



# WATER SUPPLY UPDATE

December 6, 2017

**NOTE:** Two ALERT items, on pages 3 and 4.

Data current as of December 3, 2017, unless otherwise noted.

## Meteorology, Climate, and Hydrology

### Water Year 2018 Precipitation (Oct 2017 – Sep 2018)

- **Sacramento Valley:** 118% percent of normal for this week (Link: [HERE](#))
- **San Joaquin Valley:** 64% percent of normal for this week (Link: [HERE](#))
- **Tulare Lake Region:** 41% percent of normal for this week (Link: [HERE](#))

### WY2018 Snow Accumulation (Link: [HERE](#))

- North Sierra: 0% percent of Apr 1 average; 0% of normal for this week
- Central Sierra: 0% percent of Apr 1 average; 0% of normal for this week
- South Sierra: 0% percent of Apr 1 average; 0% of normal for this week

Even though the snow pillow sensors above are not showing any snowpack, there has been some accumulation of snow in the Sierra Nevada (Link: [HERE](#))

### Looking forward:

- No precipitation is forecast for the Central Valley over the next 6 days. Maps of 6-day precipitation forecast (Link: [HERE](#) for Sacramento Basin and Eastside streams; [HERE](#) for San Joaquin Valley).
- 14-day outlook for precipitation is also below normal (Link: [HERE](#))

### Other resources:

- Interactive, real-time meteorology updates available at Ventusky (Link: [HERE](#)).
- 30- and 90-day seasonal precipitation outlooks are normal for the Central Valley, except the 90-day outlook for the San Joaquin Valley is slightly below normal (Link: [HERE](#) for 30-day; [HERE](#) for 90).
- Authoritative California climate and meteorology blog (Link: [HERE](#)).

## NASA Airborne Snow Observatory

- No updates expected until the first survey, scheduled for the beginning of February.

### Looking forward:

- Four surveys scheduled at the begin-of-month, February through May 2018, with two optional flights
- General Managers will discuss whether to apply one optional flight for a begin-of-January survey at the December 4 Water Supply meeting in Visalia.

## North of Delta Reservoirs

- **CVP reservoirs:** all are fuller than normal with a total storage of 5,612 TAF, close to the limits for winter flood control operations. Trinity, Shasta, and Folsom are at 130%, 136%, and 158% of their 15-year

average storages for this week, respectively. Folsom has been slightly encroached into its flood pool for the last week, and releases at Nimbus Dam were increased to 3300 cfs on Dec 2 to help manage storage.

- **Oroville:** storage is well below normal in response to meeting Fall X2 and limitations on operations resulting from the condition of the spillway.
- Increased reservoir inflows led to small storage increases last week. CVP reservoir storage increased by a combined 50 TAF, and Oroville storage increased by 12 TAF.
- Reclamation's daily CVP water supply report (Link: [HERE](#)).

### Looking forward:

- River forecasts are for inflows to CVP and SWP reservoirs to drop slightly throughout the week due to the lack of precipitation.
- Shasta, Folsom, and Oroville reservoirs accumulated storage of 45, 58, and 50 TAF, respectively, during November. The Fall X2 RPA requires that all storage accumulated in November in those reservoirs must be released as Delta outflow in December.

