Table 9. Statistical summary of major and trace-element data from total digestions of replicate bed sediment samples taken in different years from the Boulder River watershed, Montana

[Major element data expressed in weight percent; trace element data expressed in ppm (parts per million) or g/g, dry weight basis; STD DEV is the standard deviation]

Site Number (fig. 1)	Sample Number	Aluminum percent	Calcium percent	Iron percent	Potassium percent	Magnesium percent	Sodium percent	Phosphorous percent	Titanium percent
1S	97-BMS-137	8.2	2.0	1.6	2.1	0.47	2.4	0.05	0.26
	98-BMS-114	8.5	2.3	1.1	1.8	0.39	2.7	0.06	0.2
	MEAN	8.4	2.2	1.4	2.0	0.4	2.6	0.1	0.2
3S	97-BMS-115	8.2	3.0	4.0	2.1	1.2	2.4	0.10	0.61
	98-BMS-113	7.7	2.9	5.1	1.9	1.0	2.3	0.09	0.8
	MEAN	8.0	3.0	4.6	2.0	1.1	2.4	0.1	0.7
10S	97-BMS-112	8.4	2.7	4.8	2.5	0.94	2.3	0.08	0.48
	98-BMS-116	7.6	2.5	4.4	2.1	0.96	2.3	0.08	0.5
	MEAN	8.0	2.6	4.6	2.3	1.0	2.3	0.1	0.5
14S	97-BMS-111	8.5	2.6	4.3	2.6	0.84	2.3	0.07	0.39
	98-BMS-106	7.6	2.4	3.4	2.2	0.87	2.2	0.07	0.3
	MEAN	8.1	2.5	3.9	2.4	0.9	2.3	0.1	0.4
30S	97-BMS-117	7.6	1.9	4.3	2.9	0.74	1.5	0.11	0.44
	98-BMS-110	7.2	1.8	4.7	2.6	0.80	1.4	0.10	0.5
	MEAN	7.4	1.9	4.5	2.8	0.8	1.5	0.1	0.5

Table 9. Statistical summary of major and trace-element data from total digestions of replicate bed sediment samples taken in different years from the Boulder River watershed, Montana—(continued)

Site Number (fig. 1)	Sample Number	Aluminum percent	Calcium percent	Iron percent	Potassium percent	Magnesium percent	Sodium percent	Phosphorous percent	Titanium percent
19S	96-BM-140	7.2	3.2	13	1.6	1.5	1.9	0.16	0.70
	97-BMS-110	8.1	3.6	13	2.1	1.4	2.2	0.15	0.80
	98-BMS-105	6.2	3.2	20	1.6	1.3	1.8	0.14	1.1
	MEDIAN	7.2	3.2	13.0	1.6	1.4	1.9	0.2	0.8
	MEAN	7.2	3.3	15.3	1.8	1.4	2.0	0.2	0.9
	STD DEV	1.0	0.2	4.0	0.3	0.1	0.2	0.0	0.2
40S	96-BM-111	7.5	2.2	6.2	2.0	1.2	1.4	0.14	0.48
	97-BMS-116	7.9	2.9	12	2.4	1.3	1.8	0.15	0.82
	98-BMS-111	7.3	2.4	6.5	2.2	1.2	1.7	0.13	0.6
	MEDIAN	7.5	2.4	6.5	2.2	1.2	1.7	0.1	0.6
	MEAN	7.6	2.5	8.2	2.2	1.2	1.6	0.1	0.6
	STD DEV	0.3	0.4	3.3	0.2	0.1	0.2	0.0	0.2
46S	96-BM-120	8.1	2.7	7.1	1.9	1.1	2.2	0.14	0.55
	97-BMS-121	8.2	3.0	22	2.2	1.0	2.3	0.16	1.3
	98-BMS-109	6.8	2.6	17	1.8	0.96	2.1	0.13	1.1
	MEDIAN	8.1	2.7	17.0	1.9	1.0	2.2	0.1	1.1
	MEAN	7.7	2.8	15.4	2.0	1.0	2.2	0.1	1.0
	STD DEV	0.8	0.2	7.6	0.2	0.1	0.1	0.0	0.4

