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Geochemical and Mineralogical Data for Altered Rocks and Soils Collected In and Near the William Fork and St. Louis Peak Roadless Areas Clear Creek, Grand, and Summit Counties, Colorado

by

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STUDIES RELATED TO WILDERNESS

Under the provisions of the Wilderness Act (Public Law 88-577, September 3, 1964) and related acts, the U.S. Geological Survey and the U.S. Bureau of Mines have been conducting mineral surveys of wilderness and primitive areas. Areas officially designated as "wilderness," "wild," or "canoe" when the act was passed were incorporated into the National Wilderness Preservation System, and some of them are presently being studied. The act provided that areas under consideration for wilderness designation should be studied for suitability for incorporation into the Wilderness System. The mineral surveys constitute one aspect of the suitability studies. The act directs that the results of such surveys are to be made available to the public and be submitted to the President and the Congress. This report discusses the results of a mineral survey of the Williams Fork Roadless Area (2-114) and the St. Louis Peak Roadless Area (F2361), in the Arapahoe National Forest, Clear Creek, Grand, and Summit Counties, Colorado. The roadless areas 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

The U.S. Geological Survey and the U.S. Bureau of Mines conducted field studies from 1979 through 1982 to assess the mineral resource potential of the Williams Fork and St. Louis Peak study areas. Included were geological, geochemical, and geophysical studies by the U.S. Geological Survey and investigation of known prospects and mines by the U.S. Bureau of Mines.

This report describes sample collection methods, sample preparation techniques, analytical procedures, and data storage for selected rock and soil geochemical samples collected during the course of detailed geologic mapping in the study areas. A table of ore and gangue mineral observations, a table of geochemical data and a sample site location map are included.

Information from this report was used in preparing other reports on the study areas, including the mineral resource potential report (Theobald and others, 1983) and a report on the distribution of selected metals in altered rocks and soils (Eppinger, Theobald, Barton, and Carlson, in preparation).

The location and approximate boundaries of the contiguous areas are shown in figure 1.

SAMPLING MEDIA

Altered rocks and soils were sampled for geochemical analysis during the detailed geologic mapping phase of the assessment studies. These samples are biased, taken from fault zones, shear zones, alteration zones, prospects, and adits. Though not of a uniform or systematic character, these samples provide an indication of type and local intensity of mineralization.

In most cases, the "soil" samples were taken across fault or shear zones and are simply fault gouge. Samples were observed by hand lens in the field and ore and gangue minerals, when present, were recorded. These data are presented in table 1.

SAMPLE COLLECTION

Fifty soil and 207 rock samples were collected for analysis. Sample sites were plotted in the field on the following 1:24,000 U.S.G.S. maps: Loveland Pass (1958), Byer's Peak (1957), Ute Peak (1980), and Dillon (1970). Sample sites were later transferred to a 1:50,000 stable base map. Sample sites were assigned a WFO prefix, a three-digit number, and an R or D suffix for rocks or soils, respectively. Numbers following the R or D suffix correspond to multiple samples taken at the same site.

The samples included in this report were collected only in the areas in which geology was mapped by the authors during the years 1979 through 1982. Roughly, those areas include the northeastern part of the Williams Fork Roadless Area, all but the northernmost part of the St. Louis Peak Roadless Area, and the corridor between these two study areas (see index map showing principal sources of geologic data in Eppinger, Theobald, and Carlson, in preparation).

SAMPLE PREPARATION AND ANALYSIS

Rock samples were crushed to approximately 5 mm and passed through a sample splitter for uniformity. Rock and soil samples were pulverized to approximately -150 mesh. Quartz sand was passed through the pulverizing mill between each sample to minimize the possibility of cross-contamination. A 10 mg fraction of the homogeneous sample was then analyzed for 31 elements by the six-step semiquantitative emission spectrographic method of Grimes and Marranzino (1968). The spectrographic results are reported at the approximate geometric midpoints: 1.0, 0.7, 0.5, 0.3, 0.2, 0.15 (or appropriate multiples of ten) of ranges whose respective boundaries are: 1.2, 0.83, 0.56, 0.38, 0.22, 0.18, 0.12 (or appropriate multiples of 10). The lower limits of detection are given in table 2. Precision of a reported value is plus or minus one interval at the 83% confidence level, or plus or minus two intervals at the 96% confidence level (Motooka and Grimes, 1976).

DATA STORAGE AND PROCESSING

The emission spectrographic analytical results for the rocks and soils, along with the latitude and longitude of the sample locations, are presented in table 3. An entry of N indicates that the element was not detected at the lower limit of detection. A symbol "<" indicates that the element was present, but below the stated lowest reporting interval. A symbol ">" indicates that the element was present in excess of the stated upper limit of analytical determination. Data for the elements Fe, Mg, Ca, and Ti are given in weight percent (pct). All other data are given in parts per million (ppm). A sample site location map is shown on Plate 1.

The analyses, along with the latitude and longitude of the sample locations, were entered in the U.S. Geological Survey computerized Rock Storage System (RASS) (VanTrump and Miesch, 1977).

REFERENCES

Eppinger, R. G., Theobald, P. K., Barton, H. N., and Carlson, R. R., in preparation, Anomaly patterns for Ag, Mo, Pb, and Zn in altered rocks and soils, Williams Fork and St. Louis Peak Roadless Areas, Clear Creek, Grand, and Summit Counties, Colorado: U.S. Geological Survey Miscellaneous Field Studies Report, MF-1588D.

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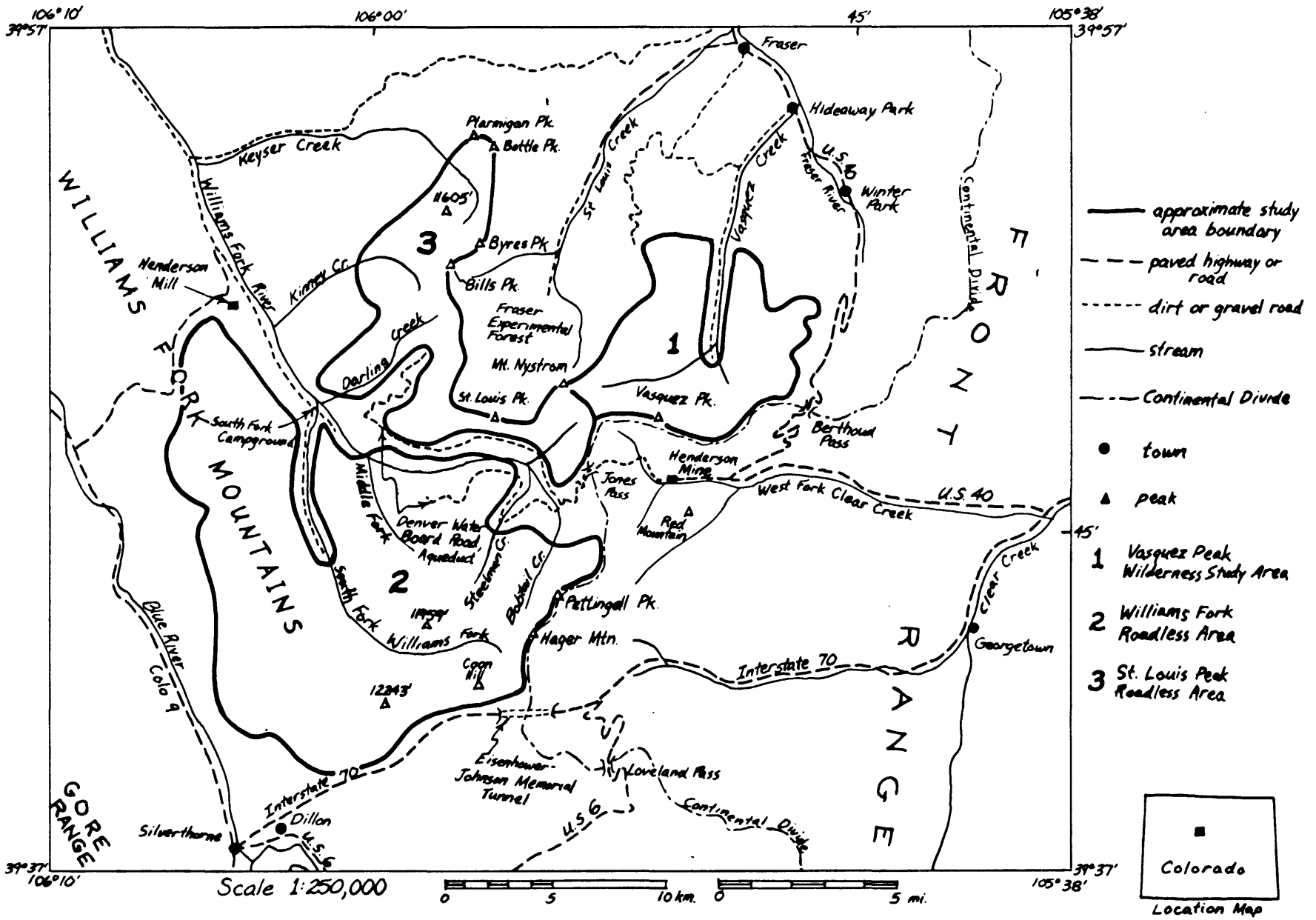

Figure 1.-- Map of Study Area

Table 1.--Ore/gangue minerals observed in rock samples

Key to lithologic symbol:
- hgn hornblende gneiss
- bgn biotite gneiss
- sill sillimanite gneiss
- bcg Boulder Creek granite
- spg Silver plume granite
- rhy rhyolite

