UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGIC SURVEY

ANALYTICAL RESULTS AND SAMPLE LOCALITY MAPS OF STREAM-SEDIMENT, HEAVY-MINERAL-CONCENTRATE AND ROCK SAMPLES FROM THE BIG HORN MOUNTAINS WILDERNESS STUDY AREA (AZ-020-099), MARICOPA COUNTY, ARIZONA

By

R. J. Miller, Floyd Gray, J. R. Hassemer, D. E. Detra,
P. H. Briggs, and John Brice III

U.S. Geological Survey
Open-File Report 86-184
1986

Contents

	Page
Studies related to wilderness	1
Introduction	1
Methods of study	1
Sample collection	2
Stream-sediment samples	2
Heavy-mineral-concentrate samples	2
Rock samples	2
Sample preparation	2
Sample analysis	3
Rock analyses storage system (RASS)	3
Description of data table	3
Acknowledgements	4
References	4

Illustrations
[Plates in pocket]

Plate 1. Map showing stream-sediment sample locations
Plate 2. Map showing heavy-mineral concentrate sample locations
Plate 3. Map showing rock sample locations

Figure 1.--Location map ---------- 6

Tables

Table 1.	Limits of determination for spectrographic analyses of rock and stream sediment	7
2.	Analyses of stream-sediment samples	8
3.	Analyses of heavy-mineral concentrate samples	14
4.	Analyses of rock samples	20

STUDIES RELATED TO WILDERNESS
Bureau of Land Management Wilderness Study Area

The Federal Land Policy and Management Act (Public Law 94-579, October 21, 1976) requires the U.S. Geological Survey and the U.S. Bureau of Mines to conduct mineral surveys on certain areas to determine the mineral values, if any, that may be present. 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 Big Horn Mountains Wilderness Study Area (AZ-020-099), Maricopa County, Arizona.

INTRODUCTION

In the Spring of 1984, the U.S. Geological Survey conducted a reconnaissance geochemical survey of the Big Horn Mountains Wilderness Study Area (AZ-020-099), Maricopa County, Arizona. The study area comprises about 21,500 acres in west-central Arizona, and lies about 55 mi west of Phoenix (fig. 1). Access to the study area is provided on the south side by unnamed jeep trails originating from Eagle Eye Road on the north and from Indian School Road, near Tonopah, on the south. Elevations range from 3,480 ft at Big Horn Peak in the southwest portion of the area to approximately 1,420 ft in the alluvial basins.

The study area lies in the Basin and Range province of west central Arizona within a zone of north- to northwest-trending faults (Rehrig and others, 1980). Numerous high-angle faults of small displacement occur within the area. Across this zone, large crustal blocks have been repeatedly downdropped to the southwest and tilted northeast during the period of active basin and range extensional development. The Precambrian rocks in the Big Horn Mountains Wilderness Study Area consist predominantly of coarse-grained porphyritic quartz monzonite and less abundant mafic metavolcanics, gneiss and pegmatite which are exposed within uplifted fault blocks. A biotite granodiorite of Late Cretaceous/early Tertiary age intrudes the Precambrian quartz monzonite. The Miocene volcanic sequence consists of a bimodal assemblage of basalt and rhyolite that has been tilted and block-faulted. Basalt of early Miocene age forms the basal volcanic unit and is overlain or intruded by aphyric rhyolite flows, domes, and plugs. The upper part of the sequence is dominated by porphyritic rhyolite flows containing phenocrysts of biotite, hornblende, and feldspar. Basalt, locally intercalated with the rhyolite, also forms the youngest volcanic unit within the wilderness study area.

METHODS OF STUDY

The geochemical study used a combination of sieved stream sediment, heavy-mineral-concentrate, and rock samples. Analyses of the stream-sediment samples represent the chemistry of the rock material eroded from the drainage basin upstream from each sample site. Such information is useful in identifying those basins which contain concentrations of elements that may be related to mineral deposits. Heavy-mineral-concentrate samples provide information about the chemistry of certain minerals in rock material eroded from the drainage basin upstream from each sample site. The selective concentration of minerals, many of which may be related to mineralization, permits determination of some elements that are not easily detected in stream-sediment samples.

Analyses of unaltered or unmineralized rock samples provide background geochemical data for individual rock units. On the other hand, analyses of altered or mineralized rocks, where present, may provide useful geochemical information about the major- and trace-element assemblages associated with a mineralizing system.

Sample collection

Stream-sediment samples were collected at 76 sites (pl. 1 and 2). At 71 of those sites, both a stream-sediment sample and a heavy-mineral-concentrate sample were collected. Sampling density was about 2 sample sites per 1 mi^2 for the stream sediments and heavy-mineral concentrates. The area of the drainage basins sampled range from 0.1 mi^2 to 1 mi^2. Rock samples were collected at 74 sites within the study area (pl. 3).

Stream-sediment samples

The stream-sediment samples consists of active alluvium collected primarily from first order (unbranched) and second-order (below the junction of two first-order) streams as shown on U.S.G.S. topographic maps (scale 1:62,500).

Heavy-mineral-concentrate samples

Heavy-mineral-concentrate samples were collected from the same active alluvium as the stream-sediment samples. Each bulk sample was screened with a 2.0-mm (10-mesh) screen to remove the coarse material. The less than 2.0-mm fraction was panned until most of the quartz, feldspar, organic material, and clay-sized material were removed.

At 14 sites an additional sample was collected and panned until a sample size of approximately 10 grams was obtained. These samples were pulverized and analyzed without further concentration.

Rock samples

Rock samples were collected from outcrops or exposures in the vicinity of the plotted site location. Samples were collected from unaltered, altered, and mineralized rocks.

Sample preparation

The stream-sediment samples were air-dried, then sieved using 80 mesh (0.17 mm) stainless steel sieves. The portion of the sediment passing through the sieve was saved for analysis.

After air-drying, bromoform (specific gravity 2.8) was used to remove the remaining quartz and feldspar from the heavy-mineral-concentrate samples that had been panned in the field. The resultant heavy-mineral sample was separated into three fractions using a large electromagnet (in this case a modified Frantz Isodynamic Separator). The most magnetic material, primarily magnetite, was not analyzed. The second fraction, largely ferromagnesian silicates and iron oxides, was saved for analysis/archival storage. The third fraction (the least magnetic material which may include the nonmagnetic ore

minerals, zircon, sphene, etc.) was split using a Jones splitter. One split was hand-ground for spectrographic analysis; the other split was saved for mineralogical analysis. These magnetic separates are the same separates that would be produced by using a Frantz Isodynamic Separator set at a slope of 15° and a tilt of 10° with a current of 0.1 ampere to remove the magnetite and ilmenite, and a current of 1.0 ampere to split the remainder of the sample into paramagnetic and nonmagnetic fractions.

Rock samples were crushed and then pulverized to minus 0.15 mm with ceramic plates.

Sample analysis

The stream-sediment, heavy-mineral-concentrate, and rock samples were analyzed for 31 elements using a semiquantitative, direct-current arc emission spectrographic method (Grimes and Marranzino, 1968). The elements analyzed and their lower limits of determination are listed in table 1. Spectrographic results were obtained by visual comparison of spectra derived from the sample against spectra obtained from standards made from pure oxides and carbonates. Standard concentrations are geometrically spaced over any given order of magnitude of concentration as follows: 100, 50, 20, 10, and so forth. Samples whose concentrations are estimated to fall between those values are assigned values of 70, 30, 15, and so forth. The precision of the analytical method is approximately plus or minus two reporting intervals at the 96 percent confidence level (Motooka and Grimes, 1976). Values determined for the major elements (iron, magnesium, calcium, and titanium) are given in weight percent; all other are given in parts per million (micrograms/gram). Selected rock and heavy-mineral-concentrate samples were analyzed for Au, As, Zn, Cd, Bi, and Sb by atomic absorption spectrophotometric methods (Viets, 1978, Ward and others, 1969, Thompson and others, 1968). The concentration of Th and U in stream-sediment samples was determined by delayed neutron counting (Millard, 1976). Analytical data for samples from the Big Horn Mountains Wilderness Study Area are listed in tables 2, 3 and 4.

ROCK ANALYSIS STORAGE SYSTEM (RASS)

Upon completion of all analytical work, the analytical results were entered into a computer-based file called Rock Analysis Storage System (RASS). This data base contains both descriptive geological information and analytical data. Any or all of this information may be retrieved and converted to a binary form (STATPAC) for computerized statistical analysis or publication (VanTrump and Miesch, 1976).

DESCRIPTION OF DATA TABLES

Tables 2, 3, and 4 list the analyses for the samples of stream sediment, heavy-mineral concentrate, and rock, respectively. For the three tables, the data are arranged so that column 1 contains the U.S.G.S.-assigned sample numbers. These numbers correspond to the numbers shown on the site location maps (pl.1,2and 3). The 14 samples listed in table 3 with an "AU" appended to the sample number were panned until a 10 gram sample was obtained and analyzed without further concentration. The data for these samples are not directly comparable to the remainder of the sample data reported in table 3. Sample numbers lacking an "AU" suffix indicate samples which were prepared as

described on page 2. Columns in which the element headings show the letter "s" below the element symbol are emission spectrographic analyses; "aa" indicates atomic absorption analyses; "ac" indicates analyses done by delayed neutron counting. The qualification codes used in the data tables are explained below.

