

San Francisco Public Utilities Commission

Hydrological Conditions Report

October 2018

J. Chester, C. Graham, R. Walters November 6, 2018



Budd Lake below Cathedral Peak near the southeastern headwaters of the Tuolumne River

System Storage

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

Table 1 Current System Storage As of November 1, 2018							
Reservoir	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 ¹	273,879		340,830		66,951		80%
Cherry ²	221,046		268,810		47,764		82%
Eleanor ³	14,747		21,495		6,748		69%
Water Bank	569,641		570,000		359		100%
Tuolumne Storage	1,079,313		1,201,135		121,822		90%
Local Bay Area Storage							
Calaveras ⁴	23,098	7,526	96,824	31,550	73,726	24,024	24%
San Antonio	42,884	13,974	50,496	16,454	7,612	2,480	85%
Crystal Springs	51,923	16,919	58,377	19,022	6,453	2,103	89%
San Andreas	17,014	5,544	18,996	6,190	1,982	646	90%
Pilarcitos	2,107	687	2,995	976	887	289	70%
Total Local Storage	137,026	44,650	227,688	74,192	90,661	29,542	60%
Total System	1,216,339		1,428,822		212,483		85%

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 Available capacity does not take into account current DSOD storage restrictions.

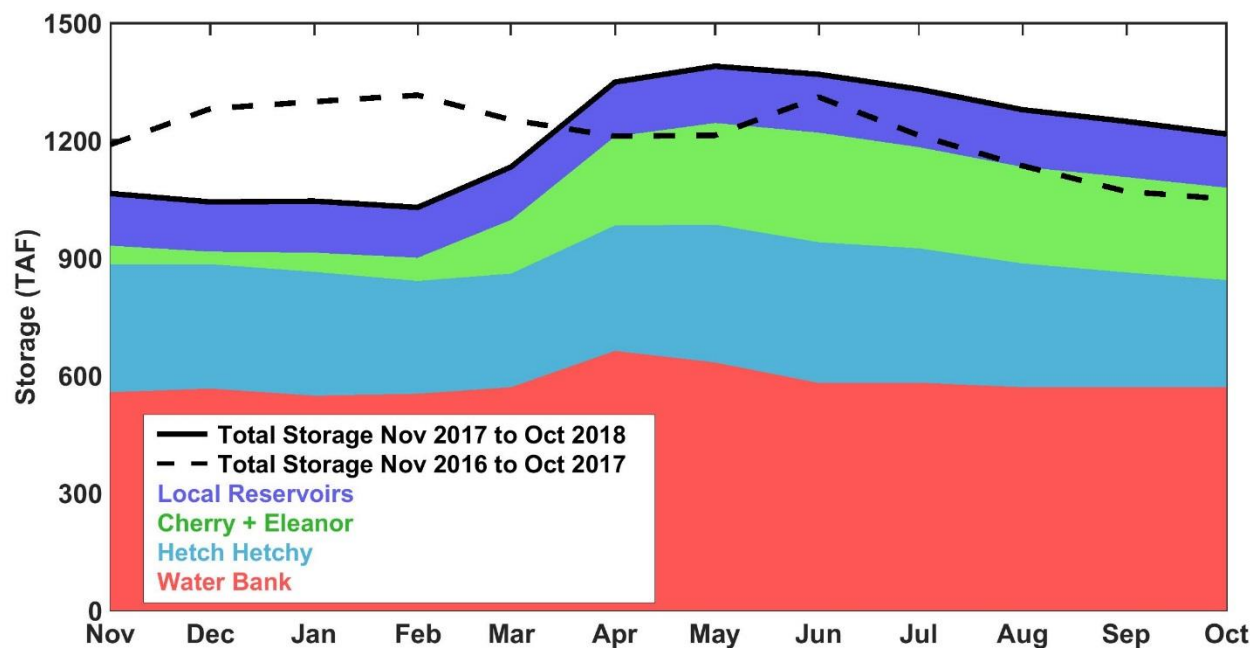


Figure 1: Monthly system storage for past 12 months in thousand acre-feet (TAF). Color bands show contributions to total system storage. Solid black line shows total system storage for the past 12 months. Dashed black line shows total system storage the previous 12 months.

