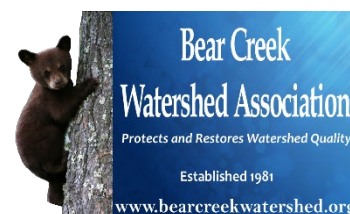


Technical Memorandum BCWA



Date: February 5, 2020
To: Bear Creek Watershed Association
From: Russell N. Clayshulte, Manager

Re: BCWA TM 2019.08 EGL Summary

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Table 1 EGL Data Summary

		Evergreen Lake, Segment 1d						
Site	Parameter (ug/l)	5/17/2019	6/12/2019	7/9/2019	8/14/2019	9/11/2019	10/9/2019	Average
EGL 4a	Total Nitrogen	246	319	271	239	244	204	254
	Phosphorus, total	12	16	12	18	11	21	15
	Chlorophyll a Average	5	2	2	3	6	8	4
EGL 4e	Total Nitrogen	249	317	213	238	275	265	260
	Phosphorus, total	23	24	28	52	38	44	35
								Total
EGL 4a	Total Nitrogen, Pounds/month	33	56	32	18	12	11	161
	Total Phosphorus, Pounds/month	2	3	3	2	1	1	10

Table 2 EGL Field Data Summary

Parameter Summary		5/17/2019	6/12/2019	7/9/2019	8/14/2019	9/11/2019	10/9/2019
Water Column	Dissolved Oxygen 1/2-2m	11.72	10.44	8.51	8.01	8.71	9.43
	Temperature (C) 1/2-2m	10.40	11.55	15.45	16.95	16.88	11.93
	pH water column	7.45	8.02	7.81	8.02	7.46	7.15
	Specific Conductance (us/m)	94.66	60.39	53.93	61.04	61.98	65.22
Flows	Bear Creek Keys (cfs) Monthly Avg	49.0	64.0	43.0	28.0	18.0	19.0
	Bear Creek EGL (cfs) daily	46.5	74.1	77.4	33.5	18.6	12.9

Table 3 Phytoplankton

	10-Jul-19	14-Aug-19	11-Sep-19
Total Density (#/mL):	783	599	1,441
Total Biovolume (um³/mL):	263,519	126,197	1,186,083
Trophic State Index:	40.2	35.0	51.1
Total Species	30	19	16
diatom	24	14	11
cryptophyte	2	2	2
chrysophyte	3	2	2
green	1		1

Table 4 Dominate Phytoplankton Species EGL

Species	Group
Cryptomonas erosa	cryptophyte
Achnanthes minutissima	diatom
Fragilaria vaucheria	diatom
Hannaea arcus	diatom
Melosira ambigua	diatom
Melosira granulata	diatom
Asterionella formosa	diatom
Synedra ulna	diatom
Navicula tripunctata	diatom

