

San Francisco Public Utilities Commission Hydrological Conditions Report For July 2010

J. Chester, B. McGurk, A. Mazurkiewicz, & M. Tsang, August 5, 2010



WISP Projects: The top picture is construction of the new Coast Range Tunnel Ventilation system, and the lower one is construction of the new Tesla UV treatment facility (A. Dufour).

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

Table 1 Current Storage As of August 1, 2010							
Reservoir	Current Storage		Maximum Storage		Available Capacity		Percent of Maximum Storage
	Acre-Feet	Millions of Gallons	Acre-Feet	Millions of Gallons	Acre-Feet	Millions of Gallons	
Tuolumne System							
Hetch Hetchy ^{1/}	354,068		360,360		6,292		98.3%
Cherry ^{2/}	270,806		273,340		2,534		99.1%
Lake Eleanor ^{3/}	24,751		27,100		2,349		91.3%
Water Bank	570,000		570,000		0		Full
Tuolumne Storage	1,219,625		1,230,800		11,175		99.1%
Local Bay Area Storage							
Calaveras ^{4/}	40,905	13,329	96,824	31,550	55,918	18,221	42.2%
San Antonio	49,204	16,033	50,496	16,454	1,292	421	97.4%
Crystal Springs	51,868	16,901	58,377	19,022	6,509	2,121	88.9%
San Andreas	17,960	5,852	18,996	6,190	1,036	338	94.5%
Pilarcitos	2,668	869	2,995	976	326	106	89.1%
Total Local Storage	162,605	52,984	227,688	74,192	65,081	21,207	71.4%
Total System	1,382,230		1,458,488		76,256		94.8%

^{1/} Maximum Hetch Hetchy Reservoir storage with drum gates activated.

^{2/} Maximum Cherry Reservoir storage with all flash-boards in.

^{3/} Maximum Lake Eleanor storage with all flash-boards in.

^{4/} Available capacity does not take into account current DSOD storage restrictions.

Hetch Hetchy System Precipitation Index ^{5/}

Current Month: Aside from scattered high-country thunderstorms, July had typical summer dry conditions. The July six-station precipitation index is zero inches, or 0.0% of the average index for the month. The precipitation gauge at Hetch Hetchy received no precipitation in July. This pattern is typical for July in the Sierra Nevada climate.

Cumulative Precipitation to Date: The accumulated six-station precipitation index for water year 2010 is 39.22 inches, which is 110.2% of the average annual water year total, or 113.8% of the season-to-date precipitation. The weather has returned to normal conditions, and is expected to be warm and dry through the summer months. The water-year cumulative precipitation for the Hetch Hetchy gauge is shown in Figure 1 in red, and is above the median line.

^{5/}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.

Precipitation at Hetch Hetchy: Water Year 2010

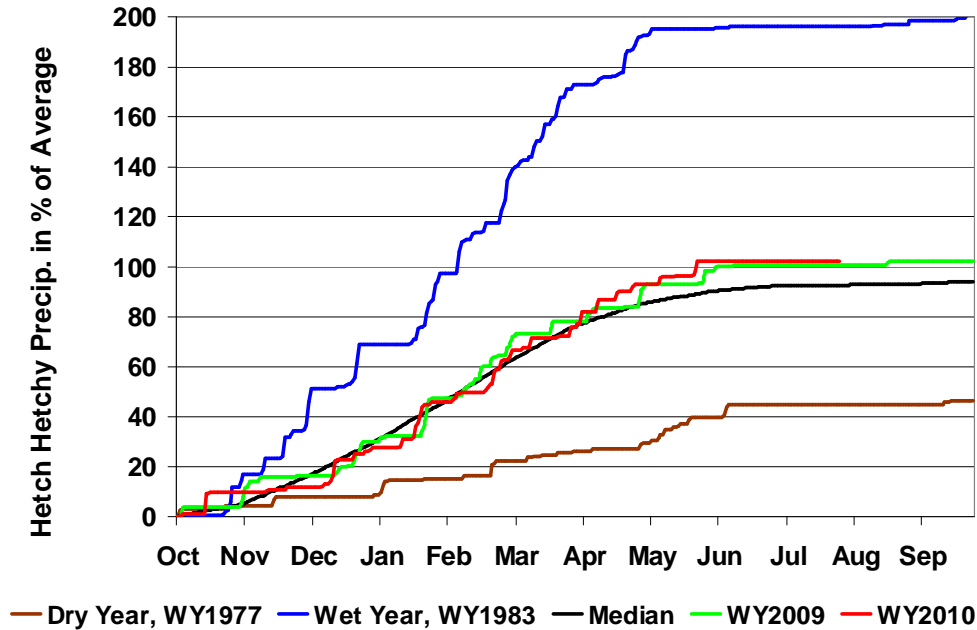


Figure 1: Water year 2010 cumulative precipitation received at Hetch Hetchy Reservoir through the end-of-month July. Precipitation curves for wet, dry, median, and WY 2009 years for the station at Hetch Hetchy are included for comparison purposes.

