

Sacramento River Temperature Task Group (SRTTG) Call
Thursday, July 9, 2015 | 1:00 p.m. – 2:00 p.m.

MEETING SUMMARY

Participants:

- Craig Anderson, FWS
 - Ken Emanuel, SWRCB
 - Robert Franklin, Hoopa Valley Tribal Fisheries
 - Les Grober, SWRCB
 - John Hannon, USBR
 - Tim Hayden, Yurok Tribe
 - Liz Kiteck, USBR
 - Scott Ligare, SWRCB
 - Ron Milligan, USBR
 - Joe Pisciotto, CDFW
 - Jason Roberts, CDFW
 - John Rueth, FWS
 - Rich Satkowski, SWRCB
 - Jim Smith, FWS
 - Stacey Smith, USBR
 - Brycen Swart, NMFS
 - Thuy Washburn, USBR
 - Rod Wittler, USBR
 - Paul Zedonis, USBR
- Note-taking:**
- Kelsey Rugani, Kearns & West

Action Items

- Reclamation will add a legend clarifying the depiction of the gate configuration on the Shasta Dam schematic profile graphics.
- Reclamation will look into whether it will be feasible to develop a schematic profile of Trinity Dam similar to the new graphic of Shasta Dam.
- Reclamation will provide SWRCB staff with the Excel spreadsheet document underlying the June forecast, targeting to share it Friday, July 10th.
- Reclamation will send an email with Jeff Sandberg's contact info.

Key Discussion Topics with Summary of Outcomes and Agreements:

Fisheries Update

As of July 2, CDFW's aerial redd surveys observed 99 winter-run redds. 98 of those were observed upstream of the Highway 44 Bridge. The one exception was observed at Painter's Riffle, immediately downstream of the Highway 44 Bridge. Of the observed redds, approximately half were upstream of ACID Dam; the other half downstream of ACID dam.

As of Monday, July 6, 450 carcasses were observed with a similar distribution as previous years.

Livingstone Stone National Fish Hatchery has spawned 81 females and 64 males to date, with approximately 15 of each left to spawn. The spawning rate is slowing, and it is expected that there will be 3-4 weeks of spawning remaining this season.

FWS runs a Juvenile Monitoring Program at Red Bluff. The first winter-run juvenile was caught on Monday, July 6 and was 34 millimeters. A total of nine winter-run juveniles have been caught this week. It is too early in the season to utilize this data or determine trends, but they will continue to monitor and assess as more juveniles are caught. The juveniles caught through this program have not displayed any health issues.

Operations Update – Temperature Summary

On Wednesday, July 8, Reclamation made a shutter change to the Shasta Dam TCD, opening one of the PRG gates. This significantly lowered the TCD weighted average, but the temperature effects have not yet been seen downstream. Keswick (*KWK*) has been running around 56°F and Reclamation is trying to lower that temperature to 55.5°F. Temperatures at the Clear Creek compliance point (*CCR*) have been running below 58°F, and the new gauge at Bella Vista (*SAC*) has been running at 57°F. Reclamation anticipates that due to the gate change, temperatures at Keswick (*KWK*) will likely be brought below 55°F and Clear Creek (*CCR*) will be brought below 57°F. Once the downstream temperature effects of the latest gate change are clearer, Reclamation will likely make some adjustments to ensure they are not overusing cold water. Reclamation continues to target 57°F at the Clear Creek compliance point (*CCR*).

As a result of a meeting yesterday, Reclamation has been releasing less water through the Spring Creek Power Plant to assist in lowering river temperatures at Keswick (*KWK*) as soon as possible. Now that the gate change has been made, Reclamation will soon return Spring Creek Power Plant releases to normal, if they haven't done so already.

Operations Update – Lake Shasta Isothermobaths

Reclamation provided a document comparing 2014 and 2015 Lake Shasta isothermobaths. Total storage is greater today than it was this time last year. There is less of the coldest water (below 48°F) than there was this time last year, but there is more water below 52°F than there was this time last year.

Operations Update – Shasta Dam TCD Configuration

Reclamation provided a graphic showing a schematic profile of Shasta Dam and the TCD configuration today vs. this time in 2014. The graphic shows approximate water temperatures in relation to TCD gate positions and shows which gates are open and closed. The water at the middle gates was warmer this time last year than it is today. This time last year, four PRG gates were open, whereas there are currently three PRG gates open.