Qualification codes used in tables 2, 3, and 4
[n refers to value of upper or lower limit of determination]

Code in tables 2 and 4	Code in table 3	Meaning
—	--	Blank; no anaylsis performed
<n	N	Not detected by analysis at the lower limit of determination
<n	<n	Detected, but below the lower limit of determination shown
>n	>n	Element present in an amount greater than the upper limit of determination shown

ACKNOWLEDGEMENTS

A number of our colleagues also participated in the collection, preparation and analyses of the sample collection: E. E. Engleman, C. A. Gent, D. B. Hatfield and L. R. Layman; preparation, J. C. Gray Jr., R. McGregor and D. F. Siems; analyses, L. A. Bradley, M. J. Malcolm, L. R. Layman, D. M. McKown, T. A. Roemer and R. B. Vaughn; RASS data entry, M. L. Marchitti.

REFERENCES CITED

Grimes, D. J., and Marranzino, A. P., 1968, Direct-current arc and alternating-current spark emission spectrographic field methods for the semiquantitative analysis of geologic materials: U.S. Geological Survey Circular 591, 6 p.

Millard, H. T., Jr., 1976, Determination of uranium, and thorium in U.S.G.S. standard rocks by the delayed neutron technique: U.S. Geological Survey Professional Paper 840, p. 61-65.

Motooka, J. M., and Grimes, D. J., 1976, Analytical precision of one-sixth order semiquantitative spectrographic analyses: U.S. Geological Survey Circular 738, 25 p.

Thompson, C. E., Nakagawa, H. M., and Van Sickle, G. H., 1968, Rapid analysis for gold in geologic materials, in Geological Survey research 1968: U.S. Geological Survey Professional Paper 600-B, p. B130-B132.

Rehrig, W. A., Shafiqullah, M., and Damon, P. E., 1980, Geochronology, geology and listric normal faulting of the Vulture Mountains, Maricopa County, Arizona: Arizona Geological Society Digest, v. 12, p. 89-110.

VanTrump, George, Jr., and Miesch, A. T., 1976, The U.S. Geological Survey RASS-STATPAC system for management and statistical reduction of geochemical data: Computers and Geoscience, v. 3, p. 475-488.

Viets, J. G., 1978, Determination of silver, bismuth, cadmium, copper, lead, and zinc in geologic materials by atomic absorption spectrometry with tricaprylylmethylammonium chloride: Analytical Chemistry, v. 50, p. 1097-1101.

Ward, F. N., Nakagawa, H. M., Harms, T. F., and Van Sickle, G. H., 1969, Atomic-absorption methods useful in geochemical exploration: U.S. Geological Survey Bulletin 1289, 45 p.

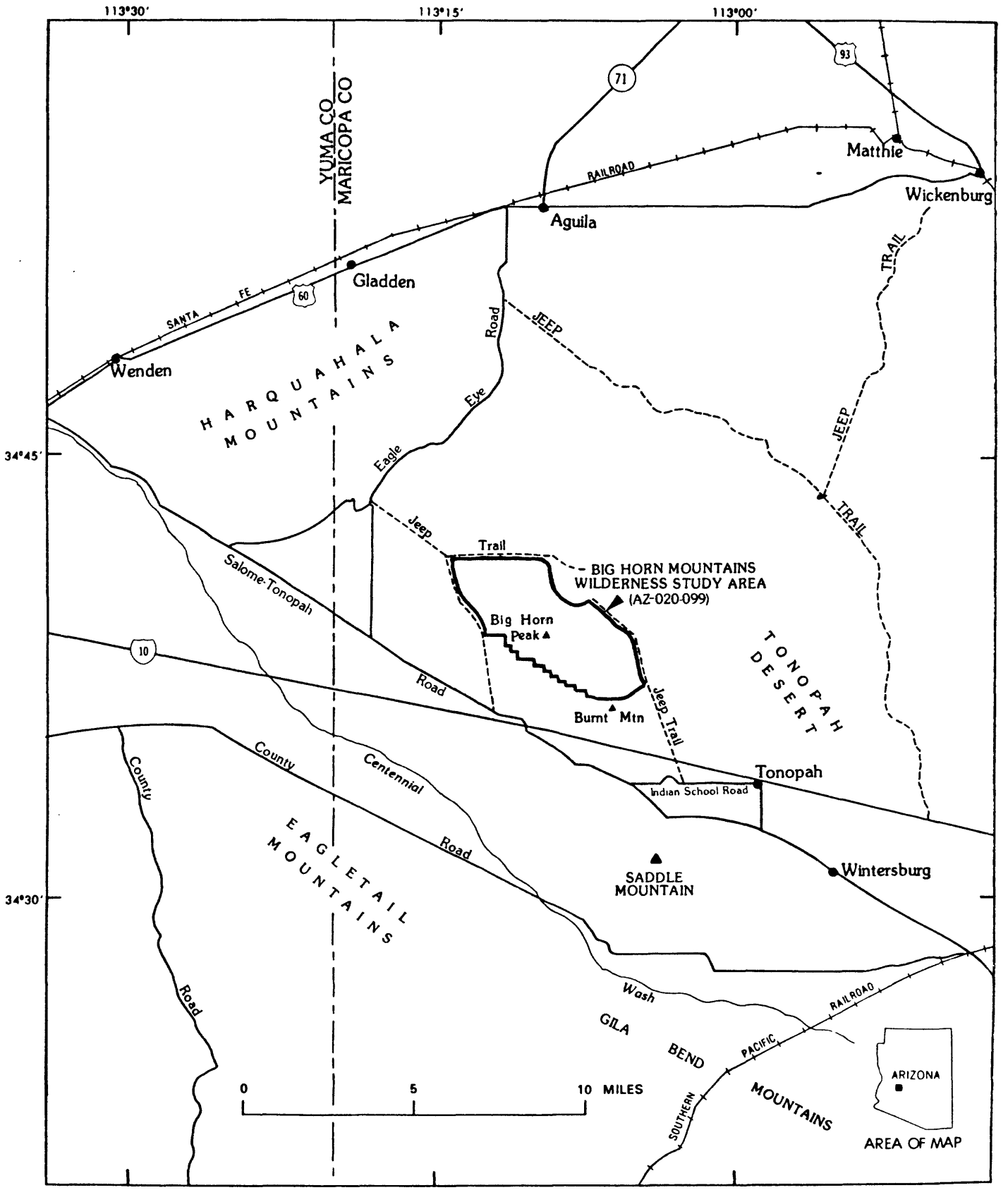

Figure 1. Index map showing location of the Big Horn Mountains Wilderness Study Area

Table 1. Lower limits of analytical determination for stream-sediment and nonmagnetic heavy-mineral-concentrate samples from Big Horn Mountains Wilderness Study Area

[Limits of determination of elements are in parts per million (ppm) except where noted. All analyses are by spectrographic methods]

Element	Determination limits stream sediment	Determination limits stream sediment concentrates
Ca	0.05 percent	0.1 percent
Fe	.05 percent	.1 percent
Mg	.02 percent	.05 percent
Ti	.002 percent	.005 percent
Ag	.5	1
As	700	500
Au	15	20
B	10	20
Ba	20	50
Be	1	2
Bi	10	20
Cd	30	50
Co	5	10
Cr	10	20
Cu	5	10
La	30	50
Mn	10	20
Mo	5	10
Nb	20	50
Ni	5	10
Pb	10	20
Sb	100	200
Sc	5	10
Sn	10	20
Sr	100	200
Th	200	200
V	10	20
W	50	100
Y	10	20
Zn	200	500
Zr	10	20

