

Appendix N

# Historical Battle Creek Water Quality Data

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This appendix contains water quality measurements made in Battle Creek by a variety of agencies that indicate the general mineral water composition. Water temperature measurements collected by TRPA in 1989 and DWR from 1998 to 2001 are also summarized as daily average values.

**Table N-1.** USGS Water Quality Data for Battle Creek below Coleman National Fish Hatchery (40°23'54" N 122°08'43" W; 5.7 miles upstream from mouth), 1961–1970

Date	Temp (°F)	Flow (cfs)	TSS (mg/L)	TDS (mg/L)	Specific Conductance (: mhos/cm)	pH	Alkalinity (mg/L)	Total Hardness (mg/L)	Ca (mg/L)	Mg (mg/L)
10/5/61		213			148	8.4	71	59		
11/2/61	52	241	3							
11/9/61		241			153	8.1	74	58		
11/21/61	43	245	3							
11/29/61	48	461	12							
12/7/61		304			142	7.9	68	57		
12/20/61	47	709	17							
12/27/61	47	219	9							
1/4/62	45	286	16							
1/11/62		273			147	7.8	67	59		
1/19/62	47	866	121							
2/6/62	47	309	12							
2/9/62	50	1080	69		80	7.4	34	31		
2/15/62	46	2650	149							
2/16/62	46	930	27							
3/9/62	47	530	7							
3/13/62	48	426	7							
3/14/62		417			126	7.6	59	49		
4/6/62	58	484	16							

Date	Temp (°F)	Flow (cfs)	TSS (mg/L)	TDS (mg/L)	Specific Conductance (: mhos/cm)	pH	Alkalinity (mg/L)	Total Hardness (mg/L)	Ca (mg/L)	Mg (mg/L)
4/11/62	458				107	7.9	52	43		
5/3/62	61	512	12							
6/3/62		498		93	106	7.8	48	40	8.0	4.9
6/5/62	59	408	35							
6/8/62		399			114	7.8	54	44		
6/15/62	58	422	12							
7/2/62		268			130	8.1	61	51		
8/1/62		206			146	8.1	69	56		
8/2/62	67	201	4							
9/11/62		170		125	156	8.1	75	60	12.0	7.3
9/26/62	58	188	3							
10/1/62		210			152	8.0	75	57		
10/16/62	51	579	40							
11/1/62		322			135	8.0	66	50		
11/23/62	50	309	5							
12/7/62		417			118	8.1	59	45		
12/19/62	49	704	16							
1/4/63		368			128	7.8	62	49		
1/24/63	45	309	4							
2/4/63		1120			77	7.6	35	29		
2/12/63	51	602	11							
2/28/62		385	9							
3/4/63		365			124	7.9	62	48		
3/21/63	52	355	11							
4/5/63		461			118	8.1	58	45		
4/25/63	51	704	10							
5/3/63		856		86	94	7.9	46	37	7.2	4.6
5/21/63	59	814	25							
6/5/63		520			104	8.0	56	42		
6/27/63	63	372	42							
7/12/63		314			130	8.2	65	51		
8/1/63	64	304	7							
8/2/63		250			137	8.2	68	52		

Date	Temp (°F)	Flow (cfs)	TSS (mg/L)	TDS (mg/L)	Specific Conductance (: mhos/cm)	pH	Alkalinity (mg/L)	Total Hardness (mg/L)	Ca (mg/L)	Mg (mg/L)
9/4/63	64	237	8							
9/12/63		242		119	146	8.2	71	56	10.0	7.5
10/3/63	61	246	5							
10/10/63		278			138	8.0		56		
11/7/63		404			125	8.0		44		
11/8/63	50	555	40							
11/14/63	54	358	12							
12/5/63	40	318	4		137	8.0		52		
12/13/63	45	309	7							
12/31/63	49	309	6							
1/2/64		309			137	8.2		52		
1/16/64	45	296	4							
2/4/64	45	370	5							
2/6/64		352			130	8.2		50		
2/20/64	50	334	4							
3/4/64	50	334	8							
3/12/64		343			139	8.3		49		
3/26/64	52	320	9							
3/31/64		384	11							
4/9/64		384			124	8.2		48		
5/2/64	49	428	6							
5/5/64	50	388	7							
5/7/64		366		110	122	8.0		49	11.0	5.2
6/11/64	59	338	23		114	7.9		45		
7/9/64		235			142	8.3		54		
7/15/64	67	732	8							
8/3/64		182			154	8.5		60		
8/19/64	64	660	17							
9/4/64		190		124	150	8.3		59	11.0	7.7
9/26/64	59	235	7							
10/8/64		222			153	8.1		58		
11/9/64		1300			80	7.3		28		
11/13/64	47	440	6							

Date	Temp (°F)	Flow (cfs)	TSS (mg/L)	TDS (mg/L)	Specific Conductance (: mhos/cm)	pH	Alkalinity (mg/L)	Total Hardness (mg/L)	Ca (mg/L)	Mg (mg/L)
12/10/64		395			132	8.0		48		
12/17/64	42	375	4							
12/22/64	52	9340	722							
12/29/64	42	1250	72							
1/14/65		827			98	8.2		38		
1/19/65	47	748	19							
2/1/65		685			106	8.2		40		
2/28/65	45	585	7							
3/1/65		540			113	8.5		43		
4/1/65	49	530	15							
4/5/65		515			115	7.9		45		
5/6/65	52	645	12	88	99	8.0		39	9.6	3.6
6/14/65		498			107	8.6		41		
6/16/65	61	455	10							
7/12/65		371			123	8.2		46		
8/3/65	69	264	5							
8/13/65		328			130	8.3		51		
9/1/65	61	291	5							
9/13/65		277		124	142	8.1		54	8.8	7.8
10/7/65		272			142	8.3		58		
10/9/65	58	273	3							
11/4/65		272			143	8.2		55		
11/18/65	51	827	102							
12/13/65		380			138	7.8		52		
12/16/65	41	282	7							
1/5/66	46	906	21		85	7.7		34		
2/4/66		844			93	8.1		36		
3/1/66	48	380	20							
3/8/66		377			131	8.1		52		
3/10/66	52	425	12							
3/31/66	53	535	39							
4/11/66	49	620	21							
4/12/66		583			100	8.0		38		