Participants appreciated the new graphic. It was suggested that a legend or note be added to clarify that black boxes represent closed gates and hollow boxes represent open gates. Robert Franklin thanked Reclamation for the graphic and asked if Reclamation could develop similar schematic profiles for Trinity Dam.

Action: Reclamation will add a legend clarifying the depiction of the gate configuration on the Shasta Dam schematic profile graphics.

Action: Reclamation will look into whether it will be feasible to develop a schematic profile of Trinity Dam similar to the new graphic of Shasta Dam.

Operations Update – June 90% Exceedance Forecast

Reclamation provided the June 90% Exceedance Forecast and verbally amended the Trinity storage numbers based on actual June storage: actual Trinity storage at end of June was approximately 930,000 acre-feet (as opposed to 870,000 acre-feet listed in the provided forecast). The revised Trinity storage forecast for the end of September is 590,000 acre-feet (as opposed to 530,000 acre-feet listed in the provided forecast). Reclamation is currently working on the July forecast.

In response to a question, Reclamation clarified that the provided June forecast document is the same as the forecast submitted to the SWRCB as part of the June 25 Sacramento River Temperature Management Plan. In response to a question, Reclamation clarified that the provided forecast does not include the 50,000 acre-feet of Trinity releases requested by Humboldt County.

Reclamation clarified that the Hoopa Tribe Boat dance water is not included in this June forecast, but the Boat Dance flows will be included in the July forecast.

Participants discussed the data underlying the June forecast, how the forecast should be interpreted, and the relationship between CVP forecasts and SWP forecasts. SWRCB staff requested the Excel spreadsheet from which the PDF June forecast was created.

Action: Reclamation will provide SWRCB staff with the Excel spreadsheet document underlying the June forecast, targeting to share it Friday, July 10th.

Operations Update – Trinity Update

Reclamation provided a Trinity update noting that there may be a potential need for some flow augmentation water. Reclamation is collaborating with Central Valley Operations in modeling cold water availability. Results of this examination will be available soon. Reclamation is looking at operations including use of auxiliary bypass to make sure they are meeting the target temperature regime.

Citing concerns about warm temperatures at the trap site above the North Fork, participants asked Reclamation the status of compliance with basin plan objectives. Reclamation explained that data from Douglas City should be available soon, as they are replacing a faulty probe. Reclamation also stated that they anticipate running RBM10 modeling for potential flow augmentation actions to model effects on temperature. In response to further questions, Reclamation clarified that it is taking actions that will provide cooler water to the Trinity, but they do not have formal reporting requirements associated with basin plan objective temperatures.

Operations Update – Temperature Profiles

Reclamation provided updated profiles for Shasta Lake, Trinity Lake, and Whiskeytown Lake, and these will be incorporated into future model runs.

As stated in Condition 6 of the July 3 Temporary Urgency Change Petition Order, Reclamation will attempt to develop weekly profiles of Lake Shasta. They suggested that in the near future, the group assess the added value of developing these profiles weekly, expressing doubt that weekly profiles will have significantly more value than profiles every other week.

It was noted that on July 7, the SWRCB Executive Director sent a letter to Reclamation approving the June 25 Sacramento River Temperature Management Plan provided compliance with conditions. The letter was provided to SRTTG members. The conditions on pages 3 and 4 are consistent with the July 3 Temporary Urgency Change Petition Order. There is an additional condition that end of September Folsom storage may not be less than 120,000 acre-feet. There is also a condition that upon the request of the SWRCB Executive Director, Reclamation and DWR will propose adjusted operations to ensure that critical water supplies are available for municipal and industrial use, including to cities served by Folsom Lake, and to provide cooling water needed to maintain grid reliability. Participants did not have any questions about the letter or conditions.

Next meeting

The next meeting of the SRTTG is scheduled for July 16th at 1:00 p.m.

Thuy will not be available for the July 16th meeting (out a few days next week). Jeff Sandberg will be the point of contact in her absence.

Action: Reclamation will send an email with Jeff Sandberg's contact info.

