UNITED STATES DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

GEOCHEMICAL ANALYSES OF ROCK AND STREAM-SEDIMENT SAMPLES FROM MOUNT EDDY AND CASTLE CRAGS ROADLESS AREAS, SHASTA, SISKIYOU, AND TRINITY COUNTIES, CALIFORNIA

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U.S. Geological Survey
Open-File Report 83-13
1983

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STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to Survey certain areas on Federal lands to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a geochemical survey of the Mount Eddy and Castle Crags Roadless Areas in the Shasta National Forest, Shasta, Siskiyou, and Trinity Counties, California. Mount Eddy and Castle Crags were classified as further planning areas during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

INTRODUCTION

Mount Eddy (05229) and Castle Crags (A5219) Roadless Areas occupy 9,600 and 3,300 acres (39 and 13 km^2) on the eastern edge of the Trinity ultramafic sheet in the eastern part of the Klamath Mountains, between Dunsmuir and Mt. Shasta City in Shasta, Siskiyou, and Trinity Counties, Calif. (fig. 1). The geology of the roadless areas has been studied by Quick (1981), Throckmorton (1978), and Peterson (unpub. data).

The Mount Eddy Roadless Area is underlain by rocks of the Trinity ultramafic sheet, including harzburgite, dunite, and plagioclase lherzolite which are intruded by hornblende diorite stocks and dikes and gabbro dikes associated with the large gabbroic intrusives southwest and northwest of the roadless area. Serpentinized shear zones striking primarily west to northwest are prevalent in the ultramafic rocks. Talus, glacial debris, and alluvium cover much of the area.

The northern Castle Crags area is underlain primarily by part of a large gabbro pluton which intrudes ultramafic rock. Throckmorton (1978) interprets at least some of the ultramafic rocks present near Castle Lake as being cumulates associated with the gabbroic magma rather than with the Trinity ultramafic sheet. The southern Castle Crags area is composed totally of ultramafic rock that is overlain by alluvium on North Fork Castle Creek. Serpentinization increases to the south from Mount Eddy, and in the Castle Crags areas it is not possible (in the field) to distinguish the types of ultramafic rock. Both of the Castle Crags areas lie near the Castle Crags granitic pluton. Numerous dikes and stocks related to the pluton are evident in the northern Castle Crags area.

ANALYTICAL DATA

Fifty-nine rock and 40 stream-sediment samples were collected for semiquantitative emission spectrographic analysis. Also, three stream-sediment-concentrate samples were collected from major drainages of the Mount Eddy area to determine the platinum group metal abundances by fire assay. One quartz sample (82ED27P) was analyzed for gold using atomic absorption methods. Representative rock samples were collected as well as samples of larger quartz veins and samples of dunite containing abundant opaque minerals. Fresh samples were collected wherever possible, but often weathering rinds to 0.25 in. (6 mm) were unavoidable on ultramafic samples. Sample size ranged from about 0.75 lb (0.3 kg) to 2 lb (1 kg) in order to allow for sufficient sample for chemical analysis, hand specimen sample, and thin section. Stream-sediment samples were collected from sandy material