## Delta/South of Delta Operations

*Flow values in this section are rounded to the nearest 100 cfs.*

- **Controlling Factor(s) in the Delta:** Available Delta export capacity (per [DWR Delta Ops report](#)). The Fall X2 requirement still applies in December, as described below.
  - Under Fall X2 the requirement in December is that all storage that was accumulated in November in Shasta, Folsom, and Oroville must be released in December. This is implemented by increasing the average Minimum Required Delta Outflow (MRDO) for December by the volume needed to release the accumulated storage over the month. Under D-1641 MRDO in December is 4,500 cfs, which will be increased to about 7,000 cfs on average throughout the month to release the accumulated storage.
  - Current X2 location: >81 km
- Delta inflow is 19,200 cfs, unchanged from last week. Inflow is 15,600 cfs on the Sacramento River at Hood and 2,300 cfs on the San Joaquin River at Vernalis
- Delta outflow is 6,900 cfs, down from 7,700 cfs last week.
- Jones pumping is 4,200 cfs, continuing the 5-unit operation from last week.
- Banks pumping is 6,400 cfs. Banks has been pumping at or near capacity for the last week, as average weekly pumping was 6,800 cfs. 0 cfs pumping at Banks for the Cross Valley Canal.
- CVP San Luis and SWP San Luis have both increased in the last week to 802 TAF and 739 TAF, respectively.
- Rescheduled water for CVP contractors in San Luis for 2018 will be capped at 150 TAF and could be reduced if the CVP storage is full and pumping in the Delta is foregone during the winter. Recapture supplies would also be evacuated from storage if this occurs.
- Salinity standards are all currently being met in the Delta.
- The Delta is currently in Excess conditions so COA accounting is suspended.
- Delta Cross Channel gates have been closed since November 27 under NMFS RPA IV.1.2, to facilitate salmon migration in the Sacramento River.
- Reclamation South of Delta daily operations report available (Link: [HERE](#)).

### Looking forward:

- No change orders for Jones pumping have been issued as of Tuesday, December 5, so pumping will remain at a 5-unit operation (4,200 cfs) for the near future.
- San Luis is expected to fill (to 2,028 TAF, with 966 TAF for CVP). If there is significant precipitation in December and no export restrictions, it could fill as early as late December. Otherwise filling is expected in January or February based on current rates of demand and fill.

## Friant Division Operations

Allocations in this section reported by Reclamation SCCAO, per November 3 water supply meeting

- Friant Water Supply Allocation and use for WY 2017-18 as of 12/1/17:
  - Class 1 100%
  - Class 2 3% (residual)
  - Class 2 29.7% (Uncontrolled Season)
  - RWA 16(b) 196 TAF
  - URF 342 TAF
  - Section 215 0.1 TAF
- Millerton Lake daily operations report (Link: [HERE](#)), CDEC information (Link: [HERE](#)), and Water Year accumulation plot (Link: [HERE](#))

### Looking forward:

- 55 TAF is expected to carry over into 2018
- Storage in Millerton is projected to be 277 TAF on March 1, the beginning of the 2018 contract year. Spill of carry-over supplies is not considered to be a high risk.
- Inflow projections for Millerton (Link: [HERE](#)).

## San Joaquin River Settlement Implementation

### Restoration Flow Releases

- Releases to the San Joaquin River at Friant Dam are currently at 375 cfs, following the default hydrograph of the Settlement. This results in approximately 235 cfs at Gravelly Ford for the month of December. The current release target at Sack Dam is 130 cfs.
- Restoration Flow releases from Friant Dam are expected to remain between 375 cfs and 450 cfs until the beginning of spring pulse flow operations. The Restoration Administrator may use a remaining portion of the fall pulse volume to increase flows above the nominal 375 cfs for periods of time between December and the end of February. Flows at Sack Dam are expected to remain between 130 cfs and 180 cfs, depending on downstream seepage limitations imposed upon the Program.
- Total Restoration Flow releases scheduled for WY 2017-18: 198.4 TAF

### Recapture/Recirculation

- **@ Mendota Pool:** As of Nov. 1, 2017, 7,276 acre-feet had been recaptured at Mendota Pool in the 2017 Restoration Year, which runs March 2017-February 2018. A spreadsheet was distributed to all Friant contractors with recaptured water in San Luis Reservoir and the water is available for immediate use or transfer. The spreadsheet distributed by Reclamation had an error on the amount recaptured at PID, which is corrected in Tables 1 and 2 on pages 4-5. Recapture amounts at Mendota Pool will likely be less than 1000 acre-feet per month, unless unexpected seepage constraints are encountered.
- **@ Patterson ID and Banta Carbona ID:** The 70 cfs currently available for recapture is all being picked up by PID and BCID. If flows from Sack Dam are increased, additional lower SJR recapture may be available, perhaps as much as 100 cfs in late December through January, and possibly higher in February.
- **Current Recaptured Supplies in San Luis Reservoir:** Each contractors' supplies were most recently updated by Reclamation and emailed on November 9. A corrected copy of this update appears on pages 4-5, as Tables 1 and 2.
- **ALERT:** Districts that want a share of the water recaptured at PID and BCID need to either return a signed Repayment Agreement signature sheet or notify Steve Ottemoeller of your intent to do so. Water recaptured by PID and BCID in October and November will be allocated to those districts that have submitted signatures or notified Ottemoeller by December 15.