Sacramento River Temperature Task Group Meeting

July 9, 2015

1:00 pm

Conference Line: 877-718-6527

Pass code: 1954134

Agenda

1. Introductions
2. Fishery update
3. Operation update
 - a. Temperature Summary ***
 - b. Lake Shasta Isothermobaths ***
 - c. TCD Config ***
 - d. June Forecast ***
 - e. Trinity update
4. Next meeting

***handout

Temperature and Release Summary for Shasta and Trinity - July 2015

(Updated twice a week November through April)

Day	Sacramento River Water Temperatures in Degrees F Collected from CDEC (California Data Exchange Center) except for TCD, SPP and Control Point														Mean Daily Release in CFS			Mean Daily Air Temp Degrees F			
	TCD Wt. Avg.	SHD minus TCD (Diff)	Shd	SPP Wt. Avg	Kwk	Bsf	Jlf	Bnd	Rdb	Lws	Control Point 4/1 Ccr	Igo	Sac	Dgc	Shasta Generation El 815	Spring Crk Powerplant Release	Keswick Total Release	RDD	BSF	RDB	LWS
Jun	54.6		53.1	54.2	55.6	59.0	61.1	61.9	63.9	52.8	57.3	57.5	59.6	na	6,022	844	6,994	84.2	79.6	80.0	71.9
Jul																					
1	54.5	(2.6)	51.9	55.3	55.7	59.5	61.4	62.4	64.5	54.8	57.4	58.8	56.7	%	5,034	1,261	7,095	94.0	85.7	87.5	81.5
2	54.7	(2.7)	52.0	55.4	55.9	59.6	61.6	62.5	64.7	55.3	57.6	59.0	57.0	%	5,391	1,542	7,105	92.5	58.8	86.2	84.0
3	54.9	(2.6)	52.3	55.6	56.0	59.8	61.8	62.8	64.9	55.1	57.7	59.0	57.0	%	5,725	1,554	7,109	91.0	86.4	83.9	81.8
4	54.4	(2.0)	52.4	55.9	55.9	59.9	61.9	62.9	65.0	54.9	57.8	59.4	57.0	%	6,337	821	7,109	91.0	85.1	85.0	79.9
5	54.8	(2.0)	52.8	56.0	55.9	60.1	62.2	63.2	65.5	54.9	57.8	59.3	57.0	%	5,909	810	7,109	90.5	84.7	82.7	80.0
6	55.2	(2.7)	52.5	56.2	55.9	60.0	61.9	62.9	65.3	54.9	57.7	59.3	57.0	%	5,945	1,172	7,110	85.5	80.0	78.0	76.1
7	55.2	(2.7)	52.5	56.3	56.2	59.7	61.6	62.5	64.6	54.8	57.9	59.2	57.2	%	5,617	1,224	7,105	85.0	77.4	77.2	74.3
8	53.6	(2.0)	51.6	56.4	56.3	59.7	61.5	62.2	64.0	54.8	57.9	59.0	57.2	%	5,863	490	7,107	83.5	75.0	74.5	70.6
9		0.0																			
10		0.0																			
11		0.0																			
12		0.0																			
13		0.0																			
14		0.0																			
15		0.0																			
16		0.0																			
17		0.0																			
18		0.0																			
19		0.0																			
20		0.0																			
21		0.0																			
22		0.0																			
23		0.0																			
24		0.0																			
25		0.0																			
26		0.0																			
27		0.0																			
28		0.0																			
29		0.0																			
30		0.0																			
Avg	54.7		52.3	55.9	56.0	59.8	61.7	62.7	64.8	54.9	57.7	59.1			5,728	1,109	7,106	89.1	79.1	81.9	78.5
Tot cfs															45,821	8,874	56,849				
Tot af															90,886	17,602	112,760				

? = Average includes 1-9 estimated hourly readings

! = No Average (10-17 hours missing)

& = No Average (18 to 23 hours missing)

When available:

= Station out of service

ND = No hourly readings or incorrect

% = Data will be down loaded from site at later date by NCAO staff.

