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Analytical results for 147 water samples from the Elkhorn Wilderness Study Area, Broadwater and Jefferson Counties, Montana

By

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INTRODUCTION

A hydrogeochemical survey was conducted in the Elkhorn Wilderness Study Area, Montana, during the summer of 1977 to help evaluate the mineral resource potential of the area. Samples from 147 first-order stream waters were collected and analyzed for nine metal ions, silica, and four anions along with measurements for pH and specific conductance. The sample analyses are presented in this report.

SAMPLE COLLECTION AND ANALYTICAL METHODS

One hundred and forty seven water samples were collected. At each site, a 60-ml sample was filtered through a 0.45-μm membrane filter into an acid-rinsed polyethylene bottle and then acidified with reagent grade concentrated nitric acid to a pH of less than 2. A 500-ml untreated sample was also collected in a clean polyethylene bottle.

At each sample site, pH was measured. All other analyses were determined at the U.S. Geological Survey laboratory in Denver, Colorado.

Calcium, magnesium, sodium, potassium, silica, zinc, copper, molybdenum, and arsenic were determined using the filtered-acidified sample. Alkalinity, sulfate, chloride, fluoride, uranium, and specific conductance were determined using the untreated sample. Alkalinity measures the total acid-neutralizable constituents in water and is generally due to the presence of carbonate and bicarbonate ions. A complete list of analytical methods used and a reference for each are listed in table 1.

RESULTS

The analytical results of the 16 constituents that were determined for these samples are shown in table 2 along with the latitude and longitude for each sample location. See U.S. Geological Survey Bulletin 1805 (Greenwood et al., 1990) for detailed information of the Elkhorn Wilderness Study Area.

REFERENCES CITED

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Table 1.--Analytical methods used for water analyses, Elkhorn Wilderness Study Area, Montana

Constituent	Method	Reference
Alkalinity-----	Gran's plot potentiometric titration----------	Orion Research, Inc. (1975).
Sulfate--------	Ion chromatography----------	Smee and Hall (1978).
Chloride-------	----------do----------	Do.
Fluoride-------	----------do----------	Do.
Calcium--------	Flame atomic absorption spectrophotometry----------	Perkin-Elmer Corp. (1976).
Magnesium------	----------do----------	Do.
Sodium---------	----------do----------	Do.
Potassium------	----------do----------	Do.
Silica---------	----------do----------	Do.
Copper---------	Flameless atomic absorption spectrophotometry----------	Perkin-Elmer Corp. (1977).
Zinc-----------	----------do----------	Do.
Molybdenum-----	----------do----------	Do.
Arsenic--------	----------do----------	Do.
Uranium--------	Fluorimetric----------	McHugh (1979).
Specific conductance--	Conductivity bridge----------	Brown, Skougstad, and Fishman (1970, p. 28-29).

TABLE 2. ANALYTICAL RESULTS FOR 147 WATER SAMPLES FROM THE ELKHORN WILDERNESS STUDY AREA, BROADWATER AND JEFFERSON COUNTIES, MONTANA

