



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

APR 12 2018

VIA ELECTRONIC MAIL

Mr. Erik Ekdahl
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 Mr. Ekdahl:

For the month of March 2018, the temperature control point was set at Balls Ferry, per the June 2017, Sacramento River Temperature Plan.

During the month, the average daily water temperature compliance of 56.0°F or less was met at the Balls Ferry compliance point on the Sacramento River. During the month, the observed average monthly water temperature was 50.7°F at Balls Ferry.

Enclosed is the monitoring report for March 2018, under Order No. 90-5. The report contains the following data as required:

ID #	Station	Temperature*	Turbidity*	Dissolved Oxygen*	Flow*
1	Shasta Inlets	X	X		
2	Shasta Dam	X	X	X	
2a	Shasta Dam				X
3	Sacramento River below Keswick Dam	X		X	
3a	Keswick Dam		X		X
4	Spring Creek Power Plant	X	X		X
5	Temperature Control Point	X	X	X	
6	Sacramento River at Delta	X	X		
7	McCloud River	X	X		
8	Pit River	X	X		
9	Trinity River below Lewiston Dam	X			
9a	Lewiston Dam				X

ID #	Station	Temperature*	Turbidity*	Dissolved Oxygen*	Flow*
10	Trinity River at Douglas City Bridge	X			
11	Trinity River at confluence of North Fork	X			

*Monitoring frequency, period, and units are specified in enclosures

Please contact Ms. Randi Field at 916-979-2066, should you have any questions regarding this data.

Sincerely,



Elizabeth Kiteck
Chief, Water Operations

Enclosures

cc: Mr. Chris Kwan
Division of Water Rights
State Water Resources Control Board
P.O. Box 2000
Sacramento, CA 95812

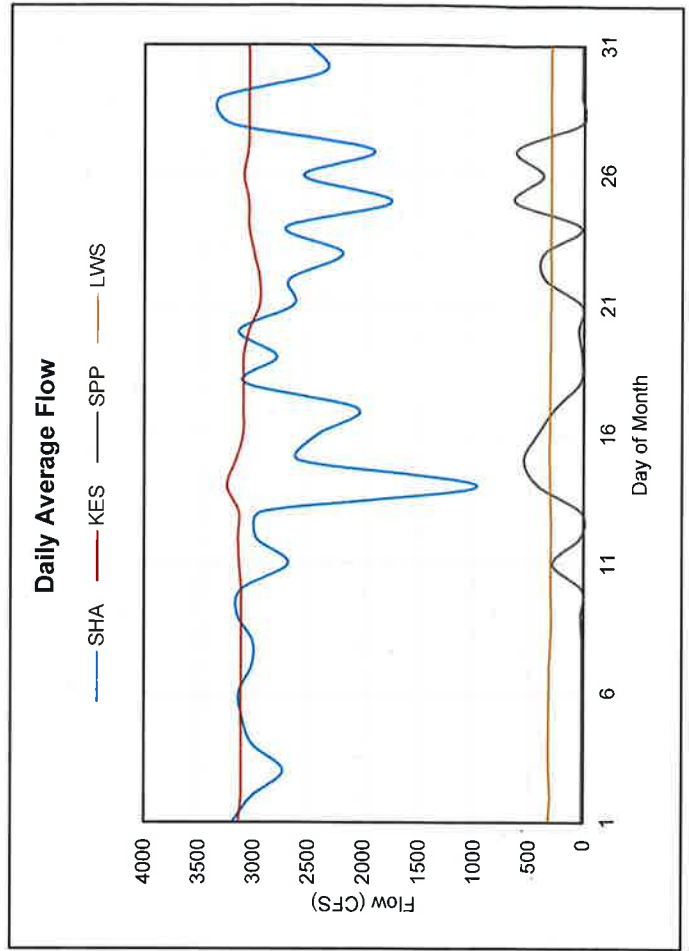
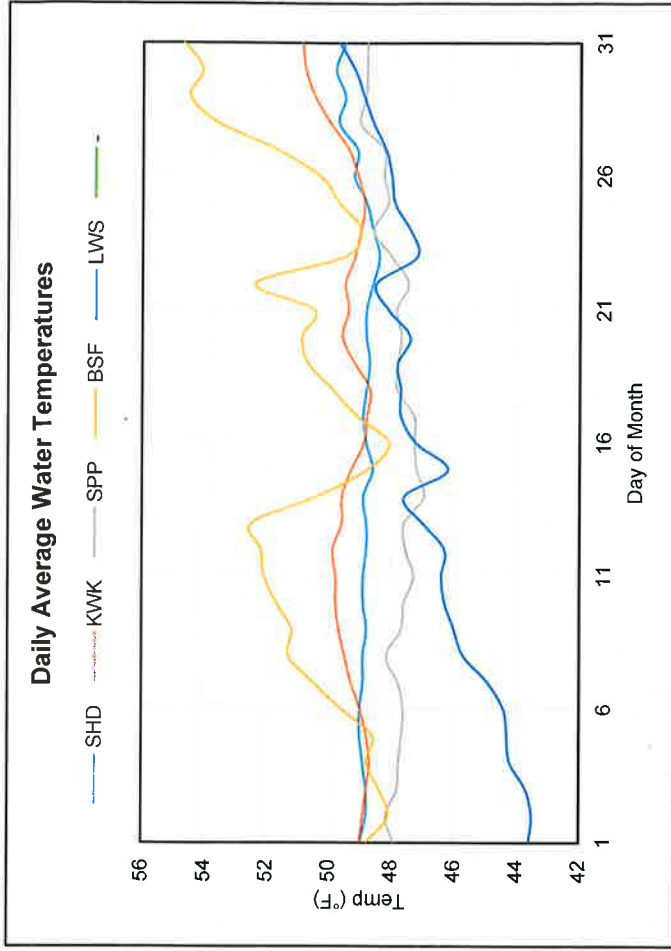
Mr. Vadim Demchuk
Division of Water Rights
State Water Resources Control Board
P.O. Box 2000
Sacramento, CA 95812

