

**San Francisco Public Utilities Commission**  
**Hydrological Conditions Report**  
**March 2018**

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Moccasin Reservoir and Surrounding Area

## System Storage

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

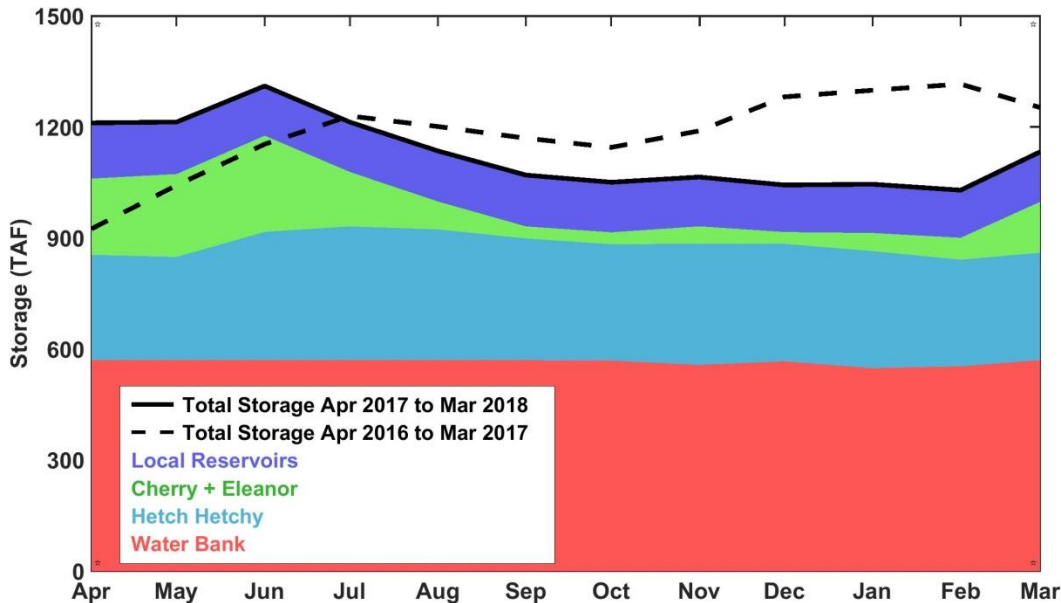
<b>Table 1 Current Storage As of April 1, 2018</b>							
Reservoir	Current Storage		Maximum Storage		Available Capacity		Percentage of Maximum Storage
	Acre-Feet	Millions of Gallons	Acre-Feet	Millions of Gallons	Acre-Feet	Millions of Gallons	
<b>Tuolumne System</b>							
Hetch Hetchy <sup>1</sup>	288,729		340,000		51,271		85%
Cherry <sup>2</sup>	121,104		268,810		147,706		45%
Eleanor <sup>3</sup>	13,370		26,416		13,046		50%
Water Bank	570,000		570,000		0		100%
Tuolumne Storage	993,203		1,205,226		212,023		82%
<b>Local Bay Area Storage</b>							
Calaveras <sup>4</sup>	25,850	8,423	96,824	31,550	70,974	23,127	27%
San Antonio	40,320	13,138	50,496	16,454	10,176	3,316	80%
Crystal Springs	48,972	15,958	58,377	19,022	9,405	3,064	84%
San Andreas	17,250	5,621	18,996	6,190	1,746	569	91%
Pilarcitos	2,650	863	2,995	976	345	112	86%
Total Local Storage	135,042	44,003	227,688	74,192	92,646	30,188	59%
<b>Total System</b>	<b>1,128,245</b>		<b>1,432,914</b>		<b>304,669</b>		<b>79%</b>

<sup>1</sup> Maximum Hetch Hetchy Reservoir storage with drum gates deactivated.

<sup>2</sup> Maximum Cherry Lake storage with flash-boards removed.

<sup>3</sup> Maximum Lake Eleanor storage with 3 of 4 rows of flash-boards installed.