Field No.	Sample Source	Ore/Gangue Minerals Observed
WF0288R	prospect; fault zone in hgn	limonite
WF0292R	outcrop; fault zone in hgn	carbonate, limonite
WF0293R	outcrop; cataclastic bgn	pyrite
WF0323R	outcrop; hgn gossan	limonite
WF0324R	outcrop; hgn gossan	limonite
WF0330F	float; hgn gossan	limonite
WF0337R1-5	float; hgn gossan	limonite
WF0350R	outcrop; shear zone in hgn	limonite, sphalerite (?)
WF0358R	prospect; shear zone in hgn	limonite
WF0364R	prospect; shear zone in hgn	limonite
WF0365R	prospect; shear zone in hgn	limonite
WF0371R	prospect; shear zone in hgn	limonite
WF0383R	prospect; fault zone in bgn/hgn	limonite
WF0430D	prospect; shear zone in bcg	limonite
WF0540R	outcrop; joint surfaces in spg	fluorite, limonite, Mn oxide
WF0541R	outcrop; vienlets in spg	pryite, quartz
WF0542R	outcrop veins in spg	fluorite, pyrite pseudomorphs, drusy quartz
WF0543R	float; spg	drusy quartz, molybdenite, pyrite
WF0544R	outcrop; veins in spg	fluorite, quartz
WF0550R	adit dump; shear zone in spg	fluorite, limonite, pyrite
WF0551R	prospect; shear zone in spg	pyrite
WF0552R	prospect; spg	pyrite
WF0553R	prospect; spg	limonite
WF0554R	adit dump (Bobtail Mine); spg	galena, limonite, pyrite, secondary Cu, sphalerite
WF0555R	adit dump; shear zone in spg	galena, pyrite
WF0556R1,2	outcrop; shear zone in spg	limonite, Mn oxide
WF0558R	prospect, fault zone in spg	limonite
WF0560R	prospect, shear zone in spg	fluorite, pyrite
WF0561R	adit dump; spg	arsenopyrite (?), pyrite
WF0562R	adit dump; veins in spg	galena, pyrite, quartz, sphalerite
WF0563R	adit dump; spg	pyrite
WF0564R	adit dump; spg	arsenopyrite (?), pyrite, sphalerite pyrite
WF0565R	adit dump; spg	pyrite
WF0573R	outcrop; shear zone in spg	fluorite, limonite
WF0581R	prospect, bgn	fluorite, limonite, magnetite
WF0585R	prospect; spg	limonite
WF0586R	prospect; spg	galena, limonite, pyrite
WF0587R	adit dump; spg	limonite, pyrite, sphalerite
WF0588R	adit; shear zone in spg	limonite
WF0622R	outcrop; veins in bgn	magnetite, quartz
WF0636R	outcrop; shear zone in bgn	pyrite
WF0646R2	float; sheared spg	fluorite

Table 1.--Continued

Field No.	Sample Source	Ore/Gangue Minerals Observed
WF0667R	outcrop; shear zone in spg	fluorite, magnetite
WF0672R	outcrop; shear zone in spg	fluorite
WF0679R	outcrop; fault zone in spg	fluorite, pyrite pseudomorphs
WF0681R	outcrop; fault zone in spg	drusy quartz, fluorite, pyrite pseudomorphs
WF0683R	outcrop; fault zone in spg	fluorite, limonite
WF0696R	outcrop; veins in spg	malachite, quartz
WF0698R1,2	outcrop; shear zone in spg	drusy quartz, fluorite, silica
WF0699R	outcrop; spg	fluorite
WF0702R	outcrop; fault zone in spg	chalcopyrite, fluorite, malachite, pyrite pseudomorphs
WF0704R	float; spg	pyrite
WF0706R1	outcrop; spg	pyrite
WF0708R	outcrop; sill	chalcopyrite, pyrite
WF0710R	outcrop; shear zone in spg	fluorite
WF0784R	prospect; shear zone in spg	limonite
WF0785R	prospect; fault zone in spg	drusy quartz, limonite, Mn oxide
WF0786R	outcrop, fault zone in spg	fluorite, limonite, silica
WF0787R	outcrop, fault zone in spg	chalcedony, drusy quartz, fluorite, limonite, pyrite
WF0788R	outcrop; fault zone in sill/spg	drusy quartz, pyrite
WF0792R	prospect; shear zone in spg	limonite, Mn oxide
WF0794R	prospect; shear zone in spg	limonite, Mn oxide
WF0796R	outcrop; fault zone in spg	drusy quartz, fluorite, limonite, Mn oxide, pyrite pseudomorphs
WF0797R	outcrop; fault zone in spg	drusy quartz, pyrite
WF0798R	prospect; spg	limonite
WF0802R	outcrop; fault zone in spg	carbonate, Mn oxide
WF0805R	prospect; shear zone in spg	fluorite, Mn oxide, silica
WF0806R	prospect; shear zone in spg	limonite, silica
WF0811R1	prospect; fault zone in spg	limonite, Mn oxide
WF0815R	adit dump; shear zone in spg	jasperoid, limonite
WF0816R	prospect; spg	limonite
WF0817R	prospect; spg	limonite, Mn oxide
WF0818R	shaft dump; shear zone in spg	galena, jasperoid, limonite, Mn oxide, pyrite
WF0820R	adit; shear zone in spg	drusy quartz, limonite, Mn oxide, pyrite
WF0821R	prospect; fault zone in spg	limonite
WF0822R1	prospect; fault zone in spg	limonite
WF0824R2	outcrop; fault zone in rhy	jarosite, limonite, pyrite
WF0825R	prospect; shear zone in sill/spg	fluorite, magnetite, pyrite, secondary Cu
WF0828R	prospect; shear zone in spg	limonite, Mn oxide

Table 2.--Detection limits in parts per million for rocks and soils determined by the emission spectrographic method

Element	Detection Limit	Element	Detection Limit	Element	Detection Limit
Ag	0.5	Cr	10	Sc	5
As	200	Cu	5	Sn	10
Au	10	La	20	Sr	100
B	10	Mn	10	Th	100
Ba	20	Mo	5	V	10
Be	1	Nb	20	W	50
Bi	10	Ni	5	Y	10
Cd	20	Pb	10	Zn	200
Co	5	Sb	100	Zr	10

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s
WF0285R	39 50 14	105 58 34	15.0	3.00	15.00	1.00	2,000	N	N	N	N	1,000
WF0288R	39 50 17	105 58 22	15.0	3.00	20.00	.70	2,000	N	N	N	N	1,000
WF0291R	39 50 22	105 58 55	15.0	3.00	3.00	>1.00	1,500	N	N	N	N	2,000
WF0292R	39 50 16	105 58 44	15.0	3.00	10.00	.70	3,000	N	N	N	N	1,000
WF0293R	39 50 7	105 59 5	10.0	.50	1.50	.50	500	2.0	N	N	N	300
WF0297R	39 50 29	105 57 51	15.0	3.00	15.00	>1.00	1,500	N	N	N	N	500
WF0323R	39 51 7	105 59 5	15.0	3.00	2.00	.70	5,000	N	N	N	N	150
WF0324R	39 51 9	105 59 3	20.0	.70	1.50	.30	1,500	N	N	N	N	100
WF0327R	39 51 5	105 59 29	15.0	1.50	3.00	1.00	1,500	N	N	N	N	1,000
WF0330R	39 50 53	105 59 11	20.0	3.00	5.00	.50	>5,000	N	N	N	20	500
WF0331R	39 50 31	105 58 56	20.0	3.00	.50	.30	3,000	3.0	N	N	N	150
WF0337R1	39 51 11	106 0 51	20.0	3.00	3.00	.70	>5,000	N	N	N	10	1,500
WF0337R2	39 51 11	106 0 51	7.0	1.00	1.50	.30	700	N	N	N	N	2,000
WF0337R3	39 51 11	106 0 51	20.0	3.00	5.00	.30	3,000	N	N	N	50	200
WF0337R4	39 51 11	106 0 51	10.0	3.00	.70	.70	2,000	N	N	N	N	700
WF0337R5	39 51 11	106 0 51	15.0	5.00	15.00	.30	3,000	N	N	N	N	150
WF0338R	39 50 51	105 58 17	20.0	5.00	1.00	1.00	>5,000	N	N	N	N	1,500
WF0350R	39 50 10	105 59 58	20.0	3.00	.15	.03	300	3.0	N	N	N	30
WF0356R	39 52 8	105 57 56	10.0	.70	.20	.50	30	N	N	N	N	>5,000
WF0359R	39 51 47	105 58 6	15.0	5.00	10.00	.50	1,500	N	N	N	1,500	1,000
WF0362R	39 51 48	105 58 8	15.0	.30	.70	.70	200	N	N	N	50	1,000
WF0364R	39 52 2	105 58 4	15.0	3.00	2.00	.70	700	N	N	N	N	1,500
WF0365R	39 52 4	105 58 4	20.0	1.50	1.00	.30	700	N	N	N	N	200
WF0383R	39 52 26	105 59 9	20.0	1.50	1.00	.50	700	N	N	N	150	300
WF0398R	39 51 28	105 59 58	20.0	5.00	3.00	.20	>5,000	N	N	N	10	50
WF0473R	39 49 52	106 0 1	20.0	5.00	10.00	>1.00	2,000	N	N	N	N	700
WF0478R	39 49 18	106 0 32	15.0	5.00	7.00	>1.00	2,000	N	N	N	N	1,000
WF0540R	39 47 34	105 56 36	3.0	.70	.50	.30	700	N	N	N	N	1,000
WF0541R	39 47 30	105 56 40	3.0	.70	.15	.15	1,000	2.0	N	N	N	1,000
WF0542R	39 47 24	105 56 27	1.0	.70	.15	.15	100	N	N	N	N	1,000
WF0543R	39 47 21	105 56 25	2.0	1.00	<.05	.15	100	2.0	N	N	N	3,000
WF0544R	39 46 54	105 55 9	15.0	2.00	.30	.15	3,000	1.0	N	N	N	1,000
WF0545R	39 47 5	105 56 10	10.0	2.00	.10	.70	3,000	N	N	N	N	1,500
WF0550R	39 46 58	105 56 5	7.0	1.00	.07	.30	300	2.0	N	N	N	700
WF0551R	39 46 7	105 54 53	3.0	.70	.07	.20	150	1.5	N	N	N	700
WF0552R	39 46 43	105 55 16	7.0	.50	.05	.15	100	7.0	N	N	N	300
WF0553R	39 46 45	105 55 18	3.0	.70	.10	.20	150	2.0	N	N	N	700
WF0554R	39 45 38	105 54 23	10.0	.30	.07	.10	1,000	70.0	10,000	N	N	100
WF0555R	39 45 50	105 54 42	15.0	.50	.70	.15	>5,000	500.0	N	N	N	500
WF0556R1	39 45 23	105 55 58	3.0	.70	.30	.20	>5,000	5.0	N	N	N	1,500
WF0556R2	39 45 23	105 55 58	3.0	.70	.20	.15	>5,000	5.0	N	N	N	2,000
WF0557R	39 45 42	105 55 42	20.0	1.50	1.50	1.00	1,500	N	N	N	N	500
WF0558R	39 45 49	105 55 33	3.0	.70	.10	.15	300	<.5	N	N	N	500
WF0560R	39 46 23	105 55 28	7.0	.50	.05	.15	5,000	2.0	3,000	N	N	500
WF0561R	39 46 25	105 55 27	15.0	.70	<.05	.15	>5,000	150.0	>10,000	N	N	700