Ms. Diane Riddle
Division of Water Rights
State Water Resources Control Board
P.O. Box 2000
Sacramento, CA 95812
(w/encl)

90-5 Required Water Monitoring Data

March 2018

Daily Averages from Hourly Automated Observations												
Parameter	Temp (°F)										Flow (CFS)	
	2	3	4	5	9	-	2a	3a	4	9a		
Site	SHD	KWK	SPP	BSF ¹	LWS	-	SHA	KES	SPP	LWS		
1	49.0	49.0	47.9	48.8	43.6		3198	3141	14	322		
2	48.8	48.9	48.2	48.1	43.5		3019	3114	14	308		
3	48.8	48.8	47.8	48.4	43.7		2729	3115	14	320		
4	48.9	48.7	47.8	48.8	44.2		3010	3114	14	321		
5	49.0	48.8	47.7	48.6	44.3		3101	3117	14	318		
6	49.0	49.0	47.6	49.6	44.4		3138	3116	14	317		
7	48.9	49.3	47.8	50.5	44.9		3018	3115	14	317		
8	48.9	49.5	48.2	51.3	45.7		3006	3114	14	300		
9	48.8	49.7	47.7	51.2	46.0		3149	3114	27	294		
10	48.9	49.8	47.6	51.7	46.3		3115	3115	14	300		
11	48.9	49.8	47.3	52.1	46.4		2680	3134	287	300		
12	48.8	49.9	47.6	52.2	46.3		2975	3144	34	299		
13	48.8	49.6	47.6	52.5	47.0		2922	3138	22	300		
14	48.9	49.6	47.0	50.4	47.6		971	3245	411	306		
15	48.6	49.3	47.2	48.8	46.2		2575	3163	552	312		
16	48.8	48.9	47.3	48.1	47.2		2406	3095	423	311		
17	48.9	48.8	47.3	49.1	47.7		2050	3094	259	310		
18	48.8	48.7	47.8	49.9	47.7		3084	3094	32	308		
19	48.7	49.2	47.8	50.7	47.8		2782	3094	14	307		
20	48.8	49.6	47.7	50.9	47.4		3134	3043	47	304		
21	48.8	49.4	47.8	50.5	48.1		2631	2944	22	302		
22	48.6	49.5	47.5	52.4	48.5		2664	2944	357	300		
23	48.4	49.2	48.0	49.5	47.2		2181	2995	368	303		
24	48.6	49.0	48.6	49.0	47.4		2699	3043	24	303		
25	48.8	48.9	48.1	49.7	47.9		1743	3046	639	302		
26	49.2	49.1	48.3	50.3	48.0		2538	3090	375	301		
27	49.1	49.4	48.3	51.7	48.2		1909	3049	623	301		
28	49.7	50.0	49.0	53.6	48.6		3209	3044	14	302		
29	49.5	50.5	48.8	54.5	48.9		3308	3043	18	305		
30	49.8	50.8	48.8	54.1	49.2		2346	3042	14	301		
31	49.5	50.9	48.8	54.7	49.7		2474	3044	14	299		
						Max	3308	3245	639	322		
						Mean	2702	3087	152	306		
						Min	971	2944	14	294		
						Volume (TAF)	166	190	9	19		



