



United States Department of the Interior

BUREAU OF RECLAMATION
Central Valley Operations Office
3310 El Camino Avenue, Suite 300
Sacramento, California 95821

IN REPLY
REFER TO:

CVO-400
WTR-4.10

JUL 18 2016

Ms. Barbara Evoy
Deputy Director, Division of Water Rights
State Water Resources Control Board
P.O. Box 2000
Sacramento, CA 95812

Subject: Monitoring and Reporting Program on Water Rights Order No. 90-5 (Water Rights)

Dear Ms. Evoy:

The Sacramento River Temperature Task Group met on May 26, 2016, and agreed to a 52° F daily average temperature at Keswick until a decision could be reached on a seasonal control point. On June 17, 2016, the temperature control point was set to a 56°F daily average temperature at Balls Ferry. Winter run spawning had begun by this date and 100% of the Redds were located above the Clear Creek location.

From June 17, 2016, to the end of the month, the average daily water temperature compliance of 56° F or less was met at the Balls Ferry compliance point on the Sacramento River. During this time period from June 17 to the end of the month, the average water temperature was 55.3° F at Balls Ferry. For the month of June 2016, the average monthly water temperature was 51.5° F at Keswick, and 55.4° F at Balls Ferry.

Enclosed is the monitoring report for June 2016, under Order No. 90-5. The report contains the following data:

Station	Description
Shasta Inlets (R-1) “	Water Temperature Profile Turbidity, monthly, ntu
Shasta Dam (R-2) “	Water Temperature, daily average, degrees F Turbidity, ntu, monthly
Shasta Dam (R-2a)	Flow, average daily, cfs
Keswick (R-3) “	Water Temperature, daily average, degrees F Turbidity, ntu, monthly
Keswick (R-3a)	Flow, average daily, cfs

Station	Description
Spring Creek Power plant (R-4) “	Water Temperature, daily average, degrees F Turbidity, ntu, monthly Flow, average daily cfs
Jellys Ferry (R-5) (Control Point)	Water Temperature, daily average, degrees F Turbidity, ntu, monthly
Sacramento at Delta (R-6)	Water Temperature, monthly, degrees F Turbidity, ntu, monthly
McCloud (R-7) “	Water Temperature, monthly, degrees F Turbidity, ntu, monthly
Pit River (R-8) “	Water Temperature, monthly, degrees F Turbidity, ntu, monthly
Lewiston (R-9)	Water Temperature, daily average, degrees F
Lewiston (R-9a)	Flow, average daily, cfs

Please contact Ms. Thuy Washburn at 916-979-2193, should you have any questions regarding this data.

Sincerely,



Elizabeth Kiteck
Chief Water Operations

Enclosures

cc: Mr. Kenneth Emanuel
Division of Water Rights
State Water Resources Control Board
P.O. Box 2000
Sacramento, CA 95812
(w/encl)

Central Valley Operations Office

*Data obtained from the California Data Exchange Center

**Data calculated by the Central Valley Operations Office

***Measurements taken by the Northern CA Area Office Personnel

Water Temperature Data in Degrees F

June 2016

Req. Sampling Frequency - Daily Average (Reading indicates daily average)							Req. Sampling Frequency - Monthly		
	Sta 2	Sta 3	Sta 4	Sta 5	Sta9		Sta 6	Sta 7	Sta 8
Date	Shd*	Kwk*	Spp**	Bsf**	Lws*		Dlt***	Mss***	Pmn***
1	50.3	52.5	52.3	57.4	48.0				
2	50.4	52.4	51.6	56.8	48.2				
3	50.1	52.5	52.0	56.6	48.2				
4	49.8	52.2	51.7	56.1	48.1				
5	49.5	51.5	52.0	55.8	47.9				
6	49.5	51.4	52.6	56.1	48.1				
7	49.5	51.2	52.6	56.0	48.4				
8	49.4	51.2	52.5	55.2	48.6			60.9	
9	49.5	51.1	52.5	55.2	48.7				
10	49.5	51.5	52.5	55.3	48.6				
11	49.4	51.3	52.5	55.2	49.2				
12	49.4	51.1	52.6	55.2	48.7				
13	49.4	51.0	52.6	55.2	48.2				
14	49.7	51.2	52.6	54.6	48.7				
15	50.2	51.0	52.6	53.4	48.7				
16	49.9	51.3	52.6	53.9	48.4				
17	50.1	51.3	52.5	53.9	48.5				
18	50.1	51.2	52.3	54.9	48.1				
19	50.0	51.8	52.1	55.2	-				
20	50.1	51.9	52.4	55.5	48.5				
21	49.9	52.1	53.1	55.8	49.0				
22	49.6	51.9	52.4	56.0	49.3		65.5		
23	49.6	51.6	52.5	55.7	49.6				
24	49.6	51.6	52.4	55.2	49.5				
25	49.5	51.7	52.6	55.4	49.5				
26	49.1	51.7	52.6	55.4	49.1				
27	49.2	51.4	52.7	55.8	49.3				
28	49.1	51.0	52.7	55.2	49.5				
29	49.1	51.1	52.8	55.2	49.6				65.4
30	49.1	51.1	52.9	55.3	49.6				