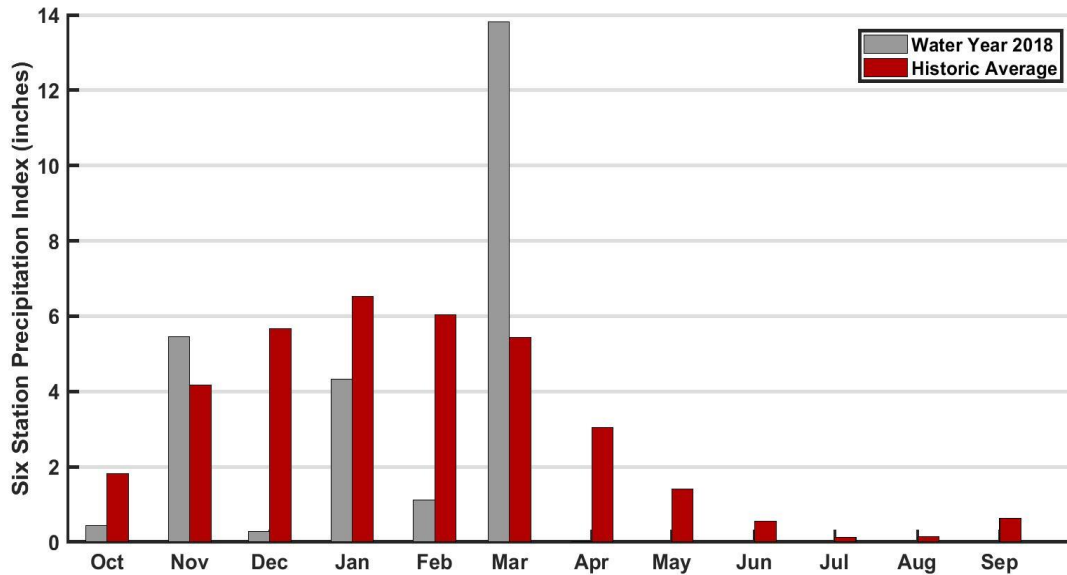
<sup>4</sup> Available capacity does not take into account current DSOD storage restrictions.



**Figure 1:** Monthly system storage for past 12 months in thousand acre-feet (TAF). Color bands show relative 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.

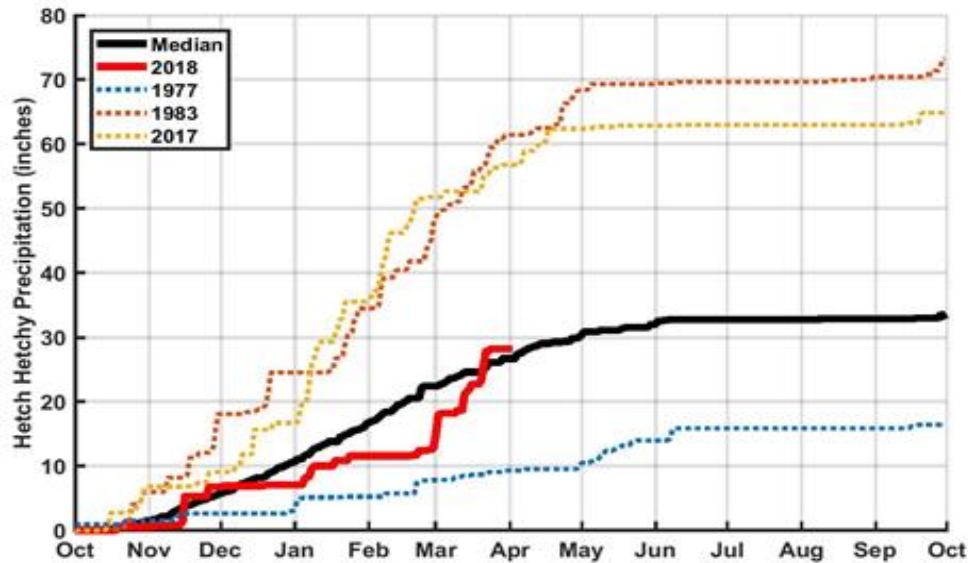
## Hetch Hetchy System Precipitation Index <sup>5/</sup>

*Current Month:* The March 2018 six-station precipitation index was 13.80 inches, or 254% of the average index for the month.