Hetch Hetchy System Precipitation Index

Current Month: The October 2018 six-station precipitation index was 0.80 inches, or 44% of the average index for the month (Figure 2). The precipitation index is computed as the average of six Sierra precipitation stations and is an indicator of the overall basin wetness. Hetch Hetchy received 0.56 inches of precipitation in October (Figure 3, in red).

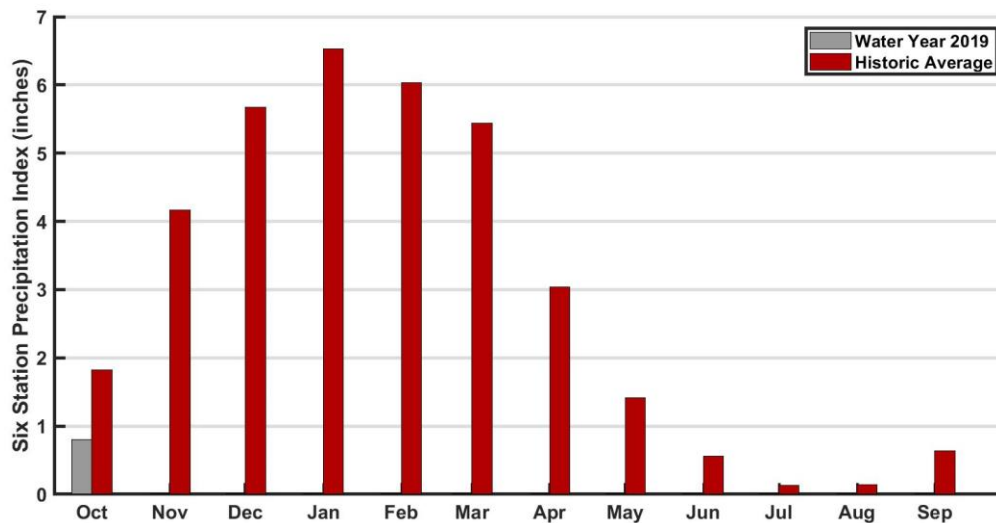


Figure 2: Monthly distribution of the six-station precipitation index as compared to the annual average precipitation for October, 2018.

Cumulative Precipitation to Date: The accumulated six-station precipitation index for Water Year 2019 is 0.80 inches, which is 2% of the average annual water year total, and 44% of the average precipitation to date. Hetch Hetchy received 0.56 inches during October, or 26% of the average annual precipitation to date.