Table 2. Analyses of stream-sediment samples

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
4M12	33 38 4	113 11 1	3	2.0	3.0	.5	1,500	<.5	<700	<15	10	700
4M19	33 38 54	113 10 34	5	2.0	3.0	.3	1,000	<.5	<700	<15	30	700
4M20	33 38 52	113 10 26	3	1.5	2.0	.3	1,000	<.5	<700	<15	20	700
4M21	33 38 51	113 10 30	10	2.0	3.0	1.0	2,000	<.5	<700	<15	20	700
4M25	33 38 30	113 7 21	7	3.0	3.0	.5	2,000	.5	<700	<15	10	700
4M26	33 38 26	113 7 10	7	2.0	3.0	.5	1,500	<.5	<700	<15	10	700
4M42	33 36 14	113 5 14	3	1.5	2.0	.3	700	<.5	<700	<15	20	700
4M44	33 36 12	113 5 30	3	2.0	3.0	.3	1,000	<.5	<700	<15	15	700
4M46	33 36 8	113 5 40	2	1.5	5.0	.3	700	<.5	<700	<15	20	700
4M04	33 36 2	113 10 6	3	1.5	2.0	.3	700	.5	<700	<15	20	1,000
4M52	33 37 50	113 6 54	3	1.0	1.5	.3	1,500	<.5	<700	<15	20	1,000
4M57	33 37 55	113 6 55	3	2.0	7.0	.3	2,000	.7	<700	<15	10	700
4M58	33 38 2	113 6 56	5	2.0	7.0	.5	2,000	1.5	<700	<15	15	700
4M59	33 38 5	113 6 56	3	3.0	5.0	.3	1,500	<.5	<700	<15	10	700
4M60	33 38 18	113 7 6	5	3.0	3.0	.3	1,500	<.5	<700	<15	10	700
4M64	33 38 16	113 7 23	5	3.0	3.0	.3	1,500	<.5	<700	<15	10	700
4M67	33 38 25	113 7 32	5	2.0	3.0	.3	1,500	<.5	<700	<15	10	500
4M08	33 38 8	113 11 36	10	1.5	2.0	.3	1,000	<.5	<700	<15	10	1,000
4M82	33 35 24	113 6 31	3	1.5	2.0	.3	1,000	<.5	<700	<15	15	1,000
4M83	33 35 26	113 6 28	3	1.5	3.0	.3	1,500	<.5	<700	<15	10	1,500
4M84	33 35 28	113 6 25	3	1.5	1.5	.3	1,000	<.5	<700	<15	10	1,000
4M85	33 35 21	113 6 2	3	1.5	1.5	.3	700	<.5	<700	<15	10	1,000
4M86	33 35 28	113 5 54	3	1.5	3.0	.3	1,000	<.5	<700	<15	10	1,000
4M87	33 35 34	113 5 31	3	2.0	3.0	.3	700	<.5	<700	<15	30	1,000
4M91	33 39 2	113 9 16	3	1.0	1.5	.5	1,000	<.5	<700	<15	10	1,000
84WAG28	33 38 6	113 10 47	3	1.5	1.5	.5	1,000	<.5	<700	<15	<10	700
84BH042	33 35 14	113 7 25	3	2.0	2.0	.3	1,000	<.5	<700	<15	<10	700
84BH046	33 35 49	113 9 3	2	1.5	1.5	.3	700	<.5	<700	<15	10	700
84BH047	33 38 53	113 9 35	3	1.5	1.5	.3	700	<.5	<700	<15	10	700
84BH048	33 38 59	113 9 41	3	1.5	1.5	.7	1,500	<.5	<700	<15	10	700
84BH049	33 38 24	113 11 23	10	1.5	1.5	.7	1,500	<.5	<700	<15	<10	300
84BH050	33 38 43	113 11 35	2	1.5	1.5	.3	500	<.5	<700	<15	10	700
84BH101	33 37 50	113 6 46	7	3.0	3.0	.5	1,000	<.5	<700	<15	<10	500
84BH225	33 35 0	113 5 12	2	1.0	2.0	.3	500	<.5	<700	<15	15	700
84BH226	33 34 28	113 5 26	2	1.0	1.5	.3	500	<.5	<700	<15	20	700
84BH227	33 34 47	113 6 49	3	1.0	1.5	.3	500	<.5	<700	<15	20	700
84BH228	33 34 24	113 5 51	2	1.5	1.5	.3	500	<.5	<700	<15	20	700
84BH229	33 38 53	113 7 22	15	1.5	2.0	.5	700	<.5	<700	<15	<10	1,000
84BH231	33 39 22	113 10 23	3	1.0	1.5	.3	500	<.5	<700	<15	15	700
84BH232	33 39 22	113 11 1	3	1.5	2.0	.3	700	<.5	<700	<15	10	700
84WAB104	33 37 19	113 7 45	2	2.0	3.0	.3	700	<.5	<700	<15	70	1,500
84WAB143	33 36 35	113 8 10	3	1.5	1.5	.3	700	<.5	<700	<15	20	1,000
84WAB144	33 36 33	113 7 52	7	2.0	3.0	.7	1,500	<.5	<700	<15	10	1,000
84WAB145	33 36 25	113 7 35	3	2.0	2.0	.3	1,000	<.5	<700	<15	20	1,000
84WAB146	33 36 0	113 7 29	7	3.0	3.0	.7	1,500	<.5	<700	<15	10	1,000

Table 2. Analyses of stream-sediment samples

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	Sb-ppm s	Sc-ppm s
4M12	1.5	<10	<30	15	70	50	150	<5	20	20	30	<100	20
4M19	1.5	<10	<30	15	70	50	50	<5	<20	30	30	<100	15
4M20	1.5	<10	<30	10	70	30	50	<5	<20	20	30	<100	10
4M21	1.5	<10	<30	15	100	100	300	<5	20	30	20	<100	30
4M25	1.0	<10	<30	20	100	200	30	<5	<20	30	300	<100	20
4M26	1.0	<10	<30	20	100	100	70	<5	<20	30	150	<100	20
4M42	1.5	<10	<30	10	150	70	70	<5	<20	20	30	<100	10
4M44	1.0	<10	<30	15	150	30	30	<5	<20	50	20	<100	10
4M46	1.0	<10	<30	10	70	100	50	<5	<20	30	20	<100	10
4M04	1.5	<10	<30	10	70	100	50	<5	<20	20	70	<100	10
4M52	1.5	<10	<30	10	50	20	50	<5	<20	20	50	<100	10
4M57	1.0	<10	<30	15	200	50	70	<5	<20	50	150	<100	15
4M58	1.0	<10	<30	15	150	70	<30	<5	<20	50	150	<100	20
4M59	1.0	<10	<30	15	150	70	30	<5	<20	50	100	<100	15
4M60	1.0	<10	<30	15	100	70	<30	<5	<20	30	70	<100	15
4M64	1.0	<10	<30	20	150	70	<30	<5	<20	50	30	<100	20
4M67	1.0	<10	<30	15	100	70	<30	<5	<20	30	100	<100	20
4M08	1.5	<10	<30	15	150	50	100	<5	<20	20	50	<100	15
4M82	1.5	<10	<30	10	70	30	50	<5	<20	30	20	<100	10
4M83	1.5	<10	<30	10	70	20	70	<5	<20	20	50	<100	15
4M84	1.5	<10	<30	10	70	20	50	<5	<20	20	30	<100	10
4M85	1.5	<10	<30	10	50	20	50	<5	<20	20	20	<100	10
4M86	1.5	<10	<30	10	70	20	70	<5	<20	20	20	<100	10
4M87	1.5	<10	<30	10	70	30	70	<5	<20	30	20	<100	10
4M91	1.5	<10	<30	10	70	20	100	<5	<20	15	20	<100	15
84WAG28	1.0	<10	<30	10	70	20	70	<5	<20	30	20	<100	15
84BH042	1.0	<10	<30	15	300	30	50	<5	<20	50	15	<100	15
84BH046	1.0	<10	<30	7	70	20	<30	<5	<20	20	15	<100	10
84BH047	1.0	<10	<30	15	70	20	50	<5	<20	30	15	<100	10
84BH048	1.0	<10	<30	15	100	30	100	<5	20	20	20	<100	15
84BH049	1.0	<10	<30	20	150	30	500	<5	20	30	20	<100	20
84BH050	1.5	<10	<30	7	70	30	50	<5	<20	20	15	<100	7
84BH101	1.0	<10	<30	20	150	50	50	<5	<20	30	15	<100	20
84BH225	1.0	<10	<30	5	70	70	70	<5	<20	20	15	<100	7
84BH226	1.5	<10	<30	7	70	20	<30	<5	<20	15	15	<100	7
84BH227	1.0	<10	<30	7	70	15	<30	<5	<20	15	15	<100	7
84BH228	1.5	<10	<30	7	50	50	50	<5	<20	20	15	<100	7
84BH229	1.0	<10	<30	20	150	50	150	<5	<20	50	20	<100	15
84BH231	1.5	<10	<30	10	70	30	150	<5	<20	20	15	<100	7
84BH232	1.5	<10	<30	10	70	30	50	<5	<20	20	20	<100	10
84WAB104	1.5	<10	<30	7	30	20	70	<5	<20	20	30	<100	7
84WAB143	1.5	<10	<30	7	50	30	50	<5	<20	20	15	<100	10
84WAB144	1.5	<10	<30	20	150	70	150	<5	20	50	50	<100	20
84WAB145	1.5	<10	<30	10	70	30	50	<5	<20	30	30	<100	15
84WAB146	1.5	<10	<30	20	300	70	70	<5	20	150	20	<100	20