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.
continued

Sample	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s
WF0285R	3	N	N	70	30	100	50	<5	<20	70	100
WF0288R	2	N	N	70	50	30	N	N	<20	70	50
WF0291R	1	N	N	70	70	100	N	N	<20	70	70
WF0292R	1	N	N	70	300	50	N	N	<20	100	50
WF0293R	N	N	N	10	20	300	N	N	<20	30	30
WF0297R	3	N	N	70	30	100	N	<5	<20	15	30
WF0323R	N	N	N	15	50	100	N	N	<20	15	20
WF0324R	N	N	N	N	15	100	N	<5	<20	N	70
WF0327R	N	N	N	15	50	150	300	N	<20	20	100
WF0330R	N	N	N	20	150	200	N	N	<20	10	10
WF0331R	N	N	N	15	70	300	100	5	<20	50	20
WF0337R1	N	N	N	50	150	500	N	7	<20	70	30
WF0337R2	N	N	N	15	70	200	70	<5	<20	70	150
WF0337R3	3	N	N	10	20	100	N	N	<20	5	<10
WF0337R4	7	N	N	5	150	70	N	N	<20	10	50
WF0337R5	2	N	N	10	30	200	N	N	<20	50	30
WF0338R	N	N	N	10	200	150	70	5	<20	50	150
WF0356R	2	N	N	N	N	70	N	5	<20	15	N
WF0358R	N	N	N	N	N	70	50	N	<20	N	50
WF0359R	N	N	N	50	700	500	N	N	<20	70	<10
WF0362R	N	N	N	N	150	150	N	N	<20	N	150
WF0364R	N	N	N	N	15	200	N	N	<20	N	70
WF0365R	N	N	N	20	10	300	N	N	<20	15	15
WF0383R	N	N	N	15	10	500	N	N	<20	10	<10
WF0396R	N	N	N	N	30	70	N	N	<20	N	<10
WF0473R	N	N	N	70	30	300	N	N	<20	30	15
WF0476R	N	N	N	50	30	300	N	N	<20	15	20
WF0540R	N	N	N	5	<10	5	100	10	<20	N	150
WF0541R	N	N	N	5	10	7	70	15	N	N	50
WF0542R	N	N	N	N	15	<5	150	30	<20	N	30
WF0543R	N	N	N	N	50	<5	70	150	N	5	150
WF0544R	N	N	N	15	15	30	50	N	N	15	500
WF0545R	N	N	N	10	200	10	100	5	20	20	50
WF0550R	N	N	N	7	70	50	70	100	N	15	30
WF0551R	N	N	N	N	10	<5	100	N	20	N	100
WF0552R	N	N	N	N	<10	7	50	50	N	N	200
WF0553R	N	N	N	30	10	10	70	20	20	N	200
WF0554R	N	N	N	N	<10	1,000	N	N	N	N	5,000
WF0555R	N	N	N	N	<10	100	100	N	<20	N	7,000
WF0556R1	N	N	N	N	15	15	150	N	<20	N	200
WF0556R2	N	N	N	5	15	20	200	70	<20	N	500
WF0557R	N	N	N	15	30	50	30	N	N	15	N
WF0558R	N	N	N	N	10	5	100	70	N	N	50
WF0560R	N	N	N	5	300	20	50	50	N	20	30
WF0561R	N	N	N	N	70	50	30	15	N	5	3,000

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado. continued

Sample	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
WF0285R	N	50	N	700	500	N	50	<200	500	N
WF0286R	N	70	N	1,000	300	N	50	<200	150	N
WF0291R	N	50	N	2,000	300	N	30	<200	500	N
WF0292R	N	70	N	1,500	300	N	50	<200	500	N
WF0293R	N	5	N	300	100	N	N	N	300	N
WF0297R	N	70	N	300	300	N	70	<200	300	N
WF0323R	N	15	N	N	150	N	70	<200	300	N
WF0324R	N	<5	N	N	30	N	N	<200	300	N
WF0327R	N	15	N	1,500	500	N	30	<200	300	N
WF0330R	N	15	N	N	150	N	30	<200	300	N
WF0331R	N	30	N	N	150	N	150	<200	150	N
WF0337R1	N	30	N	N	300	N	70	<200	300	N
WF0337R2	N	5	N	700	200	N	15	N	200	N
WF0337R3	N	5	N	N	70	N	70	<200	70	N
WF0337R4	N	30	N	200	150	N	200	<200	300	N
WF0337R5	N	5	N	N	150	N	50	<200	100	N
WF0338R	N	30	N	N	700	N	150	300	1,000	N
WF0350R	N	N	N	N	20	N	10	200	30	N
WF0356R	N	10	N	N	30	N	70	N	1,000	N
WF0359R	N	70	N	300	500	N	10	N	50	N
WF0362R	N	30	N	300	300	N	70	N	100	N
WF0364R	N	20	N	N	200	N	10	N	100	N
WF0365R	N	15	N	N	100	N	N	N	70	N
WF0383R	N	20	N	N	150	N	N	<200	70	N
WF0398R	N	5	N	N	50	N	30	<200	300	N
WF0473R	N	100	N	N	1,000	N	150	<200	700	N
WF0478R	N	70	N	N	700	N	70	<200	700	N
WF0540R	N	5	N	100	70	N	20	N	150	N
WF0541R	N	<5	N	100	50	N	20	N	150	N
WF0542R	N	<5	N	N	70	N	10	N	100	N
WF0543R	N	5	N	N	70	N	20	N	100	N
WF0544R	N	5	N	N	100	N	15	500	150	N
WF0545R	N	15	N	100	150	N	30	N	150	N
WF0550R	N	10	N	N	100	N	20	N	100	N
WF0551R	N	<5	N	N	50	N	20	N	70	N
WF0552R	150	<5	N	N	20	N	15	N	70	N
WF0553R	N	5	N	N	50	N	30	N	100	N
WF0554R	100	N	30	N	20	N	<10	>10,000	70	N
WF0555R	N	5	N	N	50	N	30	5,000	100	N
WF0556R1	N	5	N	200	70	N	20	N	150	N
WF0556R2	N	7	N	200	70	N	30	1,000	150	N
WF0557R	N	15	N	100	300	N	30	N	100	N
WF0558R	N	5	N	N	70	N	15	N	100	N
WF0560R	N	5	N	N	50	N	20	N	100	N
WF0561R	300	5	N	N	70	N	10	700	100	N

Table 4.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s
WF0562R	39 46 24	105 55 26	>20.0	.70	<.05	.07	3,000	1,000.0	>10,000	N	N	500
WF0563R	39 46 25	105 55 24	20.0	1.00	.07	.07	>5,000	50.0	10,000	N	N	500
WF0564R	39 46 24	105 55 25	>20.0	.70	<.05	.05	>5,000	70.0	>10,000	N	N	200
WF0565R	39 46 28	105 55 27	7.0	1.50	.30	.30	1,000	N	N	N	N	700
WF0566R	39 43 38	105 56 5	15.0	.20	.50	.20	700	N	N	N	N	1,000
WF0567R	39 45 53	105 55 17	10.0	1.00	.70	.50	700	N	N	N	N	700
WF0568R	39 44 20	105 54 44	3.0	.70	.50	.30	500	N	N	N	N	3,000
WF0569R	39 44 13	105 55 40	7.0	.30	.15	.20	1,000	N	N	N	N	1,000
WF0570R	39 43 44	105 55 32	15.0	1.50	.20	.50	700	1.0	N	N	N	700
WF0571R	39 44 44	105 55 26	3.0	.50	.10	.15	1,000	.7	N	N	N	700
WF0572R	39 44 52	105 55 24	5.0	.50	.10	.20	1,500	1.0	N	N	N	1,000
WF0573R	39 44 59	105 55 17	5.0	.50	.50	.30	700	N	N	N	N	700
WF0574R	39 45 2	105 55 14	5.0	.50	15.00	.30	500	N	N	N	N	300
WF0575R	39 45 18	105 55 5	5.0	.70	.30	.30	150	N	N	N	N	1,500
WF0576R	39 45 9	105 55 3	10.0	.50	.20	.07	1,000	N	N	N	N	700
WF0577R	39 45 7	105 54 59	10.0	1.00	.20	.20	1,000	N	N	N	N	1,500
WF0578R	39 45 5	105 54 54	3.0	.70	.20	.30	300	N	N	N	N	2,000
WF0579R	39 44 37	105 55 10	10.0	1.00	.15	.15	1,500	N	N	N	N	1,500
WF0580R	39 45 25	105 54 49	2.0	1.00	.50	.15	5,000	N	N	N	N	1,500
WF0581R	39 43 46	105 53 48	>20.0	3.00	2.00	1.00	5,000	N	N	N	N	300
WF0582R	39 45 25	105 54 45	3.0	1.00	.20	.30	2,000	N	N	N	N	1,000
WF0583R	39 45 24	105 54 37	2.0	1.00	.10	.30	3,000	1.0	N	N	N	1,000
WF0584R	39 45 34	105 54 58	>20.0	.20	.05	.03	>5,000	200.0	N	N	N	100
WF0585R	39 45 29	105 55 10	20.0	.70	.07	.15	>5,000	100.0	N	N	N	700
WF0586R	39 45 34	105 55 11	15.0	.70	.05	.10	>5,000	300.0	N	N	N	500
WF0587R	39 45 22	105 54 28	7.0	.70	.07	.15	>5,000	1,500.0	N	N	N	700
WF0588R	39 45 39	105 54 35	2.0	1.00	.15	.30	>5,000	15.0	N	N	N	1,500
WF0621R	39 50 16	106 1 59	>20.0	2.00	1.50	.30	1,500	1.5	N	N	N	2,000
WF0622R	39 50 21	106 1 59	20.0	1.50	.70	.15	5,000	N	N	N	N	1,000
WF0626R	39 44 39	105 59 1	3.0	1.00	.30	.50	700	N	N	N	N	700
WF0627R	39 44 17	105 58 4	3.0	.70	.10	.30	300	N	N	N	N	700
WF0628R	39 45 13	105 58 0	3.0	1.00	.15	.30	500	N	N	N	N	700
WF0633R	39 43 55	105 58 20	3.0	1.00	1.50	.15	300	N	N	N	N	500
WF0636R	39 44 45	105 58 35	3.0	.50	.50	.10	150	N	N	N	N	1,000
WF0644R	39 44 54	105 57 27	1.5	.30	.10	.07	200	N	N	N	N	300
WF0646R	39 44 58	105 57 29	.5	.20	1.50	.03	70	N	N	N	N	100
WF0648R	39 44 38	105 59 39	3.0	.20	.30	.20	150	N	N	N	N	1,500
WF0656R	39 46 34	106 0 13	5.0	1.00	.10	.50	500	N	N	N	N	700
WF0658R	39 46 24	106 0 12	7.0	.50	.15	.20	1,000	N	N	N	N	300
WF0667R	39 43 26	105 57 20	2.0	.50	.30	.15	300	N	N	N	N	300
WF0670R	39 44 54	105 57 18	1.0	.20	.07	.10	100	N	N	N	N	300
WF0672R	39 44 42	105 57 22	5.0	.70	5.00	.15	1,500	N	N	N	N	500
WF0673R	39 44 8	105 54 5	1.0	.20	.05	.07	30	7.0	N	N	N	200
WF0674R	39 43 55	105 54 13	.3	.15	.07	.05	50	N	N	N	N	200
WF0675R	39 43 46	105 53 48	10.0	3.00	1.50	.70	1,000	N	N	N	N	500