Sample	LATITUDE	LONGITUD	CA(MG/L)	MG(MG/L)	NA(MG/L)	K(MG/L)	CL(MG/L)	SO4(MG/L	ALK(MG/L
BG01	46 18 50	111 46 45	23.0	4.4	6.7	1.4	1.0	16	98
BG06	46 26 39	111 48 50	8.0	.8	1.5	.6	.4	8	14
BG07	46 25 38	111 50 49	13.0	.6	1.0	.3	.4	6	35
BG08	46 26 21	111 51 57	12.0	2.7	3.7	1.9	<.1	10	59
BG10	46 20 52	111 57 11	7.5	.9	1.8	.7	<.1	11	14
BG11	46 20 52	111 57 11	7.6	.8	1.9	.8	<.1	6	31
BG13	46 16 15	111 54 20	6.9	1.1	1.4	.3	<.1	4	28
BG14	46 16 18	111 54 24	5.7	.9	1.7	.3	<.1	3	27
DT02	46 16 33	111 45 38	60.0	19.0	4.1	1.2	--	--	--
DT03	46 16 47	111 48 53	22.0	4.3	3.0	.7	--	--	--
DT04	46 28 55	111 50 12	16.0	2.5	6.7	.8	.4	15	59
DT05	46 28 14	111 49 29	12.0	1.3	4.2	.7	<.1	12	33
DT06	46 26 48	111 48 47	6.5	.7	1.8	.7	<.1	12	6
DT07	46 25 44	111 50 41	5.3	.9	1.3	.3	--	--	--
DT08	46 24 15	111 43 45	9.1	1.4	3.1	.9	<.1	9	32
DT09	46 27 20	111 43 35	7.8	1.1	3.5	1.0	<.1	7	29
DT10	46 18 24	112 1 37	8.7	1.3	2.0	.9	<.1	7	48
DT12	46 17 11	112 1 59	36.0	7.6	7.5	1.6	<.1	19	99
DT13	46 17 7	112 3 7	42.0	12.0	8.1	2.8	<.1	50	99
DT15	46 16 54	111 58 5	20.0	7.4	3.0	1.5	<.1	14	87
DT16	46 16 59	111 58 9	6.8	1.6	2.5	1.0	<.1	8	31
DT17	46 14 44	111 58 19	23.0	5.2	8.1	1.2	2.1	11	85
DT19	46 18 53	111 58 45	7.3	.9	1.6	.8	<.1	6	26
DT20	46 18 45	112 0 24	13.0	2.4	3.6	1.5	.2	13	52
DT21	46 18 35	112 1 9	8.3	1.4	2.0	1.0	<.1	5	28
EB01	46 19 23	111 40 0	30.0	6.9	7.7	.7	1.5	27	122
EB02	46 18 46	111 44 4	50.0	10.0	9.1	1.1	3.1	28	208
EB03	46 17 17	111 46 59	26.0	6.5	4.0	1.3	.9	11	101
EB04	46 17 53	111 46 0	32.0	4.5	6.1	1.1	1.3	16	71
EB06	46 19 18	111 46 19	11.0	1.7	2.8	.7	.1	9	22
EB07	46 18 17	111 47 55	19.0	4.7	4.5	1.0	1.5	8	78
EB09	46 16 54	111 48 50	12.0	1.6	2.2	.6	--	--	--
EB10	46 16 5	111 49 29	5.4	1.4	.8	3.1	--	--	--
EB11	46 21 29	111 41 39	20.0	4.1	3.4	.9	.2	58	24
EB12	46 21 17	111 41 48	16.0	3.9	4.1	.3	1.9	26	64
EB13	46 22 59	111 42 10	24.0	2.4	3.4	.8	.2	37	48
EB14	46 25 18	111 41 49	62.0	5.4	8.8	3.0	.4	138	84
EB15	46 21 11	111 58 28	8.0	1.1	2.7	.7	.1	11	29
EB16	46 21 11	111 58 28	7.5	1.1	3.0	.8	--	--	--
EB17	46 21 11	111 58 22	10.0	1.2	3.0	.7	.3	9	29
EB18	46 21 56	111 58 45	44.0	8.1	10.0	1.2	.9	27	165
EB19	46 20 53	111 57 11	13.0	.7	1.2	.8	<.1	6	29
EB20	46 18 24	112 1 50	33.0	7.1	6.2	1.1	.8	20	124
EB21	46 18 24	112 1 58	29.0	6.6	6.2	1.2	.7	20	115
EB22	46 17 18	112 1 58	27.0	6.2	6.8	1.1	.9	27	85

TABLE 2. ANALYTICAL RESULTS FOR 147 WATER SAMPLES FROM THE ELKHORN WILDERNESS STUDY AREA, BROADWATER AND JEFFERSON COUNTIES, MONTANA--Continued