Table 2. Analyses of stream-sediment samples

Sample	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	TH-ppm ac	U-ppm ac
4M12	<10	700	150	<50	50	<200	300	<200	45.60	9.35
4M19	<10	500	150	<50	20	<200	300	<200	--	--
4M20	<10	500	70	<50	20	<200	200	<200	18.70	3.31
4M21	<10	700	300	<50	50	<200	1,000	<200	--	--
4M25	<10	500	200	<50	20	300	100	<200	12.70	3.24
4M26	<10	500	300	<50	20	200	200	300	12.90	3.91
4M42	<10	300	100	<50	30	<200	300	<200	17.90	3.61
4M44	<10	500	100	<50	20	<200	150	<200	9.90	2.74
4M46	<10	700	70	<50	20	<200	200	<200	12.00	2.66
4M04	<10	500	70	<50	20	<200	300	<200	13.00	3.57
4M52	<10	300	70	<50	20	<200	200	<200	12.20	3.74
4M57	<10	200	150	<50	20	500	150	<200	12.50	3.18
4M58	<10	300	300	<50	20	300	100	<200	7.30	2.20
4M59	<10	500	150	<50	20	<200	70	<200	6.50	3.34
4M60	<10	500	150	<50	30	<200	100	<200	13.60	3.39
4M64	<10	500	150	<50	20	<200	100	<200	10.00	2.87
4M67	<10	700	150	<50	20	<200	100	<200	5.60	2.47
4M08	10	500	300	<50	50	<200	700	<200	224.00	34.20
4M82	<10	500	70	<50	20	<200	200	<200	13.00	3.61
4M83	<10	700	100	<50	30	<200	200	<200	15.60	4.39
4M84	<10	500	70	<50	20	<200	300	<200	10.40	4.07
4M85	<10	300	70	<50	20	<200	200	<200	11.30	3.52
4M86	<10	500	70	<50	20	<200	200	<200	9.04	4.18
4M87	<10	500	100	<50	20	<200	200	<200	--	--
4M91	<10	500	100	<50	30	<200	300	<200	18.80	5.68
84WAG28	<10	300	100	<50	30	<200	300	<200	11.30	4.28
84BH042	<10	500	150	<50	20	<200	300	<200	14.10	3.92
84BH046	<10	500	100	<50	20	<200	300	<200	14.70	3.61
84BH047	<10	500	150	<50	20	<200	300	<200	22.30	4.11
84BH048	<10	500	200	<50	30	<200	300	<200	24.30	5.01
84BH049	<10	300	500	<50	50	<200	700	200	297.00	39.90
84BH050	<10	300	70	<50	20	<200	200	<200	13.40	3.56
84BH101	<10	500	300	<50	30	<200	100	300	14.90	3.17
84BH225	<10	300	70	<50	15	<200	300	<200	--	--
84BH226	<10	300	70	<50	15	<200	200	<200	14.00	3.04
84BH227	<10	500	70	<50	15	<200	300	<200	15.30	3.97
84BH228	<10	500	70	<50	30	<200	200	<200	10.70	3.04
84BH229	<10	300	500	<50	30	<200	200	<200	189.00	25.20
84BH231	<10	300	150	<50	20	<200	200	<200	89.90	14.20
84BH232	<10	300	150	<50	20	<200	200	<200	23.90	4.80
84WAB104	<10	500	70	<50	20	<200	300	<200	--	--
84WAB143	<10	500	100	<50	30	<200	300	<200	10.50	3.95
84WAB144	<10	700	200	<50	30	<200	300	<200	17.10	5.06
84WAB145	<10	500	100	<50	20	<200	300	<200	11.80	3.31
84WAB146	<10	700	200	<50	20	<200	300	<200	11.60	4.57

Table 2. Analyses of stream-sediment samples--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
84WAB147	33 37 26	113 8 24	7	1.5	1.5	.7	1,500	<.5	<700	<15	10	1,500
84WAB148	33 37 33	113 8 24	3	2.0	3.0	.3	1,000	<.5	<700	<15	10	1,000
84WAB152	33 38 27	113 8 14	7	2.0	3.0	.7	1,500	<.5	<700	<15	<10	700
84WAB153	33 38 36	113 7 55	15	1.5	3.0	1.0	1,000	<.5	<700	<15	<10	500
84WAB167	33 37 52	113 7 26	7	5.0	5.0	.7	1,500	<.5	<700	<15	<10	700
84WAB168	33 37 56	113 7 30	7	5.0	7.0	.5	1,000	<.5	<700	<15	<10	700
84WAB170	33 38 9	113 7 23	7	3.0	5.0	.5	1,500	<.5	<700	<15	<10	700
84WAB171	33 38 12	113 7 28	7	5.0	5.0	.5	1,500	<.5	<700	<15	<10	700
84WAB096	33 37 42	113 6 52	5	1.5	3.0	.3	1,000	<.5	<700	--	15	1,000
84WAG11	33 36 36	113 9 43	3	3.0	3.0	.3	1,000	<.5	<700	<15	10	700
84WAG19	33 42 32	113 14 23	5	2.0	3.0	.5	2,000	<.5	<700	<15	<10	1,000
84WAG20	33 38 5	113 11 24	5	2.0	3.0	.5	1,500	<.5	<700	<15	<10	700
84WAG27	33 37 52	113 10 53	15	1.5	2.0	.3	700	<.5	<700	<15	<10	500
84WAG30	33 38 11	113 11 03	3	2.0	2.0	.5	1,000	<.5	<700	<15	<10	1,000
84WAG34	33 39 2	113 8 57	2	1.5	1.5	.3	1,000	<.5	<700	<15	20	1,000
84WAG60	33 38 54	113 8 37	5	2.0	2.0	.3	700	<.5	<700	<15	10	700
84WAG61	33 38 34	113 8 29	2	1.5	1.5	.3	700	<.5	<700	<15	10	700
84WAG62	33 38 17	113 8 43	3	1.5	1.5	.3	700	<.5	<700	<15	10	1,000
84WAG64	33 38 2	113 8 43	2	1.5	1.5	.3	700	<.5	<700	<15	10	1,000
84WAG85	33 36 10	113 9 1	2	1.5	1.5	.3	500	<.5	<700	<15	<10	1,000
84WAG08	33 35 56	113 10 30	3	1.5	2.0	.5	700	<.5	<700	<15	20	1,000
84WAB024	33 37 45	113 11 26	15	1.5	3.0	.7	700	<.5	<700	<15	<10	500
84WAB026	33 37 32	113 10 57	3	2.0	3.0	.3	1,000	<.5	<700	<15	10	700
84WAB027	33 37 37	113 10 48	5	2.0	3.0	.7	1,000	<.5	<700	<15	10	700
84WAB036	33 37 35	113 10 18	3	2.0	3.0	.5	700	<.5	<700	<15	10	1,000
84WAB038	33 37 42	113 10 41	7	2.0	3.0	.5	1,000	<.5	<700	<15	<10	700
84WAB042	33 39 20	113 9 49	7	1.5	2.0	.3	700	<.5	<700	<15	10	700
84WAB047	33 39 25	113 8 52	3	3.0	3.0	.5	1,500	<.5	<700	<15	10	1,000
84WAB006	33 36 18	113 9 45	3	3.0	7.0	.5	1,000	<.5	<700	<15	10	1,500
84WAB076	33 36 24	113 6 42	3	3.0	3.0	.3	700	<.5	<700	<15	70	1,000
84WAB079	33 36 40	113 6 14	2	3.0	3.0	.3	700	<.5	<700	<15	50	1,000

Table 2. Analyses of stream-sediment samples--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	Sb-ppm s	Sc-ppm s
84WAB147	1.5	<10	<30	10	70	30	70	<5	20	20	30	<100	10
84WAB148	1.5	<10	<30	10	150	30	50	<5	<20	50	20	<100	10
84WAB152	1.5	<10	<30	20	70	70	70	<5	<20	30	15	<100	30
84WAB153	1.0	<10	<30	50	100	100	100	<5	<20	30	30	<100	15
84WAB167	1.0	<10	<30	20	150	70	150	<5	<20	70	20	<100	30
84WAB168	1.0	<10	<30	20	150	70	<30	<5	<20	70	20	<100	30
84WAB170	1.0	<10	<30	20	100	70	<30	<5	<20	70	20	<100	20
84WAB171	1.0	<10	<30	20	150	70	<30	<5	<20	70	20	<100	30
84WAB096	1.5	<10	<30	10	70	30	50	<5	<20	20	30	<100	15
84WAG11	1.5	<10	<30	15	70	50	50	<5	<20	30	15	<100	15
84WAG19	1.5	<10	<30	15	150	30	150	<5	<20	30	30	<100	15
84WAG20	1.5	<10	<30	15	100	30	150	<5	20	30	15	<100	30
84WAG27	1.0	<10	<30	20	150	50	150	<5	<20	30	30	<100	15
84WAG30	1.5	<10	<30	15	100	20	70	<5	<20	30	20	<100	15
84WAG34	1.5	<10	<30	10	50	20	50	<5	<20	20	20	<100	10
84WAG60	1.0	<10	<30	15	150	50	150	<5	<20	50	20	<100	15
84WAG61	1.0	<10	<30	10	70	20	50	<5	<20	20	15	<100	10
84WAG62	1.0	<10	<30	10	70	20	50	<5	<20	20	20	<100	10
84WAG64	1.5	<10	<30	10	70	20	50	<5	<20	20	20	<100	10
84WAG85	1.0	<10	<30	5	30	20	50	<5	<20	15	15	<100	7
84WAG08	1.5	<10	<30	10	150	20	50	<5	<20	30	20	<100	15
84WAB024	1.5	<10	<30	20	150	50	500	<5	20	30	30	<100	30
84WAB026	2.0	<10	<30	15	50	70	100	<5	<20	20	20	<100	20
84WAB027	2.0	<10	<30	15	70	50	200	<5	30	20	20	<100	30
84WAB036	1.5	<10	<30	15	100	50	100	<5	<20	30	20	<100	15
84WAB038	1.5	<10	<30	15	70	50	200	<5	20	20	20	<100	30
84WAB042	1.5	<10	<30	15	70	70	100	<5	<20	20	30	<100	15
84WAB047	2.0	<10	<30	15	50	70	150	<5	30	20	20	<100	20
84WAB006	1.0	<10	<30	20	150	100	150	<5	<20	70	20	<100	20
84WAB076	1.5	<10	<30	10	70	30	70	<5	<20	20	30	<100	10
84WAB079	1.5	<10	<30	10	70	50	70	<5	<20	30	30	<100	10