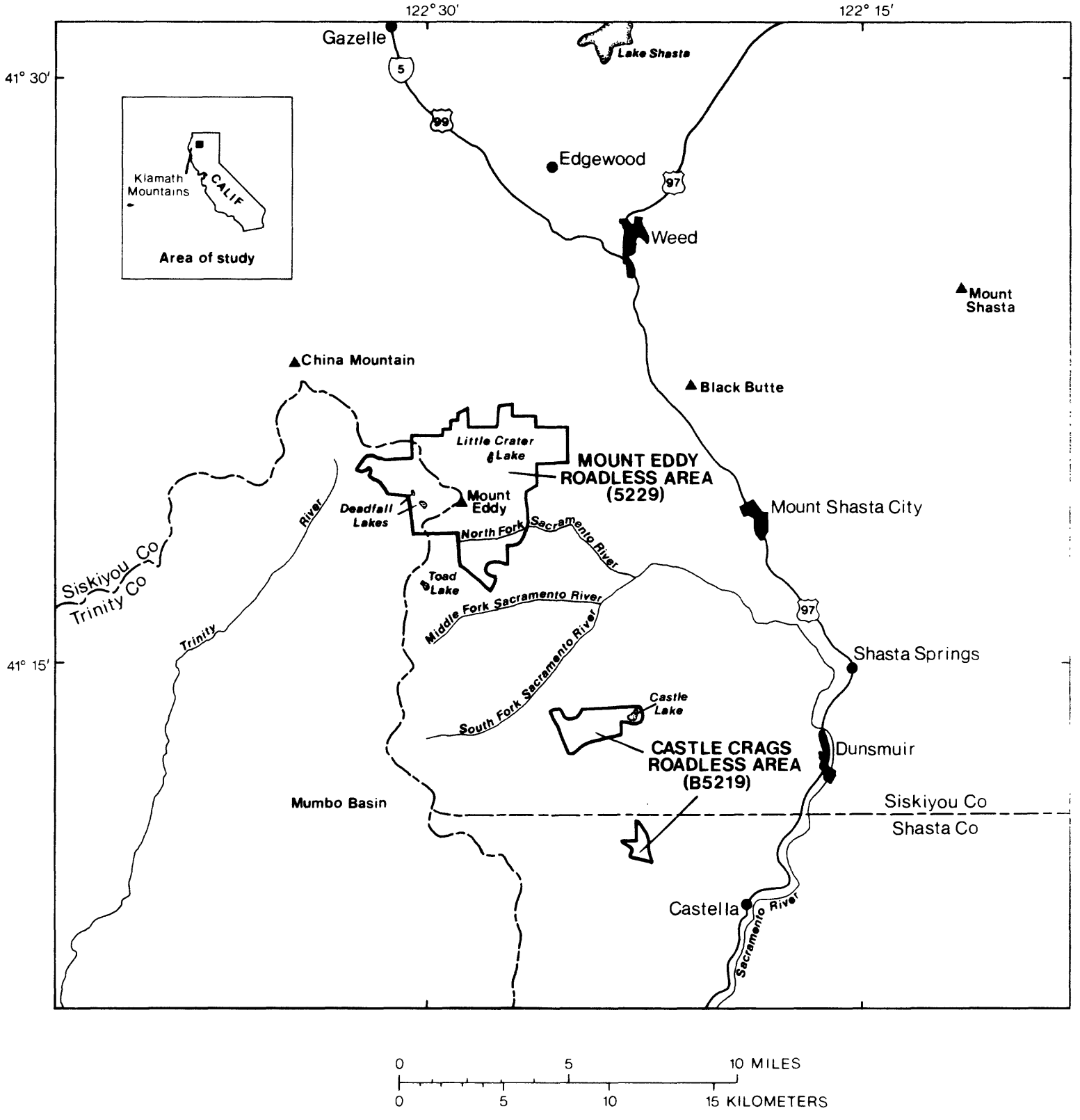

Figure 1. Location of Mount Eddy and Castle Crags Roadless Areas, California.

close to the stream bank. The stream-sediment-concentrate samples were also taken from sandy material near the bank, then concentrated by panning away light material and organics until about 10 percent of the original panful remained. Samples were collected in 1981 and 1982 by J. A. Peterson, M. E. Caress, and J. E. Quick.

Sample preparation and analytical procedure

Rock samples were crushed to 6 mm (0.25 in), split, and pulverized prior to analysis for 31 elements (table 1) by standard semiquantitative emission spectrography (Grimes and Marranzino, 1968). Stream-sediment and stream-sediment-concentrate samples were dried, sieved to minus 80 mesh, and split. The concentrates were separated into heavy and light fractions using bromoform and the light fraction discarded. The sediments were analyzed by semiquantitative emission spectrography for 31 elements (table 1). Additionally, the stream-sediment samples were analyzed for gold, silver, and mercury by atomic absorption (Ward and others, 1969). The stream-sediment-concentrates were analyzed by fire assay for platinum-group metals (Haffty and others, 1977). Sample analyses were performed by B. Adrian, B. Arbogast, R. R. Carlson, Fairfield, D. J. Grimes, and R. W. Leinz at the U.S. Geological Survey in Denver, Colo.