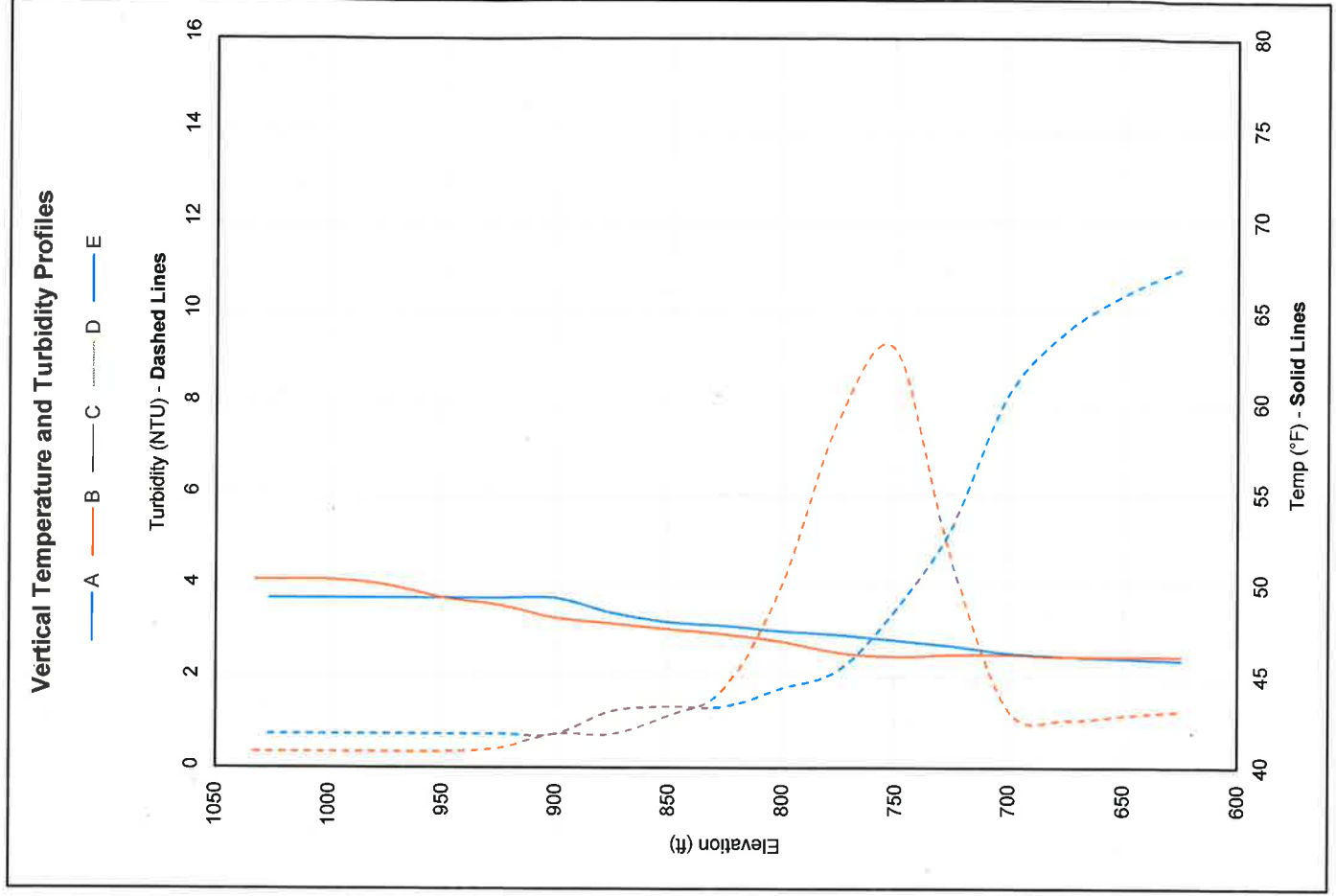
Notes

¹ Current temperature control point

90-5 Required Water Monitoring Data (Continued)