Table 2. Analyses of stream-sediment samples--continued

Sample	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	TH-ppm ac	U-ppm ac
84WAB147	<10	700	200	<50	30	<200	300	<200	--	--
84WAB148	<10	500	100	<50	30	<200	300	<200	20.00	4.13
84WAB152	<10	500	300	<50	30	<200	200	<200	10.40	3.29
84WAB153	<10	700	1,500	<50	50	<200	200	<200	114.00	17.10
84WAB167	<10	700	300	<50	30	<200	200	<200	10.00	3.10
84WAB168	<10	300	200	<50	20	<200	200	<200	9.80	2.86
84WAB170	<10	500	150	<50	20	<200	300	<200	8.70	2.97
84WAB171	<10	500	200	<50	20	<200	300	<200	8.50	2.86
84WAB096	<10	500	100	<50	30	<200	300	<200	11.30	3.39
84WAG11	<10	500	100	<50	15	<200	200	<200	7.31	3.12
84WAG19	<10	700	150	<50	30	<200	300	<200	21.70	7.30
84WAG20	<10	700	150	<50	50	<200	300	<200	62.20	13.20
84WAG27	<10	150	700	<50	50	<200	1,500	300	330.00	51.20
84WAG30	<10	500	150	<50	30	<200	300	<200	30.20	8.17
84WAG34	<10	300	70	<50	20	<200	300	<200	13.80	4.06
84WAG60	<10	300	150	<50	30	<200	300	<200	92.00	12.20
84WAG61	<10	300	70	<50	20	<200	300	<200	10.60	3.54
84WAG62	<10	300	100	<50	20	<200	200	<200	10.00	3.97
84WAG64	<10	300	100	<50	20	<200	150	<200	13.50	3.68
84WAG85	<10	300	70	<50	15	<200	150	<200	14.60	3.23
84WAG08	<10	500	100	<50	20	<200	300	<200	12.90	3.68
84WAB024	<10	700	700	<50	100	<200	1,500	500	465.00	65.40
84WAB026	<10	700	150	<50	30	<200	300	<200	28.60	7.62
84WAB027	<10	700	150	<50	70	<200	500	200	73.60	13.80
84WAB036	<10	700	150	<50	30	<200	300	<200	24.30	5.36
84WAB038	<10	500	200	<50	70	<200	1,500	<200	112.00	21.20
84WAB042	<10	500	200	<50	50	<200	500	300	305.00	49.30
84WAB047	<10	700	150	<50	50	<200	300	<200	39.40	13.00
84WAB006	<10	700	200	<50	20	<200	200	<200	7.60	2.71
84WAB076	<10	700	70	<50	30	<200	300	<200	--	--
84WAB079	<10	700	70	<50	30	<200	300	<200	--	--

Table 3. Analyses of heavy mineral concentrate samples

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
4BH042AU	33 35 14	113 7 25	50.0	5.00	10.0	>2.0	>10,000	N	N	N	50	2,000
4BH046AU	33 35 49	113 9 3	30.0	2.00	5.0	>2.0	7,000	N	N	N	50	2,000
4BH047AU	33 38 53	113 9 35	50.0	1.50	2.0	>2.0	10,000	N	N	N	70	1,500
4BH048AU	33 38 59	113 9 41	>50.0	1.50	1.5	>2.0	>10,000	N	N	N	20	700
4BH049AU	33 38 24	113 11 23	>50.0	1.50	2.0	>2.0	>10,000	N	N	N	30	500
4BH050AU	33 38 43	113 11 35	10.0	2.00	3.0	1.5	5,000	N	N	N	100	2,000
4BH101AU	33 37 50	113 6 46	>50.0	.70	.5	>2.0	7,000	N	N	N	20	500
4BH225AU	33 35 0	113 5 12	15.0	1.50	3.0	2.0	>10,000	N	N	N	50	3,000
4BH226AU	33 34 28	113 5 26	>50.0	1.50	2.0	>2.0	>10,000	N	N	N	30	1,500
4BH227AU	33 34 47	113 6 49	50.0	3.00	3.0	>2.0	>10,000	N	N	N	30	2,000
4BH228AU	33 34 24	113 5 51	30.0	2.00	5.0	>2.0	10,000	N	N	N	50	1,000
4BH229AU	33 38 53	113 7 22	>50.0	.50	.5	>2.0	5,000	N	N	N	30	3,000
4BH231AU	33 39 22	113 10 23	50.0	7.00	10.0	>2.0	10,000	N	N	N	30	1,000
4BH232AU	33 39 22	113 11 1	>50.0	.30	.5	1.5	7,000	N	N	N	30	70
4M12S	33 38 4	113 11 1	.1	.07	20.0	.5	1,000	N	N	N	20	300
4M19	33 38 54	113 10 34	.3	.15	7.0	1.5	700	70	N	N	20	>10,000
4M20	33 38 52	113 10 26	5.0	.50	5.0	>2.0	2,000	10	N	N	20	700
4M21	33 38 51	113 10 30	5.0	.20	3.0	>2.0	2,000	2	N	N	20	500
4M25,	33 38 30	113 7 21	.7	.30	15.0	>2.0	3,000	N	N	N	70	1,000
4M26	33 38 27	113 7 12	1.0	.20	15.0	>2.0	1,000	N	N	N	20	10,000
4M42	33 36 14	113 5 14	3.0	1.00	10.0	>2.0	3,000	N	N	N	30	1,500
4M44	33 36 12	113 5 30	1.5	.70	7.0	>2.0	1,000	N	N	N	20	5,000
4M46	33 36 8	113 5 40	1.5	.70	7.0	2.0	1,500	N	N	N	20	700
4M04	33 36 2	113 10 6	3.0	.70	10.0	2.0	2,000	15	N	N	50	1,000
4M52	33 37 50	113 6 54	3.0	.30	5.0	>2.0	1,500	N	N	N	30	700
4M57	33 37 55	113 6 55	.2	.10	30.0	.5	700	N	N	N	<20	>10,000
4M58	33 38 2	113 6 56	.5	.30	50.0	1.0	700	N	N	N	<20	7,000
4M59	33 38 5	113 6 56	.3	.15	30.0	>2.0	700	N	N	N	20	500
4M60	33 38 18	113 7 6	1.5	.50	30.0	>2.0	700	N	N	N	20	>10,000
4M64	33 38 16	113 7 23	1.0	.20	15.0	>2.0	700	N	N	N	20	700
4M67	33 38 25	113 7 32	1.0	.30	15.0	>2.0	700	N	N	N	20	1,500
4M08	33 38 8	113 11 36	.2	.05	5.0	.3	500	N	N	N	30	500
4M82	33 35 24	113 6 31	.5	.30	7.0	>2.0	700	N	N	N	20	3,000
4M83	33 35 26	113 6 28	15.0	1.00	7.0	>2.0	5,000	N	N	N	30	1,500
4M84	33 35 28	113 6 25	.7	.50	5.0	>2.0	1,500	N	N	N	20	1,000
4M85	33 35 21	113 6 2	1.5	1.00	15.0	>2.0	1,500	N	N	N	20	500
4M86	33 35 28	113 5 54	7.0	1.50	7.0	>2.0	5,000	N	N	N	50	>10,000
4M87	33 35 34	113 5 31	7.0	.50	10.0	>2.0	2,000	N	N	N	20	700
4M91	33 39 2	113 9 16	1.5	1.00	7.0	>2.0	2,000	N	N	N	3,000	1,000
82WAG28	33 38 7	113 10 47	1.0	1.00	10.0	>2.0	1,000	N	N	N	30	1,000
84BH042	33 35 14	113 7 25	1.0	1.00	10.0	>2.0	700	N	N	N	30	3,000
84BH046	33 35 49	113 9 3	1.0	1.50	20.0	>2.0	1,000	N	N	N	30	1,000
84BH047	33 38 53	113 9 35	1.0	1.00	20.0	>2.0	1,000	2	N	N	50	1,500
84BH048	33 38 59	113 9 41	1.0	1.00	10.0	>2.0	1,000	N	N	N	30	2,000
84BH049	33 38 24	113 11 23	.2	.20	50.0	>2.0	1,500	N	N	N	20	300