Control Point: 6/17-6/30 BSF @ 56.0 DAT

Cross Channel Gate Operation:

June 01-03 closed

June 03-06 open

June 06-10 closed

June 10-13 open

June 13-18 closed

June 18-30 open

V:\-WATER\ungvari\90-5 files\2016\90_5 06_2016.xlsx Temps

Measurements taken by the Northern CA Area Office Personnel
June 2016

TEMPERATURE				
Sampling Frequency				
Every two weeks May 1 through November 30.				
Lake Elev	Sample 1	Sample 2	Sample 3	Sample 4
MSL	6/14/2016	6/20/2016	6/27/2016	
	Temperature	Temperature	Temperature	Temperature
	Degrees F	Degrees F	Degrees F	Degrees F
	(400 Feet Upstream of Dam)			
	Time: 1030	Time: 1100	Time: 1100	Time:
625	45.8	45.9	45.9	
650	45.9	45.9	45.9	
675	45.9	45.9	46.0	
700	46.0	46.0	46.0	
725	46.1	46.1	46.2	
750	46.3	46.3	46.4	
775	46.6	46.5	46.6	
800	47.0	46.9	47.0	
825	47.4	47.3	47.3	
850	47.8	47.7	47.8	
875	48.2	48.1	48.2	
900	48.5	48.5	48.6	
925	48.8	49.0	49.1	
950	49.8	49.6	50.1	
975	51.5	52.2	53.7	
1000	56.9	58.1	59.7	
1025	71.6	70.7	74.8	
1050	72.0			
Lake Surface	1049.99' @ 72.0	1048.22' @ 71.2	1045.81' @ 75.3	

TURBIDITY				
Sampling Frequency				
Monthly, except weekly May 1 through Sep 30, when				
turbidity at Station 2 is equal to or greater than 10 NTU				
Lake Elev	Sample 1	Sample 2	Sample 3	Sample 4
MSL	6/14/2016	6/20/2016	6/27/2016	
	Turbidity	Turbidity	Turbidity	Turbidity
	ntu	ntu	ntu	ntu
	(400 Feet Upstream of Dam)			
	Time: 1030	Time: 1100	Time: 1100	Time:
625	6.1	5.9	5.9	
650	5.7	5.8	5.4	
675	5.6	5.5	5.4	
700	5.3	5.4	5.4	
725	5.2	5.1	4.9	
750	4.9	4.9	4.7	
775	4.7	4.7	4.6	
800	4.4	4.5	4.3	
825	4.0	4.1	4.3	
850	3.5	4.0	4.0	
875	3.6	3.9	3.6	
900	3.8	2.8	3.2	
925	2.8	2.9	3.2	
950	2.0	2.1	1.8	
975	1.4	1.1	0.7	
1000	0.6	0.5	0.4	
1025	0.5	0.4	0.4	
1050	0.5			
Lake Surface	1049.99' @ 0.5	1048.22' @ 0.5	1045.81' @ 0.4	

Central Valley Operations Office
Measurements taken by the Northern CA Area Office Personnel

**Summary of Turbidity and Dissolved Oxygen Water Sampling
June 2016**

Turbidity Measurements, NTU

Sampling Frequency

Monthly, except weekly from May 1 through September 30, when turbidity at Station 2 is equal to or greater than 10 NTU.

Station

	R-2	R-3a	R-4	R-5	R-6	R-7	R-8	
	Shasta Dam		Spring	Clear Creek				
	Discharge	Keswick	Creek PP		Sacramento	McCloud	Pit	
Day	at Bridge	Discharge	Discharge		River (DLT)	River	River	
8						2.0		
9			0.9					
15		3.9						
16				3.7				
22					0.7			
24	3.7							
29							2.2	

Dissolved Oxygen, mg/l

Sampling Frequency

Every two weeks from May 1 through September 30; samples to be taken before 1000 hours.