Data

Except for calcium, iron, magnesium, and titanium which are reported in percents, analytical abundances are reported in parts per million (ppm). Table 2 lists the trace element analyses for 59 rock samples, table 3 the analyses for 40 stream-sediment samples, and table 4 the analyses for 3 stream-sediment-concentrate samples. Elements not reported present above the lower limit of determination given in table 1 were omitted from tables 2, 3, and 4. Semiquantitative spectrographic analyses are reported as the midpoints of a six-step geometric interval whose boundaries are 0.12, 0.18, 0.26, 0.38, 0.56, 0.83, 1.2, and so on, and whose midpoints are 0.15, 0.2, 0.3, 0.5, 0.7, 1.0, and so on. The precision of these values is approximately plus or minus one interval at 68 percent confidence or two intervals at 98 percent confidence (D. J. Grimes, oral commun., 1980). Atomic absorption, vapor detector, and fire-assay methods are quantitative and are reported as discrete values.

STATPAC files (see Van Trump and Miesch, 1976) were generated for all data using program d0092 (card entry). STATPAC program publst (publication listing), written by J. B. Fife of the U.S. Geological Survey, was used to produce tables 2, 3, and 4.

Table 1.--Lower limits of analytical determination for rock, stream-sediment, and stream sediment concentrate samples from Mount Eddy and Castle Crags Roadless Areas

[Limits of determination of elements are in parts per million (ppm) except where noted. All analyses are by spectrographic methods except for atomic absorption (aa) gold and silver, and mercury, and fire-assay (as) platinum group metals.]

Element	Determination limit rocks	Determination limit stream-sediments	Determination limit stream-sediment concentrates
Ca	0.05 percent	0.05 percent	0.1 percent
Fe	.05 percent	.05 percent	.1 percent
Mg	.02 percent	.02 percent	.05 percent
Ti	.002 percent	.002 percent	.005 percent
Ag	.5	.5	1
As	200	200	500
Au	10	10	20
B	10	10	20
Ba	20	20	50
Be	1	1	2
Bi	10	10	20
Cd	20	20	50
Co	5	5	10
Cr	10	10	20
Cu	5	5	10
La	20	20	50
Mn	10	10	20
Mo	5	5	10
Nb	20	20	50
Ni	5	5	10
Pb	10	10	20
Sb	100	100	200
Sc	5	5	10
Sn	10	10	200
Sr	100	100	200
Th	100	100	200
V	10	10	20
W	50	50	100
Y	10	10	20
Zn	200	200	500
Zr	10	10	20
Au (aa)	.05	.05	--
Ag (aa)	--	.05	--
Hg (aa)	--	.02	--
Pt (as)	--	--	.01
Pd (as)	--	--	.002
Rh (as)	--	--	.004
Ru (as)	--	--	.4
Ir (as)	--	--	.1
Au (as)	--	--	.002

Table 2.--Results of rock geochemical analyses from Mount Eddy and Castle Crags Roadless Areas

[Qualifying codes in analytical data are defined as follows: N, not detected at the limits of analytical detection; <, detected, but below the lower limit of analytical determination; >, detected, but above the upper limit of analytical determination; --, no analysis performed. Rock codes are defined as follows: gb, gabbro; gr, granitic rocks; hbd, hornblende diorite; pd, ultramafic rocks and serpentinite; qtz, quartz vein material]