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s
WF0562R	N	N	70	5	20	700	N	70	N	5	10,000
WF0563R	N	N	N	N	20	70	N	70	N	N	1,500
WF0564R	N	N	150	N	<10	1,000	N	150	N	N	7,000
WF0565R	N	N	N	10	70	10	150	N	N	30	50
WF0566R	N	N	N	10	30	10	200	N	N	30	70
WF0567R	N	N	N	10	30	30	200	N	50	20	70
WF0568R	N	N	N	7	20	30	150	15	N	15	70
WF0569R	N	N	N	15	10	7	100	N	N	10	70
WF0570R	N	N	N	10	50	15	200	N	N	15	70
WF0571R	N	N	N	15	30	5	150	30	N	20	50
WF0572R	N	N	N	5	10	5	200	15	N	10	70
WF0573R	N	N	N	5	10	15	200	N	N	N	50
WF0574R	N	N	N	N	20	15	200	N	N	N	70
WF0575R	N	N	N	N	15	10	200	N	N	5	70
WF0576R	N	N	N	N	N	7	70	N	N	5	50
WF0577R	N	N	N	7	15	15	150	5	N	5	70
WF0578R	N	N	N	N	10	10	200	N	N	7	70
WF0579R	N	N	N	5	15	5	150	30	N	5	100
WF0580R	N	N	N	5	15	10	150	N	N	N	50
WF0581R	N	N	N	50	300	150	500	N	N	50	300
WF0582R	N	N	N	N	15	15	150	N	N	N	150
WF0583R	N	N	N	5	10	10	200	7	N	5	200
WF0584R	N	N	N	N	N	10	100	15	N	N	700
WF0585R	N	N	N	7	N	20	200	30	N	N	2,000
WF0586R	N	N	N	N	N	7	100	10	N	N	1,500
WF0587R	N	N	N	N	15	150	150	20	N	N	7,000
WF0588R	N	N	N	5	<10	15	150	N	<20	N	5,000
WF0621R	N	N	N	20	300	500	70	15	N	15	70
WF0622R	N	N	N	10	20	70	30	N	N	20	20
WF0626R	N	N	N	15	70	<5	100	5	N	30	30
WF0627R	N	N	N	10	50	15	100	5	N	20	50
WF0628R	N	N	N	15	70	50	70	7	N	20	50
WF0633R	30	N	N	10	70	50	100	15	N	30	30
WF0634R	N	N	N	10	10	100	100	5	N	15	70
WF0644R	N	N	N	N	N	5	20	10	30	N	30
WF0646R	N	N	N	N	N	<5	N	5	N	<5	30
WF0648R	N	N	N	N	N	10	20	7	N	N	50
WF0650R	N	N	N	15	100	10	70	5	N	50	30
WF0658R	N	N	N	10	70	70	30	<5	N	30	50
WF0667R	N	N	N	N	N	5	50	<5	<20	<5	70
WF0670R	N	N	N	N	N	<5	20	15	<20	N	30
WF0672R	N	N	N	10	<10	10	150	15	<20	5	70
WF0673R	N	N	N	N	N	5	30	10	N	N	30
WF0674R	N	N	N	N	N	<5	N	7	N	N	20
WF0675R	N	N	N	10	100	150	700	15	<20	100	150

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
WF0562R	500	<5	N	N	30	N	<10	>10,000	70	N
WF0563R	N	<5	N	N	30	N	N	3,000	100	N
WF0564R	2,000	<5	N	N	20	N	<10	>10,000	30	N
WF0565R	N	10	N	N	150	N	50	N	150	N
WF0566R	N	5	N	200	70	N	30	N	200	N
WF0567R	N	7	10	N	100	N	30	N	300	N
WF0568R	N	7	N	500	70	N	10	N	200	N
WF0569R	N	5	N	N	70	N	10	N	150	N
WF0570R	N	15	N	N	150	N	30	N	200	N
WF0571R	N	5	N	N	70	N	15	N	100	N
WF0572R	N	5	N	N	50	N	20	N	150	N
WF0573R	N	5	10	N	50	N	20	N	100	N
WF0574R	N	10	N	N	70	N	30	N	150	N
WF0575R	N	5	N	150	70	N	20	N	150	N
WF0576R	N	N	N	100	30	N	15	N	50	N
WF0577R	N	5	N	100	70	N	20	N	150	N
WF0578R	N	5	N	150	70	N	20	N	200	N
WF0579R	N	7	N	100	70	N	20	N	100	N
WF0580R	N	5	N	100	50	N	20	N	100	N
WF0581R	N	20	30	N	200	N	50	N	1,500	300
WF0582R	N	5	N	N	70	N	30	N	150	N
WF0583R	N	5	N	N	70	N	30	N	150	N
WF0584R	N	N	N	N	100	N	30	1,000	200	N
WF0585R	N	N	N	N	70	N	30	1,000	150	N
WF0586R	N	N	N	N	50	N	30	300	100	N
WF0587R	N	5	N	N	50	N	20	7,000	100	N
WF0588R	N	15	N	N	50	N	30	500	150	N
WF0621R	N	7	10	N	700	N	15	N	70	N
WF0622R	N	10	N	N	70	N	20	N	70	N
WF0626R	N	10	N	N	100	N	30	N	100	N
WF0627R	N	7	N	N	70	N	15	N	100	N
WF0629R	N	10	N	100	70	N	20	N	70	N
WF0633R	N	7	N	700	70	N	20	N	70	N
WF0636R	N	5	N	300	30	N	15	N	100	N
WF0644R	N	7	N	N	30	N	15	N	70	N
WF0646R	N	N	N	N	20	N	10	N	30	N
WF0648R	N	5	N	300	50	N	30	N	200	N
WF0650R	N	15	N	100	100	N	30	N	150	N
WF0658R	N	5	N	N	70	N	20	N	70	N
WF0667R	N	5	N	N	20	N	10	N	50	N
WF0670R	N	N	N	N	N	N	<10	N	20	N
WF0672R	N	5	N	N	100	N	30	N	150	N
WF0673R	N	N	N	N	<10	N	N	N	30	N
WF0674R	N	N	N	N	N	N	N	N	10	N
WF0675R	N	15	N	200	200	N	200	<200	500	300