Station

	R-2	R-3	R-5	
	Shasta Dam			Hour
	Discharge	Keswick		Time Sample
Day	at Bridge	Discharge	Clear Creek	Taken
15		11.8		13:48
16			12.5	10:55
24	11.5			9:54

Control Point: 6/17-6/30 BSF @ 56.0 DAT

UNITED STATES DEPARTMENT OF THE INTERIOR
 U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA
SHASTA LAKE, DAM AND POWERPLANT

RUN DATE: July 8, 2016

QG

GENERATION RELEASE, CFS

WATER YEAR OCTOBER 2015 TO SEPTEMBER 2016

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5,701	4,248	4,120	2,851	1,110	2,381	4,584	5,242	6,889			
2	5,680	4,351	3,597	2,573	1,133	2,353	3,474	5,090	7,259			
3	5,648	5,011	4,233	2,570	2,192	1,546	5,461	5,425	7,288			
4	5,222	4,048	3,150	2,693	2,234	2,223	4,787	5,403	6,875			
5	5,649	4,740	2,511	2,020	2,166	2,079	4,678	5,577	7,503			
6	5,732	4,341	3,604	2,058	2,086	1,179	5,062	5,974	7,299			
7	6,419	4,456	3,756	2,175	2,413	2,407	5,124	5,855	7,479			
8	6,374	4,480	4,236	2,223	3,037	975	4,644	5,462	7,615			
9	5,750	4,508	3,565	2,199	3,452	1,198	3,622	5,628	7,472			
10	5,635	4,975	3,349	2,245	3,326	833	4,799	6,251	7,986			
11	5,559	4,165	3,288	2,621	2,713	560	3,401	5,895	7,633			
12	6,084	4,206	3,219	2,790	2,322	401	4,462	5,890	7,369			
13	5,843	4,281	3,129	1,760	2,756	551	4,229	5,820	7,145			
14	5,619	4,308	3,404	1,382	2,851	445	4,694	5,853	7,564			
15	4,995	4,018	3,847	1,851	2,723	1,262	4,492	5,725	7,299			
16	5,560	3,170	4,295	1,753	2,361	1,880	4,442	5,800	7,648			
17	5,747	4,073	4,139	827	2,110	3,097	4,760	6,264	7,501			
18	5,165	3,737	3,327	1,070	1,901	17,515	4,887	6,124	8,269			
19	5,503	3,900	3,626	1,098	3,150	17,239	4,468	6,492	8,341			
20	6,131	3,685	3,497	962	2,982	16,888	4,826	6,069	8,357			
21	4,776	3,481	2,724	109	3,242	17,088	4,025	5,913	8,510			
22	4,020	3,554	3,411	400	2,364	17,034	4,535	5,653	7,536			
23	4,646	3,593	3,556	762	2,668	14,719	4,982	6,077	7,810			
24	4,441	4,062	3,346	764	2,590	13,787	4,781	6,475	8,313			
25	4,711	4,045	3,848	867	2,725	11,638	4,818	5,828	8,238			
26	4,218	3,492	2,388	1,993	3,106	9,849	4,708	4,796	7,694			
27	4,444	3,605	2,222	1,784	2,704	6,758	4,508	6,297	7,575			
28	3,627	3,796	3,235	1,072	2,653	4,247	4,550	5,571	7,800			
29	4,538	3,572	2,967	1,077	3,002	4,327	4,381	6,369	7,311			
30	4,774	3,771	2,958	491		5,232	4,757	5,548	7,621			
31	4,687		2,974	393		5,651		6,478				
TOTAL	162,898	121,672	105,521	49,433	74,072	187,342	136,941	180,844	229,199			
MEAN	5,255	4,056	3,404	1,595	2,554	6,043	4,565	5,834	7,640			
MAX	6,419	5,011	4,295	2,851	3,452	17,515	5,461	6,492	8,510			
MIN	3,627	3,170	2,222	109	1,110	401	3,401	4,796	6,875			

WATER YEAR TOTALS

TOTAL	1,247,922
DAILY MEAN	4,554
DAILY MAX	17,515
DAILY MIN	109
	03/18/2016
	01/21/2016

UNITED STATES DEPARTMENT OF THE INTERIOR
 U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA
KESWICK DAM, RESERVOIR, AND POWERPLANT