Table 3. Analyses of heavy mineral concentrate samples

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	Sb-ppm s	Sc-ppm s
4BH042AU	2	N	N	50	2,000	100	300	N	50	200	150	N	--
4BH046AU	2	N	N	50	1,500	50	200	N	50	70	70	N	--
4BH047AU	2	N	N	50	500	50	200	N	50	100	100	N	--
4BH048AU	<2	N	N	50	500	70	700	N	100	70	50	N	--
4BH049AU	N	N	N	70	700	70	1,500	N	100	100	100	N	--
4BH050AU	5	N	N	10	150	20	100	N	<50	30	50	N	--
4BH101AU	N	N	N	100	500	100	1,000	<10	N	150	100	N	--
4BH225AU	3	N	N	10	100	10	100	N	50	20	100	N	--
4BH226AU	N	N	N	70	500	100	1,000	N	100	100	100	N	--
4BH227AU	<2	N	N	30	500	70	300	10	150	70	100	N	--
4BH228AU	2	N	N	30	500	50	200	20	70	100	100	N	--
4BH229AU	<2	N	N	70	500	70	200	N	N	100	100	N	--
4BH231AU	2	N	N	50	700	100	500	N	200	100	150	N	--
4BH232AU	<2	N	N	70	500	100	200	N	<50	70	50	N	--
4M12S	<2	N	N	N	<20	N	>2,000	N	N	N	N	N	--
4M19	<2	N	N	30	200	50	700	N	N	15	N	N	--
4M20	2	N	N	10	70	N	500	20	150	20	5,000	N	--
4M21	<2	N	N	20	70	10	500	20	N	20	20	N	--
4M25	<2	N	N	N	100	50	200	10	70	10	>50,000	N	--
4M26	--	N	N	10	100	10	150	N	100	10	5,000	N	--
4M42	--	N	N	10	300	N	500	N	200	30	300	N	--
4M44	<2	N	N	N	100	100	200	N	150	10	5,000	N	--
4M46	2	N	N	N	200	N	200	N	<50	15	100	N	--
4M04	3	N	N	10	150	10	700	N	<50	30	20	N	--
4M52	2	N	N	30	200	150	1,000	10	200	15	700	N	--
4M57	<2	N	N	N	<20	15	200	N	N	N	20,000	N	--
4M58	<2	N	N	N	<20	20	100	N	N	N	30,000	N	--
4M59	3	N	N	N	20	30	200	500	50	N	5,000	N	--
4M60	2	N	N	10	70	70	300	20	50	15	10,000	N	--
4M64	2	N	N	10	150	10	200	N	70	10	500	N	--
4M67	<2	N	N	10	100	30	200	100	<50	N	>50,000	N	--
4M08	3	N	N	30	<20	30	500	N	N	10	20	N	--
4M82	2	N	N	N	30	N	200	N	100	N	1,000	N	--
4M83	2	N	N	20	200	10	700	50	200	30	50	N	--
4M84	2	N	N	N	50	N	200	N	100	15	20	N	--
4M85	3	N	N	10	150	N	500	N	300	30	20	N	--
4M86	3	N	N	10	100	N	150	N	70	20	50	N	--
4M87	3	N	N	10	70	<10	500	N	150	50	50	N	--
4M91	3	N	N	N	100	N	200	N	100	15	N	N	--
82WAG28	2	N	N	10	100	<10	500	N	50	15	50	N	--
84BH042	2	N	N	N	50	N	150	N	70	N	200	N	--
84BH046	3	N	N	N	300	N	200	N	N	N	300	N	--
84BH047	2	N	N	N	50	10	300	N	70	N	100	N	--
84BH048	2	N	N	N	50	10	200	N	N	N	5,000	N	--
84BH049	<2	N	N	N	<100	<10	2,000	N	70	N	70	N	--

Table 3. Analyses of heavy mineral concentrate samples

Sample	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa
4BH042AU	N	500	500	N	100	N	2,000	N	N
4BH046AU	N	300	700	N	150	N	1,500	N	N
4BH047AU	N	200	1,000	N	100	N	>2,000	N	N
4BH048AU	N	N	1,500	N	200	1,500	>2,000	N	N
4BH049AU	N	N	2,000	N	500	1,000	>2,000	<200	N
4BH050AU	N	500	300	N	70	N	1,500	N	N
4BH101AU	N	N	5,000	N	200	N	>2,000	N	4.2
4BH225AU	N	700	300	N	70	N	2,000	N	N
4BH226AU	N	N	1,500	N	300	1,500	>2,000	N	N
4BH227AU	N	200	700	N	200	1,000	2,000	N	N
4BH228AU	N	200	1,000	N	150	N	>2,000	N	N
4BH229AU	N	N	5,000	N	150	N	>2,000	300	N
4BH231AU	N	200	1,500	N	500	N	>2,000	N	N
4BH232AU	N	N	3,000	N	100	N	>2,000	500	N
4M12S	N	500	150	N	700	N	>2,000	1,000	--
4M19	N	1,000	1,000	N	1,000	N	>2,000	>5,000	--
4M20	N	200	700	N	1,000	N	>2,000	1,500	--
4M21S	N	200	500	N	1,000	N	>2,000	>5,000	--
4M25S	N	500	20,000	150	500	N	>2,000	N	--
4M26S	N	500	1,500	N	700	N	>2,000	2,000	--
4M42	20	300	200	N	700	N	>2,000	N	--
4M44	N	500	2,000	N	300	2,000	>2,000	N	--
4M46	N	500	100	N	300	N	>2,000	N	--
4M04	N	700	200	N	200	1,500	>2,000	700	--
4M52	20	200	300	N	700	N	>2,000	700	--
4M57	N	500	200	N	300	N	>2,000	N	--
4M58	N	500	5,000	N	300	N	1,500	N	--
4M59	N	300	200	300	500	700	2,000	N	--
4M60	N	300	1,000	N	500	N	>2,000	N	--
4M64	20	500	700	N	500	N	>2,000	N	--
4M67	N	500	>20,000	2,000	700	N	>2,000	700	--
4M08	N	700	500	N	300	N	>2,000	>5,000	--
4M82	N	700	500	N	200	N	>2,000	N	--
4M83	100	500	500	100	700	N	2,000	N	--
4M84	N	500	500	N	500	N	2,000	200	--
4M85	N	200	700	N	700	N	>2,000	200	--
4M86	N	1,000	500	N	200	N	>2,000	N	--
4M87	N	200	200	N	500	N	>2,000	N	--
4M91	N	500	200	N	300	N	>2,000	N	--
82WAG28	N	500	500	N	500	N	>2,000	1,500	--
84BH042	N	500	150	N	300	N	>2,000	<200	--
84BH046	N	200	300	N	700	N	>2,000	700	--
84BH047	N	500	1,000	N	1,500	N	>2,000	3,000	--
84BH048	500	500	1,000	N	500	N	>2,000	2,000	--
84BH049	N	200	300	N	700	N	>2,000	2,000	--

