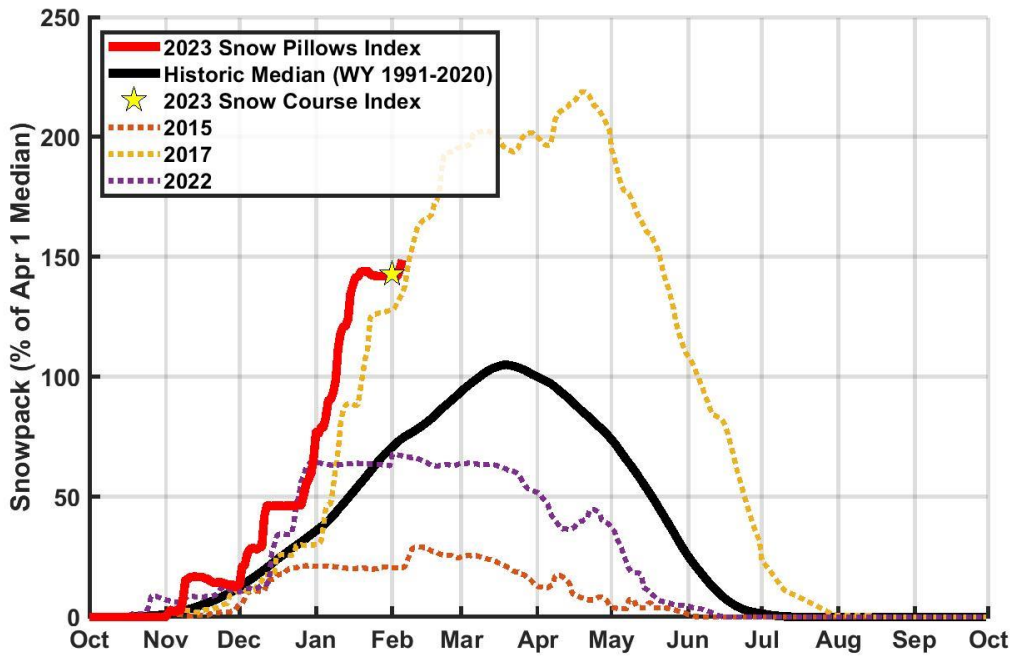


Figure 4: Tuolumne River Basin Snow Pillow Index and Snow Course Index, based on real time snow pillow and manual snow course Snow Water Equivalent (SWE) measurements in the Tuolumne Basin. Example high and low snowpack years are included with Water Year 2023 for comparison purposes.