RUN DATE: July 8, 2016

QT

TOTAL RELEASE, CFS

WATER YEAR OCTOBER 2015 TO SEPTEMBER 2016

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6,542	5,068	3,995	3,121	2,974	3,118	4,991	5,178	7,092			
2	6,544	4,685	3,996	3,121	2,973	3,118	4,881	5,192	7,528			
3	6,545	4,698	3,993	3,121	2,970	3,119	4,834	5,192	7,576			
4	6,543	4,702	3,997	3,119	2,969	3,091	4,840	5,672	7,614			
5	6,545	4,704	4,058	3,076	2,972	3,163	4,728	5,696	7,644			
6	6,544	4,704	4,208	3,080	2,994	3,161	4,588	5,692	7,644			
7	6,544	4,701	4,211	3,091	2,996	3,163	4,594	5,756	7,627			
8	6,536	4,704	4,213	3,086	2,992	3,109	4,587	5,842	7,621			
9	6,505	4,702	4,204	3,078	3,012	3,025	4,582	5,953	7,618			
10	6,534	4,701	4,161	3,051	3,067	3,091	4,588	6,237	7,618			
11	6,510	4,697	4,190	3,064	3,070	4,219	4,588	6,242	7,618			
12	6,511	4,505	4,192	3,065	3,051	4,514	4,612	6,241	7,617			
13	6,509	4,288	4,139	3,068	3,052	4,609	4,659	6,199	7,628			
14	6,506	4,290	4,137	3,033	3,055	4,504	4,645	6,193	7,669			
15	6,510	4,150	4,156	3,088	3,054	4,598	4,648	6,194	7,644			
16	6,509	3,953	4,162	3,120	3,055	4,692	4,644	6,193	7,642			
17	6,506	3,944	4,171	3,103	3,055	4,692	4,647	6,195	7,641			
18	6,498	4,039	4,171	2,994	3,050	18,000	4,648	6,192	8,395			
19	6,652	4,081	4,172	2,970	3,054	18,874	4,648	6,191	8,779			
20	6,188	4,035	4,171	2,981	3,055	18,591	4,650	6,193	8,775			
21	5,913	4,053	4,170	2,974	3,057	18,537	4,667	6,193	8,777			
22	5,732	4,054	4,153	2,973	3,052	18,558	4,669	6,192	8,790			
23	5,472	4,061	3,889	2,932	3,066	16,063	4,667	6,192	8,793			
24	5,467	4,054	3,632	2,961	3,092	13,226	4,669	6,194	8,787			
25	5,388	4,044	3,335	3,045	3,119	10,631	4,669	6,192	8,789			
26	5,164	4,017	3,079	3,047	3,121	8,552	4,589	6,229	8,788			
27	5,164	4,012	3,082	3,046	3,118	7,136	4,689	6,243	8,692			
28	5,166	4,005	3,092	3,046	3,119	4,890	4,717	6,242	8,692			
29	5,168	3,996	3,133	3,063	3,119	4,885	4,720	6,241	8,689			
30	4,866	3,996	3,101	3,044		4,936	4,743	6,243	8,691			
31	4,803		3,103	2,999		4,942		6,244				
TOTAL	188,584	129,643	120,466	94,470	88,333	230,307	140,401	186,849	242,478			
MEAN	6,083	4,321	3,886	3,047	3,046	7,445	4,680	6,027	8,083			
MAX	6,652	5,068	4,213	3,121	3,121	18,874	4,991	6,244	8,793			
MIN	4,803	3,944	3,079	2,932	2,969	3,025	4,582	5,178	7,092			

WATER YEAR TOTALS

TOTAL	1,422,031
DAILY MEAN	5,190
DAILY MAX	18,874 03/19/2016
DAILY MIN	2,932 01/23/2016

UNITED STATES DEPARTMENT OF THE INTERIOR
 U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA
LEWISTON DAM, LAKE, AND JUDGE FRANCIS CARR POWERPLANT