Sample	utm east	utm north	Ca-pct. s	Fe-pct. s	Mg-pct. s	Ti-pct. s	B-ppm s	Ba-ppm s	Be-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s
82CC01M	552,560	4,564,500	3.00	3.0	1.0	.300	N	1,500	1	7	20	N
82CC01P	551,950	4,563,680	3.00	7.0	>10.0	.100	N	N	N	150	1,500	10
82CC02P	551,990	4,563,580	5.00	5.0	3.0	.500	<10	<20	N	30	150	70
82CC03P	551,700	4,563,560	2.00	2.0	.7	.300	N	1,000	1	7	20	N
82CC05M	552,400	4,563,000	<.05	5.0	>10.0	.030	<10	N	N	50	1,500	N
82CC05P	552,220	4,563,610	1.50	7.0	>10.0	.030	15	N	N	100	3,000	70
82CC07P	552,270	4,563,800	5.00	7.0	5.0	.500	10	500	N	50	200	100
82CC08M	552,580	4,562,950	1.50	2.0	1.0	.300	N	500	<1	7	50	70
82CC11M	551,990	4,563,070	2.00	3.0	1.5	.300	<10	1,000	1	10	15	20
82CC14P	551,650	4,557,470	.05	7.0	>10.0	.015	30	N	N	100	1,000	7
82CC15M	547,960	4,561,500	10.00	5.0	7.0	.070	N	<20	N	30	70	10
82CC16M	542,850	4,570,960	.20	5.0	>10.0	.010	20	N	N	100	1,000	5
82CC16P	551,160	4,563,840	5.00	1.5	2.0	.300	<10	<20	N	10	50	70
82CC17M	541,300	4,570,050	10.00	5.0	10.0	.100	<10	N	N	70	150	70
82CC17P	551,200	4,564,280	15.00	5.0	7.0	.070	N	N	N	50	200	7
82CC18M	541,810	4,569,430	.20	5.0	>10.0	.015	100	N	N	70	2,000	20
82CC18P	551,350	4,565,180	.20	7.0	>10.0	.030	70	N	N	100	2,000	N
82CC20P	550,990	4,562,430	.70	5.0	10.0	.030	<10	N	N	100	1,500	50
82CC22P	548,370	4,562,820	7.00	7.0	10.0	.500	10	<20	N	70	700	100
82CC23P	547,990	4,563,940	7.00	5.0	>10.0	.100	<10	N	N	70	1,000	30
82CC25P	549,330	4,562,810	10.00	7.0	7.0	.100	<10	<20	N	50	100	15
82ED01M	543,550	4,573,750	1.00	7.0	>10.0	.015	100	N	N	150	2,000	30
82ED01P	541,700	4,570,830	.10	2.0	7.0	<.002	100	N	N	50	2,000	<5
82ED02M	544,040	4,572,920	1.00	7.0	>10.0	.050	100	N	N	150	1,500	20
82ED02P	543,190	4,571,160	.07	7.0	>10.0	.007	10	N	N	100	5,000	5
82ED03M	545,100	4,575,420	.70	5.0	>10.0	.020	70	N	N	100	1,500	10
82ED03P	545,420	4,571,390	1.00	2.0	2.0	.500	10	150	N	10	30	10
82ED04M	545,780	4,575,900	.20	7.0	>10.0	<.002	150	N	N	150	2,000	N
82ED04P	544,450	4,571,490	.20	5.0	>10.0	.005	10	N	N	100	2,000	5
82ED05M	546,220	4,576,920	.70	5.0	>10.0	.020	10	N	N	50	2,000	N
82ED05P	543,950	4,570,790	.20	7.0	>10.0	.007	70	N	N	200	2,000	7
82ED06M	546,800	4,577,530	5.00	3.0	2.0	.500	N	2,000	<1	15	100	<5
82ED06P	542,025	4,572,050	1.50	5.0	>10.0	.070	N	N	N	100	2,000	50
82ED07M	546,900	4,577,630	10.00	10.0	7.0	.700	15	300	N	70	70	15
82ED07P	541,900	4,572,880	<.05	5.0	>10.0	.020	100	N	N	100	3,000	<5
82ED08P	541,400	4,573,320	1.00	7.0	>10.0	.050	N	N	N	100	2,000	20
82ED09P	541,100	4,573,840	5.00	3.0	2.0	.300	<10	500	<1	15	100	15
82ED10P	540,800	4,574,220	5.00	5.0	2.0	.500	30	700	<1	15	100	10
82ED11P	545,260	4,574,450	.05	7.0	>10.0	.002	70	N	N	100	2,000	N
82ED12P	545,400	4,574,450	5.00	5.0	10.0	.500	N	<20	N	70	700	<5
82ED13P	545,960	4,574,340	1.00	7.0	>10.0	.050	15	N	N	150	2,000	20
82ED14P	546,780	4,573,720	.70	7.0	>10.0	.030	20	N	N	150	2,000	<5
82ED15P	541,450	4,576,750	5.00	3.0	2.0	.500	<10	500	<1	15	100	10
82ED16P	541,600	4,575,750	2.00	1.0	.5	.150	N	<20	N	<5	30	N
82ED17P	542,400	4,575,080	1.50	7.0	>10.0	.050	10	N	N	100	3,000	50