Table 9. Statistical summary of major and trace-element data from total digestions of replicate bed sediment samples taken in different years from the Boulder River watershed, Montana—(continued)

Site Number (fig. 1)	Sample Number	Aluminum percent	Calcium percent	Iron percent	Potassium percent	Magnesium percent	Sodium percent	Phosphorous percent	Titanium percent
50S	96-BM-117	7.0	2.1	3.1	2.4	0.71	1.7	0.08	0.27
	97-BMS-136	7.5	2.3	5.3	2.3	0.73	2.1	0.09	0.52
	98-BMS-118	7.6	2.3	4.7	2.3	0.84	2.0	0.10	0.4
	MEDIAN	7.5	2.3	4.7	2.3	0.7	2.0	0.1	0.4
	MEAN	7.4	2.2	4.4	2.3	0.8	1.9	0.1	0.4
	STD DEV	0.3	0.1	1.1	0.1	0.1	0.2	0.0	0.1
53S	96-BM-106	7.5	2.0	6.5	2.2	0.82	1.6	0.13	0.44
	97-BMS-113	8.0	2.4	6.6	2.6	0.82	2.0	0.12	0.55
	98-BMS-117	7.9	2.5	6.4	2.5	1.10	1.8	0.12	0.5
	MEDIAN	7.9	2.4	6.5	2.5	0.8	1.8	0.1	0.5
	MEAN	7.8	2.3	6.5	2.4	0.9	1.8	0.1	0.5
	STD DEV	0.3	0.3	0.1	0.2	0.2	0.2	0.0	0.1
63S	96-BM-105A	4.7	2.0	9.0	1.6	0.79	1.0	0.12	0.27
	97-BMS-118	5.0	2.0	8.9	2.0	0.72	1.2	0.08	0.27
	98-BMS-108	5.0	1.8	11	1.8	0.69	1.2	0.12	0.3
	MEDIAN	5.0	2.0	9.0	1.8	0.7	1.2	0.1	0.3
	MEAN	4.9	1.9	9.6	1.8	0.7	1.1	0.1	0.3
	STD DEV	0.2	0.1	1.2	0.2	0.1	0.1	0.0	0.0

Table 9. Statistical summary of major and trace-element data from total digestions of replicate bed sediment samples taken in different years from the Boulder River watershed, Montana—(continued)

Site Number (fig. 1)	Sample Number	Arsenic ppm	Barium ppm	Beryllium ppm	Cadmium ppm	Cerium ppm	Chromium ppm	Cobalt ppm	Copper ppm
1S	97-BMS-137	13	1,100	2	< 2	65	31	5	18
	98-BMS-114	24	900	2	< 2	66	31	5	9
	MEAN	19	1,000	2	< 2	65.5	31	5	13.5
3S	97-BMS-115	< 10	870	2	< 2	220	51	11	16
	98-BMS-113	19	870	2	< 2	220	58	9	6
	MEAN	< 10	870	2	< 2	220	55	10	11
10S	97-BMS-112	80	940	2	< 2	120	53	11	110
	98-BMS-116	57	840	2	< 2	120	53	12	97
	MEAN	69	890	2	< 2	120	53	12	104
14S	97-BMS-111	330	850	2	< 2	120	41	11	120
	98-BMS-106	200	820	2	3	84	38	12	110
	MEAN	265	835	2	< 2	102	40	12	115
30S	97-BMS-117	150	730	2	< 2	100	36	14	74
	98-BMS-110	170	750	3	4	110	42	16	110
	MEAN	160	740	2.5	2	105	39	15	92

Table 9. Statistical summary of major and trace-element data from total digestions of replicate bed sediment samples taken in different years from the Boulder River watershed, Montana—(continued)