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Latitude	Longitude	Fe-pct.	Mg-pct.	Ca-pct.	Ti-pct.	Mn-ppm	Ag-ppm	As-ppm	Au-ppm	B-ppm	Ba-ppm
			s	s	s	s	s	s	s	s	s	s
WF0678R	39 45 33	105 56 41	1.0	.20	.05	.07	700	<.5	N	N	N	150
WF0679R	39 46 0	105 56 34	1.5	.30	.20	.15	70	N	N	N	N	500
WF0681R	39 46 11	105 56 29	2.0	.30	1.50	.15	100	<.5	N	N	N	500
WF0682R	39 46 15	105 56 27	3.0	.20	<.05	.10	300	1.0	N	N	N	500
WF0683R	39 46 24	105 56 27	3.0	.30	.50	.15	200	N	N	N	N	700
WF0688R	39 45 0	105 59 53	1.0	.20	.20	.07	150	N	N	N	N	700
WF0689R	39 44 58	105 59 46	3.0	.70	.30	.30	500	N	N	N	N	500
WF0690R	39 45 43	105 56 29	2.0	.20	.07	.10	200	1.5	N	N	N	150
WF0691R	39 45 58	105 56 27	3.0	.30	.07	.10	70	N	N	N	N	300
WF0692R	39 44 49	105 56 49	5.0	.20	3.00	.15	200	N	N	N	N	200
WF0693R	39 46 5	105 55 32	2.0	.20	.10	.15	30	1.5	N	N	N	300
WF0694R	39 45 26	105 56 17	2.0	.30	.10	.15	300	N	N	N	N	300
WF0695R	39 45 0	105 56 32	5.0	.20	2.00	.20	700	N	N	N	N	1,000
WF0696R	39 46 14	105 56 24	.3	.07	1.50	.03	30	.7	N	N	N	70
WF0697R	39 46 26	105 56 16	3.0	.30	.10	.15	150	N	N	N	N	500
WF0698R1	39 46 31	105 56 18	2.0	.30	.50	.20	200	N	N	N	N	500
WF0698R2	39 46 31	105 56 18	.7	.20	.05	.05	50	N	N	N	N	200
WF0699R	39 46 30	105 56 25	1.0	.30	.10	.15	70	N	N	N	N	200
WF0701R	39 46 25	105 55 59	2.0	.30	.10	.15	70	N	N	N	N	700
WF0702R	39 46 25	105 56 8	.7	.15	10.00	.07	200	2.0	N	N	N	300
WF0703R	39 46 32	105 56 12	3.0	.20	.07	.07	70	15.0	700	N	N	100
WF0704R	39 46 32	105 56 20	5.0	.50	.10	.20	100	3.0	N	N	N	700
WF0705R	39 46 4	105 57 42	3.0	.50	.10	.10	700	N	N	N	N	200
WF0706R	39 45 52	105 58 2	5.0	2.00	1.00	.50	1,000	N	N	N	N	2,000
WF0707R	39 46 6	105 59 15	1.5	.10	.10	.01	300	N	N	N	N	100
WF0708R	39 46 31	105 56 52	7.0	3.00	2.00	.20	700	1.0	N	N	N	2,000
WF0710R	39 46 29	105 56 17	1.5	.50	.50	.15	150	N	N	N	N	700
WF0715R	39 46 25	105 58 41	3.0	.15	.10	.15	700	N	N	N	N	700
WF0716R	39 46 38	105 56 9	7.0	.70	.30	.70	700	3.0	N	N	N	200
WF0717R	39 46 39	105 55 58	3.0	.70	.05	.15	150	<.5	N	N	N	300
WF0718R	39 46 43	105 55 34	2.0	.20	<.05	.10	50	5.0	3,000	N	N	70
WF0719R	39 46 53	105 56 32	2.0	.50	.10	.15	700	N	N	N	N	150
WF0725R	39 43 25	105 56 26	3.0	.10	1.00	.20	100	N	N	N	N	1,000
WF0726R	39 43 27	105 56 33	.7	.07	.10	.03	50	N	N	N	20	300
WF0728R	39 43 19	105 56 57	1.0	.05	3.00	.05	150	1.0	N	N	20	20
WF0729R	39 42 49	105 56 56	5.0	.15	.10	.10	150	N	700	N	20	300
WF0730R	39 42 47	105 57 54	2.0	.10	.15	.20	150	N	N	N	50	500
WF0733R	39 43 21	105 56 23	3.0	.10	.70	.15	100	N	N	N	N	1,500
WF0734R	39 43 18	105 56 20	2.0	.10	.10	.20	100	N	N	N	20	300
WF0735R	39 43 15	105 56 14	2.0	.10	.05	.20	100	N	N	N	20	300
WF0736R	39 43 13	105 56 20	2.0	.10	.07	.30	70	N	N	N	50	700
WF0737R	39 43 16	105 56 20	1.0	.15	.10	.10	30	N	N	N	50	200
WF0738R	39 43 1	105 56 15	1.0	.02	<.05	.07	30	N	N	N	20	100
WF0739R	39 43 18	105 56 38	5.0	.20	.70	.70	700	N	N	N	N	100
WF0740R1	39 42 54	105 56 47	2.0	.15	.10	.10	200	1.0	1,000	N	N	500

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Be-ppm S	Bi-ppm S	Cd-ppm S	Co-ppm S	Cr-ppm S	Cu-ppm S	La-ppm S	Mo-ppm S	Nb-ppm S	Ni-ppm S	Pb-ppm S
WF0678R	N	N	N	N	N	<5	20	15	N	N	50
WF0679R	N	N	N	N	<10	<5	50	7	<20	N	20
WF0681R	N	N	N	<5	<10	20	100	10	<20	N	30
WF0682R	N	N	N	<5	<10	15	70	15	N	N	50
WF0683R	N	N	N	7	10	30	150	7	<20	5	70
WF0688R	N	N	N	N	N	<5	20	7	N	N	30
WF0689R	N	N	N	10	70	10	100	20	N	30	50
WF0690R	N	N	N	<5	<10	5	50	150	N	<5	300
WF0691R	N	N	N	N	<10	15	70	15	N	<5	20
WF0692R	20	N	N	5	N	100	20	<5	N	7	50
WF0693R	N	N	N	N	<10	10	70	30	N	N	50
WF0694R	N	N	N	5	<10	7	70	5	N	N	70
WF0695R	N	N	N	10	70	20	100	5	N	30	50
WF0696R	N	N	N	N	N	500	N	N	N	N	100
WF0697R	N	N	N	N	<10	15	150	10	<20	N	50
WF0698R1	N	N	N	5	10	20	200	5	N	5	50
WF0698R2	N	N	N	N	N	10	30	10	N	N	50
WF0699R	N	N	N	N	<10	7	70	5	N	N	30
WF0701R	N	N	N	<5	<10	7	50	7	N	<5	30
WF0702R	N	N	N	N	20	1,000	200	<5	N	N	200
WF0703R	N	N	N	N	<10	20	70	30	<20	N	2,000
WF0704R	N	N	N	5	<10	10	70	20	N	150	100
WF0705R	N	N	N	10	30	50	30	5	N	15	20
WF0706R	N	N	N	50	30	30	100	10	N	30	30
WF0707R	N	N	N	N	N	<5	N	5	N	N	50
WF0708R	N	N	N	50	700	1,000	200	<5	N	150	15
WF0710R	N	N	N	5	<10	20	100	5	<20	<5	50
WF0715R	N	N	N	7	N	7	70	15	N	<5	50
WF0716R	N	N	N	20	30	200	20	10	N	20	200
WF0717R	N	N	N	5	30	10	30	20	<20	15	30
WF0718R	N	N	N	N	<10	<5	20	7	N	N	100
WF0719R	N	N	N	5	15	<5	70	5	N	10	10
WF0725R	N	N	N	5	N	50	50	5	N	N	70
WF0726R	N	N	N	N	N	<5	N	5	N	N	30
WF0728R	N	N	N	N	N	1,000	50	<5	N	N	150
WF0729R	N	N	N	N	N	10	50	20	N	N	100
WF0730R	N	N	N	10	70	70	50	30	N	20	50
WF0733R	N	N	N	N	<10	30	N	5	N	N	50
WF0734R	N	N	N	N	N	10	50	15	N	N	50
WF0735R	N	N	N	N	<10	10	100	7	<20	N	50
WF0736R	N	N	N	N	10	15	100	7	<20	N	70
WF0737R	N	N	N	N	N	<5	100	5	N	N	20
WF0738R	N	N	N	N	N	15	50	5	N	N	30
WF0739R	N	N	N	10	150	20	50	5	20	50	30
WF0740R1	N	N	N	N	N	5	70	50	N	N	30

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
WF0678R	N	N	N	N	<10	N	N	N	50	N
WF0679R	N	5	N	N	50	N	15	N	100	N
WF0681R	N	5	N	N	70	N	10	N	150	N
WF0682R	N	N	N	N	50	N	<10	N	150	N
WF0683R	N	5	N	100	70	N	20	N	150	N
WF0686R	N	5	N	100	10	N	20	N	30	N
WF0689R	N	10	N	N	100	N	20	N	100	N
WF0690R	N	N	N	N	15	N	10	N	50	N
WF0691R	N	N	N	N	50	N	15	N	70	N
WF0692R	N	N	N	500	100	N	10	N	30	N
WF0693R	N	N	N	N	30	N	10	N	100	N
WF0694R	N	5	N	N	50	N	10	N	100	N
WF0695R	N	10	N	300	150	N	30	N	70	N
WF0696R	N	N	N	N	N	N	N	N	30	N
WF0697R	N	5	N	N	50	N	20	N	200	N
WF0698R1	N	<5	N	100	50	N	20	N	200	N
WF0698R2	N	N	N	N	10	N	N	N	30	N
WF0699R	N	N	N	N	30	N	<10	N	150	N
WF0701R	N	5	N	N	50	N	10	N	150	N
WF0702R	N	N	N	N	20	N	30	N	70	N
WF0703R	N	N	N	N	30	N	N	N	50	N
WF0704R	N	<5	N	N	50	N	10	N	100	N
WF0705R	N	5	N	N	50	N	<10	N	100	N
WF0706R	N	15	N	700	100	N	15	N	100	N
WF0707R	N	N	N	N	N	N	10	N	15	N
WF0708R	N	20	N	1,000	100	N	50	300	150	N
WF0710R	N	<5	N	N	50	N	10	N	150	N
WF0715R	N	<5	N	100	50	N	15	N	150	N
WF0716R	N	20	N	N	150	N	30	1,000	100	N
WF0717R	N	7	N	N	100	N	<10	N	150	N
WF0718R	N	N	N	N	10	N	<10	N	100	N
WF0719R	N	7	N	N	50	N	30	N	150	N
WF0725R	N	<5	N	300	30	N	50	N	100	N
WF0726R	N	N	N	N	<10	N	N	N	20	N
WF0728R	N	N	N	N	10	N	<10	N	50	N
WF0729R	N	N	N	N	50	N	<10	N	70	N
WF0730R	N	<5	N	300	70	N	15	N	150	N
WF0733R	N	N	N	300	50	N	<10	N	100	N
WF0734R	N	N	N	N	20	N	<10	N	150	N
WF0735R	N	N	N	N	30	N	<10	N	150	N
WF0736R	N	N	N	N	50	N	<10	N	200	N
WF0737R	N	N	N	N	20	N	N	N	70	N
WF0738R	N	N	N	N	15	N	N	N	70	N
WF0739R	N	10	<10	N	150	N	30	N	50	N
WF0740R1	N	N	N	N	20	N	10	<200	100	N