Sample	F(MG/L)	SIO2(MG/	AS(UG/L)	CU(UG/L)	ZN(UG/L)	MO(UG/L)	U(UG/L)	PH	SP.COND.
BG01	.10	23	--	--	--	--	<.2	7.6	183
BG06	.09	10	<1	1	1	2	<.2	7.4	56
BG07	.40	8	<1	2	3	1	<.2	7.5	77
BG08	.14	20	2	2	2	1	.2	7.6	112
BG10	.10	11	1	2	2	4	1.5	7.6	61
BG11	<.05	11	1	2	8	3	1.3	7.5	61
BG13	.07	10	<1	<1	2	<1	<.2	7.5	53
BG14	<.05	13	1	<1	2	<1	<.2	7.5	52
DT02	--	--	5	1	3	1	1.1	--	--
DT03	--	--	2	2	2	<1	.2	--	--
DT04	.12	30	1	1	2	1	<.2	7.5	137
DT05	.12	26	<1	1	2	6	<.2	7.5	94
DT06	.14	16	<1	1	6	1	<.2	7.1	60
DT07	--	--	--	1	3	<1	<.2	--	--
DT08	.09	22	125	3	3	2	.4	7.2	74
DT09	<.05	18	1	1	2	<1	<.2	7.3	70
DT10	.05	14	1	2	2	2	1.4	7.3	70
DT12	.14	20	3	4	1	8	11.3	8.0	271
DT13	.20	20	1	1	3	12	9.7	8.0	357
DT15	.06	25	4	7	4	2	1.5	8.0	156
DT16	.09	17	1	1	2	2	.2	7.6	64
DT17	.27	33	1	1	2	2	1.0	7.7	203
DT19	.09	13	1	1	3	2	.4	7.5	56
DT20	<.05	19	1	1	3	3	.6	8.0	110
DT21	.09	14	<1	2	4	2	.5	7.5	67
EB01	.17	17	<1	<1	1	<1	<.2	8.0	250
EB02	.16	19	1	1	3	1	.4	8.0	370
EB03	.10	32	3	1	2	14	.3	7.8	198
EB04	.12	17	1	1	3	2	.3	7.9	235
EB06	.11	14	3	1	4	<1	<.2	7.4	88
EB07	.14	24	<1	2	2	<1	<.2	7.4	165
EB09	--	--	2	1	4	1	<.2	--	--
EB10	--	--	5	5	7	<1	<.2	--	--
EB11	.08	15	28	9	1,700	1	<.2	7.3	185
EB12	.05	15	<1	1	2	<1	<.2	7.6	142
EB13	.09	19	<1	2	2	1	<.2	7.7	165
EB14	.08	18	7	3	2,200	4	<.2	7.6	425
EB15	.05	20	<1	2	11	4	.6	7.6	71
EB16	--	--	<1	1	13	5	.8	--	--
EB17	<.05	20	<1	2	2	4	.9	7.5	79
EB18	.12	18	4	1	2	5	15.4	8.2	320
EB19	.13	11	1	1	2	2	.5	7.9	58
EB20	.07	21	<1	1	4	9	10.8	7.9	230
EB21	.08	21	<1	1	3	8	10.7	8.2	230
EB22	.10	28	<1	<1	2	12	14.4	8.3	225

TABLE 2. ANALYTICAL RESULTS FOR 147 WATER SAMPLES FROM THE ELKHORN WILDERNESS STUDY AREA, BROADWATER AND JEFFERSON COUNTIES, MONTANA--Continued