**Figure 2:** Monthly distribution of the Hetch Hetchy six-station precipitation index as percent of the annual average precipitation, as of April 1, 2018.

*Cumulative Precipitation to Date:* As of April 1, the six-station precipitation index for water year 2018 was 25.11 inches, which is 70% of the average annual water year total. Hetch Hetchy received 15.46 inches precipitation in March, for a total of 28.03 inches for Water Year 2018. The cumulative Hetch Hetchy precipitation is shown in Figure 3 in red.



**Figure 3:** Water year 2018 cumulative precipitation measured at Hetch Hetchy Reservoir through April 1, 2018. Precipitation at the Hetch Hetchy gauge for wet, dry, median, and WY 2017 are included for comparison purposes.

<sup>5/</sup>The precipitation index is computed using six Sierra precipitation stations and is an indicator of the wetness of the basin for the water year to date. The index is computed as the average of the six stations and is expressed in inches and in percent.

## Tuolumne Basin Unimpaired Inflow

Unimpaired inflow to SFPUC reservoirs and the Tuolumne River at La Grange as of April 1, 2018 is summarized below in Table 2.

*All flows are in acre feet	March 2018				October 1, 2017 through March 31, 2018			
	Observed Flow	Median <sup>6</sup>	Mean <sup>6</sup>	Percent of Mean	Observed Flow	Median <sup>6</sup>	Mean <sup>6</sup>	Percent of Mean
Inflow to Hetch Hetchy Reservoir	60,292	39,024	41,622	145%	138,728	114,363	130,291	106%
Inflow to Cherry Lake and Lake Eleanor	77,617	38,030	42,251	184%	163,864	113,246	138,673	118%
Tuolumne River at La Grange	356,809	159,679	190,777	187%	625,200	482,363	600,584	104%
Water Available to City	226,030	27,949	67,897	333%	274,578	109,924	223,858	122%

<sup>6</sup>Hydrologic Record: 1919 – 2015

### Hetch Hetchy System Operations

Power draft and releases from Hetch Hetchy Reservoir during the month of March totaled 61,023 acre-feet. Precipitation as of April 1<sup>st</sup> results in a water year Type A for Hetch Hetchy Reservoir through June 1<sup>st</sup>, 2018. Hetch Hetchy minimum instream release requirements for March were 35 cfs, and for April are 75 cfs. The latest water supply forecasts show that water from Hetch Hetchy will be available for power generation through the end of runoff. Hetch Hetchy inflows are currently being managed via power draft and valve releases.

Valve releases from Cherry Lake totaled 644 acre-feet during the month of March. The required minimum instream release from Cherry Lake is 5 cfs through June 30<sup>th</sup>, 2018. Required minimum release from Lake Eleanor is 5 cfs through June 30<sup>th</sup>. Transfer from Lake Eleanor to Cherry Lake will occur throughout the runoff season.

### Regional System Treatment Plant Production

The Harry Tracy Water Treatment Plant average production rate for March was 41 MGD. The Sunol Valley Water Treatment Plant production for the month was 36 MGD.

### Local System Water Delivery

On average there was little change between the February and March delivery rates of 176 MGD for each month.

## Local Precipitation

Wet weather returned to the area with above normal rainfall amounts for the month of March. The rainfall summary for the month is presented in Table 3.