**River Settlement, Restoration Area Conditions:**

- The following conditions are being reported by California DFW for aquatic habitat conditions along the San Joaquin River within the Restoration Area (Friant Dam to the Merced River Confluence). For near maximum daily water temperatures observed last week, Friant Dam release temperatures remain Optimal to Critical for all relevant Chinook life stages for the month of December (i.e. Adult Migration, Spawning, Incubation/Emergence, and late-season In-river Juvenile Rearing). These temperatures, where flow is observed, relate to SJRRP objectives for spring-run and fall-run Chinook salmon as follows:
  - Adult Migration (Reach 1-5) – temperatures are observed as Optimal to above Optimal within Reaches 1, 2, 3, 4, 5, and the Eastside Bypass.
  - Spawning (Reach 1) – temperatures are observed as Optimal to above Optimal within Reach 1.
  - Incubation/Emergence (Reach 1) – temperatures are observed as above Optimal to Critical within Reach 1.
  - Late-season In-River & Floodplain Juvenile Rearing (Reaches 1-5) – temperatures are observed as Optimal within Reaches 1, 2, 3, 4, 5, and the Eastside Bypass.
- Three rotary screw traps have been placed in Reach 1 and have already captured over 100 spring-run fry from that have recently emerged from 16 known redds. These juveniles are from 55 adult females and 60 adult males that were released into the river this summer as extra brood stock fish from the fish conservation facility at Friant Dam.

**Looking forward:**

**Recapture supplies in San Luis Reservoir:**

- Recapture at PID and BCID will likely continue at a combined 3,500 to 5,500 acre-feet per month through January, subject to room in the reservoir or conveyance opportunities.
- **ALERT:** Recaptured supplies held in San Luis Reservoir are subject to loss when San Luis Reservoir fills, which is anticipated to occur sometime in December, January or February as noted above (subject to Reclamation’s rescheduling guidelines for San Luis Reservoir). Storage capacity will be available for recaptured water in San Luis Reservoir until it fills, after which time stored supplies will need to be evacuated before San Luis Reservoir reaches “sustained drawdown.” Once San Luis Reservoir has filled, any future recapture will require a simultaneous destination. Due to the 150 TAF limit on Rescheduling in SLR, there may be little or no room for Rescheduling Recaptured Water.

**Table 1. Monthly Recapture Volume in 2017 for Friant Contractors in acre-feet. Recapture supplies are held in San Luis Reservoir unless otherwise scheduled for delivery by individual contractors. (Source: e-mail to Friant Contractors, November 9, 2017)**

Month	at MP, AF	at Lower SJR, AF	Total
July	4,983		4,983
August	1,232		1,232
September	1,061		1,061
October	0	62	62
November			-
December			-
January			-
February			-
Total	7,276	62	7,338

**Table 2. Recapture Volume during July-October 2017 by Friant Contractors in acre-feet. Recapture supplies are held in San Luis Reservoir unless otherwise scheduled for delivery by individual contractors. (Source: e-mail to Friant Contractors, November 9, 2017)**