Site Number (fig. 1)	Sample Number	Arsenic ppm	Barium ppm	Beryllium ppm	Cadmium ppm	Cerium ppm	Chromium ppm	Cobalt ppm	Copper ppm
19S	96-BM-140	37	380	2	2	140	110	22	29
	97-BMS-110	< 10	410	2	< 2	190	120	16	26
	98-BMS-105	< 10	740	2	< 2	190	210	18	4
	MEDIAN	37	410	2	< 2	190	120	18	26
	MEAN	< 10	510	2	1	173	147	19	20
	STD DEV	--	200	--	--	28.9	55.1	3.1	13.7
40S	96-BM-111	940	460	2	15	110	52	31	610
	97-BMS-116	760	520	2	5	180	130	28	290
	98-BMS-111	420	560	2	3	130	63	22	200
	MEDIAN	760	520	2	5	130	63	28	290
	MEAN	707	513	2	8	140	82	27	367
	STD DEV	264	50	--	6.4	36.1	42.2	4.6	215.5
46S	96-BM-120	63	520	2	< 2	140	61	17	47
	97-BMS-121	25	510	1	< 2	280	220	15	41
	98-BMS-109	< 10	770	2	< 2	260	180	12	8
	MEDIAN	44	520	2	< 2	260	180	15	41
	MEAN	29	600	2	< 2	227	154	15	32
	STD DEV	27	147	0.6	--	75.7	88	2.5	21

Table 9. Statistical summary of major and trace-element data from total digestions of replicate bed sediment samples taken in different years from the Boulder River watershed, Montana—(continued)

Site Number (fig. 1)	Sample Number	Arsenic ppm	Barium ppm	Beryllium ppm	Cadmium ppm	Cerium ppm	Chromium ppm	Cobalt ppm	Copper ppm
50S	96-BM-117	570	540	2	20	83	23	24	630
	97-BMS-136	980	610	2	9	170	38	25	680
	98-BMS-118	570	630	2	12	130	33	24	620
	MEDIAN	570	610	2	12	130	33	24	630
	MEAN	707	593	2	14	128	31	24	643
	STD DEV	237	47	--	5.7	43.5	7.6	0.6	32.1
53S	96-BM-106	380	710	2	23	120	64	26	560
	97-BMS-113	580	680	2	8	180	58	26	460
	98-BMS-117	410	620	2	5	120	57	22	240
	MEDIAN	410	680	2	8	120	58	26	460
	MEAN	457	670	2	12	140	60	25	420
	STD DEV	108	46	--	9.6	34.6	3.8	2.3	163.7
63S	96-BM-105A	4,800	480	1	32	82	63	33	460
	97-BMS-118	3,900	120	1	30	75	63	34	680
	98-BMS-108	4,000	710	2	19	120	93	30	480
	MEDIAN	4,000	480	1	30	82	63	33	480
	MEAN	4,230	437	1	27	92	73	32	540
	STD DEV	493	297	0.6	7.0	24.2	17.3	2.1	122

Table 9. Statistical summary of major and trace-element data from total digestions of replicate bed sediment samples taken in different years from the Boulder River watershed, Montana—(continued)

Site Number (fig. 1)	Sample Number	Gallium ppm	Lanthanum ppm	Lead ppm	Lithium ppm	Manganese ppm	Molybdenum ppm	Neodymium ppm	Nickel ppm
1S	97-BMS-137	12	37	18	28	540	< 2	28	10
	98-BMS-114	20	38	26	27	330	< 2	25	11
	MEAN	16	37.5	22	27.5	435	< 2	26.5	10.5
3S	97-BMS-115	17	120	20	22	1,100	< 2	86	14
	98-BMS-113	18	120	24	20	1,300	< 2	83	16
	MEAN	18	120	22	21	1,200	< 2	85	15
10S	97-BMS-112	17	64	79	22	980	< 2	52	13
	98-BMS-116	18	62	81	22	960	< 2	46	16
	MEAN	18	63	80	22	970	< 2	49	15
14S	97-BMS-111	14	65	150	23	1,100	< 2	47	10
	98-BMS-106	17	43	120	22	1,200	< 2	34	14
	MEAN	16	54	135	23	1,150	< 2	47	12
30S	97-BMS-117	14	54	170	24	1,000	< 2	43	10
	98-BMS-110	16	56	160	26	1,200	2	42	15
	MEAN	15	55	165	25	1,100	1	42.5	12.5

Table 9. Statistical summary of major and trace-element data from total digestions of replicate bed sediment samples taken in different years from the Boulder River watershed, Montana—(continued)