Sample	La-ppm s	Mn-ppm s	Mo-ppm s	Ni-ppm s	Pb-ppm s	Sc-ppm s	Sr-ppm s	V-ppm s	Y-ppm s	Zr-ppm s	Rock type
82CC01M	30	700	N	20	15	5	1,000	50	15	150	gr
82CC01P	<20	2,000	N	1,500	N	30	N	100	15	N	pd
82CC02P	N	1,000	N	70	N	50	100	150	30	<10	gb+pd
82CC03P	N	700	N	20	10	5	1,000	50	10	100	gr
82CC05M	N	300	N	2,000	10	7	N	30	<10	N	pd
82CC05P	N	700	N	2,000	N	15	N	50	<10	N	pd
82CC07P	<20	1,000	N	200	<10	30	500	200	20	50	gb
82CC08M	20	300	N	50	15	<5	1,000	30	10	100	gr
82CC11M	20	1,000	N	20	20	7	1,500	100	15	100	gr
82CC14P	N	700	N	2,000	N	7	N	30	N	N	pd
82CC15M	<20	1,000	N	100	<10	50	<100	100	<10	<10	gb
82CC16M	30	500	N	2,000	N	5	N	20	N	N	pd
82CC16P	<20	300	N	30	<10	10	<100	70	<10	20	qtz
82CC17M	<20	1,000	N	100	N	50	N	200	N	N	gb
82CC17P	N	700	N	100	N	30	N	100	N	N	gb
82CC18M	30	700	N	2,000	<10	7	N	50	N	N	pd
82CC18P	N	700	N	2,000	N	15	N	50	N	N	pd
82CC20P	N	500	N	1,500	<10	10	N	50	N	N	pd
82CC22P	N	1,000	N	700	<10	50	<100	200	15	N	gb
82CC23P	N	1,000	N	1,000	N	50	N	150	<10	N	pd+gb
82CC25P	N	1,500	N	100	N	30	100	100	<10	N	gb
82ED01M	<20	1,000	N	2,000	N	10	N	50	N	N	pd
82ED01P	<20	700	N	1,500	N	<5	N	20	<10	N	pd
82ED02M	N	700	N	1,500	N	10	N	70	N	N	pd
82ED02P	N	1,000	N	2,000	N	5	N	30	N	N	pd
82ED03M	20	1,000	N	1,500	N	5	N	30	N	N	pd
82ED03P	20	200	N	50	15	<5	300	50	N	100	hbd
82ED04M	N	1,000	N	2,000	N	7	N	30	N	N	pd
82ED04P	N	700	N	1,500	N	5	N	30	N	N	pd
82ED05M	<20	500	N	1,500	<10	7	N	30	N	N	pd
82ED05P	N	1,000	N	2,000	N	7	N	30	N	N	pd
82ED06M	30	1,000	N	50	15	10	500	150	20	150	hbd
82ED06P	N	1,000	N	2,000	N	15	N	70	N	N	pd
82ED07M	20	2,000	N	30	<10	50	700	300	30	20	hbd
82ED07P	N	1,000	N	2,000	N	5	N	50	N	N	pd
82ED08P	N	1,000	N	2,000	N	15	N	50	<10	N	pd
82ED09P	20	700	N	50	<10	10	500	100	15	100	hbd
82ED10P	20	1,000	N	30	<10	10	500	100	15	100	hbd
82ED11P	N	700	N	2,000	N	5	N	15	N	N	pd
82ED12P	N	1,000	N	500	N	50	N	200	20	15	pd
82ED13P	N	1,000	N	2,000	N	15	N	70	N	N	pd
82ED14P	N	1,000	N	2,000	N	10	N	30	N	N	pd
82ED15P	20	1,000	N	30	10	10	500	100	30	100	hbd
82ED16P	<20	200	N	15	N	<5	N	70	10	N	qtz
82ED17P	N	1,000	N	2,000	N	20	N	70	N	N	pd