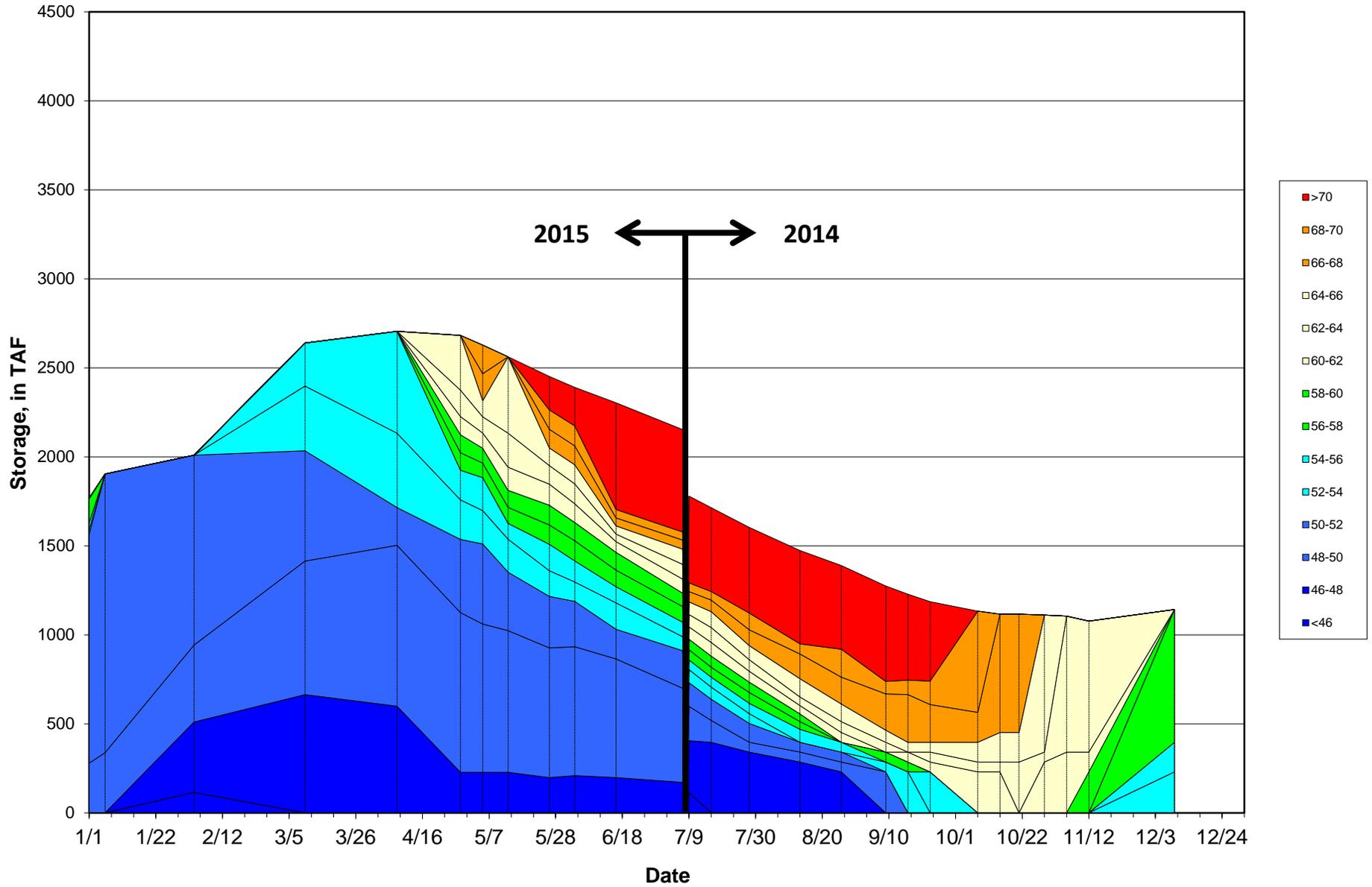
^ = Redding Air Temp Record High

* = Redding Air Temp Record Low

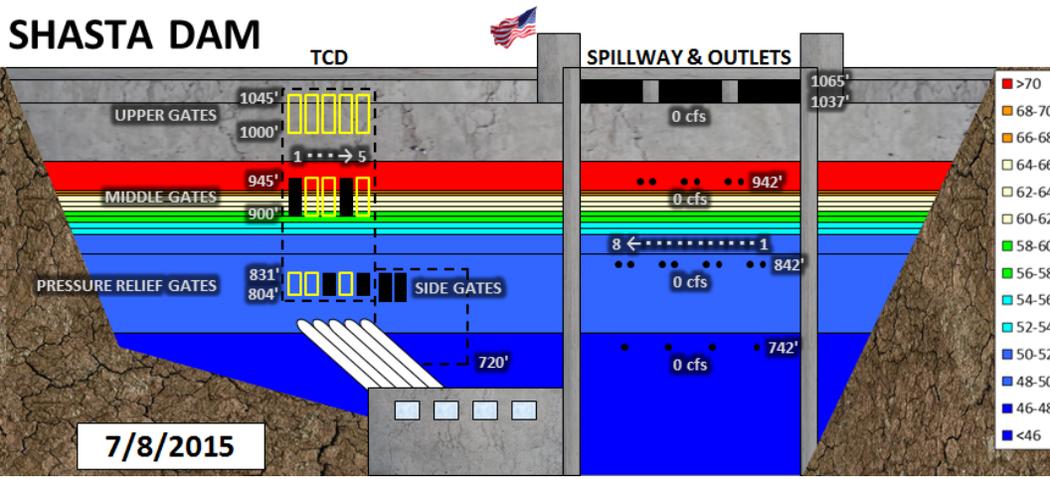
Control Point: Clear Creek 4/1/2015 to 4/17/2015 at 56.0 degrees; 4/18/2015 to 5/14/2015 at 58.0 degrees; 5/15/2015 to 6/4/2015 56.0; 6/5/2015 to present 58.0 degrees.

PRELIMINARY

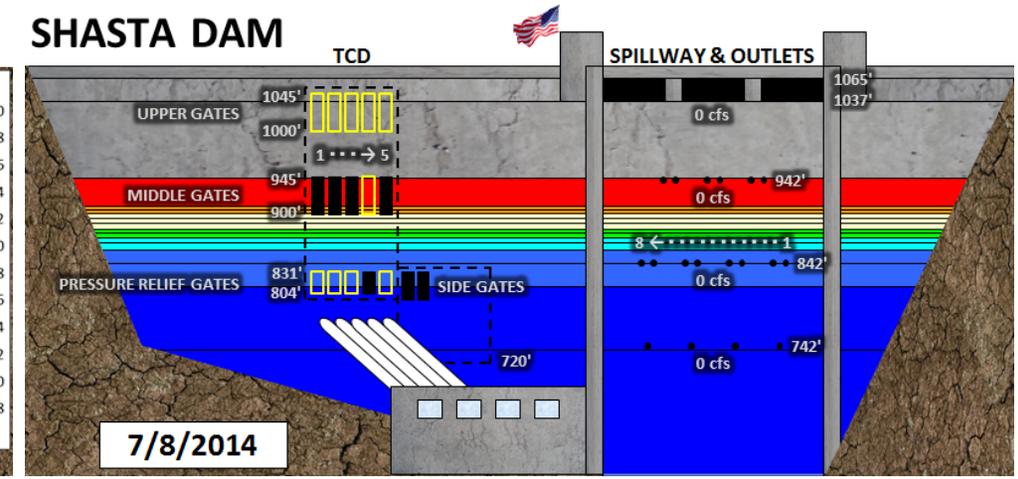
Lake Shasta Isothermobaths (Water Temperature, in ° F)



SHASTA DAM



SHASTA DAM



Estimated CVP Operations Jun 90% Exceedance - 7250 cfs Keswick Jun, Jul, Aug

Storages

Federal End of the Month Storage/Elevation (TAF/Feet)

		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
Trinity		1024	870	745	620	530	499	467	451	458	495	562	630	560
	Elev.	2240	2224	2205	2190	2185	2178	2175	2177	2184	2196	2207	2195	
Whiskeytown		239	238	238	238	230	206	206	206	206	206	238	238	
	Elev.	1209	1209	1209	1209	1207	1199	1199	1199	1199	1199	1209	1209	
Shasta		2404	2196	1943	1687	1460	1379	1388	1413	1534	1734	2061	2257	2138
	Elev.	968	954	938	923	917	917	919	928	941	961	972	965	
Folsom		535	433	238	136	120	126	139	161	194	254	377	538	576
	Elev.	408	375	349	343	345	350	357	365	379	400	421	426	
New Melones		453	388	323	265	238	216	211	206	209	217	223	229	228
	Elev.	832	815	798	789	781	780	778	779	782	784	786	786	
San Luis		305	220	100	24	1	20	11	99	280	373	410	402	327
	Elev.	443	410	380	367	367	383	413	446	469	482	475	463	
Total		4345	3587	2970	2579	2446	2421	2535	2880	3279	3839	4293	4066	