Date	Temp (°F)	Flow (cfs)	TSS (mg/L)	TDS (mg/L)	Specific Conductance (: mhos/cm)	pH	Alkalinity (mg/L)	Total Hardness (mg/L)	Ca (mg/L)	Mg (mg/L)
5/2/66	57	450	10	101	110	7.9		44	8.8	5.4
6/2/66		331			125	8.2		48		
7/6/66		266			142	8.2		55		
9/1/66		190		125	152	8.2		58	10.0	8.0
10/3/66	58	217	5							
11/1/66	54	233	5							
12/2/66	51	632	9							
1/3/67	43	290	5							
2/1/67	48	1260	37							
3/1/67	50	410	6							
4/3/67	49	590	9							
11/2/67	55	244	6							
12/4/67	48	440	8							
1/9/68	45	280	4							
2/12/68	52	464	11							
2/20/68	50	2440	147							
3/19/68	48	608	4							
5/3/68	57	410	8							
6/4/68	61	350	7							
7/31/68	63	220	8							
9/5/68	61	234	14							
10/3/68	54	244	10							
11/21/68	50	324	11							
12/20/68	41	440	7							
1/22/69	41	2630	341							
2/11/69	46	1620	204							
2/17/69	46	1070	19							
3/5/69	45	795	26							
4/7/69	46	970	35							
5/6/69	54	942	31							
6/5/69	61	893	25							
8/11/69	63	324	10							
9/19/69	59	297	12							

Date	Temp (°F)	Flow (cfs)	TSS (mg/L)	TDS (mg/L)	Specific Conductance (: mhos/cm)	pH	Alkalinity (mg/L)	Total Hardness (mg/L)	Ca (mg/L)	Mg (mg/L)
10/6/69	52	306	6							
11/3/69	58	316	4							
12/15/69	49	618	10							
12/20/69	53	2820	112							
1/7/70	45	466	7							
1/14/70	48	4380	383							
1/19/70	50	1690	79							
1/30/70	45	1590	109							
2/18/70	46	905	30							
3/9/70	47	1060	65							
3/20/70	50	710	10							
4/9/70	54	710	7							
5/8/70	55	604	13							
6/11/70	58	541	24							
7/6/70	66	473	7							
8/27/70	60	281	4							

**Table N-1 Continued.** USGS Water Quality Data for Battle Creek below Coleman National Fish Hatchery (40°23'54" N 122°08'43" W; 5.7 miles upstream from mouth), 1961–1970

Date	Na (mg/L)	K (mg/L)	Cl (mg/L)	F (mg/L)	SO <sub>4</sub> (mg/L)	B (: g/L)	SiO <sub>2</sub> (mg/L)	NO <sub>3</sub> -N (mg/L)
10/5/61	8.4							
11/2/61								
11/9/61	8.7		2.4			100		
11/21/61								
11/29/61								
12/7/61	7.7		1.5			100		
12/20/61								
12/27/61								
1/4/62								
1/11/62	7.9		4.2			0		
1/19/62								
2/6/62								

Date	Na (mg/L)	K (mg/L)	Cl (mg/L)	F (mg/L)	SO <sub>4</sub> (mg/L)	B (: g/L)	SiO <sub>2</sub> (mg/L)	NO <sub>3</sub> -N (mg/L)
2/9/62	4.3		1.1			0		
2/15/62								
2/16/62								
3/9/62								
3/13/62								
3/14/62	6.6		2.0			100		
4/6/62								
4/11/62	6.5		1.2			300		
5/3/62								
6/3/62	5.9	1.7	1.5	0.00	3.4	0	39	0.00
6/5/62								
6/8/62	6.3		1.3			100		
6/15/62								
7/2/62	7.9		1.8			0		
8/1/62	9.2		4.3			0		
8/2/62								
9/11/62	9.1	2.1	2.5	0.01	1.0	0	45	0.07
9/26/62								
10/1/62	9.6		2.8			200		
10/16/62								
11/1/62	7.8		1.2			0		
11/23/62								
12/7/62	6.6		0.1			0		
12/19/62								
1/4/63	7.3		3.5			0		
1/24/63								
2/4/63	3.9		1.0			0		
2/12/63								
2/28/62								
3/4/63	6.6		3.6			0		
3/21/63								
4/5/63	6.3		2.1			0		
4/25/63								
5/3/63	5.0	1.5	1.5	0.10	0.0	0	37	1.00