Sample	utm east	utm north	Ca-pct. s	Fe-pct. s	Mg-pct. s	Ti-pct. s	B-ppm s	Ba-ppm s	Be-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s
82ED18P	543,060	4,574,660	.15	7.0	>10.0	.030	50	N	N	100	3,000	<5
82ED19P	543,700	4,574,150	<.05	5.0	10.0	.003	100	N	N	70	1,500	5
82ED20P	542,900	4,573,750	.15	5.0	>10.0	.015	100	N	N	100	2,000	20
82ED21P	544,700	4,574,200	1.50	7.0	>10.0	.070	70	N	N	100	3,000	10
82ED22P	544,500	4,573,830	<.05	5.0	>10.0	.005	100	N	N	70	2,000	5
82ED23P	540,040	4,574,980	5.00	5.0	2.0	.500	<10	1,000	<1	20	100	15
82ED24P	543,400	4,575,900	.05	7.0	>10.0	.015	10	N	N	150	3,000	<5
82ED25P	542,500	4,576,080	3.00	5.0	2.0	.500	N	500	<1	20	100	10
82ED26P	542,980	4,576,900	1.00	7.0	>10.0	.050	50	N	N	150	2,000	15
82ED27P	543,100	4,576,940	N	2.0	.1	.050	N	<20	N	20	<10	700
82ED28P	543,500	4,577,180	5.00	5.0	2.0	.500	10	1,000	1	30	20	15
82ED29P	544,300	4,575,130	3.00	7.0	>10.0	.150	<10	<20	N	100	2,000	50
82ED30P	544,950	4,576,480	.15	7.0	>10.0	.010	<10	N	N	150	2,000	N
82ED31P	544,950	4,577,180	5.00	5.0	3.0	.500	N	1,000	1	20	100	15

Sample	La-ppm s	Mn-ppm s	Mo-ppm s	Ni-ppm s	Pb-ppm s	Sc-ppm s	Sr-ppm s	V-ppm s	Y-ppm s	Zr-ppm s	Rock type
82ED18P	N	1,000	N	2,000	N	7	N	50	N	N	pd
82ED19P	<20	700	N	2,000	<10	<5	N	20	N	N	pd
82ED20P	N	700	N	2,000	N	7	N	50	N	N	pd
82ED21P	N	1,000	N	2,000	15	10	N	70	N	N	pd
82ED22P	N	700	N	2,000	N	<5	N	20	<10	N	pd
82ED23P	20	1,000	N	50	10	10	500	150	20	150	hbd
82ED24P	N	1,000	N	3,000	<10	5	N	30	N	N	pd
82ED25P	20	1,000	N	50	10	10	500	150	30	100	hbd
82ED26P	N	700	N	2,000	N	15	N	50	N	N	pd
82ED27P	<20	50	300	15	N	N	N	30	N	N	qtz
82ED28P	20	1,000	N	20	15	15	500	200	30	70	hbd
82ED29P	<20	1,000	N	2,000	<10	20	N	70	<10	N	pd
82ED30P	N	1,000	N	3,000	<10	5	N	20	N	N	pd
82ED31P	30	1,500	N	30	<10	15	700	200	20	150	hbd

Table 3.--Results of stream-sediment analyses from Mount Eddy and Castle Crags Roadless Areas

[Qualifying codes in analytical data are defined as follows: N, not detected at the limits of analytical detection; <, detected, but below the lower limit of analytical determination; >, detected, but above the upper limit of analytical determination; --, no analysis performed]