<b>Contractor</b>	<b>MP Recapture</b>	<b>Lower SJR Recapture</b>	<b>Total (Rounded)</b>
Arvin-Edison WSD	1,618		1,618
Chowchilla WD	831		831
City of Fresno	-		-
City of Lindsay	-		-
City of Orange Cove	-		-
County of Madera	-		-
Delano-Earlimart ID	387		387
Exeter ID	99		99
Fresno Co. WW #18	-		-
Fresno ID	389		389
Garfield WD	-		-
Gravelly Ford WD	73		73
Hills Valley WD	-		-
International ID	-		-
Ivanhoe ID	3		3
Kaweah Delta WCD	38		38
Kern-Tulare WD	26		26
Lewis Creek WD	-		-
Lindmore ID	114		114
Lindsay-Strathmore ID	-		-
Lower Tule River ID	1,236		1,236
Madera ID	966		966
Orange Cove ID	-		-
Porterville ID	156		156
Saucelito ID	170		170
Shafter-Wasco ID	206		206
So San Joaquin MUD	234		234
Stone Corral ID	-		-
Teapot Dome WD	-		-
Tri-Valley WD	-		-
Tulare ID	732		732
<b>TOTALS</b>	<b>7,276</b>	<b>62</b>	<b>7,278</b>

# WEDNESDAY WATER DATA REPORT

AS OF DATE December 6, 2017

**FRIANT WATER AUTHORITY  
SAN JOAQUIN RIVER AND ASSOCIATED WATER DATA**

		THIS YEAR 12/06/17	LAST WEEK	LAST YEAR 12/07/16
<b>RESERVOIR STORAGE (A.F.) CAPACITY</b>			<b>STORAGE</b>	
<b>Southern California Edison:</b>				
Vermillion (Edison)	125,000	49,768	51,975	53,095
Florence	64,400	1,073	1,141	11,489
Huntington	89,000	63,321	65,459	27,265
Shaver	<u>135,300</u>	<u>73,079</u>	<u>78,646</u>	<u>102,015</u>
Sub-total (Big Creek)	413,700	187,241	197,221	193,864
Mammoth Pool	122,000	8,622	9,477	29,929
Redinger	<u>26,100</u>	<u>21,923</u>	<u>21,932</u>	<u>18,450</u>
Sub-total Southern California Edison	<u>561,800</u>	<u>217,786</u>	<u>228,630</u>	<u>242,243</u>
<b>Pacific Gas &amp; Electric:</b>				
Crane Valley (Bass Lake)	45,400	22,660	25,373	25,762
Kerckhoff	<u>4,200</u>	<u>4,146</u>	<u>4,174</u>	<u>3,450</u>
Sub-total P G & E	<u>49,600</u>	<u>26,806</u>	<u>29,547</u>	<u>29,212</u>
<b>TOTAL UPSTREAM STORAGE</b>	<b>611,400</b>	<b>244,592</b>	<b>258,177</b>	<b>271,455</b>
<b>MILLERTON LAKE</b>	<b><u>520,500</u></b>	<b><u>346,738</u></b>	<b><u>335,487</u></b>	<b><u>314,462</u></b>
<b>TOTAL STORAGE</b>	<b>1,131,900</b>	<b>591,330</b>	<b>593,664</b>	<b>585,917</b>
<b>INFLOW &amp; RELEASE DATA (C.F.S.)</b>				
<b>Millerton Releases:</b>				
Madera Canal		0	0	0
Friant-Kern Canal		527	352	0
San Joaquin River		375	375	202
Spillway		<u>0</u>	<u>0</u>	<u>0</u>
Total Millerton Releases		902	727	202
Actual Millerton Inflow		1,499	1,618	1,558
Computed Natural River (@Friant)		148	1,039	225
<b>SAN JOAQUIN RIVER (A.F.)</b>				
<b>This Month:</b>				
Actual to-date		4,711	35,400	4,907
Forecasted DWR 50% forecasts.		32,600	33,000	10,700
<b>April/July Period:</b>				
Actual to-date		N.A.	N.A.	N.A.
Forecasted DWR 50% forecasts.		N.A.	N.A.	N.A.
Last Year Actual				2,641,089
<b>Water Year:</b>				
Actual to-date		65,569	57,820	118,235
Forecasted DWR 50% forecasts.		N.A.	N.A.	N.A.
Last Year Actual				4,395,400
<b>ESTIMATED WATER YET TO BE DELIVERED (A.F.)</b>				
<b>Contract Year Ending February 28</b>		<b>148,105*</b>	<b>43,094**</b>	<b>33,733</b>

\*Figure is based on Final Water Supply forecast for Contract Year 2017 minus District usage.