State End of the Month Reservoir Storage (TAF)

Oroville		1565	1346	1115	954	911	901	793	738	848	995	1212	1441	1388
	Elev.	712	681	657	650	648	630	620	640	663	695	724	717	
San Luis		786	679	502	351	283	266	382	534	655	789	891	834	773
Total San Luis (TAF)		1091	900	602	374	284	286	393	633	934	1162	1301	1235	1100

Monthly River Releases (TAF/cfs)

Trinity	TAF	47	28	28	27	23	18	18	18	17	18	32	180
	cfs	783	450	450	450	373	300	300	300	300	300	540	2,924
Clear Creek	TAF	9	7	5	9	11	10	11	11	10	11	13	13
	cfs	150	120	85	150	175	175	175	175	175	175	218	216
Sacramento	TAF	431	446	446	387	307	238	246	200	180	200	256	479
	cfs	7250	7250	7250	6500	5000	4000	4000	3250	3250	3250	4300	7800
American	TAF	134	222	126	30	31	30	31	31	45	49	48	136
	cfs	2250	3615	2043	501	500	504	501	505	803	800	800	2215
Stanislaus	TAF	9	9	9	9	35	12	13	16	17	17	9	9
	cfs	150	150	150	150	577	200	206	261	309	280	150	150
Feather	TAF	142	160	101	57	58	57	58	58	53	49	48	136
	cfs	2387	2600	1650	950	950	950	950	950	950	800	800	2216

Trinity Diversions (TAF)

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Carr PP	116	98	97	62	15	28	19	6	1	1	38	37
Spring Crk. PP	110	90	90	60	30	19	12	3	3	10	8	30

Delta Summary (TAF)

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Tracy	25	10	18	95	109	27	104	187	116	87	48	25
USBR Banks	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	8.7	8.0	8.3	8.7	3.5	4.3	4.7	4.7	3.5	3.5	8.7	8.7
Total USBR	34	18	26	104	113	31	109	192	120	91	56	33
State Export	25	12	12	37	83	130	168	168	165	180	42	25
Total Export	59	30	38	141	196	161	277	360	285	271	98	58
COA Balance	-48	-81	-86	-39	0	0	0	0	0	0	0	0
Old/Middle River Std.												
Old/Middle R. calc.	-1,215	-832	-937	-2,276	-2,531	-2,330	-3,721	-4,714	-4,081	-3,531	-1,570	-1,136
Computed DOI	4001	2798	2798	3009	4197	5093	4994	6003	7096	7873	5934	4815
Excess Outflow	0	0	0	0	0	0	0	0	0	765	1933	0
% Export/Inflow	10%	5%	7%	27%	35%	31%	47%	53%	44%	36%	17%	10%
% Export/Inflow std.	35%	65%	65%	65%	65%	65%	65%	65%	45%	35%	35%	35%

Hydrology

Water Year Inflow (TAF)	Trinity	Shasta	Folsom	New Melones
Year to Date + Forecasted % of mean	877 73%	3,468 63%	864 32%	314 30%

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Shasta Lake Profile

Date: 7/7/2015 Time: 11:20 Observer: Gotham, Martin
 Precipitation Last 48 Hours: 0 Weather: sunny and calm
 Thermometer ID: YSI6600A Air Temperature (Degrees F): 86 Storet Code: SH21