RUN DATE: July 8, 2016

QR

RELEASE TO RIVER, CFS

WATER YEAR OCTOBER 2015 TO SEPTEMBER 2016

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	439	331	313	305	305	305	316	2,158	3,267			
2	439	321	305	305	305	303	315	2,408	3,050			
3	439	321	305	305	305	305	315	2,869	3,183			
4	436	323	305	305	305	305	314	3,436	3,306			
5	449	323	305	305	305	304	318	3,281	2,927			
6	466	323	305	305	305	305	314	3,992	2,746			
7	468	324	305	305	305	305	316	3,809	2,791			
8	464	323	305	305	305	305	317	5,643	2,749			
9	467	308	305	305	305	337	319	8,708	2,525			
10	468	300	305	305	305	305	317	9,452	2,400			
11	464	300	305	305	305	316	323	7,513	2,589			
12	465	299	305	305	305	316	331	5,941	2,246			
13	467	296	305	305	305	313	330	8,490	2,191			
14	467	296	305	305	305	312	320	9,218	2,417			
15	467	295	305	305	305	310	331	7,417	2,173			
16	467	297	305	305	305	316	330	5,645	2,209			
17	467	305	305	305	305	321	330	4,411	2,308			
18	467	326	305	305	305	320	325	4,206	1,848			
19	467	323	305	305	305	319	325	4,235	1,986			
20	426	326	305	305	305	319	324	4,146	2,010			
21	346	328	305	305	305	319	572	4,041	2,011			
22	309	327	305	305	305	320	488	3,961	2,008			
23	301	325	305	305	305	319	484	3,960	2,024			
24	301	325	305	305	305	318	484	3,914	1,996			
25	303	327	305	305	305	313	1,024	3,447	1,807			
26	305	326	305	305	305	312	1,383	3,615	1,759			
27	305	325	305	305	305	311	1,988	3,381	1,871			
28	309	327	305	305	305	314	1,594	3,335	1,669			
29	318	328	305	305	305	315	2,126	3,294	1,625			
30	318	327	305	305	305	315	2,946	3,484	1,709			
31	319		305	305		314		3,334				
TOTAL	12,593	9,525	9,463	9,455	8,845	9,711	19,519	146,744	69,400			
MEAN	406	318	305	305	305	313	651	4,734	2,313			
MAX	468	331	313	305	305	337	2,946	9,452	3,306			
MIN	301	295	305	305	305	303	314	2,158	1,625			

WATER YEAR TOTALS

TOTAL	295,255
DAILY MEAN	1,078
DAILY MAX	9,452 05/10/2016
DAILY MIN	295 11/15/2015

UNITED STATES DEPARTMENT OF THE INTERIOR
 U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA
WHISKEYTOWN DAM, LAKE, AND SPRING CREEK POWERPLANT

RUN DATE: July 8, 2016

QG

GENERATION RELEASE, CFS

WATER YEAR OCTOBER 2015 TO SEPTEMBER 2016

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	756	344	69	14	1,708	304	28	14	14			
2	669	353	16	14	1,480	450	14	14	353			
3	670	14	35	14	1,147	482	19	14	94			
4	593	14	1,064	14	144	116	15	14	280			
5	667	22	1,612	430	16	342	15	14	91			
6	589	30	14	1,011	14	687	27	14	14			
7	458	42	50	346	14	1,081	18	14	14			
8	375	33	109	656	14	1,761	14	14	14			
9	807	16	14	14	19	2,061	893	14	14			
10	788	34	45	14	514	1,908	18	14	14			
11	14	86	36	771	731	1,775	1,124	14	14			
12	511	87	22	351	348	1,888	18	14	14			
13	535	19	216	900	14	1,988	14	14	14			
14	571	17	361	1,220	189	1,964	14	14	14			
15	677	52	14	685	369	1,999	14	14	14			
16	811	18	14	207	342	1,930	14	14	14			
17	270	227	15	733	285	2,062	14	14	14			
18	597	24	277	792	14	2,043	14	14	69			
19	654	17	15	703	189	2,131	14	20	382			
20	664	57	14	1,960	247	2,133	14	14	101			
21	409	21	550	2,467	191	2,136	14	14	14			
22	865	20	401	1,325	360	2,141	14	14	841			
23	609	15	495	1,306	485	2,100	14	14	476			
24	803	16	71	753	40	380	14	70	412			
25	632	23	103	1,640	14	179	14	14	443			
26	800	14	14	1,362	14	160	14	1,089	678			
27	729	25	14	2,047	389	261	14	14	842			
28	788	14	14	1,903	273	704	14	14	643			
29	214	14	16	1,401	14	154	14	14	845			
30	188	15	14	2,144	14	14	14	14	841			
31	185	14	14	2,112	45	45	20	20				
TOTAL	17,898	1,683	5,718	29,309	9,578	37,379	2,455	1,577	7,587			
MEAN	577	56	184	945	330	1,206	82	51	253			
MAX	865	353	1,612	2,467	1,708	2,141	1,124	1,089	845			
MIN	14	14	14	14	14	14	14	14	14			
WATER YEAR TOTALS												
TOTAL	113,184											
DAILY MEAN	413											
DAILY MAX	2,467 01/21/2016											
DAILY MIN	14 10/11/2015											