\*\*Figure is based on 100% Class I, 3% Class II Residual, minus District usage YTD.

**FRIANT WATER AUTHORITY  
SAN JOAQUIN RIVER AND ASSOCIATED WATER DATA**

**PRECIPITATION DATA**

REPORTING STATIONS:	AVERAGE (INCHES)	THIS YEAR 12/06/17		LAST YEAR 12/07/16	
		ACCUMULATIVE TO DATE (INCHES/PERCENT AVG)			
<b>HUNTINGTON</b>					
This Month	4.63	0.02 /	0	0.00 /	0
Seasonal Average*	8.21	6.12 /	75	7.80 /	95
Annual Average	42.65	6.12 /	14	7.80 /	18
<b>CRANE VALLEY</b>					
This Month	3.85	0.01 /	0	0.00 /	0
Seasonal Average*	6.41	3.93 /	61	5.92 /	92
Annual Average	40.54	3.93 /	10	5.92 /	15
<b>FRIANT</b>					
This Month	1.48	0.00 /	0	0.00 /	0
Seasonal Average*	2.47	1.28 /	52	2.98 /	121
Annual Average	14.49	1.28 /	9	2.98 /	21

\* Seasonal Average (July - June) is through the current month

\*\* SCE updated Huntington Precipitation

MISC RIVER/RESERVOIR	CAPACITY (A.F.)	STORAGE (A.F.)	RELEASE (C.F.S.)	INFLOW (C.F.S.)
Chowchilla/Buchanan	150,000	86,363	1	4
Fresno/Hidden	90,000	16,779	0	18
Kings/Pine Flat	1,000,000	478,185	604	652
Kaweah/Terminus	185,000	19,257	853	97
Tule/Success	82,314	9,267	23	46
Kern/Isabella	570,000	166,316	414	344



FRIANT WATER AUTHORITY  
SAN JOAQUIN RIVER AND ASSOCIATED WATER DATA

CVP/SWP SAN LUIS OPERATIONS

		THIS YEAR 12/06/17	LAST WEEK FLOWRATE (C.F.S.)	LAST YEAR 12/07/16 Average
PUMPING	MAX. FLOWRATE (C.F.S.)			
INSTANTANEOUS				
Tracy P.P.	4,600	4,233	4,214	2,453
Banks P.P.	10,000	6,070	7,425	6,691

MONTH TO DATE

Tracy P.P.	41,994	165,740	158,857
Banks P.P.	63,848	231,358	289,917

SEASON TO DATE (Since October 1)

Tracy P.P.	492,722	433,980	393,244
Banks P.P.	409,163	318,440	465,560

SAN LUIS RESERVOIR CAPACITY  
(A.F.)

	CAPACITY (A.F.)	THIS YEAR 12/06/17	LAST WEEK FLOWRATE (A.F.)	LAST YEAR 12/07/16
Federal	980,000	810,756	787,079	301,537
State	1,060,000	744,790	714,297	662,316
Total	2,040,000	1,555,546	1,501,376	963,853

SAN LUIS RESERVOIR

Federal	1,854	1,556	3,132
State	4,866	5,656	9,298

SACRAMENTO-SAN JOAQUIN DELTA FLOW INDICES

	FLOWRATE (C.F.S.)
Delta Outflow Index	6,164
Sacramento River @ Freeport	15,977
San Joaquin River @ Vernalis	2,256
Total Delta Inflow	19,297

**FRIANT WATER AUTHORITY  
SAN JOAQUIN RIVER AND ASSOCIATED WATER DATA**

**CIMIS EVAPOTRANSPIRATION RATES**

REPORTING STATION #	REPORTING STATION	YESTERDAY 12/5/2017 (Inches)	TOTAL PAST 7 DAYS (Inches)	NORMAL PAST 7 DAYS (Inches)	VARIANCE FROM NORMAL (%)	NORMAL NEXT 7 DAYS* (Inches)
5	Shafter	0.06	0.40	0.35	14	0.29
15	Stratford	0.07	0.49	0.34	44	0.28
39	Parlier	0.05	0.36	0.28	29	0.24
80	Fresno State	0.06	0.42	0.29	45	0.25
86	Lindcove	0.06	0.36	0.28	29	0.25
125	Arvin-Edison	0.07	0.43	0.35	23	0.32
142	Orange Cove	0.06	0.43	0.31	39	0.27
148	Merced	0.05	0.35	0.28	2	0.25
169	Porterville	0.05	0.33	0.31	6	0.27
182	Delano	0.04	0.31	0.30	3	0.26
188	Madera II	0.05	0.35	0.31	13	0.26