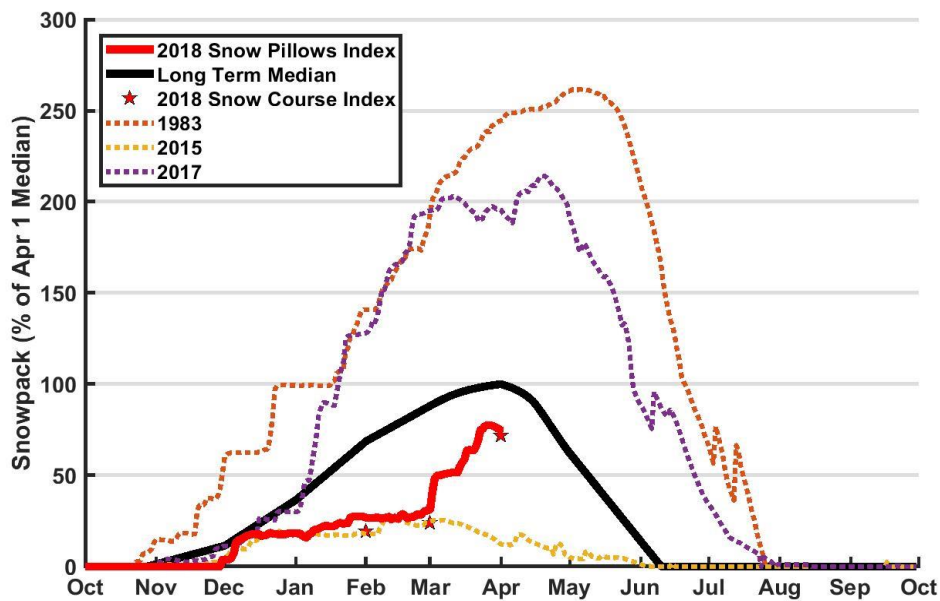
Reservoir	Month Total (inches)	Percentage of Average for the Month	Water Year to Date <sup>7</sup> (inches)	Percentage of Average for the Year-to-Date <sup>7</sup>
Pilarcitos	7.64	136 %	24.38	87 %
Lower Crystal Springs	5.20	133%	17.08	86 %
Calaveras	3.87	116 %	11.80	76 %

<sup>7</sup> WY 2018: Oct. 2017 through Sep. 2018.

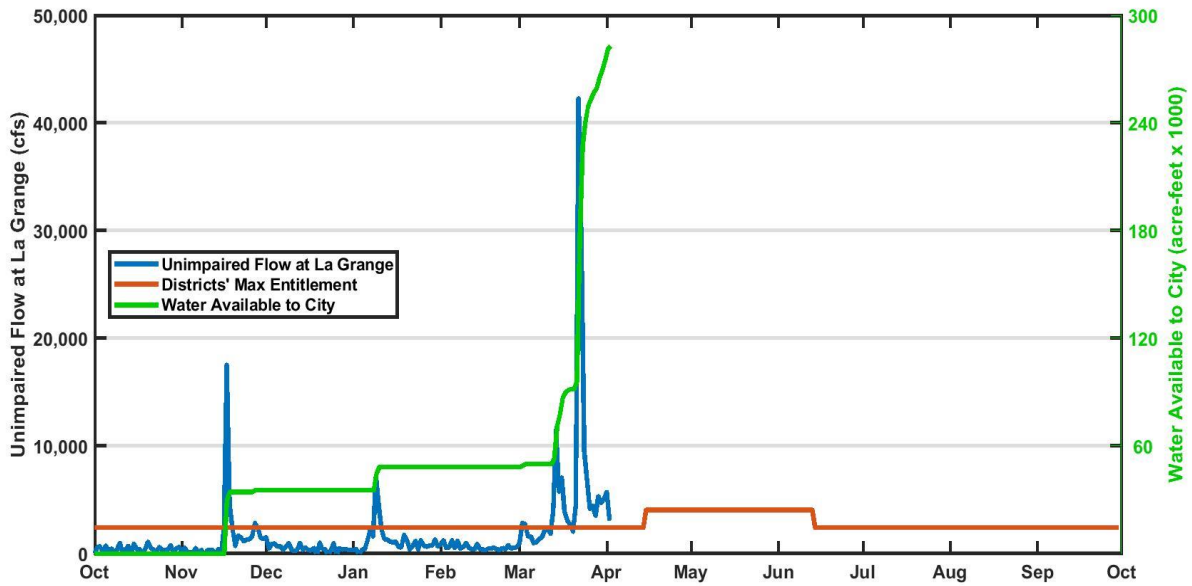
## Snowmelt and Water Supply

March was the second wettest March in our records, behind the 16.77 inches seen in 1997. Much of the precipitation fell as rain rather than snow. After the April snow survey the basin April 1<sup>st</sup> average snow water equivalent was 67% of long term averages.