Sample	LATITUDE	LONGITUD	CA(MG/L)	MG(MG/L)	NA(MG/L)	K(MG/L)	CL(MG/L)	SO4(MG/L	ALK(MG/L
EB23	46 15 48	112 2 0	33.0	7.7	9.5	2.7	3.2	28	135
EB24	46 15 16	112 1 14	25.0	5.8	9.4	1.9	1.6	10	128
EB25	46 25 8	111 46 22	5.1	.6	1.2	.3	<.1	11	18
EB26	46 29 27	111 46 24	8.4	1.6	4.2	.7	<.1	13	31
EB27	46 28 58	111 45 39	6.9	.8	2.7	.7	<.1	5	20
LA01	46 18 52	111 42 46	40.0	8.8	8.5	.3	2.0	26	183
LA02	46 17 52	111 44 26	39.0	8.3	9.8	1.5	2.8	23	166
LA03	46 18 29	111 43 54	51.0	9.9	11.0	1.1	3.3	28	204
LA04	46 18 20	111 44 49	38.0	5.5	6.2	1.1	1.5	23	102
LA05	46 19 4	111 45 32	28.0	4.5	6.4	1.2	1.4	18	103
LA06	46 18 50	111 48 11	8.3	1.2	2.2	.5	--	6	36
LA08	46 20 20	111 40 8	13.0	1.7	2.5	.5	--	--	--
LA09	46 19 58	111 46 49	50.0	10.0	6.4	.9	--	--	--
LA10	46 19 59	111 46 22	34.0	7.0	5.8	.6	--	--	--
LA11	46 20 53	111 45 50	19.0	4.4	5.2	.4	--	--	--
LA12	46 21 14	111 44 44	6.7	1.2	2.0	.4	--	--	--
LA13	46 28 47	111 50 4	12.0	2.0	5.4	.9	<.1	12	37
LA14	46 28 11	111 49 35	9.2	1.2	2.7	.7	<.1	12	26
LA15	46 26 44	111 48 56	8.8	.8	1.4	.4	<.1	9	13
LA16	46 26 59	111 50 9	8.3	1.0	2.1	.5	--	--	--
LA17	46 25 58	111 51 34	10.0	.8	2.2	.5	<.1	17	13
LA18	46 21 6	111 59 9	6.0	.9	1.9	.7	<.1	7	18
LA19	46 21 20	111 57 7	7.1	1.4	2.2	1.1	<.1	9	28
LA20	46 25 31	111 47 8	7.8	.6	1.0	.4	<.1	7	13
LA21	46 16 51	111 59 3	32.0	7.4	5.3	1.3	.8	26	122
MG01	46 25 29	111 55 41	24.0	6.0	5.6	3.1	.8	25	101
MG02	46 24 12	111 53 52	6.5	1.1	2.9	1.0	<.1	10	28
MG03	46 23 14	111 57 11	6.8	1.4	3.2	1.1	<.1	8	31
MG04	46 23 41	111 58 42	38.0	7.2	10.0	2.7	1.4	37	165
MG05	46 23 17	111 59 43	5.8	.8	2.1	.7	<.1	7	24
MG06	46 20 56	112 0 34	16.0	2.7	4.9	1.4	.4	22	45
MG07	46 16 47	111 56 57	39.0	6.3	1.8	.9	.3	6	153
MG10	46 22 58	111 49 32	5.0	.8	1.6	.3	<.1	5	19
MG11	46 22 54	111 49 37	3.9	.8	1.8	.3	<.1	5	15
MG12	46 21 47	111 50 44	5.0	1.1	2.5	.8	<.1	9	14
MG13	46 21 47	111 50 44	4.2	.9	2.5	.7	<.1	7	17
MG14	46 22 4	111 51 55	4.3	.9	3.3	1.0	.2	8	17
MG16	46 20 35	111 54 14	5.1	1.0	1.6	1.3	<.1	8	14
MG17	46 20 35	111 54 11	6.0	1.2	2.8	.9	<.1	7	25
MG18	46 20 35	111 50 4	5.1	1.3	2.1	.6	<.1	5	20
MG19	46 19 49	111 51 29	4.0	1.0	1.8	.7	<.1	2	18
MG20	46 19 33	111 51 34	4.0	.9	1.5	<.1	<.1	4	23
MG21	46 19 8	111 51 44	2.3	.4	1.2	.4	<.1	3	9
MG22	46 19 5	111 51 28	2.8	.8	1.6	.5	<.1	5	10
MG23	46 20 38	111 50 31	5.5	1.0	1.9	.5	<.1	5	19

TABLE 2. ANALYTICAL RESULTS FOR 147 WATER SAMPLES FROM THE ELKHORN WILDERNESS STUDY AREA, BROADWATER AND JEFFERSON COUNTIES, MONTANA--Continued