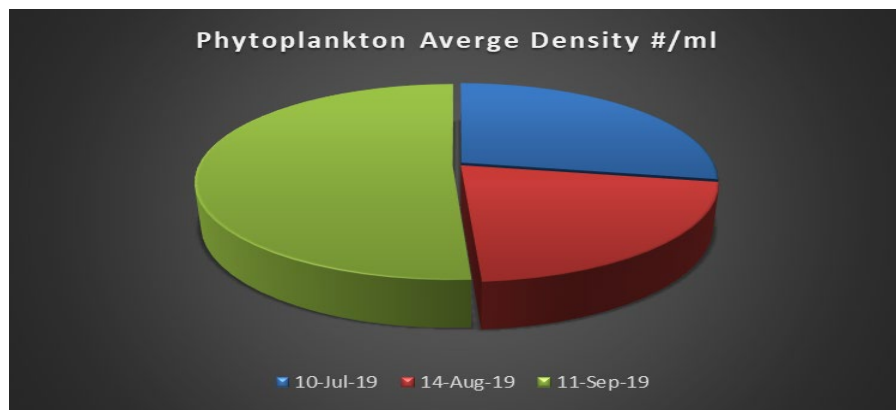


Figure 1 Phytoplankton Average Density

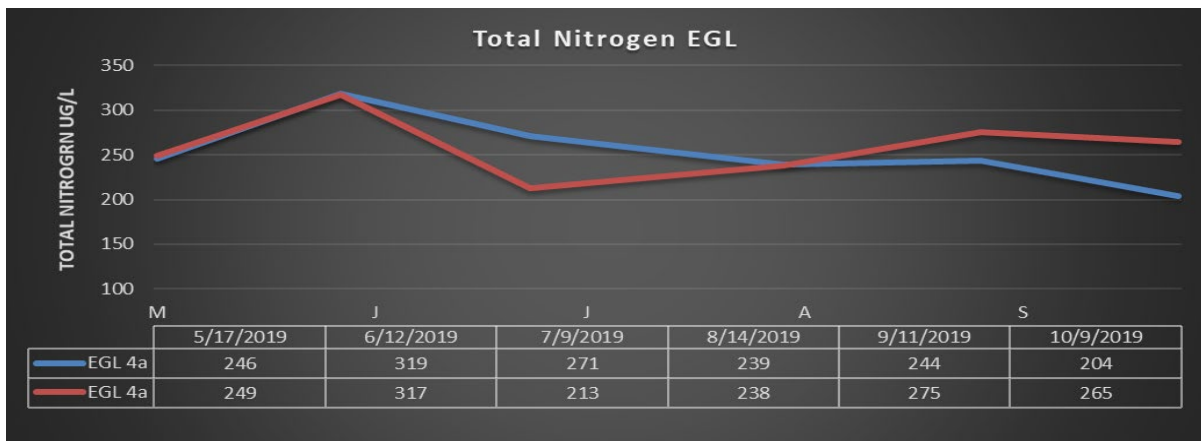


Figure 2 EGL Total Nitrogen

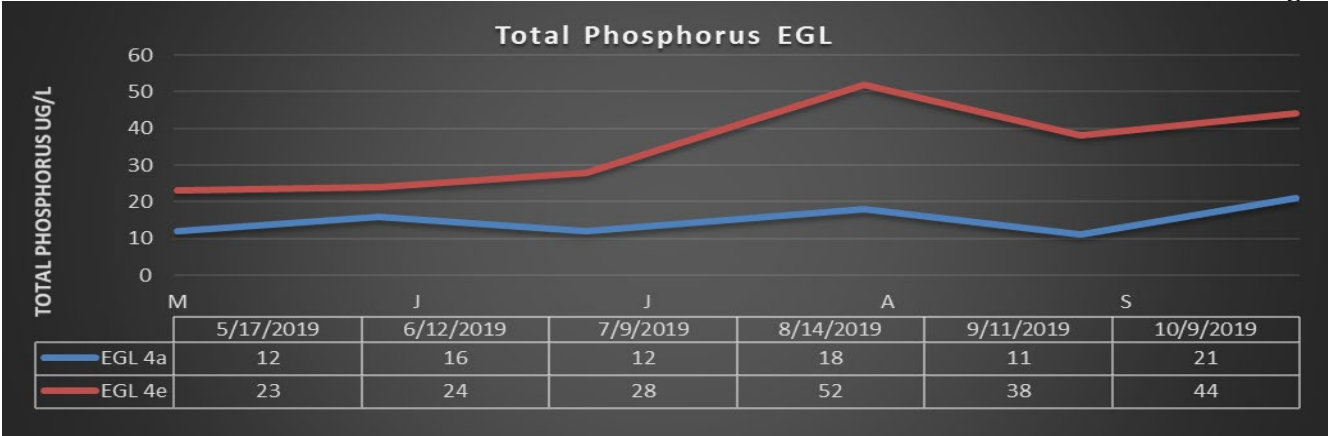


Figure 3 EGL Total Phosphorus Loading

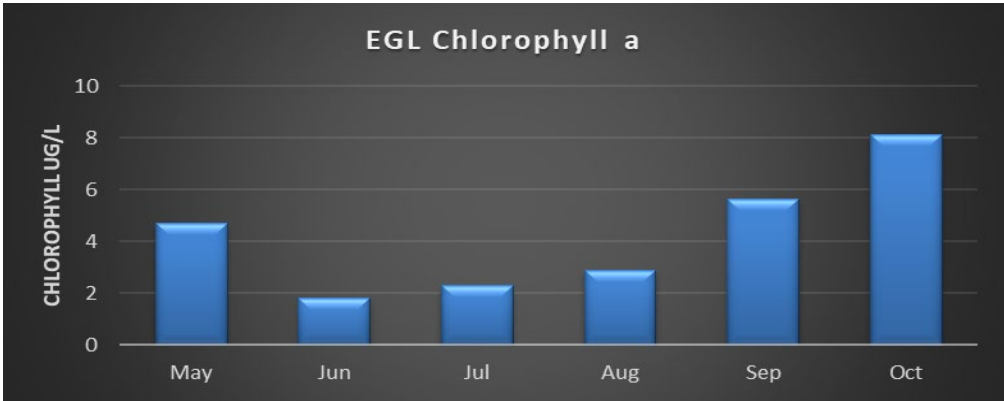


Figure 4 Chlorophyll Trend

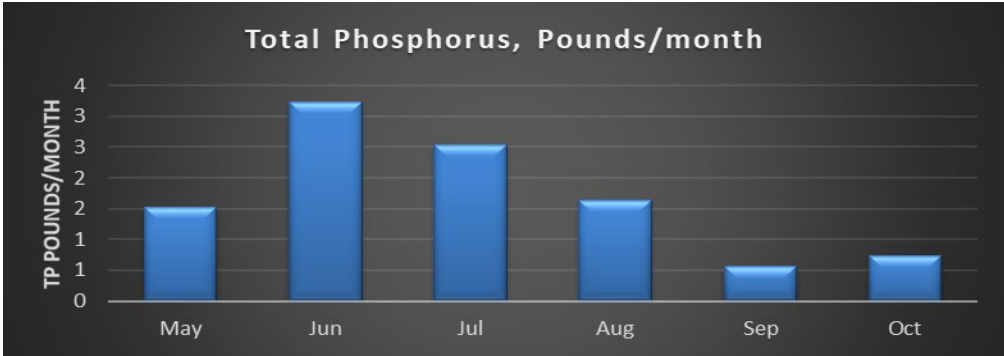


Figure 5 EGL Total Phosphorus

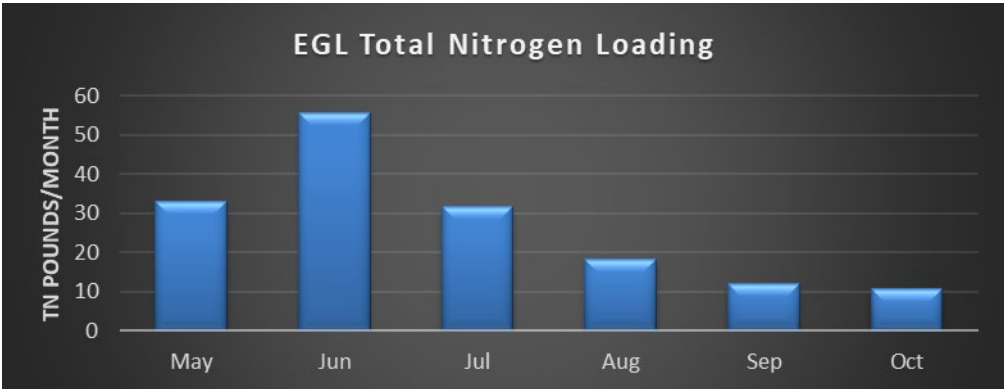


Figure 6 Total Nitrogen Seasonal Load

Table 5 Phytoplankton Data 7/10/2019

7/10/2019	Density	Density	Biovolume	Biovolume	
Species	#/mL	Percent	um ³ /mL	Percent	Group
-	-	-	-	-	-
Chrysococcus rufescens	30	3.9	2,583	1.0	chrysophyte
Dinobryon sertularia	15	1.9	1,823	0.7	chrysophyte
Kephyrion sp.	15	1.9	957	0.4	chrysophyte
Cryptomonas erosa	99	12.6	51,361	19.5	cryptophyte
Rhodomonas minuta	61	7.8	1,216	0.5	cryptophyte
Achnanthes lanceolata	8	1.0	1,368	0.5	diatom
Achnanthes linearis	23	2.9	3,009	1.1	diatom
Achnanthes minutissima	213	27.2	10,637	4.0	diatom
Amphora perpusilla	15	1.9	2,522	1.0	diatom
Cocconeis placentula	8	1.0	3,495	1.3	diatom
Cymbella microcephala	8	1.0	403	0.2	diatom
Cymbella minuta	23	2.9	8,433	3.2	diatom
Diatoma tenue	23	2.9	6,610	2.5	diatom
Fragilaria construens venter	15	1.9	729	0.3	diatom