Date	Na (mg/L)	K (mg/L)	Cl (mg/L)	F (mg/L)	SO <sub>4</sub> (mg/L)	B (: g/L)	SiO <sub>2</sub> (mg/L)	NO <sub>3</sub> -N (mg/L)
5/21/63								
6/5/63	5.6		1.2			100		
6/27/63								
7/12/63	7.2		1.8			0		
8/1/63								
8/2/63	7.4		1.5			200		
9/4/63								
9/12/63	7.8	1.8	2.0	0.01	1.0	0	45	0.05
10/3/63								
10/10/63	7.6		3.9			0		
11/7/63	7.0		2.0			100		
11/8/63								
11/14/63								
12/5/63	8.0		3.4			0		
12/13/63								
12/31/63								
1/2/64	8.0		3.6			0		
1/16/64								
2/4/64								
2/6/64	8.5		3.0			0		
2/20/64								
3/4/64								
3/12/64	8.6		3.2			100		
3/26/64								
3/31/64								
4/9/64	7.5		3.0			0		
5/2/64								
5/5/64								
5/7/64	6.9	1.8	3.2	0.0	3.0	100	43	1.0
6/11/64	7.0		1.0			0		
7/9/64	8.2		1.0			100		
7/15/64								
8/3/64	9.0		3.0			0		
8/19/64								

Date	Na (mg/L)	K (mg/L)	Cl (mg/L)	F (mg/L)	SO <sub>4</sub> (mg/L)	B (: g/L)	SiO <sub>2</sub> (mg/L)	NO <sub>3</sub> -N (mg/L)
9/4/64	8.3	3.1	2.1		2.0	100	46	0.8
9/26/64								
10/8/64	8.1		1.9			0		
11/9/64	4.4		2.1			100		
11/13/64								
12/10/64	7.1		1.4			0		
12/17/64								
12/22/64								
12/29/64								
1/14/65	5.3		1.1			0		
1/19/65								
2/1/65	5.8		1.0			0		
2/28/65								
3/1/65	5.7		1.0			0		
4/1/65								
4/5/65	6.2		1.3			0		
5/6/65	5.3	2.1	1.1		1.0	0	37	1.4
6/14/65	5.8		1.2			0		
6/16/65								
7/12/65	7.1		1.3			0		
8/3/65								
8/13/65	7.4		1.7			0		
9/1/65								
9/13/65	8.3	2.0	2.0		3.0	0	48	0.2
10/7/65	8.2		1.3			0		
10/9/65								
11/4/65	8.1		1.3			0		
11/18/65								
12/13/65	7.6		2.1			0		
12/16/65								
1/5/66	5.0		1.6			0		
2/4/66	4.9		1.4			100		
3/1/66								
3/8/66	7.1		0.9			0		

Date	Na (mg/L)	K (mg/L)	Cl (mg/L)	F (mg/L)	SO <sub>4</sub> (mg/L)	B (: g/L)	SiO <sub>2</sub> (mg/L)	NO <sub>3</sub> -N (mg/L)
3/10/66								
3/31/66								
4/11/66								
4/12/66	5.4		0.6			0		
5/2/66	6.1	1.6	1.3		3.0	0	35	0.5
6/2/66	7.0		1.2			0		
7/6/66	7.9		1.4			0		
9/1/66	9.2	2.3	1.8		3.0	0	46	0.1
10/3/66								
11/1/66								
12/2/66								
1/3/67								
2/1/67								
3/1/67								
4/3/67								
11/2/67								
12/4/67								
1/9/68								
2/12/68								
2/20/68								
3/19/68								
5/3/68								
6/4/68								
7/31/68								
9/5/68								
10/3/68								
11/21/68								
12/20/68								
1/22/69								
2/11/69								
2/17/69								
3/5/69								
4/7/69								
5/6/69								

Date	Na (mg/L)	K (mg/L)	Cl (mg/L)	F (mg/L)	SO <sub>4</sub> (mg/L)	B (: g/L)	SiO <sub>2</sub> (mg/L)	NO <sub>3</sub> -N (mg/L)
6/5/69								
8/11/69								
9/19/69								
10/6/69								
11/3/69								
12/15/69								
12/20/69								
1/7/70								
1/14/70								
1/19/70								
1/30/70								
2/18/70								
3/9/70								
3/20/70								
4/9/70								
5/8/70								
6/11/70								
7/6/70								
8/27/70								

Source: U.S. Geological Survey; U.S. Environmental Protection Agency STORET database.

**Table N-2.** EPA Water Quality Data for Battle Creek below Coleman Powerhouse  
(40°23'54" N 122°08'10" W), 1971–1972

Date	BOD <sub>5</sub> (mg/L)	Alkalinity (mg/L)	Total Hardness (mg/L)	Total Residue (mg/L)	TSS (mg/L)	NH <sub>3</sub> +NH <sub>4</sub> (mg/L)	NO <sub>2</sub> -N (mg/L)
7/14/71	3.5	75	102	66	15.0	0.02	0.20
8/10/71	2.3	88	116	97	8.0	0.05	0.03
9/13/71	1.8	73	100	68	10.0	0.01	0.02
10/21/71	1.2	70	110	69	11.0	0.04	0.06
11/8/71	2.1	72	85	72	16.0	0.10	0.05
12/20/71	3.1	74	73	146	12.0	0.30	0.02
1/10/72	2.0	75	52	115	3.7	0.33	0.09
2/14/72	2.3	70	52	112	2.5	0.35	0.10
3/15/72	2.5	56	45	110	2.1	0.30	0.10
4/10/72	3.0	54	50	110	3.7	0.30	0.14
5/8/72	4.0	66	72	120	3.0	0.26	0.14
6/15/72	2.8	68	60	124	2.0	0.20	0.09

**Table N-2 Continued.** EPA Water Quality Data for Battle Creek below Coleman Powerhouse  
(40°23'54" N 122°08'10" W), 1971–1972

Date	NO <sub>3</sub> -N (mg/L)	Total Kjeldahl N (mg/L)	Total PO <sub>4</sub> (mg/L)	OrthoPO <sub>4</sub> (mg/L)	Total Coliforms (100/mL)	Fecal Coliforms (100/mL)
7/14/71	0.10	0.14	0.36	0.03	10	0
8/10/71	0.11	0.20	0.40	0.03	32	0
9/13/71	0.15	0.20	0.30	0.03	75	0
10/21/71	0.14	0.30	0.23	0.05		
11/8/71	0.17	0.42	0.43	0.04		
12/20/71	0.14	0.75	0.73	0.03		
1/10/72	0.20	0.65	0.35	0.15	32	3
2/14/72	0.38	0.88	0.33	0.30		
3/15/72	0.16	0.58	0.45	0.28		
4/10/72	0.14	0.59	0.46	0.30		
5/8/72	0.12	0.58	0.70	0.29		
6/15/72	0.10	0.45	0.88	0.30		

Source: U.S. Environmental Protection Agency (USEPA) Region 1, USEPA STORET database.