Tuolumne Basin Unimpaired Inflow

Unimpaired inflow to SFPUC reservoirs and the Tuolumne River at La Grange as of July 31st is summarized below in Table 2. July inflows were above normal due to the late snowmelt runoff this year. Throughout July inflows to all the reservoirs continued to taper to summer baseflow levels (Figure 3). As shown in Table 2, the July reservoir inflows were all well above normal.

	July 2010				October 1, 2009 through July 31, 2010			
	Observed Flow	Median ⁶	Average ⁶	Percent of Average	Observed Flow	Median ⁶	Average ⁶	Percent of Average
Inflow to Hetch Hetchy Reservoir	101,699	43,119	75,793	134.2%	815,554	699,887	728,198	112.0%
Inflow to Cherry Reservoir and Lake Eleanor	34,780	12,724	25,536	136.2%	503,993	439,790	446,650	112.8%
Tuolumne River at La Grange	140,864	67,160	121,121	116.3%	1,874,860	1,736,350	1,806,537	103.8%
Water Available to the City	37,710	1,443	47,247	79.8%	761,334	620,855	780,488	97.5%

⁶ Hydrologic Record: 1919 – 2005.

Hetch Hetchy System Operations

Hetch Hetchy Reservoir filled and spilled in early July. Fill timing was delayed this year due to the late season snowmelt runoff pattern. Draft from Hetch Hetchy Reservoir in July totaled 96,222 acre-feet. That volume included draft for Kirkwood Powerhouse generation, SJPL deliveries, fisheries releases, and valve releases at O'Shaughnessy Dam to manage reservoir inflows. As the spills stopped in mid-July, draft from Hetch Hetchy was reduced to SJPL deliveries plus fisheries releases.

A total of 30,536 acre-feet of power draft was made at Cherry Reservoir to increase available storage to capture spring snowmelt runoff. Power draft made from Cherry Reservoir in July supported the City's Municipal load, District Class 1, other loads or accounts, and sales. Cherry Reservoir filled initially in June and remained at or near capacity during July. About 6,482 acre-feet of water was transferred from Eleanor to Cherry in July to reduce the spill at Lake Eleanor and maximize Cherry Reservoir storage.

Local System Operations

The Sunol Valley Water Treatment Plant average production rate for the month was 11 MGD. The Harry Tracy Treatment Plant rate averaged 16 MGD. Both plants were taken off-line for the later half of the month to perform routine maintenance.

Local System Water Delivery

The water delivery rates for the month averaged 283 MGD. This is an 8% increase over the June average rate of 262 MGD.

Local Precipitation

There was no precipitation in the local watersheds for the month of July. The rainfall summary is presented in Table 3. (Note: Table 3 information will now be presented by water year⁷. In previous reports the precipitation was reported by precipitation year, July 1 through June 30.)

Reservoir	Month Total (inches)	Percentage of Normal for the Month	Water Year To Date ⁷ (inches)	Percentage of Normal for the Year-to-Date ⁷
Pilarcitos	0.00	0 %	39.46	102 %
Lower Crystal Springs	0.00	0 %	25.20	95 %
Calaveras	0.00	0 %	25.15	117 %

⁷ WY 2010: Oct. 2009 through Sep. 2010

Snowmelt and Water Supply

Due to the cool spring weather patterns experienced in the Sierra Nevada, snowmelt runoff was delayed until June. Filling Hetch Hetchy Reservoir was delayed until early July in order to manage spill and release volumes. As inflows to all the reservoirs have receded, draft has been minimized to maintain reservoir storage. Currently only SJPL deliveries and required minimum release are being made from Hetch Hetchy. Seasonal dry conditions are expected to continue into November, which is typically the beginning of the next winter season.