Lake Surface Elevation: <u>966.08</u>	Temperature	Turbidity
All Elevations in M.S.L. (Mean Sea Level)	400 Feet Upstream of Dam	400 Feet Upstream of Dam
	Surface: <u>82.3</u>	Surface: <u>0.6</u>
	Elevation 1050': _____	Elevation 1050': _____
	1025': _____	1025': _____
	1000': _____	1000': _____
	975': _____	975': _____
	950': <u>82.0</u>	950': <u>0.6</u>
	925': <u>66.3</u>	925': <u>0.5</u>
	900': <u>58.2</u>	900': <u>0.6</u>
	875': <u>51.5</u>	875': <u>0.8</u>
	850': <u>49.7</u>	850': <u>1.5</u>
	825': <u>49.0</u>	825': <u>2.0</u>
	800': <u>48.6</u>	800': <u>2.2</u>
Spillway Outlet (Elevation = 942)': <u>0</u>	775': <u>48.2</u>	775': <u>2.3</u>
Spillway Outlet (Elevation = 842)': <u>0</u>	750': <u>47.9</u>	750': <u>2.2</u>
Spillway Outlet (Elevation = 742)': <u>0</u>	725': <u>47.5</u>	725': <u>2.4</u>
Power (Elevation = 815)': <u>1775</u>	700': <u>47.4</u>	700': <u>2.4</u>
Tailbay Water Surface Elevation: <u>579.52</u>	675': <u>47.3</u>	675': <u>2.7</u>
Tailbay Water Temperature: <u>50.1</u>	650': <u>47.2</u>	650': <u>2.8</u>
Tailbay Water Turbidity: <u>2.3</u>	625': <u>47.1</u>	625': <u>3.2</u>

Remarks: TCD Middle gates 1,4 closed. Lower gates 2,3,5 closed. Side gates closed. Secchi depth = 17feet.

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Trinity Lake Profile

Date: 7/8/2015 Time: 12:00 Observer: Martin, Gotham
 Precipitation Last 48 Hours: 0.05 Weather: mostly sunny and calm
 Thermometer ID: YSI6600A Air Temperature (Degrees F): 82 Storet Code: SH26

**Temperature
~ 2000 Feet
Upstream of Dam**

Lake Surface Elevation:	<u>2,244.06</u>	<u>78.0</u>
All Elevations in M.S.L. (Mean Sea Level)	2350':	<u> </u>
	2325':	<u> </u>
	2300':	<u> </u>
	2275':	<u> </u>
	2250':	<u> </u>
	2225':	<u>76.9</u>
	2200':	<u>58.5</u>
	2175':	<u>52.1</u>
	2150':	<u>48.6</u>
	2125':	<u>47.6</u>
	2100':	<u>47.1</u>
	2075':	<u>46.8</u>
	2050':	<u>46.6</u>
	2025':	<u>46.5</u>
	2000':	<u>46.4</u>
	1975':	<u>46.4</u>
	1950':	<u> </u>
Lake Bottom:	<u>1966</u>	<u>46.4</u>

Top of Trinity Outlet intake at 2225 feet. Location at N40 48' 19.76, W122 45' 34.92

Comments: Secchi depth = 10 feet.

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Whiskeytown Lake Profile

Date: 7/7/2015 Time: 14:30 Observer: Martin, Gotham

Precipitation Last 48 Hours: 0 Weather: mostly sunny and breezy

Thermometer ID: YSI6600A Air Temperature (Degrees F): 90

Lake Surface Elevation: 1209

All Elevations in M.S.L.
(Mean Sea Level)

Outlet (Upper) Release (Elevation = 1110'): 0

Outlet (Lower) Release (Elevation = 975'): 175

Spill Release (Elevation = 1210'): 0

Spring Creek / PWR (Elevation = 1085'): 0

Carr PP Release: 1470

2 Miles Upstream of Dam (W3)

1000' Upstream of Dam (W2)

Surface Temperature: 81.2

Surface Temperature: 81.0

1200' elevation: 80.9

1200' elevation: 80.6

1175': 63.1

1175': 62.2

1150': 59.8

1150': 59.4

1125': 58.0

1125': 58.0

1100': 56.3

1100': 56.4

1075': 54.4

1075': 54.6

1050': 53.6

1050': 53.8

1025': 53.5

1025': 53.5

Lake Bottom Elevation: 1023 53.5

1000': 53.5

Lake Bottom Elevation: 991 53.4

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Whiskeytown Lake Profile

Spring Creek PWR Intake Structure (W1)

Surface Temperature:	<u>81.5</u>
1200':	<u>80.5</u>
1175':	<u>62.4</u>
1150':	<u>59.2</u>
1125':	<u>58.1</u>
1100':	<u>56.3</u>
1075':	<u> </u>
Lake Bottom Elevation:	<u>1079</u> <u>54.3</u>

Comment: Secchi depth = 22 feet.