Fragilaria vaucheria	46	5.8	13,129	5.0	diatom
Gomphonema angustatum	15	1.9	2,735	1.0	diatom
Hannaea arcus	15	1.9	26,592	10.1	diatom
Melosira ambigua	8	1.0	13,425	5.1	diatom
Melosira granulata	23	2.9	87,754	33.3	diatom
Navicula anglica	8	1.0	2,735	1.0	diatom
Navicula cryptocephala	8	1.0	1,406	0.5	diatom
Navicula decussis	15	1.9	2,918	1.1	diatom
Navicula minima	8	1.0	334	0.1	diatom
Navicula pupula	8	1.0	2,051	0.8	diatom
Nitzschia dissipata	15	1.9	4,088	1.6	diatom
Nitzschia frustulum	15	1.9	1,823	0.7	diatom
Nitzschia palea	15	1.9	2,735	1.0	diatom
Pinnularia sp.	8	1.0	3,039	1.2	diatom
Synedra rumpens	15	1.9	2,127	0.8	diatom
Scenedesmus quadricauda	8	1.0	1,482	0.6	green

Table 6 Phytoplankton Data 8/14/2019

8/14/2019	Density	Density	Biovolume	Biovolume	
Species	#/mL	Percent	um ³ /mL	Percent	Group
-	-	-	-	-	-
Chrysooccus rufescens	7	1.1	579	0.5	chrysophyte
Kephyrion sp.	7	1.1	429	0.3	chrysophyte
Cryptomonas erosa	41	6.8	21,243	16.8	cryptophyte
Rhodomonas minuta	95	15.9	1,906	1.5	cryptophyte
Achnanthes clevei	7	1.1	1,021	0.8	diatom
Achnanthes lanceolata	14	2.3	2,451	1.9	diatom
Achnanthes linearis	20	3.4	2,696	2.1	diatom
Achnanthes marginulata	7	1.1	647	0.5	diatom
Achnanthes minutissima	259	43.2	12,936	10.3	diatom