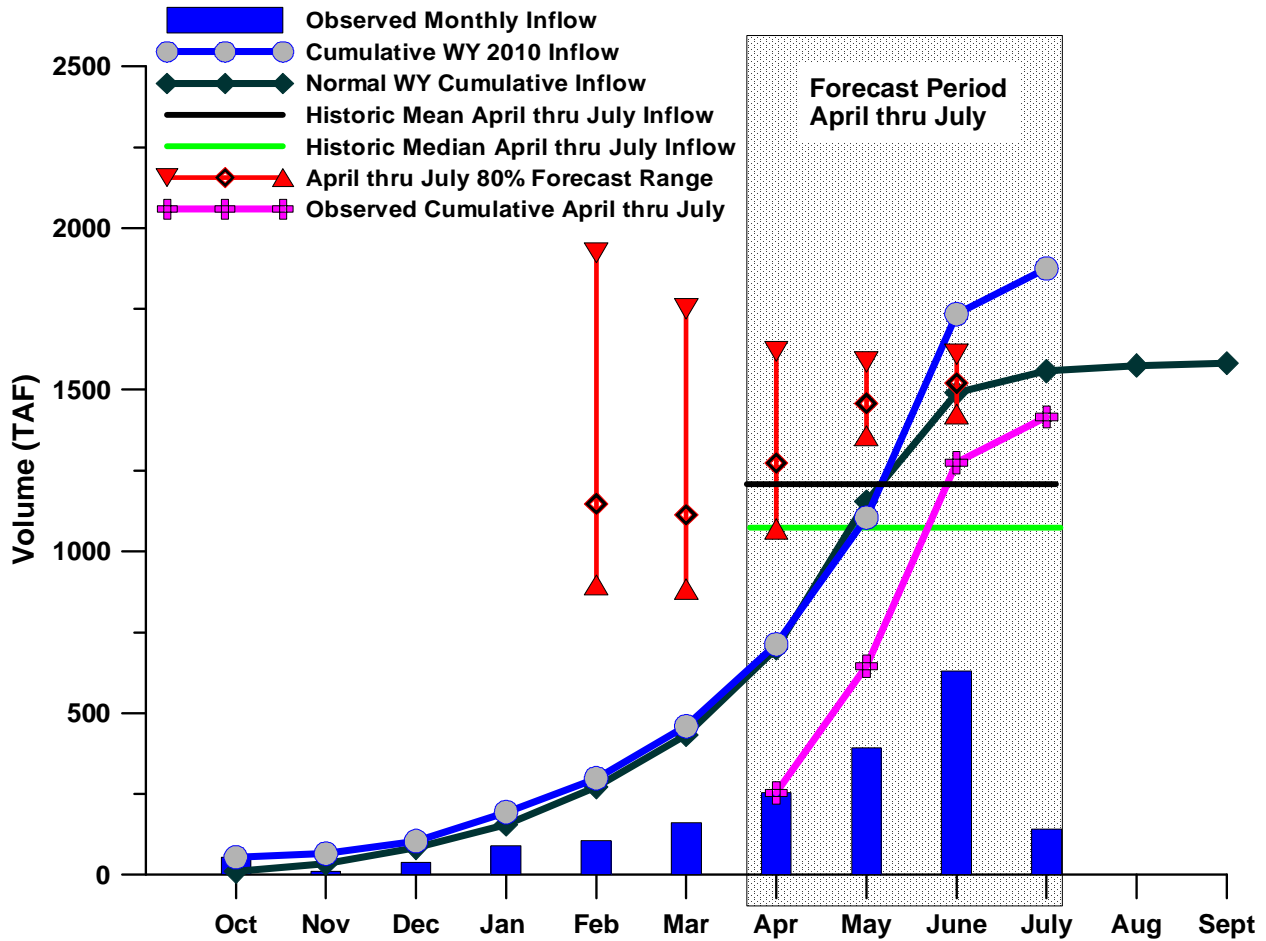


Figure 2: Water year 2010 conditions for the Tuolumne River at La Grange and for the 80% water supply forecast range (triangles represent the 90% and 10% forecasts, open diamonds represent the median forecast).

The total seasonal snowmelt runoff volume totaled approximately 1416 TAF at La Grange. This volume is 122% of the of the April 1st forecast. Due to relatively cool and wet conditions during April, the May 1st forecast increased to 1380 TAF. The observed April-July seasonal volume is within +/- 3.5% of the May 1st forecast and the June 1st forecast. This forecast performance is well within the bounds of acceptable model accuracy. The April-July seasonal snowmelt runoff at La Grange is 140% of median conditions (Figure 2).

While the snowmelt runoff volume at La Grange is considerably above median conditions, the water year runoff is only 107% of median conditions (Table 2). This reflects the relatively low inflows experienced during a majority of the winter months. A majority of winter precipitation fell as snow down to lower-than-normal elevations due to cool conditions. This delayed the runoff until the April-July period.