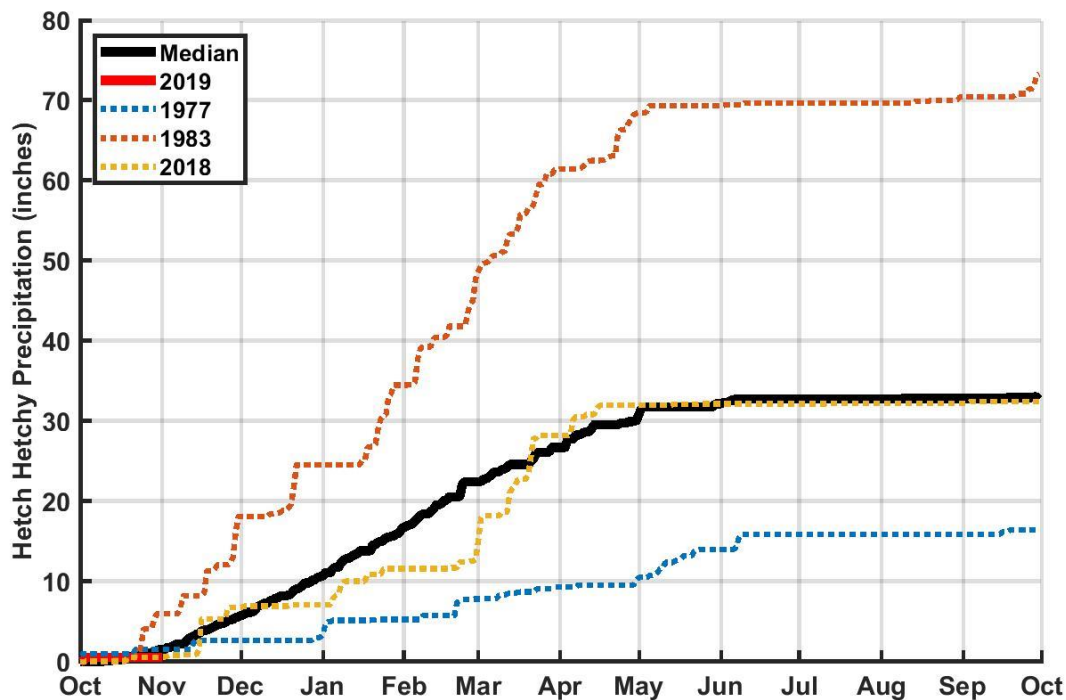


Figure 3: Water year 2019 cumulative precipitation measured at Hetch Hetchy Reservoir. Median cumulative precipitation at Hetch Hetchy and example wet and dry years are included with WY 2018 for comparison purposes.

Tuolumne Basin Unimpaired Inflow

Unimpaired inflow to SFPUC reservoirs and the Tuolumne River at La Grange for October 2018 is summarized below in Table 2.

Table 2 WY 2019 Calculated reservoir inflows and Water Available to City as of November 1, 2018				
*All flows are in acre-feet	October 2018			
	Observed Flow	Median¹	Mean¹	Percent of Mean
Inflow to Hetch Hetchy Reservoir	2,051	3,161	6,199	33%
Inflow to Cherry Reservoir and Lake Eleanor	-448 ²	2,329	5,537	-8%
Tuolumne River at LaGrange	14,011	10,099	17,711	79%
Water Available to City	0	0	2,583	0%

¹ Hydrologic Record: 1919 – 2015

² Negative inflows are due to uncertainties in evaporation, flows and reservoir rating curves

Hetch Hetchy System Operations

Power draft and stream releases from Hetch Hetchy Reservoir during the month of October totaled 21,485 acre-feet. Inflows from Water Year 2018 resulted in a Water Year Type A (normal to wet conditions) for Hetch Hetchy Reservoir, which will be maintained through January 1st, 2019. Hetch Hetchy minimum instream release requirements for the month of October were 60 cfs. Instream release requirements for November are also 60 cfs and then will decrease to 50 cfs for December. Current Hetch Hetchy releases are equal to minimum environmental releases and SFPUC water deliveries.

Power draft and valve releases from Cherry Reservoir totaled 6,254 acre-feet during the month of October. The required minimum instream release from Cherry Reservoir was 5 cfs for the month, and will remain at this rate through June 30. Required minimum release from Lake Eleanor (due to pumping) was 10 cfs through the end of October, after which it decreased to 5 cfs on November 1. Transfer from Lake Eleanor to Cherry Reservoir started September 28th and ended on October 16th. Pumping during October transferred approximately 5,355 acre-feet from Lake Eleanor to Cherry Reservoir.

Regional System Treatment Plant Production

The Harry Tracy Water Treatment Plant average production rate for October was 16 MGD. The Sunol Valley Water Treatment Plant production rate for the month was 38 MGD.

Local System Water Delivery

The average October delivery rate was 208 MGD which is a 6% decrease below the September delivery rate of 221 MGD.