Sample	F(MG/L)	SIO2(MG/	AS(UG/L)	CU(UG/L)	ZN(UG/L)	MO(UG/L)	U(UG/L)	PH	SP.COND.
EB23	.14	28	<1	2	3	7	9.2	8.1	293
EB24	.18	25	3	1	2	5	3.8	7.9	215
EB25	.06	11	<1	1	2	<1	<.2	7.7	43
EB26	.10	24	<1	4	8	<1	<.2	7.4	80
EB27	.08	22	1	1	3	<1	<.2	7.6	64
LA01	.24	19	<1	3	4	1	.4	7.9	318
LA02	.22	23	4	3	1	10	.6	7.8	295
LA03	.26	21	<1	4	6	4	.5	7.8	380
LA04	.13	18	2	1	2	2	.3	7.9	260
LA05	.19	23	2	1	1	1	<.2	7.6	203
LA06	<.05	16	3	2	1	1	<.2	7.4	68
LA08	--	--	<1	1	4	<1	<.2	--	--
LA09	--	--	<1	1	2	1	.5	--	--
LA10	--	--	<1	<1	1	3	.2	--	--
LA11	--	--	<1	1	2	<1	<.2	--	--
LA12	--	--	1	1	1	<1	<.2	--	--
LA13	.11	27	<1	2	2	<1	<.2	7.6	108
LA14	.09	20	1	1	5	<1	<.2	7.5	77
LA15	.05	11	<1	<1	1	1	<.2	7.5	65
LA16	--	--	<1	1	1	<1	<.2	--	--
LA17	.09	15	<1	1	1	<1	<.2	7.3	56
LA18	<.05	12	<1	2	4	2	.3	7.3	52
LA19	.06	14	<1	2	3	1	.4	7.3	60
LA20	.07	9	<1	1	2	<1	<.2	7.3	58
LA21	.18	22	<1	1	1	4	3.3	8.3	244
MG01	.23	24	2	4	2	3	1.6	7.9	213
MG02	.05	18	2	2	3	2	.9	7.7	62
MG03	<.05	19	1	1	3	1	.5	7.5	67
MG04	.18	29	2	1	2	4	8.6	8.2	310
MG05	.05	14	<1	1	6	1	.6	7.3	52
MG06	.08	23	1	1	2	4	2.6	7.7	132
MG07	.12	21	5	1	3	1	.4	7.9	150
MG10	.07	11	<1	<1	2	<1	<.2	7.6	44
MG11	<.05	11	<1	<1	1	<1	<.2	7.5	38
MG12	.05	17	<1	1	1	<1	<.2	7.2	50
MG13	.11	20	<1	1	2	<1	<.2	7.3	49
MG14	.10	27	<1	<1	1	<1	<.2	7.1	50
MG16	.08	12	2	3	3	<1	.3	7.0	46
MG17	.08	23	1	<1	3	<1	<.2	7.1	58
MG18	.05	14	3	2	3	<1	<.2	7.2	48
MG19	<.05	11	3	2	4	<1	<.2	7.1	35
MG20	<.05	11	2	1	4	<1	<.2	7.1	30
MG21	.05	9	<1	<1	2	<1	<.2	7.0	30
MG22	<.05	12	2	1	2	<1	<.2	7.1	31
MG23	<.05	10	--	--	--	--	<.2	7.3	47

TABLE 2. ANALYTICAL RESULTS FOR 147 WATER SAMPLES FROM THE ELKHORN WILDERNESS STUDY AREA, BROADWATER AND JEFFERSON COUNTIES, MONTANA--Continued