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Latitude	Longitude	Fe-pct.	Mg-pct.	Ca-pct.	Ti-pct.	Mn-ppm	Ag-ppm	As-ppm	Au-ppm	B-ppm	Ba-ppm
			S	S	S	S	S	S	S	S	S	S
WF0740R2	39 42 54	105 56 47	5.0	.30	1.00	.15	500	N	N	N	20	300
WF0745R	39 43 24	105 56 9	2.0	.15	.07	.15	100	N	N	N	20	200
WF0746R	39 43 11	105 55 59	2.0	.10	.07	.15	70	N	N	N	20	150
WF0747R	39 43 6	105 56 7	1.0	.07	.05	.15	70	N	N	N	50	100
WF0748R	39 42 55	105 56 5	2.0	.30	.10	.20	70	N	N	N	20	700
WF0750R	39 43 32	105 56 40	3.0	.70	5.00	.07	700	N	N	N	N	200
WF0751R	39 43 37	105 57 12	5.0	1.00	7.00	.15	1,000	N	N	N	N	500
WF0753R	39 44 1	105 56 28	5.0	.20	.20	.20	700	N	N	N	20	700
WF0754R	39 44 19	105 56 27	3.0	.50	.07	.15	70	N	N	N	N	500
WF0756R	39 45 10	105 55 24	3.0	.30	.20	.30	700	N	N	N	N	2,000
WF0758R	39 45 8	105 55 34	3.0	.20	1.00	.15	200	2.0	N	N	20	500
WF0759R	39 45 0	105 55 52	2.0	.20	<.05	.10	100	N	N	N	50	70
WF0760R	39 45 24	105 55 30	3.0	.15	3.00	.15	2,000	15.0	N	N	20	300
WF0761R	39 45 28	105 55 26	5.0	.10	1.00	.10	500	500.0	7,000	N	20	150
WF0762R	39 45 10	105 55 58	2.0	.20	.10	.15	200	<.5	N	N	20	700
WF0763R	39 45 23	105 55 43	.7	.10	7.00	.05	300	1.5	N	N	N	30
WF0764R	39 45 40	105 55 7	5.0	2.00	2.00	.30	500	2.0	N	N	20	1,500
WF0766R	39 45 39	105 54 32	3.0	.15	<.05	.10	500	2,000.0	1,500	N	30	150
WF0767R	39 47 50	105 54 48	2.0	.10	.10	.10	150	2.0	N	N	20	300
WF0769R	39 47 27	105 55 23	2.0	.15	<.05	.10	150	2.0	N	N	50	500
WF0771R	39 47 38	105 54 43	2.0	.15	<.05	.10	50	1.0	N	N	10	100
WF0772R	39 47 54	105 56 3	1.0	.05	.07	.15	100	1.0	N	N	20	100
WF0773R	39 44 30	105 55 53	.2	.03	<.05	.07	20	1.0	N	N	30	200
WF0774R	39 44 32	105 55 54	1.5	.07	<.05	.15	200	N	N	N	20	300
WF0775R	39 44 44	105 55 48	2.0	.15	<.05	.15	100	N	N	N	30	200
WF0776R	39 44 36	105 55 56	5.0	.10	.05	.15	70	N	N	N	N	500
WF0777R	39 45 28	105 55 30	5.0	.15	.50	.15	2,000	70.0	N	N	100	200
WF0778R	39 45 29	105 55 29	5.0	.20	1.00	.20	1,500	20.0	1,500	N	20	300
WF0779R	39 45 34	105 54 24	5.0	.20	<.05	.15	3,000	20.0	N	N	30	150
WF0780R	39 47 40	105 55 24	1.0	.07	.10	.15	70	N	N	N	20	500
WF0781R	39 47 31	105 55 14	1.0	.10	.07	.05	50	3.0	N	N	N	200
WF0782R	39 47 48	105 54 45	1.0	.10	1.00	.10	100	N	N	N	N	150
WF0783R	39 48 31	105 53 55	1.0	.07	10.00	.03	50	N	N	N	N	100
WF0784R	39 47 37	105 53 14	3.0	.30	.50	.15	200	N	N	N	N	300
WF0785R	39 47 23	105 55 31	10.0	.15	.05	.15	70	1.0	N	N	N	500
WF0786R	39 47 33	105 53 18	3.0	.07	1.00	.10	150	N	N	N	30	200
WF0787R	39 47 18	105 53 26	1.5	.03	.70	.20	100	N	N	N	20	500
WF0788R	39 47 26	105 55 41	3.0	.07	.05	.07	50	<.5	N	N	30	300
WF0789R	39 47 9	105 55 16	3.0	.10	.07	.15	70	2.0	N	N	20	300
WF0790R	39 47 6	105 55 12	5.0	.20	.10	.20	300	N	N	N	20	500
WF0791R	39 47 27	105 55 7	1.0	.05	.05	.03	200	2.0	N	N	30	100
WF0792R	39 47 12	105 55 23	5.0	.10	.05	.10	100	N	N	N	30	200
WF0793R	39 47 8	105 55 18	5.0	.20	.10	.20	150	<.5	N	N	30	500
WF0794R	39 47 5	105 55 9	3.0	.10	.07	.15	200	N	N	N	20	300
WF0795R1	39 47 19	105 54 31	5.0	.10	.07	.15	100	N	N	N	N	300

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--Continued

Sample	Be-ppm S	Bi-ppm S	Co-ppm S	Cr-ppm S	Cr-ppm S	Cu-ppm S	La-ppm S	Mo-ppm S	Nb-ppm S	Ni-ppm S	Pb-ppm S
WF0740R2	N	N	N	5	10	15	500	10	N	N	50
WF0745R	N	N	N	N	10	<5	150	5	<20	N	50
WF0746R	N	N	N	N	N	10	100	5	N	N	30
WF0747R	N	N	N	N	N	<5	100	<5	N	N	30
WF0748R	N	N	N	<5	<10	20	100	7	N	N	50
WF0750R	N	N	N	10	10	100	N	<5	N	N	50
WF0751R	N	N	N	10	<10	7	150	5	N	N	50
WF0753R	N	N	N	5	10	20	150	10	N	N	100
WF0754R	N	N	N	N	<10	5	50	7	N	N	70
WF0756R	N	N	N	10	10	50	100	7	<20	N	150
WF0758R	N	N	N	7	<10	70	70	150	<20	<5	200
WF0759R	N	N	N	N	10	7	50	20	<20	N	20
WF0760R	N	N	N	7	<10	15	100	30	<20	N	100
WF0761R	N	N	N	N	<10	100	70	50	N	<5	7,000
WF0762R	N	N	N	50	<10	300	100	7	N	20	100
WF0763R	N	N	N	7	N	<5	20	7	N	N	30
WF0764R	N	N	N	15	70	50	100	10	N	70	150
WF0766R	N	N	N	N	N	50	70	<5	N	N	5,000
WF0767R	N	N	N	N	<10	10	50	N	N	<5	50
WF0769R	N	N	N	N	15	15	N	15	N	<5	50
WF0771R	N	N	N	7	N	150	30	<5	<20	5	30
WF0772R	N	N	N	<5	15	100	N	<5	N	5	50
WF0773R	N	N	N	N	N	<5	N	50	N	N	70
WF0774R	N	N	N	<5	<10	15	70	20	N	N	70
WF0775R	N	N	N	5	30	30	<20	<5	N	7	20
WF0776R	N	N	N	5	<10	150	50	50	<20	5	50
WF0777R	N	N	N	N	<10	15	70	20	<20	N	1,000
WF0778R	N	N	N	N	10	20	100	10	<20	N	500
WF0779R	N	N	N	N	N	50	70	10	<20	N	500
WF0780R	N	N	N	N	<10	5	70	10	<20	N	50
WF0781R	N	N	N	N	N	<5	20	100	N	N	50
WF0782R	N	N	N	N	N	<5	50	30	20	N	50
WF0783R	N	N	N	N	N	<5	N	5	<20	N	20
WF0784R	N	N	N	5	10	15	100	7	<20	5	50
WF0785R	N	N	N	<5	10	30	100	30	<20	N	50
WF0786R	N	N	N	<5	<10	7	50	5	N	N	70
WF0787R	N	N	N	5	<10	10	100	7	N	N	50
WF0788R	15	N	N	N	10	10	N	20	N	N	30
WF0789R	N	N	N	N	<10	<5	70	10	N	N	50
WF0790R	N	N	N	5	<10	20	500	5	N	N	70
WF0791R	N	N	N	N	N	5	N	150	N	N	50
WF0792R	N	N	N	N	N	20	70	30	N	N	30
WF0793R	N	N	N	5	10	20	300	15	<20	N	70
WF0794R	N	N	N	N	<10	<5	100	7	N	N	30
WF0795R1	500	N	N	N	<10	5	50	10	<20	N	30

Table 5.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
WF0740R2	N	<5	N	200	70	N	30	N	200	N
WF0745R	N	<5	N	N	50	N	N	<200	200	N
WF0746R	N	N	N	N	30	N	N	200	100	N
WF0747R	N	N	N	N	20	N	N	N	100	N
WF0748R	N	<5	N	N	50	N	<10	N	200	N
WF0750R	N	<5	N	200	30	N	<10	500	30	N
WF0751R	N	<5	N	200	50	N	20	N	200	N
WF0753R	N	7	N	200	50	N	15	200	200	N
WF0754R	N	N	N	N	30	N	N	N	150	N
WF0756R	N	<5	N	N	50	N	15	N	300	N
WF0758R	<100	N	N	N	50	N	10	N	200	N
WF0759R	<100	N	N	N	50	N	N	N	100	N
WF0760R	N	N	N	N	50	N	20	200	200	N
WF0761R	100	N	30	N	20	N	<10	>10,000	100	N
WF0762R	N	<5	N	N	20	N	20	N	150	N
WF0763R	N	N	N	N	20	N	20	N	50	N
WF0764R	N	10	N	2,000	100	N	30	N	70	N
WF0766R	<100	N	20	N	15	N	<10	300	70	N
WF0767R	N	N	N	N	20	N	<10	N	70	N
WF0769R	N	N	N	N	20	N	N	N	100	N
WF0771R	N	N	N	N	15	N	N	N	100	N
WF0772R	N	N	N	N	30	N	N	N	50	N
WF0773R	N	N	N	N	10	N	N	N	50	N
WF0774R	N	N	N	N	20	N	20	N	100	N
WF0775R	N	N	N	N	50	N	20	N	100	N
WF0776R	N	N	N	N	20	N	<10	<200	100	N
WF0777R	N	N	N	N	50	N	15	<200	150	N
WF0778R	N	N	N	N	50	N	20	1,500	300	N
WF0779R	N	N	N	N	20	N	10	200	50	N
WF0780R	N	N	N	N	30	N	10	N	100	N
WF0781R	N	N	N	N	10	N	N	N	50	N
WF0782R	N	5	10	N	10	N	20	N	70	N
WF0783R	N	N	N	N	<10	N	20	N	30	N
WF0784R	N	N	N	N	50	N	15	N	100	N
WF0785R	N	5	N	N	50	N	20	N	150	N
WF0786R	N	N	N	N	20	N	15	N	100	N
WF0787R	N	N	N	N	20	N	20	N	200	<100
WF0788R	N	N	N	N	20	N	10	N	50	N
WF0789R	N	N	N	N	20	N	10	N	200	N
WF0790R	N	N	N	N	30	N	30	N	200	N
WF0791R	N	N	N	N	<10	N	N	N	30	N
WF0792R	N	N	N	N	20	N	<10	N	100	N
WF0793R	N	<5	N	N	50	N	20	N	200	N
WF0794R	N	N	N	N	30	N	10	N	200	N
WF0795R1	N	N	N	N	20	N	10	N	100	N