**Table N-3.** DWR Water Quality Data for Battle Creek Below Coleman National Fish Hatchery (40°23'54" N 122°08'43" W; 5.7 miles upstream from mouth), 1988–1989

Date	Time	Temp (°F)	Specific Conductance (: mhos/cm)	Turbidity (NTU)	D.O. (mg/L)	pH	Alkalinity (mg/L)	Total Hardness (mg/L)	Ca mg/L	Mg mg/L	Na mg/L	SO <sub>4</sub> mg/L	B mg/L
<b>1988</b>													
3/16	0930	49	142		12.0	7.5		54	10	7	7	3	<0.1
6/13	0508	60	160	1.0	6.5	7.3	78						
6/13	1000	66	126	0.8	11.7	7.8	68						
6/13	1400	68	135	0.7	10.4	8.2	65						
6/13	1940	66	140	0.9	7.7	8.1	62						
6/13	2110	66	143	0.9	8.3	7.9	64						
6/14	0215	63	142	0.8	8.3	7.3	63						
6/14	0505	61	160	1.1	7.2	7.2	65						
6/14	1010	67	145	1.9	10.2	8.1							
6/14	1400	69	140	1.1	9.6	7.8	65						
6/14	1910	67	141	1.1	8.3	7.9							
6/14	2100	67	158	1.1	8.2	7.9	66						
6/15	0150	64	155	1.0	8.3	7.9							
9/12	0505	59	87	0.4	8.2	7.3	76						
9/12	0910	60	165	0.9	10.7	7.5							
9/12	1330	65	258	0.5	11.0	8.3							
9/12	1715	64	176	0.4	10.1	8.6	75						
9/12	2135	64	120	0.5	8.6	7.9							
9/13	0125	59	160	0.5	9.0	7.6							
9/13	0515	66	156	0.6	9.3	7.7							
9/13	0930	59	160	0.5	10.6	8.0	75	64	11	9	9	3	<0.1
9/13	1320	63	165	0.5	11.2	8.1							
9/13	1820	62	170	0.5	8.5	8.2							
9/13	2115	61	137	0.5	8.7	8.0							
9/14	0050	60	162	0.5	9.6	7.6	75						
<b>1989</b>													
3/20	0615	48	67	5.0	11.0	7.2							
3/20	1005	50	88	3.5	11.8	7.3	42						
3/20	1435	52	112		10.8	7.5							
3/20	1915	54	95	2.6	10.3	7.5							

Date	Time	Temp (°F)	Specific				pH	Alkalinity (mg/L)	Total					
			Conductance (: mhos/cm)	Turbidity (NTU)	D.O. (mg/L)	Hardness (mg/L)			Ca mg/L	Mg mg/L	Na mg/L	SO <sub>4</sub> mg/L	B mg/L	
3/20	2220	52	105	2.8	10.6	7.3								
3/21	0235	52	30	2.5	3.2	7.2	45							
3/21	0615	51	117	2.4	10.6	7.1								
3/21	1105	53	96	2.1	10.6	7.2		38	7	5	5	2	<0.1	
3/21	1505	55	122	3.0	11.2	7.3	46							
3/21	1815	55	100	3.1	10.8	7.4								
3/21	2220	53	108	3.2	10.6	7.3								
3/22	0240	52	97	3.1	10.5	7.3	46							
8/14	0600	69	120	0.7	8.1	7.8	85							
8/14	0910	66	153	0.6	10.2	8.1								
8/14	1325	70	173	0.7	9.8	8.1	82							
8/14	1710	73	156	0.6	8.6	8.3	75							
8/14	2140	68	158	0.9	8.8	8.5								
8/15	0115	64	156	0.7	8.6	8.2	75							
8/15	0530	63	148	0.9	8.5	7.9								
8/15	0916	67	157	0.7	9.8	8.1		58	10	8	9	2	<0.1	
8/15	1435	74	154	0.8	9.1	8.1	83							
8/15	1725	70	153	0.9	8.6	8.4								
8/15	2125	66	150	0.9	8.3	8.6								
8/16	0120	68	147	0.6	8.6	8.3	80							

**Table N-3 Continued.** DWR Water Quality Data for Battle Creek Below Coleman Fish Hatchery (40°23'54" N 122°08'43" W; 5.7 miles upstream from mouth), 1988–1989

Date	Time	Cl mg/L	Br mg/L	Cd µg/L	Cu µg/L	Fe mg/L	Pb µg/L	Mn µg/L	Hg µg/L	Zn µg/L	NH <sub>3</sub> <sup>+</sup>	NO <sub>2</sub> <sup>+</sup>	Ortho PO <sub>4</sub> mg/L	Total P mg/L	
											Org N mg/L	NO <sub>3</sub> mg/L			NO <sub>3</sub> mg/L
<b>1988</b>															
3/16	0930	2	0.02	<5	<5	0.1	<5	7	<1	<5	0.2		0.07	0.04	0.08
6/13	0508														
6/13	1000														
6/13	1400														
6/13	1940														
6/13	2110														