Sample	utm east	utm north	Ca-pct. s	Fe-pct. s	Mg-pct. s	Ti-pct. s	Ag-ppm s	B-ppm s	Ba-ppm s	Be-ppm s	Co-ppm s	Cr-ppm s
81E01S	539,095	4,575,500	.7	3.0	5.0	.15	N	20	200	<1.0	70	3,000
81E02S	538,920	4,574,730	2.0	5.0	5.0	.15	N	15	150	N	100	5,000
81E03S	540,205	4,575,610	.5	7.0	7.0	.15	15.0	15	150	<1.0	100	3,000
81E04S	540,095	4,575,490	.5	1.0	1.5	.10	N	15	100	<1.0	20	1,000
81E05S	543,790	4,575,840	.3	3.0	5.0	.07	N	20	70	<1.0	70	2,000
81E06S	543,870	4,575,780	.3	3.0	7.0	.07	N	10	50	N	70	2,000
81E07S	544,300	4,577,320	.7	3.0	5.0	.10	N	20	100	N	70	3,000
81E08S	544,225	4,577,350	.3	5.0	7.0	.07	N	15	70	N	70	5,000
81E09S	544,445	4,578,715	.7	1.5	1.5	.10	N	10	150	<1.0	15	1,500
81E10S	544,735	4,578,285	.3	2.0	7.0	.05	N	15	50	N	70	2,000
81E11S	549,820	4,576,630	.7	2.0	3.0	.10	N	20	200	<1.0	50	3,000
81E12S	547,225	4,573,040	.5	3.0	5.0	.15	N	20	200	<1.0	70	1,500
81E13S	547,210	4,569,660	.5	7.0	7.0	.15	N	15	100	N	100	5,000
81E14S	547,125	4,569,580	.7	3.0	5.0	.15	N	50	70	<1.0	70	2,000
81E15S	546,640	4,569,480	.7	5.0	7.0	.15	N	15	100	N	70	2,000
81E16S	546,695	4,569,592	.7	7.0	5.0	.20	N	20	100	N	100	5,000
81E17S	546,035	4,569,050	.7	5.0	7.0	.15	N	20	100	N	100	2,000
81E18S	546,045	4,569,175	.5	5.0	7.0	.07	N	20	70	N	100	3,000
81E19S	545,200	4,568,890	.7	3.0	2.0	.10	N	15	70	<1.0	70	3,000
81E20S	545,026	4,568,905	.7	5.0	3.0	.10	N	20	70	N	100	5,000
81E21S	547,830	4,565,750	1.5	1.5	2.0	.10	N	<10	150	N	30	1,500
81E22S	547,700	4,565,740	1.0	5.0	5.0	.30	N	20	70	N	100	5,000
81E23S	546,800	4,564,460	2.0	1.5	2.0	.10	<.5	<10	30	N	20	300
81E24S	546,620	4,564,600	1.0	5.0	3.0	.15	N	10	150	<1.0	70	3,000
81E25S	552,040	4,566,320	1.5	3.0	2.0	.20	N	<10	300	<1.0	20	2,000
81E26S	550,190	4,564,360	2.0	2.0	2.0	.15	N	10	100	<1.0	20	200
81E27S	551,150	4,561,310	.7	3.0	1.5	.15	N	<10	500	2.0	20	500
81E28S	551,030	4,561,400	1.5	5.0	5.0	.20	N	10	300	<1.0	70	1,500
81E29S	551,040	4,560,900	.7	1.5	1.5	.10	N	<10	300	1.5	15	1,000
81E30S	550,890	4,560,810	2.0	5.0	7.0	.15	N	10	70	N	50	2,000
81E31S	551,590	4,559,630	1.0	3.0	5.0	.15	N	10	300	1.0	50	700
81E32S	551,520	4,559,530	.5	5.0	7.0	.10	N	10	100	<1.0	70	3,000
81E33S	551,940	4,559,250	1.0	3.0	5.0	.10	N	20	200	1.0	50	2,000
81E34S	552,090	4,559,350	.7	5.0	.7	.30	N	10	700	3.0	7	70
81E35S	552,350	4,558,630	.7	5.0	5.0	.15	N	10	300	1.0	50	3,000
81E36S	552,510	4,558,470	.5	1.5	.7	.10	N	<10	500	2.0	7	150
81E37S	552,600	4,557,330	.5	7.0	7.0	.15	N	10	300	<1.0	100	3,000
81E38S	552,680	4,557,400	.7	3.0	5.0	.15	N	10	500	1.0	50	2,000
81E39S	552,680	4,556,910	.5	5.0	5.0	.15	N	10	200	<1.0	70	2,000
81E40S	552,760	4,557,000	.7	7.0	7.0	.20	N	10	300	<1.0	100	5,000