Table 1.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s
WF0795R2	39 47 19	105 54 31	1.0	.07	1.00	.07	50	N	N	N	30	200
WF0796R	39 47 9	105 55 34	5.0	.15	2.00	.20	150	N	N	N	20	500
WF0797R	39 47 8	105 55 27	10.0	.20	.05	.10	500	2.0	N	N	30	300
WF0798R	39 48 12	105 53 52	2.0	.10	.30	.10	70	<.5	N	N	N	300
WF0799R	39 47 20	105 53 36	5.0	.10	.10	.15	150	N	N	N	20	700
WF0800R	39 47 17	105 53 32	7.0	.07	<.05	.07	20	7.0	N	N	N	500
WF0801R	39 47 14	105 53 36	2.0	.10	.07	.15	50	N	N	N	N	300
WF0802R	39 47 7	105 53 26	10.0	5.00	10.00	.03	1,500	N	N	N	N	150
WF0804R	39 47 1	105 53 35	3.0	.10	.07	.07	100	N	N	N	N	200
WF0805R	39 46 59	105 53 30	5.0	.15	1.50	.20	500	1.0	N	N	N	700
WF0806R	39 46 50	105 53 28	7.0	.05	<.05	.20	150	N	N	N	<10	300
WF0808R	39 46 28	105 53 20	1.5	.07	<.05	.10	50	N	N	N	20	300
WF0810R	39 46 27	105 53 19	1.5	.07	.05	.07	50	N	N	N	20	300
WF0811R	39 46 43	105 54 4	1.5	.05	<.05	.10	20	<.5	N	N	20	200
WF0812R	39 46 40	105 54 2	5.0	.05	<.05	.07	150	N	N	N	<10	300
WF0815R	39 46 0	105 53 28	1.5	.20	.07	.15	150	N	N	N	<10	300
WF0816R	39 45 51	105 54 5	1.0	.10	.05	.10	100	N	N	N	50	300
WF0817R	39 45 45	105 53 59	.5	.05	.05	.05	300	N	N	N	20	300
WF0818R	39 45 56	105 53 46	.7	.10	<.05	.07	100	1,000.0	N	N	70	3,000
WF0819R	39 44 52	105 53 13	1.0	.10	.05	.10	1,000	7.0	N	N	20	300
WF0820R	39 44 58	105 53 18	3.0	.15	.07	.15	5,000	300.0	N	N	150	500
WF0821R	39 46 7	105 53 11	5.0	.05	<.05	.10	50	5.0	N	N	N	300
WF0822R	39 46 0	105 53 10	2.0	.07	<.05	.07	50	1.5	N	N	50	200
WF0824R	39 45 43	105 52 54	.5	.10	<.05	.15	70	<.5	N	N	20	300
WF0825R	39 45 21	105 52 53	20.0	3.00	1.00	1.00	1,000	2.0	N	N	N	500
WF0827R	39 45 16	105 52 59	1.5	.20	<.05	.10	100	<.5	N	N	20	150
WF0828R	39 45 4	105 53 6	2.0	.20	.05	.10	2,000	150.0	N	N	20	700
WF0274D	39 49 44	105 58 29	10.0	1.50	.30	.50	700	1.0	N	N	N	1,000
WF0275D	39 49 44	105 58 22	20.0	2.00	.50	1.00	3,000	3.0	N	N	30	1,500
WF0280D	39 50 6	105 57 48	20.0	3.00	.50	1.00	5,000	1.0	N	N	N	1,000
WF0281D	39 50 13	105 57 42	15.0	5.00	1.50	.70	3,000	1.0	N	N	N	2,000
WF0285D1	39 50 14	105 58 34	20.0	3.00	1.50	.70	3,000	N	N	N	N	1,500
WF0285D2	39 50 14	105 58 34	20.0	3.00	1.00	1.00	5,000	1.0	N	N	30	2,000
WF0285D3	39 50 14	105 58 34	15.0	3.00	.70	.70	5,000	N	N	N	N	1,500
WF0291D	39 50 22	105 58 55	20.0	3.00	.50	1.00	5,000	N	N	N	20	1,500
WF0292D	39 50 16	105 58 44	15.0	3.00	.50	1.00	5,000	N	N	N	N	3,000
WF0299D	39 50 29	105 58 32	20.0	3.00	.70	1.00	>5,000	N	N	N	N	1,500
WF0322D	39 51 6	105 59 5	20.0	3.00	.70	1.00	3,000	N	N	N	N	2,000
WF0323D	39 51 7	105 59 5	15.0	3.00	1.50	1.00	3,000	1.5	N	N	20	1,500
WF0333D	39 51 0	105 58 24	20.0	5.00	7.00	1.00	3,000	1.0	N	N	10	1,000
WF0343D	39 49 46	104 0 16	7.0	1.50	.50	.70	1,000	N	N	N	10	1,500
WF0357D	39 52 12	105 57 57	15.0	5.00	.70	.70	1,000	1.0	N	N	30	1,500
WF0364D	39 52 2	105 58 4	15.0	3.00	1.50	1.00	1,000	1.0	N	N	N	3,000
WF0370D	39 52 24	105 58 15	5.0	1.00	.50	.50	700	N	N	N	N	2,000
WF0371D	39 52 23	105 58 7	10.0	1.50	.50	1.00	700	N	N	N	10	700

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s
WF07954?	1,000	N	N	N	N	<5	20	7	N	N	20
WF0796R	N	N	N	5	<10	20	100	7	<20	N	70
WF0797R	N	N	N	10	N	50	70	15	N	N	50
WF0798R	N	N	N	N	N	70	50	15	<20	N	70
WF0799R	N	N	N	N	<10	30	100	7	N	N	50
WF0800R	N	N	N	N	N	70	N	30	N	N	50
WF0801R	N	N	N	N	N	7	70	5	N	N	50
WF0802R	N	N	N	10	10	<5	50	10	N	N	30
WF0804R	N	N	N	N	N	7	50	15	N	N	70
WF0805R	N	N	N	5	<10	5	150	20	<20	N	150
WF0806R	N	N	N	5	30	20	100	20	N	N	30
WF0809R	N	N	N	N	<10	5	50	<5	N	N	30
WF0810R	N	N	N	N	N	5	N	N	N	N	70
WF0811R	N	N	N	N	N	7	70	70	N	N	50
WF0812R	N	N	N	N	N	10	50	15	N	<5	30
WF0815R	N	N	N	N	<10	15	150	7	N	N	50
WF0816R	N	N	N	<5	N	7	70	<5	N	N	50
WF0817R	N	N	N	N	N	5	N	<5	N	N	50
WF0818R	N	N	30	N	N	200	<20	<5	N	N	15,000
WF0819R	N	N	N	N	N	5	<20	<5	N	N	150
WF0820R	N	N	N	<5	<10	100	100	10	N	<5	10,000
WF0821R	N	N	N	N	N	30	70	10	N	N	700
WF0822R	N	N	N	N	N	7	<20	5	N	N	150
WF0824R	N	N	N	N	<10	7	150	7	<20	N	150
WF0825R	N	N	N	50	300	200	700	15	20	200	150
WF0827R	N	N	N	N	N	10	<20	5	N	N	70
WF0828R	N	N	N	N	N	30	70	30	N	N	500
WF0274D	N	N	N	5	70	15	N	N	<20	20	20
WF0275D	N	N	N	10	300	70	N	<5	<20	30	150
WF0280D	1	N	N	30	150	150	N	N	<20	70	50
WF0281D	2	N	N	10	70	70	100	<5	<20	15	70
WF0285D1	N	N	N	10	70	50	N	N	<20	20	20
WF0285D2	3	N	N	20	70	150	150	5	<20	30	150
WF0285D3	N	N	N	5	30	50	N	N	<20	15	20
WF0291D	3	N	N	30	300	50	300	5	<20	50	70
WF0292D	1	N	N	15	300	30	70	<5	<20	50	50
WF0299D	N	N	N	15	150	50	100	<5	<20	50	30
WF0322D	N	N	N	15	150	30	N	<5	<20	30	30
WF0323D	N	N	N	20	150	70	N	<5	<20	70	100
WF0333D	N	N	N	70	200	50	N	N	<20	70	100
WF0343D	N	N	N	7	30	30	70	N	<20	10	70
WF0357D	N	N	N	20	50	300	50	N	<20	15	150
WF0364D	N	N	N	20	150	200	N	<5	<20	20	70
WF0370D	N	N	N	N	15	30	50	N	<20	<5	150
WF0371D	1	N	N	50	70	70	500	<5	<20	50	100