Sample	LATITUDE	LONGITUD	CA(MG/L)	MG(MG/L)	NA(MG/L)	K(MG/L)	CL(MG/L)	SO4(MG/L	ALK(MG/L
MG24	46 20 57	111 48 42	11.0	1.5	2.3	.6	<.1	7	39
MG25	46 22 30	111 48 5	17.0	2.1	2.7	.5	<.1	10	59
MG26	46 22 26	111 47 58	10.0	1.5	2.1	.4	<.1	6	32
MG27	46 18 38	111 54 10	5.5	1.0	1.6	.5	--	--	--
SL02	46 19 26	111 41 52	25.0	7.1	7.5	1.2	1.6	33	61
SL05	46 19 50	111 45 3	53.0	7.6	9.3	.8	2.6	31	197
SL06	46 20 13	111 43 51	21.0	4.4	6.4	1.8	.9	21	85
SL07	46 21 2	111 45 16	6.6	1.3	1.9	.3	.1	5	28
SL08	46 21 12	111 47 50	9.1	2.4	4.0	.3	.2	8	36
SL09	46 21 35	111 46 18	4.4	1.1	1.9	.3	<.1	5	18
SL10	46 20 24	111 47 47	12.0	1.7	2.6	.8	<.1	10	36
SL11	46 20 29	111 47 26	14.0	2.5	3.9	.5	<.1	10	60
SL12	46 20 22	111 47 43	11.0	2.3	3.3	.5	<.1	13	48
SL13	46 19 56	111 46 59	9.4	1.6	2.8	.5	--	--	--
SL14	46 21 11	111 44 43	17.0	2.2	2.9	.6	--	--	--
SL15	46 21 23	111 41 8	21.0	3.7	3.3	.3	<.1	11	81
SL16	46 23 12	111 41 59	9.3	1.8	3.1	.9	<.1	12	28
SL17	46 25 20	111 41 41	38.0	5.1	6.7	2.3	.6	76	71
SL18	46 26 44	111 43 8	11.0	1.8	5.1	1.5	.2	8	47
SL19	46 21 23	111 41 8	19.0	3.6	3.3	.3	<.1	7	85
SL20	46 24 15	111 43 50	5.0	1.0	2.0	.8	<.1	5	16
SL21	46 24 57	111 44 32	3.8	1.0	1.6	.4	<.1	5	17
SL22	46 26 3	111 44 14	5.7	.7	2.7	.8	<.1	7	26
SL23	46 28 27	111 43 27	8.5	1.1	3.2	1.1	<.1	12	24
SL24	46 25 27	111 47 9	5.0	.7	1.3	.3	<.1	5	17
SL25	46 25 33	111 47 3	5.3	.7	2.0	.6	<.1	6	16
SL88	46 18 46	111 53 20	24.0	.7	1.3	.5	<.1	11	51
SL117	46 25 30	111 52 45	13.0	2.8	5.3	1.3	.1	16	48
WM03	46 25 14	111 54 23	6.2	.9	2.4	1.8	.3	17	8
WM04	46 25 9	111 54 25	26.0	6.6	5.1	2.1	<.1	49	60
WM05	46 24 15	111 54 24	27.0	4.8	7.3	2.8	.5	30	106
WM06	46 24 10	111 53 53	7.0	1.4	2.8	1.1	<.1	9	28
WM07	46 24 47	111 56 36	12.0	2.5	4.7	1.6	<.1	14	59
WM09	46 23 21	111 58 5	44.0	9.7	11.0	3.2	2.2	45	162
WM10	46 23 12	111 57 15	7.3	1.6	3.2	1.2	<.1	9	35
WM11	46 23 12	111 57 15	7.3	1.6	3.3	1.2	<.1	6	34
WM12	46 20 54	112 0 23	8.0	1.1	2.5	.9	<.1	11	35
WM13	46 16 51	111 58 50	12.0	2.6	3.3	1.1	<.1	9	51
WM14	46 16 26	111 58 56	20.0	7.3	2.9	1.4	<.1	8	90
WM16	46 15 38	111 57 46	23.0	5.6	7.3	1.8	.8	14	88
WM22	46 18 52	111 59 8	9.4	1.9	2.8	1.4	<.1	5	47
WM23	46 18 51	111 59 52	7.5	1.1	2.0	.9	<.1	6	33
WM24	46 18 51	112 0 7	13.0	2.5	3.9	1.4	.2	8	55
WM25	46 18 50	112 0 15	11.0	2.2	3.8	1.5	<.1	8	43
WM26	46 18 39	112 1 9	35.0	3.9	4.7	1.3	.2	13	129

TABLE 2. ANALYTICAL RESULTS FOR 147 WATER SAMPLES FROM THE ELKHORN WILDERNESS STUDY AREA, BROADWATER AND JEFFERSON COUNTIES, MONTANA--Continued

Sample	F(MG/L)	SIO2(MG/	AS(UG/L)	CU(UG/L)	ZN(UG/L)	MO(UG/L)	U(UG/L)	PH	SP.COND.
MG24	.09	14	<1	2	4	--	<.2	7.5	84
MG25	<.05	13	<1	<1	1	--	<.2	7.9	126
MG26	.06	13	<1	1	2	--	<.2	7.7	72
MG27	--	--	3	2	3	<1	<.2	--	--
SL02	.20	21	4	2	3	<1	<.2	7.7	228
SL05	.16	19	3	1	7	2	.6	8.0	375
SL06	.19	22	3	<1	1	6	<.2	7.6	193
SL07	.11	12	1	1	1	1	.2	7.5	55
SL08	.08	20	<1	1	4	<1	<.2	7.4	87
SL09	<.05	12	<1	2	3	<1	.6	7.5	45
SL10	.05	16	<1	2	5	1	<.2	7.4	92
SL11	.07	18	<1	1	2	<1	<.2	7.5	108
SL12	.17	18	1	2	2	<1	<.2	7.6	96
SL13	--	--	2	1	2	<1	<.2	--	--
SL14	--	--	1	1	2	<1	<.2	--	--
SL15	.06	14	<1	1	2	<1	<.2	7.8	150
SL16	<.05	18	3	1	3	2	<.2	7.6	88
SL17	.16	20	8	6	720	12	.3	7.6	290
SL18	.11	29	1	1	2	<1	<.2	7.7	103
SL19	.05	13	<1	1	1	--	<.2	8.0	150
SL20	.06	13	<1	1	1	<1	<.2	7.6	47
SL21	<.05	9	<1	1	2	<1	<.2	7.3	39
SL22	<.05	15	<1	1	3	<1	<.2	7.7	57
SL23	.05	19	<1	1	2	<1	<.2	7.4	76
SL24	.05	9	<1	2	3	<1	<.2	7.5	42
SL25	.09	13	<1	2	2	<1	<.2	7.5	48
SL88	.11	13	<1	16	8	3	<.2	8.1	143
SL117	.09	22	2	1	2	4	2.1	7.8	116
WM03	2.40	17	<1	1	800	1	.6	7.3	65
WM04	.17	20	49	5	680	3	1.3	7.6	220
WM05	.13	22	1	2	1	3	2.3	7.8	218
WM06	<.05	18	1	2	1	<1	.8	7.8	63
WM07	.15	24	1	1	2	2	1.4	7.5	112
WM09	.18	32	1	1	2	7	19.6	8.4	355
WM10	<.05	19	1	1	1	1	.7	7.8	72
WM11	<.05	17	1	1	1	<1	.6	7.7	71
WM12	.05	16	<1	2	30	2	.6	7.3	70
WM13	.11	21	<1	1	1	3	.3	7.7	100
WM14	.12	24	3	6	3	2	1.5	8.0	125
WM16	<.05	32	5	<1	2	2	.4	7.9	195
WM22	.08	22	<1	<1	2	1	.6	7.9	88
WM23	.07	14	--	--	--	--	.3	7.5	60
WM24	.09	23	<1	3	2	6	1.6	7.6	112
WM25	.13	23	<1	1	4	4	1.0	7.8	102
WM26	.09	19	<1	<1	2	5	6.6	8.1	170