Site Number (fig. 1)	Sample Number	Gallium ppm	Lanthanum ppm	Lead ppm	Lithium ppm	Manganese ppm	Molybdenum ppm	Neodymium ppm	Nickel ppm
19S	96-BM-140	17	82	30	20	1,500	< 2	60	16
	97-BMS-110	21	94	38	19	1,500	2	85	16
	98-BMS-105	29	95	44	16	1,900	< 2	81	32
	MEDIAN	21	94	38	19	1,500	< 2	81	16
	MEAN	22	90	37	18	1,630	< 2	75	21
	STD DEV	6.1	7.2	7.0	2.1	230.9	--	13.4	9.2
40S	96-BM-111	17	64	370	36	1,800	< 2	48	19
	97-BMS-116	17	91	330	28	1,900	3	73	18
	98-BMS-111	17	66	210	29	1,300	3	50	20
	MEDIAN	17	66	330	29	1,800	3	50	19
	MEAN	17	74	303	31	1,670	2	57	19
	STD DEV	0.0	15.0	83.3	4.4	321.5	--	13.9	1.0
46S	96-BM-120	18	86	47	27	1,200	< 2	56	13
	97-BMS-121	22	150	86	19	2,000	< 2	110	24
	98-BMS-109	21	140	47	17	1,600	< 2	91	29
	MEDIAN	21	140	47	19	1,600	< 2	91	24
	MEAN	20	125	60	21	1,600	< 2	86	22
	STD DEV	2.1	34.4	22.5	5.3	400.0	--	27.4	8.2

Table 9. Statistical summary of major and trace-element data from total digestions of replicate bed sediment samples taken in different years from the Boulder River watershed, Montana—(continued)

Site Number (fig. 1)	Sample Number	Gallium ppm	Lanthanum ppm	Lead ppm	Lithium ppm	Manganese ppm	Molybdenum ppm	Neodymium ppm	Nickel ppm
50S	96-BM-117	18	51	480	29	4,200	2	34	9
	97-BMS-136	14	96	640	27	1,800	3	66	9
	98-BMS-118	14	67	400	28	2,100	4	46	14
	MEDIAN	14	67	480	28	2,100	3	46	9
	MEAN	15	71	507	28	2,700	3	49	11
	STD DEV	2.3	22.8	122	1.0	1,310	1.0	16.2	2.9
53S	96-BM-106	18	73	310	31	1,700	< 2	47	17
	97-BMS-113	15	96	440	26	1,800	3	66	11
	98-BMS-117	16	62	220	28	1,500	3	46	19
	MEDIAN	16	73	310	28	1,700	3	47	17
	MEAN	16	77	323	28	1,670	2	53	16
	STD DEV	1.5	17.3	111	2.5	152.8	--	11.3	4.2
63S	96-BM-105A	15	50	1,600	26	9,100	5	32	14
	97-BMS-118	27	40	1,600	24	9,600	7	30	17
	98-BMS-108	< 4	63	1,000	23	6,700	9	43	22
	MEDIAN	21	50	1,600	24	9,100	7	32	17
	MEAN	14	51	1,400	24	8,467	7	35	18
	STD DEV	8.5	11.5	346	1.5	1,550	2.0	7.0	4.0

Table 9. Statistical summary of major and trace-element data from total digestions of replicate bed sediment samples taken in different years from the Boulder River watershed, Montana—(continued)

Site Number (fig. 1)	Sample Number	Niobium ppm	Scandium ppm	Silver ppm	Strontium ppm	Thorium ppm	Vanadium ppm	Ytterbium ppm	Yttrium ppm	Zinc ppm
1S	97-BMS-137	20	6	< 2	710	16	40	2	17	61
	98-BMS-114	21	4	< 2	930	9	29	1	11	40
	MEAN	20.5	5	< 2	820	12.5	34.5	1.5	14	50.5
3S	97-BMS-115	25	16	< 2	670	31	130	4	32	110
	98-BMS-113	31	16	< 2	710	72	190	2	32	84
	MEAN	28	16	< 2	690	52	160	3	32	97
10S	97-BMS-112	21	13	< 2	650	36	150	3	27	460
	98-BMS-116	22	13	< 2	600	31	150	2	25	430
	MEAN	22	13	< 2	625	34	150	3	26	445
14S	97-BMS-111	20	12	4	620	26	120	3	23	660
	98-BMS-106	22	12	< 2	600	15	110	2	23	680
	MEAN	21	12	2	610	21	115	3	23	670
30S	97-BMS-117	24	12	< 2	330	18	130	4	31	470
	98-BMS-110	27	13	< 2	320	20	160	3	32	650
	MEAN	25.5	12.5	< 2	325	19	145	3.5	31.5	560