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
WF0795R2	N	N	N	N	10	N	N	N	50	N
WF0796R	N	N	N	N	50	N	15	200	300	N
WF0797R	N	N	N	N	30	N	10	300	100	N
WF0798R	N	N	N	N	10	N	15	N	70	N
WF0799R	N	<5	N	N	50	N	15	N	200	N
WF0801R	N	N	N	100	15	N	N	N	20	N
WF0802R	N	N	N	N	30	N	10	N	150	N
WF0803R	N	10	N	100	100	N	30	1,000	70	N
WF0804R	N	N	N	N	10	N	10	N	70	N
WF0805R	N	5	<10	200	50	N	30	300	200	N
WF0806R	N	5	N	N	50	N	20	N	200	N
WF0808R	N	N	N	N	20	N	<10	N	100	N
WF0810R	N	N	N	N	10	N	N	N	50	N
WF0811R	<100	N	N	N	10	N	<10	N	70	N
WF0812R	N	N	N	N	10	N	<10	N	50	N
WF0815R	N	N	N	N	20	N	15	N	100	N
WF0816R	N	N	N	N	15	N	10	N	70	N
WF0817R	N	N	N	N	N	N	N	N	<10	N
WF0818R	<100	N	N	N	15	N	<10	>10,000	70	N
WF0819R	N	N	N	N	20	N	N	N	50	N
WF0820R	N	N	N	N	30	N	10	300	100	N
WF0821R	N	N	N	N	20	N	N	N	100	N
WF0822R	N	N	N	N	15	N	N	N	70	N
WF0824R	N	N	N	N	20	N	10	N	150	N
WF0825R	N	15	20	N	300	N	100	1,000	300	500
WF0827R	N	N	N	N	15	N	<10	N	70	N
WF0828R	N	N	N	N	20	N	10	300	100	N
WF0274D	N	7	N	N	100	N	N	N	300	N
WF0275D	N	15	N	N	150	N	15	N	300	N
WF0280D	N	20	N	N	150	N	10	<200	150	N
WF0281D	N	10	N	N	100	N	70	N	300	N
WF0285D1	N	15	N	N	150	N	15	N	150	N
WF0285D2	N	15	N	200	150	N	50	N	200	N
WF0285D3	N	10	N	N	100	N	10	N	150	N
WF0291D	N	20	N	N	200	N	150	<200	700	N
WF0292D	N	15	N	100	150	N	50	N	300	N
WF0299D	N	15	N	100	150	N	70	<200	500	N
WF0322D	N	15	N	N	150	N	100	N	300	N
WF0323D	N	30	N	150	150	N	150	200	700	N
WF0333D	N	70	N	300	500	N	50	<200	300	N
WF0343D	N	7	N	N	70	N	100	N	700	N
WF0357D	N	30	N	100	150	N	100	<200	300	N
WF0364D	N	50	N	N	300	N	30	<200	200	N
WF0370D	N	15	N	100	30	N	100	N	300	N
WF0371D	N	15	N	N	150	N	>200	300	300	N

Table 7.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Latitude	Longitude	Fe-pct. S	Mg-pct. S	Ca-pct. S	Ti-pct. S	Mn-ppm S	Ag-ppm S	As-ppm S	Au-ppm S	B-ppm S	Ba-ppm S
WF0373D	39 52 18	105 57 59	15.0	5.00	7.00	1.00	3,000	N	N	N	10	700
WF0383D	39 52 26	105 59 9	15.0	3.00	5.00	1.00	2,000	N	N	N	15	700
WF0398D	39 51 28	105 59 58	20.0	3.00	1.50	.70	5,000	N	N	N	N	700
WF0413D	39 51 50	105 59 8	15.0	3.00	.70	.70	1,500	1.0	N	N	10	1,500
WF0415D	39 49 11	105 57 16	7.0	2.00	.50	.50	1,500	N	N	N	N	1,000
WF0416D	39 49 14	105 57 16	7.0	3.00	2.00	1.00	1,000	N	N	N	15	1,500
WF0417D	39 49 16	105 57 14	7.0	2.00	1.00	1.00	1,000	N	N	N	15	2,000
WF0418D	39 49 18	105 57 13	7.0	2.00	.70	1.00	1,000	N	N	N	10	1,500
WF0424D	39 49 20	105 57 10	10.0	3.00	3.00	1.00	1,000	N	N	N	N	700
WF0425D	39 49 23	105 57 7	10.0	3.00	2.00	>1.00	1,000	N	N	N	10	1,500
WF0429D	39 49 44	105 57 8	10.0	2.00	1.50	>1.00	2,000	N	N	N	N	2,000
WF0430D	39 49 53	105 57 11	10.0	.70	1.00	.70	1,500	N	N	N	10	2,000
WF0431D	39 50 2	105 57 20	15.0	3.00	3.00	1.00	1,500	N	N	N	N	1,500
WF0432D	39 50 4	105 57 22	15.0	3.00	3.00	1.00	1,500	N	N	N	N	1,500
WF0434D	39 50 11	105 57 19	15.0	3.00	1.00	1.00	1,500	N	N	N	10	1,500
WF0440D	39 49 42	105 57 29	10.0	1.00	.70	1.00	700	N	N	N	N	1,500
WF0441D	39 49 43	105 57 36	15.0	2.00	1.50	1.00	1,500	N	N	N	N	1,500
WF0447D	39 49 38	105 57 45	15.0	3.00	2.00	>1.00	1,500	N	N	N	10	1,500
WF0451D	39 47 57	105 58 21	5.0	.50	.50	.70	500	N	N	N	N	700
WF0526D	39 48 5	105 57 27	3.0	1.00	.30	.20	1,500	N	N	N	N	1,000
WF0536D	39 47 49	105 56 59	5.0	2.00	.30	.20	1,500	N	N	N	N	1,500
WF0540D	39 47 34	105 56 36	7.0	1.50	.20	.30	2,000	N	N	N	N	2,000
WF0554D	39 45 52	105 55 28	2.0	1.00	.20	.30	1,000	N	N	N	N	1,500
WF0645D	39 45 0	105 57 17	3.0	.20	.20	.20	300	N	N	N	N	500
WF0646D	39 44 58	105 57 29	1.0	.20	1.50	.15	300	N	N	N	N	500
WF0649D	39 43 33	105 57 31	1.5	.20	.20	.15	200	N	N	N	N	500
WF0650D	39 43 29	105 57 26	1.5	.20	.20	.15	300	N	N	N	N	500
WF0651D	39 43 24	105 57 18	1.5	.20	.10	.15	300	N	N	N	N	500
WF0668D	39 45 6	105 57 6	3.0	.70	.10	.15	200	N	N	N	N	500
WF0700D	39 45 56	105 57 36	5.0	.70	.10	.15	300	N	N	N	N	300
WF0723D	39 42 58	105 57 41	5.0	.70	.20	.20	200	N	N	N	N	700
WF0823D	39 45 47	105 52 54	5.0	.50	.07	.20	100	N	N	N	N	700

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s
WF03735	N	N	N	70	1,500	150	50	N	<20	70	150
WF03835	N	N	N	30	50	100	N	N	<20	20	70
WF03985	N	N	N	70	700	100	N	N	<20	100	70
WF04135	N	N	N	15	150	30	30	15	<20	50	100
WF04150	7	N	N	20	100	30	70	<5	<20	50	100
WF04160	7	N	N	70	150	70	70	N	<20	150	70
WF04170	7	N	N	15	70	30	30	N	<20	30	100
WF04185	7	N	N	15	150	50	30	N	<20	100	100
WF04245	2	N	N	30	150	70	300	N	<20	100	100
WF04255	7	N	N	70	150	70	150	N	<20	100	100
WF04285	7	N	N	100	300	50	300	N	<20	50	100
WF04305	7	N	N	15	30	30	300	<5	<20	70	100
WF04315	3	N	N	70	70	70	200	N	<20	100	70
WF04325	2	N	N	70	100	70	100	N	<20	15	70
WF04345	3	N	N	30	30	100	N	N	<20	10	70
WF04405	3	N	N	15	30	30	200	7	<20	30	70
WF04415	3	N	N	15	70	50	200	N	<20	100	100
WF04475	3	N	N	70	300	70	700	N	<20	N	100
WF04585	N	N	N	N	15	30	30	N	<20	7	100
WF05285	N	N	N	5	30	5	100	10	20		
WF05335	N	N	N	10	150	15	100	N	<20	15	70
WF05405	N	N	N	7	30	15	200	7	<20	10	200
WF05595	N	N	N	N	10	7	150	7	<20	N	100
WF06455	N	N	N	5	10	20	150	5	N	5	50
WF06465	N	N	N	N	<10	5	100	<5	N	N	50
WF06495	N	N	N	<5	<10	<5	100	<5	<20	N	50
WF06505	N	N	N	5	10	5	150	<5	<20	5	50
WF06515	N	N	N	<5	<10	15	150	<5	N	<5	50
WF06685	N	N	N	5	15	20	200	<5	N	5	50
WF07005	N	N	N	10	50	20	50	<5	N	20	100
WF07235	N	N	N	10	50	20	50	10	<20	20	30
WF08235	N	N	N	N	15	50	150	15	20	<5	100

Table 3.--Spectrographic analysis of altered rocks and soils, Williams Fork and St. Louis Peak study areas, Colorado.--continued

Sample	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
WF03730	N	70	N	200	300	N	100	<200	150	N
WF03830	N	50	N	150	200	N	20	<200	200	N
WF03980	N	70	N	150	200	N	70	<200	200	N
WF04130	N	30	N	150	150	N	30	<200	300	N
WF04150	N	30	N	150	100	N	50	N	300	N
WF04160	N	70	N	300	300	N	20	N	700	N
WF04170	N	30	N	300	150	N	20	N	1,000	N
WF04180	N	70	N	300	150	N	50	N	1,000	N
WF04240	N	50	N	200	200	N	150	N	1,000	N
WF04250	N	70	N	300	200	N	70	N	>1,000	N
WF04280	N	70	N	500	300	N	100	<200	1,000	N
WF04300	N	15	N	300	150	N	100	N	1,000	N
WF04310	N	70	N	1,500	300	N	100	<200	700	N
WF04320	N	50	N	700	300	N	70	<200	700	N
WF04340	N	70	N	<100	150	N	100	<200	700	N
WF04400	N	30	N	200	70	N	100	N	1,000	N
WF04410	N	70	N	300	100	N	>200	N	1,000	N
WF04470	N	70	N	700	300	N	150	<200	1,000	N
WF04580	N	5	N	200	70	N	15	N	500	N
WF05200	N	10	10	N	70	N	30	N	70	N
WF05360	N	10	N	N	70	N	30	N	100	N
WF05400	N	5	N	N	70	N	30	N	150	N
WF05590	N	5	N	N	70	N	20	N	70	N
WF06450	N	N	N	N	50	N	20	N	150	N
WF06460	N	N	N	N	20	N	15	N	150	N
WF06490	N	N	N	N	20	N	30	N	100	N
WF06500	N	N	N	N	30	N	20	N	150	N
WF06510	N	N	N	N	30	N	15	N	150	N
WF06680	N	<5	N	N	70	N	20	N	150	N
WF07000	N	7	N	N	70	N	30	N	150	N
WF07230	N	10	N	200	70	N	15	N	100	N
WF08230	N	<5	N	N	50	N	20	N	150	N