TABLE 2. ANALYTICAL RESULTS FOR 147 WATER SAMPLES FROM THE ELKHORN WILDERNESS STUDY AREA, BROADWATER AND JEFFERSON COUNTIES, MONTANA--Continued

Sample	LATITUDE	LONGITUD	CA(MG/L)	MG(MG/L)	NA(MG/L)	K(MG/L)	CL(MG/L)	SO4(MG/L	ALK(MG/L
WM27	46 18 39	112 1 9	22.0	3.8	4.5	1.4	.1	14	82
WM28	46 22 54	111 49 27	7.0	1.0	1.7	.4	<.1	4	24
WM29	46 21 53	111 49 32	5.6	1.1	1.9	.4	<.1	5	21
WM30	46 22 5	111 52 59	7.3	1.2	3.0	1.2	<.1	9	18
WM32	46 22 28	111 49 37	19.0	3.7	6.1	2.2	1.2	9	82
WM34	46 20 34	111 54 10	6.0	1.5	2.6	1.4	<.1	9	27
WM35	46 20 51	111 51 30	7.1	1.9	3.3	.7	<.1	2	33
WM36	46 20 40	111 51 57	5.6	.9	1.3	.5	<.1	4	18
WM37	46 18 38	111 53 26	6.4	.7	1.0	.4	<.1	3	20
WM38	46 18 45	111 53 12	4.0	.8	1.1	.3	<.1	3	14
WM39	46 19 22	111 52 37	4.8	.8	1.2	.5	<.1	3	22
WM94	46 20 38	111 59 58	16.0	2.9	5.2	1.8	.3	30	43

TABLE 2. ANALYTICAL RESULTS FOR 147 WATER SAMPLES FROM THE ELKHORN WILDERNESS STUDY AREA, BROADWATER AND JEFFERSON COUNTIES, MONTANA--Continued

Sample	F(MG/L)	SIO2(MG/	AS(UG/L)	CU(UG/L)	ZN(UG/L)	MO(UG/L)	U(UG/L)	PH	SP.COND.
WM27	.09	20	<1	1	1	5	7.1	8.2	169
WM28	<.05	12	<1	<1	1	<1	<.2	7.8	47
WM29	.09	15	<1	1	2	<1	<.2	7.5	49
WM30	.09	22	<1	1	2	1	<.2	7.2	69
WM32	1.70	40	2	<1	3	8	2.7	8.0	157
WM34	.07	17	1	1	7	<1	<.2	7.7	62
WM35	.08	20	4	1	4	<1	<.2	7.2	65
WM36	.08	8	3	1	1	<1	<.2	7.2	43
WM37	.07	7	5	<1	1	<1	<.2	7.2	46
WM38	.08	7	2	1	2	<1	<.2	7.1	30
WM39	.08	8	4	<1	2	<1	<.2	7.1	41
WM94	.09	22	<1	2	15	7	10.2	7.3	126