Date	Time	Cl mg/L	Br mg/L	Cd µg/L	Cu µg/L	Fe mg/L	Pb µg/L	Mn µg/L	Hg µg/L	Zn µg/L	NH <sub>3</sub> <sup>+</sup> Org N mg/L	NO <sub>2</sub> <sup>+</sup> NO <sub>3</sub> mg/L	NO <sub>3</sub> mg/L	Ortho PO <sub>4</sub> mg/L	Total P mg/L
6/14	0215														
6/14	0505														
6/14	1010														
6/14	1400														
6/14	1910														
6/14	2100														
6/15	0150														
9/12	0505														
9/12	0910														
9/12	1330														
9/12	1715														
9/12	2135														
9/13	0125														
9/13	0515														
9/13	0930	2	<1.00	<5	<5	<0.1	<5	7	<1	33	0.5		0.03	0.03	0.05
9/13	1320														
9/13	1820														
9/13	2115														
9/14	0050														
<b>1989</b>															
3/20	0615														
3/20	1005														
3/20	1435														
3/20	1915														
3/20	2220														
3/21	0235														
3/21	0615														
3/21	1105	1		<5	<5	0.2	<5	47	<1	13	0.4		0.13	0.02	0.04
3/21	1505														
3/21	1815														
3/21	2220														
3/22	0240														
8/14	0600														



Date	Time	Cl mg/L	Br mg/L	Cd µg/L	Cu µg/L	Fe mg/L	Pb µg/L	Mn µg/L	Hg µg/L	Zn µg/L	NH <sub>3</sub> <sup>+</sup> Org N mg/L	NO <sub>2</sub> <sup>+</sup> NO <sub>3</sub> mg/L	NO <sub>3</sub> mg/L	Ortho PO <sub>4</sub> mg/L	Total P mg/L
8/14	0910														
8/14	1325														
8/14	1710														
8/14	2140														
8/15	0115														
8/15	0530														
8/15	0916	22		<5	<5	<0.1	<5	37	<1	11	0.4	0.01		0.02	0.05
8/15	1435														
8/15	1725														
8/15	2125														
8/16	0120														

Source: California Department of Water Resources (DWR), Red Bluff.

**Table N-4.** EPA Water Quality Data for Battle Creek below Coleman Powerhouse  
(40°23'54" N 122°08'10" W), 1971-1972

Date	BOD5 (mg/L)	Alkalinity (mg/L)	Total Hardness (mg/L)	Total Residue (mg/L)	TSS (mg/L)	NH <sub>3</sub> +NH <sub>4</sub> (mg/L)	NO <sub>2</sub> -N (mg/L)
7/14/71	3.5	75	102	66	15.0	0.02	0.20
8/10/71	2.3	88	116	97	8.0	0.05	0.03
9/13/71	1.8	73	100	68	10.0	0.01	0.02
10/21/71	1.2	70	110	69	11.0	0.04	0.06
11/8/71	2.1	72	85	72	16.0	0.10	0.05
12/20/71	3.1	74	73	146	12.0	0.30	0.02
1/10/72	2.0	75	52	115	3.7	0.33	0.09
2/14/72	2.3	70	52	112	2.5	0.35	0.10
3/15/72	2.5	56	45	110	2.1	0.30	0.10
4/10/72	3.0	54	50	110	3.7	0.30	0.14
5/8/72	4.0	66	72	120	3.0	0.26	0.14
6/15/72	2.8	68	60	124	2.0	0.20	0.09

**Table N-4 Continued.** EPA Water Quality Data for Battle Creek below Coleman Powerhouse  
(40°23'54" N 122°08'10" W), 1971-1972

Date	NO <sub>3</sub> -N (mg/L)	Total Kjeldahl N (mg/L)	Total PO <sub>4</sub> (mg/L)	OrthoPO <sub>4</sub> (mg/L)	Total Coliforms (100/mL)	Fecal Coliforms (100/mL)
7/14/71	0.10	0.14	0.36	0.03	10	0
8/10/71	0.11	0.20	0.40	0.03	32	0
9/13/71	0.15	0.20	0.30	0.03	75	0
10/21/71	0.14	0.30	0.23	0.05		
11/8/71	0.17	0.42	0.43	0.04		
12/20/71	0.14	0.75	0.73	0.03		
1/10/72	0.20	0.65	0.35	0.15	32	3
2/14/72	0.38	0.88	0.33	0.30		
3/15/72	0.16	0.58	0.45	0.28		
4/10/72	0.14	0.59	0.46	0.30		
5/8/72	0.12	0.58	0.70	0.29		
6/15/72	0.10	0.45	0.88	0.30		

Source: U.S. Environmental Protection Agency (USEPA) Region 1, USEPA STORET database.