Sample	Cu-ppm s	Mn-ppm s	Ni-ppm s	Pb-ppm s	Sc-ppm s	Sr-ppm s	V-ppm s	Y-ppm s	Zr-ppm s	Ag-ppm aa	Hg-ppm inst
81E01S	15	1,000	700	<10	15	200	100	10	20	.40	.45
81E02S	30	1,000	700	10	50	<100	150	10	50	.40	.26
81E03S	20	700	1,500	10	10	N	100	10	30	.40	.20
81E04S	10	500	300	N	7	N	50	10	20	.45	.35
81E05S	15	500	1,500	10	5	N	50	10	10	.30	.35
81E06S	15	500	1,500	10	7	N	50	10	15	.30	.30
81E07S	10	500	1,000	10	10	N	70	10	15	.35	--
81E08S	15	1,000	2,000	10	7	<100	70	10	15	.30	.24
81E09S	10	700	300	<10	5	N	70	10	70	.30	.20
81E10S	10	500	1,000	N	5	<100	50	10	20	.30	.24
81E11S	50	700	1,000	15	15	N	100	10	50	.40	.14
81E12S	30	700	1,000	<10	10	<100	70	10	20	.30	.06
81E13S	20	1,000	2,000	10	15	<100	70	10	20	.30	.12
81E14S	15	700	1,500	N	15	<100	70	10	20	.20	.35
81E15S	20	1,000	2,000	<10	15	N	70	10	15	.20	.08
81E16S	30	1,000	2,000	<10	20	N	100	10	30	.25	.06
81E17S	30	1,000	2,000	<10	15	N	70	10	15	.25	.06
81E18S	20	700	2,000	<10	10	N	50	10	20	.25	.90
81E19S	20	700	2,000	20	10	N	70	15	70	.25	.16
81E20S	30	1,000	2,000	<10	15	N	100	10	10	.20	.22
81E21S	15	700	300	N	20	<100	100	10	10	.35	.12
81E22S	30	1,000	2,000	N	30	<100	150	15	100	.30	.08
81E23S	30	700	150	<10	30	N	150	10	<10	.50	.06
81E24S	30	1,000	1,000	10	20	<100	100	10	20	.30	.08
81E25S	20	1,000	200	15	20	300	100	10	15	.20	.10
81E26S	50	700	150	<10	30	<100	150	10	15	.15	.12
81E27S	10	1,000	300	10	7	500	100	10	70	.15	.06
81E28S	50	1,000	1,500	15	20	200	150	10	30	.25	.04
81E29S	15	500	200	10	7	300	70	10	50	.20	.12
81E30S	30	1,000	700	15	30	N	150	10	10	.30	.12
81E31S	20	700	500	10	10	300	100	10	50	.10	.08
81E32S	30	700	1,500	<10	10	N	100	10	10	.05	.06
81E33S	30	700	1,000	10	10	200	100	10	50	.20	.12
81E34S	7	1,000	50	50	5	1,000	200	10	200	<.05	.16
81E35S	15	700	500	10	10	500	100	10	50	.10	.06
81E36S	5	300	100	30	<5	1,000	50	10	70	.10	.08
81E37S	30	1,500	2,000	15	15	300	70	10	70	N	.16
81E38S	20	500	1,000	10	10	700	100	10	70	.10	.08
81E39S	20	700	1,000	<10	10	200	100	10	70	<.05	.06
81E40S	20	1,000	1,500	15	15	500	150	10	70	<.05	.16

Table 4.--Results of stream-sediment concentrate samples from Mount Eddy and Castle Crags Roadless Areas

[Qualifying codes in analytical data are defined as follows: N, not detected at the limits of analytical detection]

Sample	utm east	utm north	Ca-pct. s	Fe-pct. s	Mg-pct. s	Ti-pct. s	B-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mn-ppm s	Ni-ppm s	Sc-ppm s
DEADFALL	539,230	4,575,650	7.0	20.0	10.00	1.5	20	100	>10,000	30	70	3,000	1,500	30
DOBKINS	544,690	4,578,250	1.5	15.0	20.00	0.5	<20	100	>10,000	10	50	2,000	2,000	15
MORGAN	547,600	4,572,560	1.5	20.0	15.00	0.5	20	100	>10,000	20	50	2,000	2,000	15

Sample	Sr-ppm	V-ppm	Y-ppm	Zr-ppm	Au-ppm
DEADFALL	300	500	100	700	0.200
DOBKINS	N	150	N	N	0.010
MORGAN	N	200	N	N	N

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