Table 9. Statistical summary of major and trace-element data from total digestions of replicate bed sediment samples taken in different years from the Boulder River watershed, Montana—(continued)

Site Number (fig. 1)	Sample Number	Niobium ppm	Scandium ppm	Silver ppm	Strontium ppm	Thorium ppm	Vanadium ppm	Ytterbium ppm	Yttrium ppm	Zinc ppm
19S	96-BM-140	28	21	< 2	370	67	490	5	48	170
	97-BMS-110	23	22	< 2	460	75	500	6	48	110
	98-BMS-105	17	27	< 2	350	110	980	3	53	170
	MEDIAN	23	22	< 2	370	75	500	5	48	170
	MEAN	23	23	< 2	393	84	657	5	50	150
	STD DEV	5.5	3.2	--	58.6	22.9	280	1.5	2.9	34.6
40S	96-BM-111	28	19	3	290	41	170	4	42	1,700
	97-BMS-116	24	21	< 2	330	39	460	5	42	890
	98-BMS-111	22	18	< 2	340	29	240	3	33	570
	MEDIAN	24	19	< 2	330	39	240	4	42	890
	MEAN	25	19	1	320	36	290	4	39	1,050
	STD DEV	3.1	1.5	--	26.5	6.4	151	1.0	5.2	582
46S	96-BM-120	32	16	< 2	460	25	230	4	40	280
	97-BMS-121	24	16	< 2	500	47	940	6	40	230
	98-BMS-109	17	19	< 2	430	51	750	1	32	180
	MEDIAN	24	16	< 2	460	47	750	4	40	230
	MEAN	24	17	< 2	463	41	640	4	37	230
	STD DEV	7.5	1.7	--	35.1	14.0	368	2.5	4.6	50.0

Table 9. Statistical summary of major and trace-element data from total digestions of replicate bed sediment samples taken in different years from the Boulder River watershed, Montana—(continued)

Site Number (fig. 1)	Sample Number	Niobium ppm	Scandium ppm	Silver ppm	Strontium ppm	Thorium ppm	Vanadium ppm	Ytterbium ppm	Yttrium ppm	Zinc ppm
50S	96-BM-117	19	10	8	360	16	73	2	24	2,300
	97-BMS-136	34	12	6	410	42	150	3	31	990
	98-BMS-118	28	13	6	440	28	140	2	27	1,300
	MEDIAN	28	12	6	410	28	140	2	27	1,300
	MEAN	27	12	7	403	29	121	2	27	1,530
	STD DEV	7.5	1.5	1.2	40.4	13.0	41.9	0.6	3.5	685
53S	96-BM-106	26	13	12	350	38	200	3	33	2,600
	97-BMS-113	26	13	6	430	27	210	3	30	1,000
	98-BMS-117	25	17	2	360	29	220	3	31	740
	MEDIAN	26	13	6	360	29	210	3	31	1,000
	MEAN	26	14	7	380	31	210	3	31	1,450
	STD DEV	0.6	2.3	5.0	43.6	5.9	10.0	--	1.5	1,010
63S	96-BM-105A	17	9	25	240	40	210	2	24	7,300
	97-BMS-118	< 4	8	27	260	< 4	220	2	17	6,800
	98-BMS-108	5	13	26	280	18	350	2	22	4,300
	MEDIAN	11	9	26	260	29	220	2	22	6,800
	MEAN	7	10	26	260	19	260	2	21	6,133
	STD DEV	8.5	2.6	1.0	20.0	15.6	78.1	--	3.6	1,610