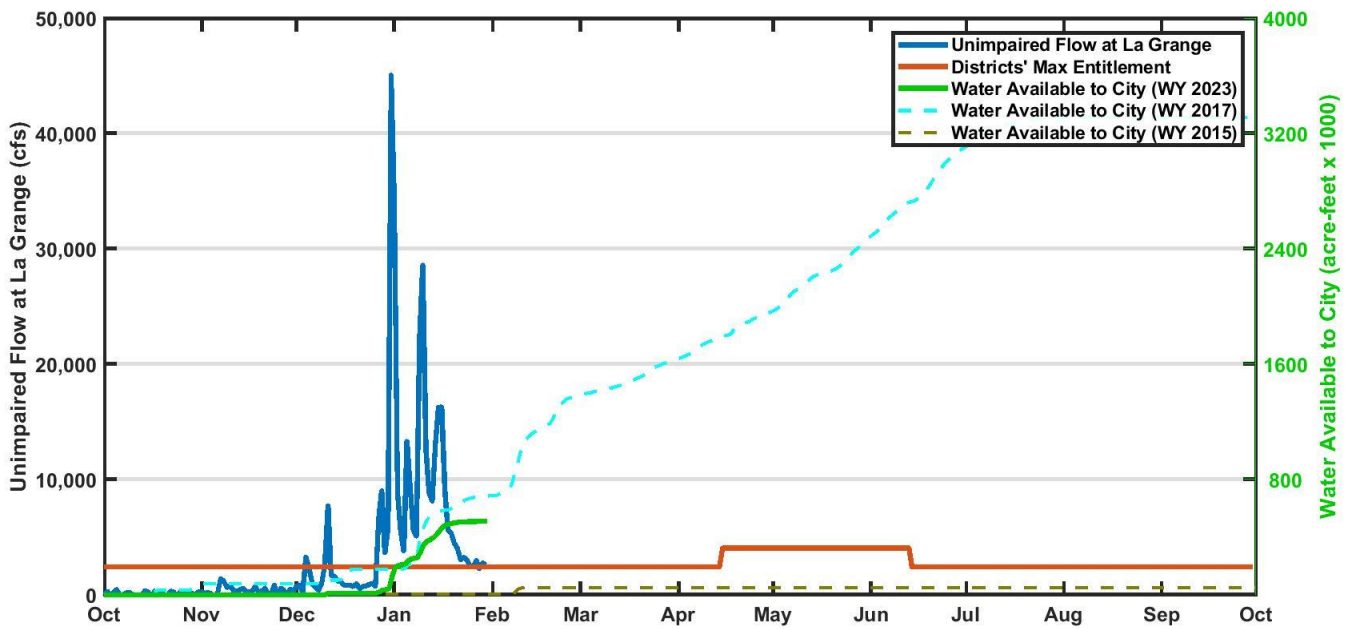


Figure 5: Calculated unimpaired flow at La Grange and the allocation of flows between the Districts and the City.

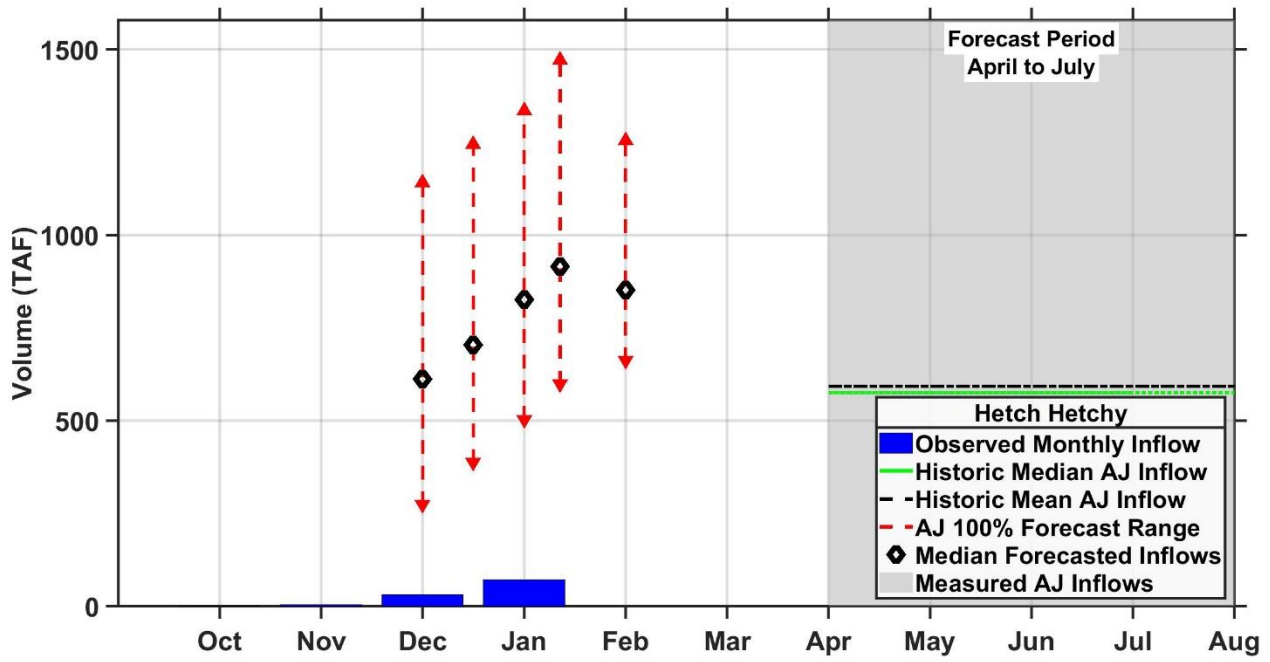


Figure 6: Water Supply Forecast Model of runoff (April to July) on the Tuolumne River at Hetch Hetchy. This model is driven by precipitation from October to February, and by snow survey data from February through June. The forecast range decreases as time passes due to reduced potential future precipitation.