Unimpaired Flow at La Grange & Water Available to the City

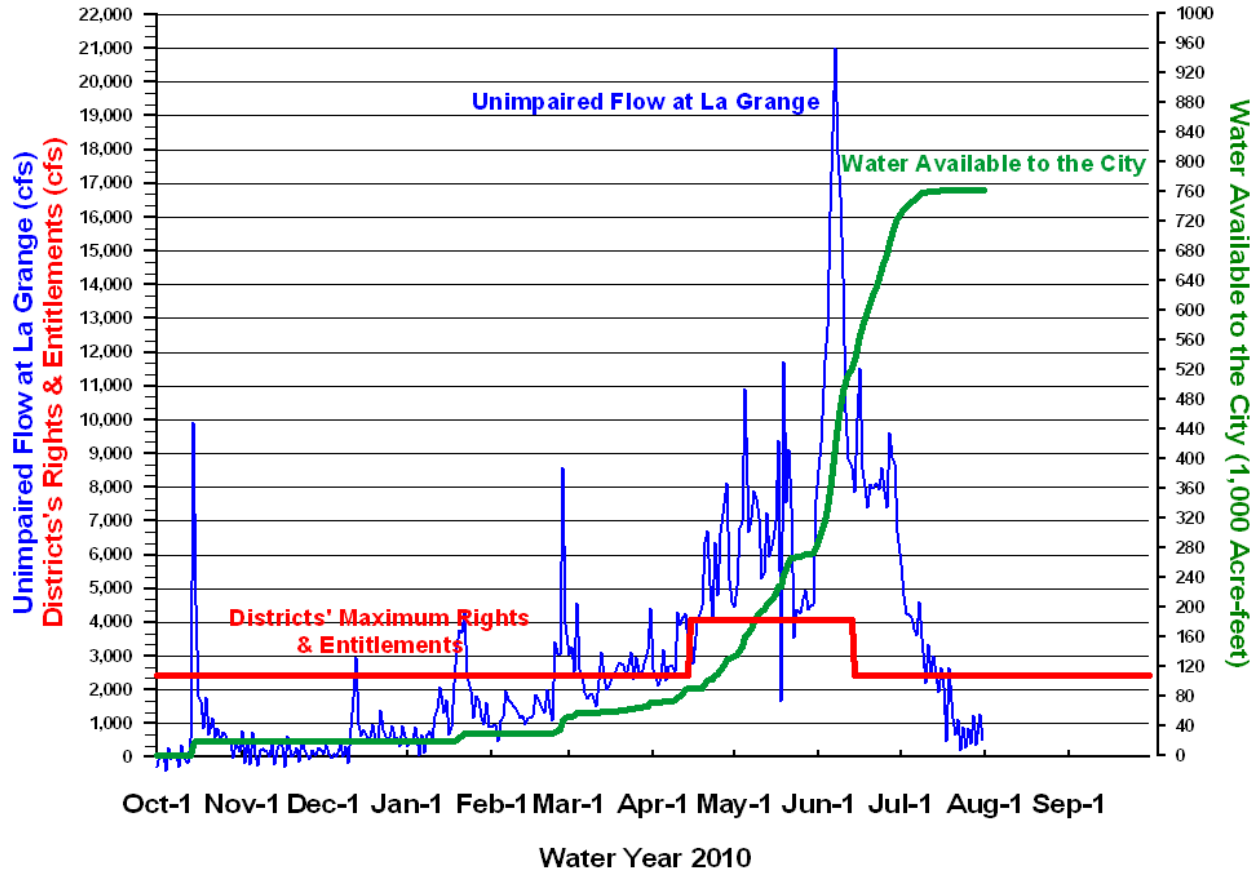


Figure 3: Calculated unimpaired flow at La Grange and the allocation of flows between the Districts and the City. Water available to the City for the period from October 1st, 2009 through July 31st, 2010 was 761,334 acre-feet.

cc	HHWP Records	Dufour, Alexis	Jue, Tyrone	Patterson, Mike
	Briggs, David	Gibson, Bill	Kehoe, Paula	Ramirez, Tim
	Cameron, David	Griffin, Dave	Levin, Ellen	Ritchie, Steve
	Carlin, Michael	Hale, Barbara	Mazurkiewicz, Adam	Rydstrom, Todd
	Chester, John	Hannaford, Margaret	McGurk, Bruce	Samii, Camron
	DeGraca, Andrew	Harrington, Ed	Meier, Steve	Sandkulla, Nicole
	Dhakal, Amod	Jensen, Art	Nelson, Kent	Tsang, Michael