Table 3. Analyses of heavy mineral concentrate samples--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
84BH050	33 38 43	113 11 35	1.0	1.50	15.0	>2.0	1,500	N	N	N	50	1,000
84BH101	33 37 50	113 6 46	.5	.20	20.0	>2.0	1,000	N	N	N	30	>10,000
84BH226	33 34 28	113 5 26	.5	.50	7.0	>2.0	500	N	N	N	30	1,000
84BH227	33 34 47	113 6 49	.5	.70	10.0	>2.0	500	N	N	N	70	10,000
84BH228	33 34 24	113 5 51	.7	1.00	10.0	>2.0	1,000	N	N	N	50	1,000
84BH229	33 38 53	113 7 22	.3	.20	20.0	>2.0	1,000	N	N	N	30	>10,000
84BH231	33 39 22	113 10 23	.2	.20	5.0	1.0	700	N	700	N	30	1,500
84BH232	33 39 22	113 11 1	.5	.50	10.0	>2.0	700	N	N	N	30	1,000
84WAG11	33 36 36	113 9 43	1.5	1.50	10.0	>2.0	3,000	N	N	N	30	500
84WAG19	33 42 32	113 14 28	1.5	.70	30.0	>2.0	2,000	N	N	N	30	1,500
84WAG20	33 38 5	113 11 24	.2	.30	50.0	>2.0	1,500	N	N	N	20	200
84WAG30	33 38 11	113 11 3	.2	.20	30.0	>2.0	1,000	N	N	N	20	500
84WAG34	33 39 2	113 8 57	1.5	1.50	10.0	>2.0	2,000	N	N	N	50	2,000
84WAG60	33 38 54	113 8 37	.5	.20	20.0	>2.0	1,000	N	N	N	20	700
84WAG61	33 38 34	113 8 29	5.0	2.00	5.0	>2.0	3,000	N	N	N	1,500	1,500
84WAG62	33 38 17	113 8 43	2.0	.30	3.0	>2.0	3,000	<1	N	N	100	5,000
84WAG64	33 38 2	113 8 43	5.0	2.00	15.0	>2.0	2,000	N	N	N	70	1,000
84WAG85	33 36 10	113 9 8	1.5	.70	10.0	>2.0	2,000	N	N	N	30	>10,000
84WAG08	33 35 55	113 10 31	.5	.30	15.0	>2.0	1,000	N	N	N	20	500
84WAB104	33 37 19	113 7 45	2.0	1.00	7.0	2.0	2,000	N	N	N	50	1,500
84WAB143	33 36 35	113 8 10	1.0	1.00	10.0	>2.0	1,000	N	N	N	70	1,500
84WAB144	33 36 33	113 7 52	.5	.50	10.0	>2.0	700	N	N	N	30	700
84WAB145	33 36 25	113 7 35	3.0	1.50	10.0	>2.0	2,000	N	N	N	50	>10,000
84WAB146	33 36 0	113 7 29	2.0	1.00	10.0	>2.0	2,000	N	N	N	20	5,000
84WAB147	33 37 26	113 8 24	2.0	2.00	15.0	>2.0	1,500	N	N	N	30	500
84WAB148	33 37 33	113 8 24	5.0	.70	5.0	>2.0	2,000	15	N	N	30	1,000
84WAB152	33 38 27	113 8 14	.7	.20	30.0	>2.0	1,000	N	N	N	20	700
84WAB153	33 38 36	113 7 55	.5	.15	10.0	>2.0	700	N	N	N	20	1,000
84WAB167	33 37 52	113 7 26	1.0	.50	10.0	>2.0	1,000	N	N	N	30	500
84WAB168	33 37 56	113 7 30	1.0	.50	10.0	>2.0	1,000	N	N	N	20	3,000
84WAB170	33 38 9	113 7 23	.5	.50	10.0	>2.0	700	N	N	N	20	500
84WAB171	33 38 12	113 7 28	.7	.50	15.0	>2.0	1,000	N	N	N	20	500
84WAB24	33 37 45	113 11 26	.3	.07	10.0	1.0	700	N	N	N	20	500
84WAB26	33 37 32	113 10 57	1.5	.30	15.0	1.5	1,000	N	N	N	20	200
84WAB27	33 37 37	113 10 48	.7	.10	20.0	2.0	1,000	N	N	N	30	200
84WAB36	33 37 35	113 10 18	.2	.70	20.0	2.0	1,000	N	N	N	30	700
84WAB38	33 37 42	113 10 41	.3	.15	30.0	1.5	1,500	N	N	N	20	100
84WAB42	33 39 20	113 9 49	.7	.15	10.0	>2.0	700	N	<500	N	30	700
84WAB47	33 39 25	113 8 57	.5	.20	30.0	>2.0	1,000	N	N	N	30	500
84WAB76	33 36 24	113 6 42	3.0	1.50	20.0	>2.0	2,000	N	N	N	30	3,000
84WAB79	33 36 40	113 6 14	2.0	1.00	10.0	1.0	3,000	N	N	N	30	2,000
84WAB89	33 37 3	113 6 47	2.0	1.50	7.0	>2.0	1,000	N	N	N	300	3,000
84WAB96	33 37 42	113 6 52	1.0	.20	15.0	1.5	1,000	N	N	N	30	700

Table 3. Analyses of heavy mineral concentrate samples--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	Sb-ppm s	Sc-ppm s
84BH050	2	N	N	N	50	N	300	N	150	N	50	N	--
84BH101	<2	N	N	N	70	N	200	N	50	N	700	N	--
84BH226	2	N	N	N	30	N	100	N	70	N	20	N	--
84BH227	2	N	N	N	70	N	150	N	100	N	50	N	--
84BH228	2	N	N	N	100	N	200	N	200	N	20	N	--
84BH229	2	N	N	15	50	15	1,000	N	<50	N	200	N	--
84BH231	2	N	N	50	30	70	500	N	N	N	150	N	--
84BH232	2	N	N	10	30	N	700	N	50	N	50	N	--
84WAG11	2	N	N	50	200	<10	200	N	200	30	20	N	--
84WAG19	2	N	N	N	70	<10	200	N	70	15	100	N	--
84WAG20	<2	N	N	15	20	10	>2,000	N	<50	N	50	N	--
84WAG30	<2	N	N	20	20	30	2,000	N	<50	N	20	N	--
84WAG34	2	N	N	10	100	N	500	N	200	20	30	N	--
84WAG60	2	N	N	20	30	30	1,000	N	<50	20	30	N	--
84WAG61	2	N	N	10	150	N	200	N	150	20	30	N	--
84WAG62	3	N	N	N	50	<10	700	N	100	20	30	N	--
84WAG64	<2	N	N	20	200	50	500	20	200	30	150	N	--
84WAG85	2	N	N	N	500	<10	200	N	100	10	30	N	--
84WAG08	2	N	N	15	70	<10	1,000	N	70	10	300	N	--
84WAB104	3	N	N	N	50	N	100	N	<50	10	30	N	--
84WAB143	3	N	N	N	50	N	500	N	100	10	20	N	--
84WAB144	3	N	N	N	50	N	150	N	<50	10	100	N	--
84WAB145	3	N	N	10	200	N	500	N	70	20	70	N	--
84WAB146	2	N	N	10	200	N	300	N	100	20	500	N	--
84WAB147	3	N	N	10	150	N	500	N	200	15	30	N	--
84WAB148	2	N	N	20	70	10	300	N	100	20	50	N	--
84WAB152	2	N	N	N	20	<10	200	N	<50	15	50	N	--
84WAB153	3	N	N	N	20	N	200	N	<50	20	50	N	--
84WAB167	<2	N	N	N	100	N	300	100	70	20	3,000	N	--
84WAB168	<2	N	N	10	50	N	500	150	70	15	7,000	N	--
84WAB170	<2	N	N	10	50	N	300	N	<50	15	50,000	N	--
84WAB171	<2	N	N	10	100	N	300	100	100	30	100	N	--
84WAB24	2	N	N	20	N	20	700	N	<50	15	N	N	--
84WAB26	<2	N	N	10	20	700	1,000	N	<50	10	30	N	--
84WAB27	3	N	N	N	20	<10	1,500	N	50	N	20	N	--
84WAB36	<2	N	N	N	50	<10	2,000	N	<50	N	N	N	--
84WAB38	<2	N	N	10	20	20	2,000	N	N	N	70	N	--
84WAB42	<2	N	N	30	20	50	1,000	N	N	10	70	N	--
84WAB47	3	N	N	N	30	15	2,000	N	50	10	N	N	--
84WAB76	2	N	N	20	150	30	1,500	N	70	15	150	N	--
84WAB79	5	N	N	15	50	20	700	N	<50	10	20	N	--
84WAB89	3	N	N	10	200	10	150	N	50	50	20	N	--
84WAB96	2	N	N	15	20	20	700	N	<50	10	70	N	--