FRIANT WATER AUTHORITY  
SAN JOAQUIN RIVER AND ASSOCIATED WATER DATA

CROP COEFFICIENTS

6-Dec-17

Crop (Description)	Today	Avg. Prev. 7 Days	Avg. Next 7 Days
Alfalfa (average)	0.95	0.95	0.95
Almonds (Feb. 20 leafout, Nov. 15 leafdrop)	0.00	0.00	0.00
Almonds (Mar. 1 leafout, Nov. 15 leafdrop)	0.00	0.00	0.00
Beans (Apr. 1 plant date, Aug. 1 harvest)	0.00	0.00	0.00
Beans (May 1 plant date, Aug. 15 harvest)	0.00	0.00	0.00
Beans (Jun. 1 plant date, Sep. 15 harvest)	0.00	0.00	0.00
Citrus (year round)	0.65	0.65	0.65
Corn (Apr. 15 plant date, Sep. 15 harvest)	0.00	0.00	0.00
Cotton (Apr. 1 plant date, Sep. 20 defoliate)	0.00	0.00	0.00
Cotton (Apr. 15 plant date, Oct. 1 defoliate)	0.00	0.00	0.00
Cotton (May 1 plant date, Oct. 1 defoliate)	0.00	0.00	0.00
Wheat, Oats, Barley (Dec. 1 plant date, Jun. 1 harvest)	0.40	0.29	0.40
Grapes, Raisin (Mar. 15 leafout, Oct. 15 leafdrop)	0.00	0.00	0.00
Grapes, Table (Mar. 15 leafout, Oct. 15 leafdrop)	0.00	0.00	0.00
Kiwi (Mar. 15 leafout, Nov. 1 leafdrop)	0.00	0.00	0.00
Melons (Apr. 1 plant date, Jul. 15 harvest)	0.00	0.00	0.00
Melons (May 1 plant date, Aug. 15 harvest)	0.00	0.00	0.00
Melons (Jun. 1 plant date, Sep. 20 harvest)	0.00	0.00	0.00
Melons (Jul. 1 plant date, Oct. 10 harvest)	0.00	0.00	0.00
Olives (year round)	0.75	0.75	0.75
Pasture Grass	0.59	0.60	0.58
Pistachio (Apr. 1 leafout, Nov. 15 leafdrop)	0.00	0.00	0.00
Safflower (Mar. 1 plant date, Aug. 1 harvest)	0.00	0.00	0.00
Low Chilling Stone Fruit (Feb. 15 leafout, Dec. 1 leafdrop)	0.00	0.28	0.00
Stone Fruit (Mar.1 leafout, Nov. 15 leafdrop)			
[Peach, Nectarine, Plum, Apricot]	0.00	0.00	0.00
Late Stone Fruit (Mar. 16 leafout, Nov. 1 leafdrop)	0.00	0.00	0.00
Soft Fruit (Apr. 1 leafout, Nov. 15 leafdrop)			
[Apple, Pear]	0.00	0.00	0.00
Tomato (Mar. 1 plant date, Jul. 20 harvest)	0.00	0.00	0.00
Tomato (Apr. 1 plant date, July 30 harvest)	0.00	0.00	0.00
Walnut, Early (Mar. 15 leafout, Nov. 1 leafdrop)	0.00	0.00	0.00
Walnut, Late (Apr. 1 leafout, Nov. 1 leafdrop)	0.00	0.00	0.00

*NOTE: This information is a reproduction of information compiled by Kings River Conservation District.  
This information is provided as a general guideline and may not exactly be reflective of all  
locations or varieties.*