Local Precipitation

Seasonably dry weather continued throughout the month. The rainfall summary for October 2018 is presented in Table 3.

Reservoir	October		WY 2019 ¹	
	Total (inches)	Percent of Mean for the Month	Total (inches)	Percent of Mean for the Year-To-Date
Pilarcitos	0.22	11 %	0.22	11 %
Lower Crystal Springs	0.24	17 %	0.24	17 %
Calaveras	0.00	0 %	0.00	0 %

¹WY2019 is Oct 2018 to Sep 2019

Water Supply

Inflows at all upcountry reservoirs continued to recede throughout the month of October. Hetch Hetchy Reservoir storage remains within seasonal targets and is being drafted to meet instream release requirements and water delivery demands. At Cherry Reservoir, storage is near the seasonal target with no power generation releases scheduled until significant inflows are forecasted into the system. Total Tuolumne system storage is at 90%. Instream releases from Cherry, Eleanor and Hetch Hetchy reservoirs exceeded unimpaired flows at LaGrange maintaining the Water Bank at capacity throughout the month of October.

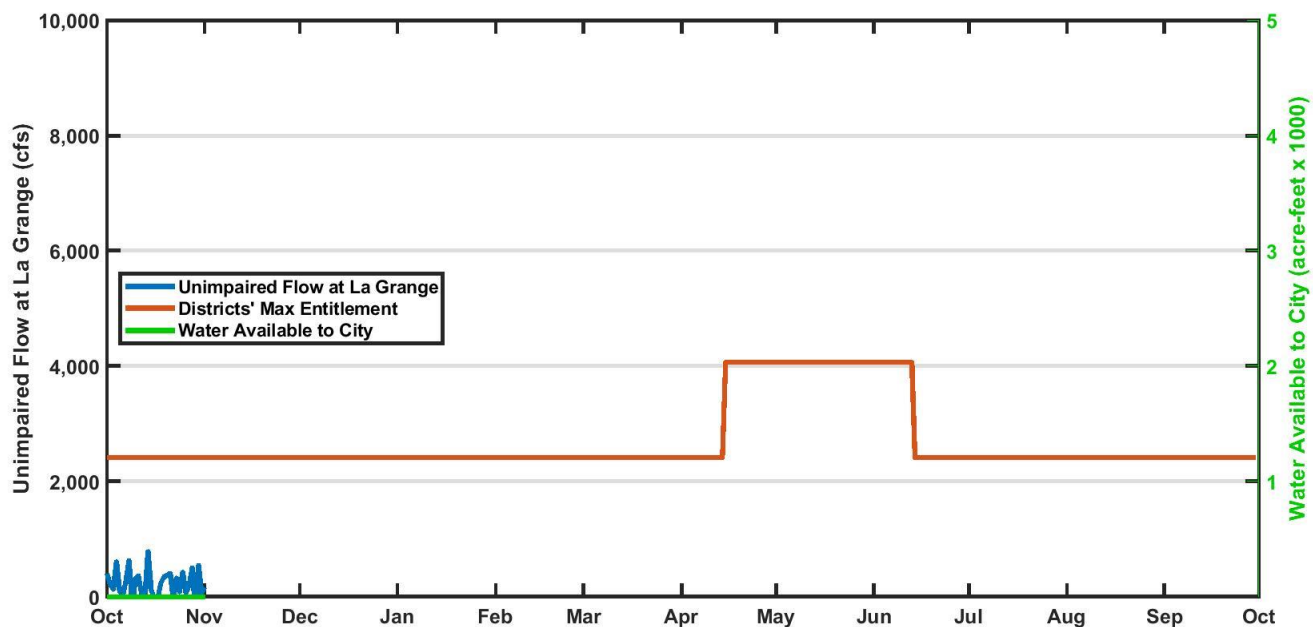


Figure 4: Calculated unimpaired flow at La Grange and the allocation of flows between the Districts and the City. No water is available to the city thus far in Water Year 2019.