**Table N-5. SWRCB Water Quality Data for Battle Creek below Coleman Powerhouse  
(40°23'54" N 122°08'06" W), 1955-1989**

Date	Temp (°F)	Flow (cfs)	D.O. (mg/L)	Turbidity (NTU)	Specific Conductance (: mhos/cm)	TDS (mg/L)	pH	Alkalinity (mg/L)	Total Hardness (mg/L)	Ca mg/L	Mg mg/L	Na mg/L	K mg/L
1/28/55	46	300	10.7	1	133		7.4		52	11.0	5.8	7.6	2.0
4/28/58	59	700	9.2		102		7.4	51	38	7.8	4.5	6.2	2.0
5/21/58	58	750	8.8	2	76		7.8		30	6.0	3.6	4.1	1.3
6/26/58	66		8.0		100		7.9	48	40	7.8	5.0	5.0	1.5
7/25/58	72	500	8.5		121		7.2	57	44	8.6	5.5	6.4	2.0
8/27/58	62	400	8.2		142		7.5	67	53	12.0	5.6	7.6	2.3
9/19/58	63		10.0		149		7.8	69	54	9.5	7.4	9.0	2.4
10/24/58	55	280	6.3		148		7.4	66	53	9.4	7.2	8.0	2.4
11/14/58	58	300			146		7.6		52	8.4	7.5	7.6	2.4
12/23/58	47		10.3		139		7.6	69	54	9.6	7.3	8.2	2.3
1/5/59		350			111		7.5	47	44	7.6	6.1	6.6	1.9
2/9/59	42	290			134		7.8	65	54	10.0	7.1	7.7	2.1
3/11/59	51		12.0		122		7.4	58	46	9.6	5.5	6.5	1.9
4/15/59	57		10.6		117		7.7	58	48	8.8	6.3	6.5	1.4
5/15/59	54		10.9	3	118		7.8		45	8.0	6.1	6.5	1.9
6/16/59	63		10.0		135		8.1	65	52	9.2	7.1	7.5	1.8
7/9/59	64	700	8.7		154		8.1	69	54	12.0	5.8	8.7	2.6
8/11/59	63		9.4	20	152		7.9	72	60			9.1	1.5
9/1/59	59		10.2	10	148		8.0		58	11.0	7.4	8.8	2.2
10/13/59	56		10.0	2	149		7.8	75	58			10.0	3.5
11/11/59	49		11.4	4	149		7.8	74	58			9.7	
12/10/59	44		12.6	4	147		7.8	74	58			9.0	
1/14/60	42		11.5	2	147		7.9	72	57			8.8	
2/24/60	48		11.0	35	123		7.6	63	57			7.2	
3/7/60	53		10.0	125	68		7.2	30	26			2.7	
4/11/60	57		10.0	15	117		7.8	54	48			5.6	
5/11/60	59	600	9.9	25	108		7.7		46	7.6	6.6	5.7	2.1
6/13/60	68		9.2	4	116		7.8	24	48			5.6	
7/12/60	64	350	10.0	1	142		8.0	72	54			16.0	
8/8/60	63	90	9.5	1	149		8.0	77	58			8.8	
9/5/60	65	200	10.1	3	149		7.6		58	11.0	7.4	11.0	2.4

Date	Temp (°F)	Flow (cfs)	D.O. (mg/L)	Turbidity (NTU)	Specific Conductance (: mhos/cm)	TDS (mg/L)	pH	Alkalinity (mg/L)	Total Hardness (mg/L)	Ca mg/L	Mg mg/L	Na mg/L	K mg/L
10/10/60	54	179	10.5	2	149		8.0	71	59			8.5	
11/7/60	56	171	10.9	4	154		7.9	73	58			9.2	
12/12/60	47	255	11.6	3	140		8.0	71	57			8.5	
1/3/61	43	233	11.6	5	144		7.9	71	58			8.5	
2/15/61	52	1320	10.8	20	95		7.9	42	38			4.2	
3/14/61	55	271	11.4	3	127		8.1	63	51			7.5	
4/11/61	53	409	10.4	1	118		7.9	53	47			6.6	
5/2/61	52	379	10.2	5	113		8.0		43	9.2	4.9	7.9	1.8
6/6/61	58	367	8.4	1	109		8.1	51	43			6.0	
7/6/61	65	233	10.1	4	135		8.1	64	52			7.9	
8/8/61	65	180	9.5	3	145		8.1	71	56			8.5	
9/7/61	63	200	10.3	3	153		8.3		56	10.0	7.5	8.4	2.2
10/5/61	65	217	10.4	10	148		8.4	72	59			8.4	
11/9/61	51	225	11.2	5	153		8.1	74	58			8.7	
12/7/61	46	305	11.2	5	142		7.9	68	57			7.7	
1/11/62	47	280	10.2	2	147		7.8	67	59			7.9	
2/9/62	51	1530	10.5	20	80		7.4	34	31			4.3	
3/14/62	48	432	11.4	5	126		7.6	59	49			6.6	2.0
4/11/62	55	460	10.9	4	107		7.9	52	43			6.5	
5/3/62	60	470	10.0	2	106		7.8	48	40	8.0	4.7	5.9	1.7
6/8/62	64	400	9.6	10	114		7.8	54	44			6.3	
7/2/62	66	230	9.5	2	130		8.1	61	51			7.9	
8/1/62	70	222	9.5	5	146		8.1	69	56			9.2	4.3
9/11/62	65	138	10.4	3	156	133	8.1	75	60	12.0	7.3	9.1	2.1
10/1/62	62	217	11.5	10	152		8.0	75	57			9.6	
11/1/62	57	277	10.4	5	135		8.0	66	50			7.8	
12/7/62	50	380	11.6	3	118		8.1	59	45			6.6	
1/4/63	46	355	11.7	2	128		7.8	62	49			7.3	
2/4/63	51	1060	11.0	9	77		7.6	35	29			3.9	
3/4/63	47	398	12.7	1	124		7.9	62	48			6.6	
4/5/63	53	470	10.7	3	118		8.1	58	45			6.3	
5/3/63	55	990	10.1	6	94	82	7.9	46	37	7.2	4.6	5.0	1.5
6/5/63	63	510	10.1	1	104		8.0	56	42			5.6	