March 2018

Vertical Profiles Taken at Site 1 (Shasta Lake at Dam Inlets)												
Profile	A		B		C		D		E			
Day of Month	6		20									
Lake Elev.	1026.45		1033.06									
Parameter	Temp	Turb	Temp	Turb	Temp	Turb	Temp	Turb	Temp	Turb		
L.E.	49.3	0.7	50.3	0.3	-	-	-	-	-	-		
1050	-	-	-	-	-	-	-	-	-	-		
1025	49.3	0.7	50.3	0.3	-	-	-	-	-	-		
1000	49.3	0.7	50.3	0.3	-	-	-	-	-	-		
975	49.3	0.7	50.0	0.3	-	-	-	-	-	-		
950	49.3	0.7	49.3	0.3	-	-	-	-	-	-		
925	49.3	0.7	48.9	0.4	-	-	-	-	-	-		
900	49.3	0.7	48.2	0.7	-	-	-	-	-	-		
875	48.5	1.2	47.9	0.7	-	-	-	-	-	-		
850	48.0	1.3	47.6	1.1	-	-	-	-	-	-		
825	47.8	1.3	47.3	1.7	-	-	-	-	-	-		
800	47.5	1.7	46.9	4.0	-	-	-	-	-	-		
775	47.3	2.1	46.3	7.6	-	-	-	-	-	-		
750	47.0	3.4	46.1	9.1	-	-	-	-	-	-		
725	46.7	5.2	46.2	4.5	-	-	-	-	-	-		
700	46.3	8.1	46.2	1.2	-	-	-	-	-	-		
675	46.1	9.5	46.1	1.0	-	-	-	-	-	-		
650	46.0	10.3	46.1	1.1	-	-	-	-	-	-		
625	45.9	10.9	46.1	1.2	-	-	-	-	-	-		



Monthly Manual Observations												
Parameter	Temp (°F)						Turb (NTU)					
	6	7	8	2	3	4	5	6	7	13	20	23
Site	DLT	MSS	PMN	SHD	KWK	SPP	RDB	DLT	MSS	PMN		
Value	47.5	44.4	46.6	5.8	1.2	1.2	2.5	11.1	1.2	9.5		
Day of Month	13	20	23	14	6	14	7	13	20	23		