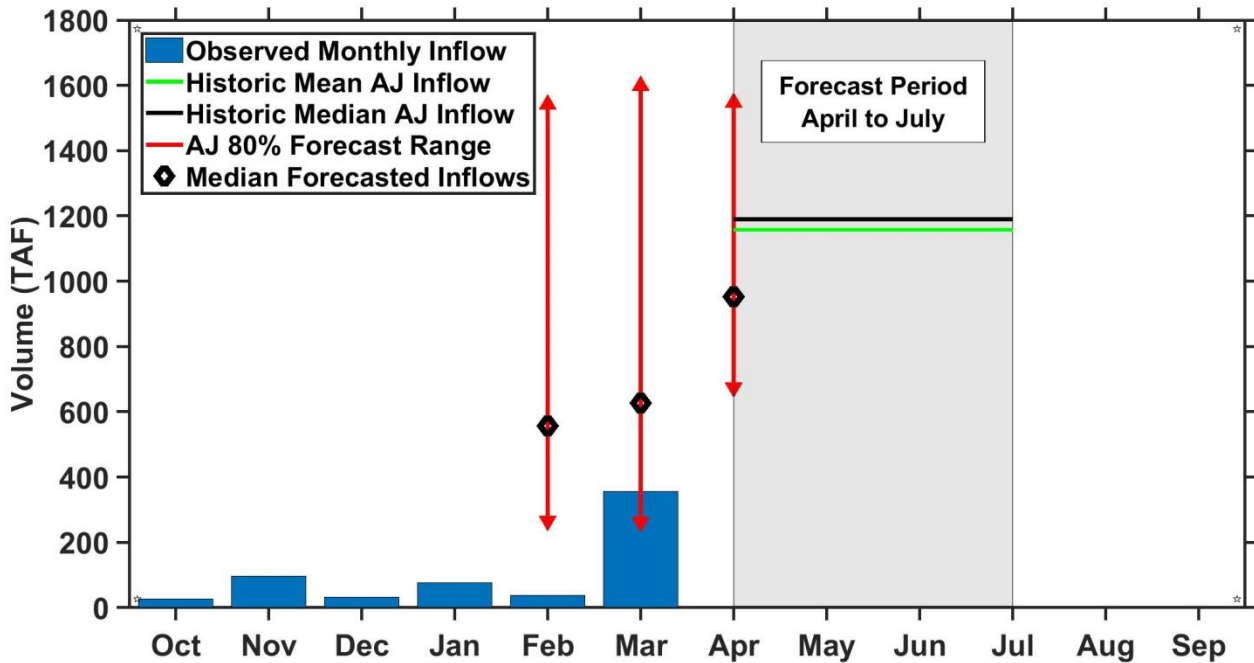
Hetch Hetchy Reservoir storage remains within seasonal targets. The current seasonal inflow forecast projects Hetch Hetchy Reservoir will fill, with additional water available for power generation through the runoff season. Total system storage is near 79% due to the low storage levels in Cherry Lake and Lake Eleanor. Water Bank is projected to debit throughout April as the reservoirs fill. Inflow forecasts project that the total system storage will fill at the 50% exceedance level and wetter.



**Figure 4:** Tuolumne Snow Pillow and Snow Course Indices. A set of storm events in March resulted in an increase in snowpack, though we remain below average to date.



**Figure 5:** Calculated unimpaired flow at La Grange and the allocation of flows between the Districts and the City. Current Water Available to the City is 274,578 acre feet in WY2018.



**Figure 6:** Water year 2018 conditions for the Tuolumne River at La Grange and for the 80% water supply forecast range (triangles represent the 90% and 10% forecasts, the open diamond represents the median forecast).