Date	Temp (°F)	Flow (cfs)	D.O. (mg/L)	Turbidity (NTU)	Specific Conductance (: mhos/cm)	TDS (mg/L)	pH	Alkalinity (mg/L)	Total Hardness (mg/L)	Ca mg/L	Mg mg/L	Na mg/L	K mg/L
7/12/63	65	322	9.8	1	130		8.2	65	51			7.2	
8/2/63	63	235	10.1	6	137		8.2	68	52			7.4	
9/12/63	60	300	9.8	3	146	115	8.2	71	56	10.0	7.5	7.8	1.8
10/10/63	57	278	10.1	1	138		8.0	71	56			7.6	
11/7/63	50	420	11.0	15	125		8.0	59	44			7.0	
12/5/63	48	322	12.1	1	137		8.0	66	52			8.0	
1/2/64	46	318	11.9	2	137		8.2	67	52			8.0	
2/6/64	45	370	12.7	2	130		8.2	62	50			8.5	
3/12/64	47	345	12.5	1	139		8.3	67	49			8.6	
4/9/64	54	426	11.1	2	124		8.2	57	48			7.5	
5/7/64	55	365	11.0	2	122	102	8.0	58	49	11.0	5.2	6.9	1.8
6/11/64	57	390	10.5	3	114		7.9	54	45			7.0	
7/9/64	65		9.9	2	142		8.3	68	54			8.2	
8/3/64	63	190	9.9	1	154		8.5	75	60			9.0	
9/4/64	63	204	10.1	3	150	112	8.3	72	59	11.0	7.7	8.3	3.1
10/8/64	58	271	10.0	1	153		8.1	72	58			8.1	
11/9/64	52	2100	10.7	40	80		7.2	23	28			4.4	
12/10/64	50	356	9.6	3	132		8.0	61	48			7.1	
1/14/65	47	806	10.3	5	98		8.2	44	38			5.3	
2/1/65	48	664	10.4	4	106		8.2	49	40			5.8	
3/1/65	50	532	10.2	1	113		8.5	53	43			5.7	
4/3/65	53	537	9.3	5	115		7.9	54	45			6.2	
5/6/65	52	658	9.5	3	99	82	8.0	44	39	9.6	3.6	5.3	2.1
6/14/65	57	505	8.2	6	107		8.6	49	41			5.8	
7/12/65	67	380	8.6	1	123		8.2	59	46			7.1	
8/13/65	61	307	9.6	5	130		8.3	61	51			7.4	
9/13/65	59	284	10.3	1	142	124	8.1	69	54	8.8	7.8	8.3	2.0
10/7/65	58	296	10.0	1	142		8.3	70	58			8.2	
11/4/65	55	325	10.8	1	143		8.2	69	55			8.1	
12/13/65	46	330	12.0	3	138		7.8	64	52			7.6	
1/5/66	46	906	11.3	10	85		7.7	38	34			5.0	
2/4/66	47	815	11.5	5	93		8.1	41	36			4.9	
3/8/66	52	376	12.2	2	131		8.1	63	52			7.1	

Date	Temp (°F)	Flow (cfs)	D.O. (mg/L)	Turbidity (NTU)	Specific Conductance (: mhos/cm)	TDS (mg/L)	pH	Alkalinity (mg/L)	Total Hardness (mg/L)	Ca mg/L	Mg mg/L	Na mg/L	K mg/L
4/12/66	54	589	11.3	5	100		8.0	47	38			5.4	
5/2/66	57	450	10.6	1	110	101	7.9	54	44	8.8	5.4	6.1	1.6
6/2/66	56	312	10.7	1	125		8.2	60	48			7.0	
7/6/66	62	275	10.5	1	142		8.2	69	55			7.9	
9/1/66	60	250	9.5	2	152	119	8.2	75	58	10.0	8.0	9.2	2.3
11/2/66	53	250	11.7	1	152		8.2	74	60	11.0	7.8	9.1	2.4
1/10/67	48	304	12.1	1	140		8.2	67	54	9.8	7.0	8.2	2.0
3/6/67	49	390	12.3	1	128		8.0	62	50	9.5	6.6	7.4	1.9
5/4/67	54	686	11.3	1	110	101	7.8	52	42	8.0	5.4	5.8	1.7
7/5/67	65	579	9.5	2	106		7.9	46	40			5.6	
9/6/67	64	254	9.5		144	123	8.2	69	54	9.8	7.1	8.5	2.2
11/2/67	55	258	10.6	2	147		8.0	69	55			8.3	
1/16/68	44	1240	11.6	25	81		7.7	34	33			3.6	
3/7/68	49	632	11.3	5	112		7.9	51	48			5.0	
5/1/68	57	425	10.6	2	117	102	7.9	55	44	8.3	5.7	6.8	1.2
7/5/68	68	258	9.4	5	146		8.3	68	62			8.0	
9/3/68	64	240	10.6	2	152	130	7.8	71	57	10.0	7.8	9.2	2.4
11/4/68	52	372	11.4		131		8.1	59	54			7.4	
1/6/69	46	423	12.2		129		8.0	61	56			6.9	
5/1/69	55	907	11.7		89	66	7.6	41	34	5.5	5.0	4.2	1.5
9/3/69	62	320	10.4		139	115	7.9	69	58	9.7	8.3	7.2	1.6
1/7/70	43	472	13.0	2	124		7.6	60	48			6.6	
5/7/70	54	449	11.7	2	119	91	7.9	58	45	8.1	6.1	7.2	1.7
10/7/70	54	305	11.6	7	146	116	8.3	68	58	9.8	8.1	8.2	2.2
2/8/71	48	546	12.3	3	120	86	8.1	58	47	11.0	4.7	6.0	1.5
2/9/72	46	407	11.8	2	127		8.4	63	56			7.2	
10/16/72	54	502	10.0	5	123		7.7	53	44			7.3	
2/2/73	46	546	11.6	2	118		7.4						
10/11/73	52	281	12.9	1	148		7.7	74	56			10.0	
1/18/74		1000		35	63								
2/14/74	45	604	12.7	3	115		7.4						
10/11/74	54	390	12.2	1	143		7.8						
2/6/75	45	676	12.2	4	101		7.6	51	42			7.0	