90-5 Required Water Monitoring Details

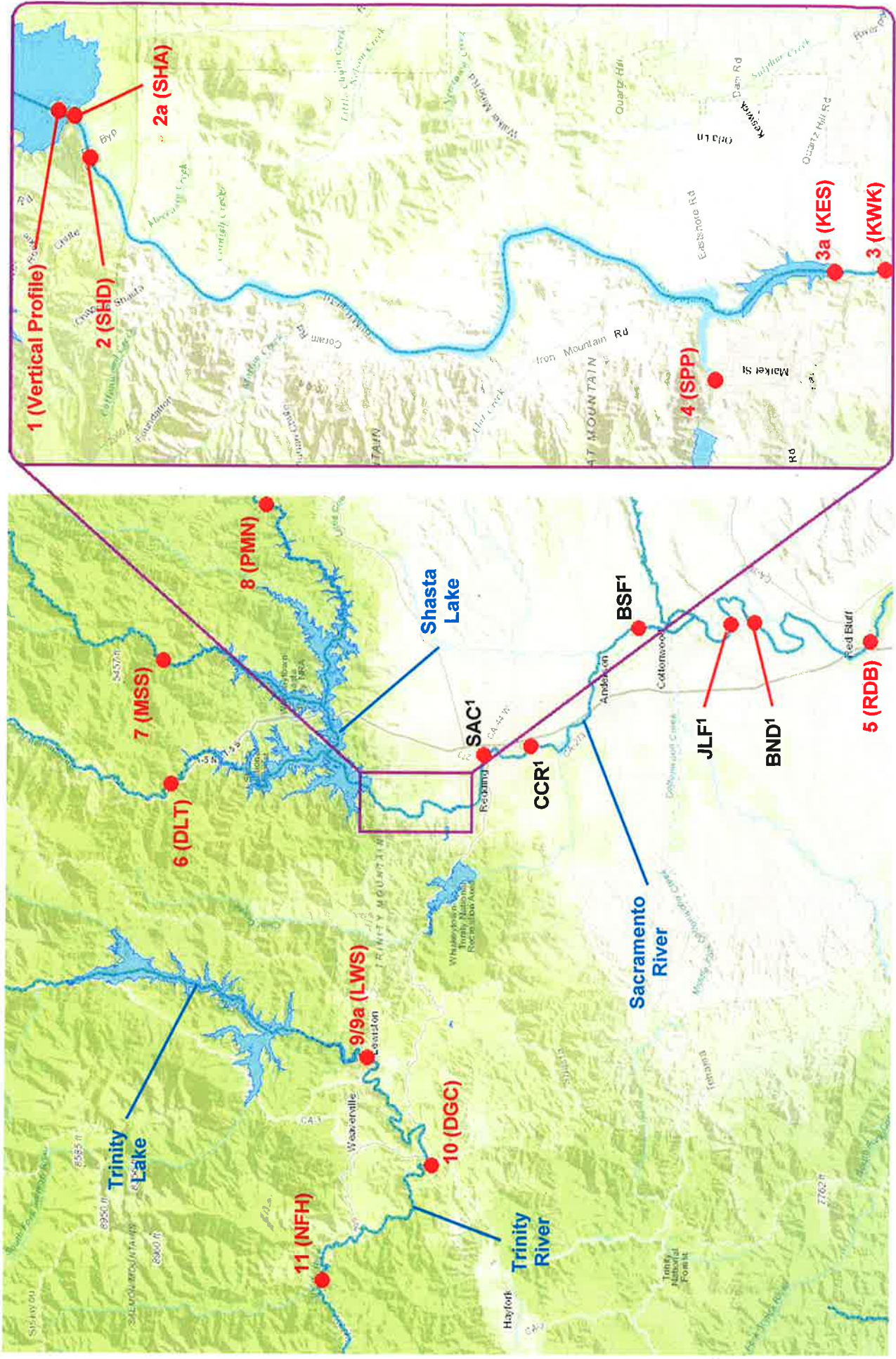
Site	CDEC ID	Description
1	-	Shasta Dam inlets or lake adjacent to the dam face. ¹
2	SHD	Shasta Dam release immediately downstream from the power plant.
2a	SHA	Shasta Dam release.
3	KWK	Sacramento River immediately downstream from Keswick Dam.
3a	KES	Keswick Dam release.
4	SPP	Spring Creek Power Plant release.
5	RDB	Sacramento River downstream from Red Bluff Diversion Dam.
6	DLT ²	Sacramento River (above Shasta Dam).
7	MSS	McCloud River (above Shasta Dam).
8	PMN	Pit River (above Shasta Dam).
9	LWS	Trinity River immediately downstream from Lewiston Dam.
9a	LWS	Lewiston Dam release.
10	DGC	Trinity River at the Douglas City Bridge.
11	NFH	Trinity River at the confluence of the North Fork Trinity River.

	Temperature		Turbidity ³		Dissolved Oxygen ⁴		Flow	
	Frequency	Period	Frequency	Period	Frequency	Period	Frequency	Period
1	Every 2 weeks	5/1 to 11/30	Monthly	All Year	-	-	-	-
2	Average Daily	All Year	Monthly	All Year	Every 2 weeks	5/1 to 9/30	-	-
2a	-	-	-	-	-	-	Average Daily	All Year
3	Average Daily	All Year	-	-	Every 2 weeks	5/1 to 9/30	-	-
3a	-	-	Monthly	All Year	-	-	Average Daily	All Year
4	Average Daily	All Year	Monthly	All Year	-	-	Average Daily	All Year
5	Average Daily ⁵	All Year	Monthly	All Year	Every 2 weeks	5/1 to 9/30	-	-
6	Monthly	All Year	Monthly	All Year	-	-	-	-
7	Monthly	All Year	Monthly	All Year	-	-	-	-
8	Monthly	All Year	Monthly	All Year	-	-	-	-
9	Average Daily	All Year	-	-	-	-	-	-
9a	-	-	-	-	-	-	Average Daily	All Year
10	Average Daily	9/15 to 10/1	-	-	-	-	-	-
11	Average Daily	10/1 to 12/31	-	-	-	-	-	-

Notes

- Take sufficient collection points to characterize the vertical profile for temperature and turbidity.
- Site 6 (DLT) is not accessible year round making it unsuitable for real-time Dissolved Oxygen monitoring do to calibration requirements.
- From 5/1 to 9/30 if turbidity at site 2 is greater than or equal to 10 ntu's then frequency must be weekly.
- To be taken before 10:00 am.
- If the temperature control point is moved upstream from site 5, then temperature monitoring shall continue at the new site.

90-5 Required Water Monitoring Site Map



Notes

¹ SAC, CCR, BSF, JLF and BND are alternative upstream temperature control points to RDB