Asterionella formosa	27	4.5	7,190	5.7	diatom
Caloneis ventricosa minuta	7	1.1	1,906	1.5	diatom
Cymbella minuta	41	6.8	15,115	12.0	diatom
Fragilaria vaucheria	7	1.1	1,961	1.6	diatom
Hannaea arcus	14	2.3	23,830	18.9	diatom
Melosira granulata	14	2.3	14,979	11.9	diatom
Navicula minuscula	7	1.1	306	0.2	diatom
Navicula tripunctata	14	2.3	15,251	12.1	diatom
Rhoicosphenia curvata	7	1.1	797	0.6	diatom
Synedra rumpens	7	1.1	953	0.8	diatom

Table 7 Phytoplankton Data 9/11/2019

9/11/2019	Density	Density	Biovolume	Biovolume	
Species	#/mL	Percent	um ³ /mL	Percent	Group
-	-	-	-	-	-
Kephyrion sp.	31	2.2	1,973	0.2	chrysophyte
Kephyrion spirale	94	6.5	5,919	0.5	chrysophyte
Cryptomonas erosa	47	3.3	24,429	2.1	cryptophyte
Rhodomonas minuta	94	6.5	1,879	0.2	cryptophyte
Achnanthes linearis	31	2.2	4,134	0.3	diatom
Achnanthes minutissima	78	5.4	4,698	0.4	diatom
Asterionella formosa	814	56.5	716,589	60.4	diatom
Cyclotella stelligera	16	1.1	861	0.1	diatom
Cymbella minuta	47	3.3	17,382	1.5	diatom
Fragilaria pinnata	16	1.1	940	0.1	diatom
Melosira ambigua	78	5.4	285,931	24.1	diatom
Melosira granulata	47	3.3	85,267	7.2	diatom
Nitzschia dissipata	16	1.1	4,212	0.4	diatom
Synedra ulna	16	1.1	31,163	2.6	diatom
Tetraedron minimum	16	1.1	705	0.1	green