Date	Temp (°F)	Flow (cfs)	D.O. (mg/L)	Turbidity (NTU)	Specific Conductance (: mhos/cm)	TDS (mg/L)	pH	Alkalinity (mg/L)	Total Hardness (mg/L)	Ca mg/L	Mg mg/L	Na mg/L	K mg/L
10/17/75	54	325	10.4	1	142		7.6						
2/11/76	46	325	12.4	1	150		7.6	68	54			7.6	
10/18/76	54	237	11.0	1	155		8.2	74	61			9.1	
1/3/77		750		9	141								
6/15/77	63		10.3	1	155		7.8	68					
10/14/77	57	197	10.7	0	166		7.6	75	61			8.8	
2/14/78	47	800	12.1	4	97		7.4						
10/18/78	56		10.5	1	153		7.6						
2/21/79	47	2320	11.4		64	63	7.4	28	22	4.0	3.0	3.0	1.1
10/22/79	52	228	11.9	2	147		7.5						
1/14/80	49	5000		60	56		7.5	25	25	5.0	3.0	3.0	1.3
2/19/80	49	1000		31	57		8.4						
2/26/80	51	882	11.2	4	115		7.7						
10/24/80	56	250	12.0	1	153		7.9	69	54	10.0	7.0	9.0	2.5
2/26/81	47	465	12.1	2	126		8.1	57	47	9.0	6.0	7.0	1.9
10/27/81	59	158	10.7	3	164		7.9						
2/10/82	46	481	12.3		122		7.8						
10/28/82	51	415	11.3	1	125		7.5	59	47	9.0	6.0	7.0	2.1
12/22/82	45	1000		15	84		7.3						
2/9/83	48		11.5	3	97		7.6	40	38	7.0	5.0	5.0	1.5
10/19/83	52		10.6	2	135		7.3						
2/23/84	45	675	12.7	2	118		7.6						
2/14/85	50	384	11.3	2	142		8.1	65	54	10.0	7.0	8.0	
10/24/85	55	376	11.1	5	141		7.6						
3/3/86	56	937	10.8	33	99		7.8						
10/21/86	58	353	11.7	3	276		8.3	69	68	9.0	11.0	30.0	
2/19/87	48		11.9	3	135		7.6	54	45	8.0	6.0	7.0	
2/16/88	45	371	12.5	1	138	112	7.9	64	52	9.0	7.0	7.0	2.0
9/19/88	59	280	10.2	2	190	132	7.9	79	64	11.0	9.0	10.0	3.0
10/20/88	59	181	10.0		157		7.7						
2/15/89	48		12.7		153		7.7						

**Table N-6.** USEPA Water Quality Data for Battle Creek near Coleman Power House (40°24'04" N 122°07'43" W), 1971–1972

Date	BOD <sub>5</sub> (mg/L)	Alkalinity (mg/L)	Total Hardness (mg/L)	Total Residue (mg/L)	TSS (mg/L)	NH <sub>3</sub> +NH <sub>4</sub> (mg/L)	NO <sub>2</sub> -N (mg/L)
7/14/71	3.3	76	112	72	1.5	0.03	0.01
8/10/71	3.1	94	115	103	1.4	0.06	0.03
9/13/71	2.3	74	115	85	1.2	0.02	0.03
10/21/71	1.2	70	85	60	0.8	0.08	0.02
11/8/71	1.0	78	78	67	0.9	0.09	0.01
12/20/71	1.5	84	61	94	0.8	0.08	0.02
1/10/72	1.7	80	55	103	0.2	0.32	0.05
2/14/72	1.5	80	54	110	0.6	0.22	0.06
3/15/72	1.4	56	50	106	2.0	0.23	0.05
4/10/72	1.2	54	48	115	1.0	0.21	0.06
5/8/72	1.5	56	50	110	1.3	0.25	0.05
6/15/72	0.8	58	48	118	1.0	0.22	0.04

**Table N-6 Continued.** USEPA Water Quality Data for Battle Creek near Coleman Power House (40°24'04" N 122°07'43" W), 1971–1972

Date	NO <sub>3</sub> -N (mg/L)	Total Kjeldahl N (mg/L)	Total PO <sub>4</sub> (mg/L)	OrthoPO <sub>4</sub> (mg/L)	Total Coliforms (100/mL)	Fecal Coliforms (100/mL)
7/14/71	0.18	0.23	0.20	0.05	0	0
8/10/71	0.20	0.31	0.30	0.06	0	0
9/13/71	0.20	0.25	0.25	0.05	15	0
10/21/71	0.22	0.36	0.20	0.01		
11/8/71	0.20	0.38	0.20	0.03		
12/20/71	0.16	0.30	0.22	0.05		
1/10/72	0.12	0.52	0.25	0.08	10	
2/14/72	0.10	0.40	0.20	0.05		
3/15/72	0.10	0.42	0.25	0.02		
4/10/72	0.15	0.45	0.20	0.05		
5/8/72	0.13	0.44	0.26	0.03		
6/15/72	0.13	0.42	0.25	0.05		

Source: U.S. Environmental Protection Agency (USEPA) Region 1, USEPA STORET database.