Table 3. Analyses of heavy mineral concentrate samples--continued

Sample	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa
84BH050	N	500	500	N	500	N	>2,000	1,000	--
84BH101	N	700	500	700	700	N	>2,000	500	--
84BH226	N	200	150	N	300	N	>2,000	300	--
84BH227	N	500	200	N	500	N	>2,000	300	--
84BH228	N	200	200	N	500	N	>2,000	200	--
84BH229	N	700	500	N	700	N	>2,000	3,000	--
84BH231	300	500	1,500	N	700	N	>2,000	>5,000	--
84BH232	N	500	700	N	500	N	>2,000	2,000	--
84WAG11	N	1,000	700	N	500	N	>2,000	1,000	--
84WAG19	N	700	150	N	500	N	>2,000	N	--
84WAG20	N	500	700	N	1,000	N	>2,000	>5,000	--
84WAG30	N	500	700	N	1,000	N	>2,000	>5,000	--
84WAG34	N	300	500	N	500	N	>2,000	700	--
84WAG60	N	300	1,000	N	1,000	N	>2,000	>5,000	--
84WAG61	N	200	300	N	300	N	>2,000	200	--
84WAG62	N	700	100	N	500	N	1,500	200	--
84WAG64	50	200	700	N	700	N	>2,000	1,000	--
84WAG85	N	2,000	200	N	500	N	>2,000	N	--
84WAG08	N	300	500	N	700	N	>2,000	3,000	--
84WAB104	N	200	100	N	150	N	>2,000	200	--
84WAB143	20	300	500	N	500	N	>2,000	500	--
84WAB144	<20	200	300	N	700	N	>2,000	1,000	--
84WAB145	50	200	300	N	700	N	>2,000	N	--
84WAB146	20	500	300	N	500	N	>2,000	700	--
84WAB147	30	200	500	N	700	N	>2,000	1,000	--
84WAB148	N	200	300	N	500	N	>2,000	1,500	--
84WAB152	N	700	200	300	300	N	>2,000	200	--
84WAB153	N	300	50	N	700	N	>2,000	N	--
84WAB167	N	500	500	1,000	500	N	>2,000	200	--
84WAB168	N	1,000	2,000	1,500	500	N	>2,000	N	--
84WAB170	N	500	15,000	N	500	N	>2,000	N	--
84WAB171	N	200	500	1,500	500	N	>2,000	<200	--
84WAB24	N	700	700	N	500	N	>2,000	>5,000	--
84WAB26	N	500	200	N	500	N	>2,000	2,000	--
84WAB27	N	500	200	N	500	N	>2,000	1,500	--
84WAB36	N	500	150	N	500	N	>2,000	1,000	--
84WAB38	20	300	500	N	700	N	>2,000	2,000	--
84WAB42	N	500	1,000	N	700	N	>2,000	5,000	--
84WAB47	N	500	150	N	500	N	>2,000	200	--
84WAB76	N	700	700	N	700	N	>2,000	5,000	--
84WAB79	N	300	100	N	500	N	2,000	1,000	--
84WAB89	N	500	100	N	200	N	>2,000	N	--
84WAB96	N	500	500	N	500	N	>2,000	>5,000	--

Table 4. Analyses of rock samples

Sample	Latitude	Longitude	Rock Type	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s
4G91	33 33 35	113 5 20	basalt	3.0	1.50	3.00	.500	500	<.5	<700	<15
4BH102R1	33 37 43	113 6 56		--	--	--	--	--	--	--	--
4BH102R2	33 37 43	113 6 56		--	--	--	--	--	--	--	--
4M18	33 39 5	113 10 20	rhyolite	1.0	.30	.50	.200	700	<.5	<700	<15
4M22	33 38 45	113 10 35	granite	.5	.05	.30	.050	70	<.5	<700	<15
4M51B	33 37 15	113 6 55	diorite	2.0	.30	.30	.150	700	<.5	<700	<15
4M52C	33 37 52	113 6 53	diorite	1.5	.30	.70	.150	700	<.5	<700	<15
4M53A	33 37 58	113 7 6	hornblendite	10.0	7.00	7.00	.300	2,000	<.5	<700	<15
4M53D	33 37 58	113 7 6	skarn	3.0	.20	7.00	.150	1,500	<.5	<700	<15
4M54B	33 37 58	113 7 1	hornblendite	5.0	3.00	3.00	.200	1,500	2.0	<700	<15
4M54C	33 37 58	113 7 1	hornblendite	.7	.07	.70	.100	100	5.0	<700	<15
4M55	33 38 2	113 7 5	fault breccia	7.0	2.00	3.00	.300	2,000	5.0	<700	<15
4M61B	33 38 20	113 7 15	altered granite	2.0	1.00	.30	.070	1,000	1.5	<700	<15
4M62A	33 38 21	113 7 15	altered granite	7.0	1.00	1.00	.700	150	7.0	<700	<15
4M62B	33 38 21	113 7 15	rhyolite dike	10.0	.20	.15	1.000	150	<.5	<700	<15
4M65A	33 38 18	113 7 35	diorite	7.0	5.00	3.00	.300	1,000	<.5	<700	<15
4M66	33 38 23	113 7 52	pegmatite	2.0	1.00	.15	.100	500	<.5	<700	<15
4M68	33 38 25	113 7 30		7.0	5.00	7.00	1.000	1,000	<.5	<700	<15
4M72	33 34 58	113 6 28	rhyolite	1.5	.50	1.50	.300	700	<.5	<700	<15
4M73A	33 34 51	113 6 20	fault breccia	.7	.70	1.00	.150	>5,000	<.5	<700	<15
4M73B	33 34 51	113 6 20	gouge	2.0	1.50	2.00	.200	1,500	<.5	<700	<15
4M73C	33 34 51	113 6 20	tuff	2.0	.70	1.50	.300	700	<.5	<700	<15
4M76	33 34 55	113 6 2	altered basalt	5.0	5.00	3.00	.300	1,000	<.5	<700	<15
4M07B	33 37 53	113 11 38	altered granite	1.5	.30	.30	.150	70	<.5	<700	<15
4M80	33 35 52	113 6 36	basalt	5.0	2.00	3.00	1.000	1,500	<.5	<700	<15
4M87	33 35 33	113 5 30	altered rhyolite	2.0	.15	1.00	.050	200	<.5	<700	<15
4M99	33 36 20	113 7 0	andesite	5.0	1.50	3.00	1.000	1,500	<.5	<700	<15
84BH227R	33 34 47	113 6 49		--	--	--	--	--	--	--	--
84BH230R	33 34 28	113 5 43		--	--	--	--	--	--	--	--
84BH233R	33 39 35	113 10 25		--	--	--	--	--	--	--	--
84BH234R	33 39 35	113 10 25		--	--	--	--	--	--	--	--
84BH235R	33 39 17	113 10 13		--	--	--	--	--	--	--	--
84WAG81	33 36 33	113 8 40	andesite	5.0	5.00	5.00	.300	700	<.5	<700	<15
84WAG83	33 36 20	113 8 30	rhyolite	1.5	.50	1.50	.300	1,000	<.5	<700	<15
84WAG84	33 36 10	113 9 8	rhyodacite	3.0	.50	1.50	.500	300	<.5	<700	<15
84WAG86	33 36 7	113 8 58	rhyodacite	3.0	.70	1.50	.500	700	<.5	<700	<15
84WAB001	33 35 35	113 10 43	basalt	7.0	3.00	5.00	1.000	1,500	<.5	<700	<15
84WAB111	33 37 14	113 7 15	tuff	1.5	1.50	1.00	.150	500	<.5	<700	<15
84WAB119	33 37 47	113 7 11	gouge	5.0	2.00	7.00	.150	2,000	<.5	<700	<15
84WAB121	33 37 43	113 7 14	hornfels	7.0	5.00	5.00	.200	2,000	<.5	<700	<15
84WAB132	33 37 35	113 7 15	gouge	3.0	5.00	15.00	.150	700	<.5	<700	<15
84WAB134	33 37 45	113 7 26	gouge	1.5	2.00	>20.00	.150	200	<.5	<700	<15
84WAB142	33 36 43	113 7 22	rhyolite	1.0	.50	.70	.150	1,000	<.5	<700	<15

Table 4. Analyses of rock samples

Sample	B-ppm s	Ba-ppm s	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
4G91	<10	2,000	1.5	<10	<30	15	30	30	70	<5	20	30	20
4BH102R1	--	--	--	--	--	--	--	--	--	--	--	--	--
4BH102R2	--	--	--	--	--	--	--	--	--	--	--	--	--
4M18	20	1,500	3.0	<10	<30	<5	<10	<5	150	<5	30	<5	20
4M22	<10	100	1.5	<10	<30	<5	<10	30	<30	<5	<20	<5	15
4M51B	<1	2,000	1.5	<10	<30	<5	<10	5	70	<5	<20	<5	15
4M52C	10	1,500	1.5	<10	<30	<5	<10	5	30	<5	<20	<5	15
4M53A	<10	100	<1.0	<10	<30	50	300	300	<30	<5	<20	150	<10
4M53D	20	300	<1.0	<10	<30	5	<10	10	<30	<5	<20	5	10
4M54B	15	500	1.5	<10	<30	15	150	15	<30	<5	<20	70	70
4M54C	10	500	1.5	<10	<30	5	<10	50	30	5	30	<5	100
4M55	<10	500	1.5	<10	<30	20	<10	70	<30	<5	<20	5	200
4M61B	30	300	5.0	<10	<30	<5	<10	30	<30	<5	30	<5	200
4M62A	>2,000	100	3.0	10	<30	15	150	>20,000	70	30	20	20	150
4M62B	30	200	1.5	<10	<30	5	15	200	<30	20	<20	10	150
4M65A	<10	300	<1.0	<10	<30	20	15	150	<30	<5	<20	30	15
4M66	>2,000	70	1.5	<10	<30	<5	<10	7	<30	<5	30	<5	20
4M68	<10	2,000	1.0	<10	<30	30	50	100	150	<5	20	70	10
4M72	20	3,000	2.0	<10	<30	<5	<10	20	100	<5	20	5	30
4M73A	20	>5,000	2.0	<10	<30	20	<10	150	30	15	<20	30	10
4M73B	<10	3,000	3.0	<10	<30	5	<10	30	70	<5	<20	10	10
4M73C	10	2,000	2.0	<10	<30	5	<10	10	100	<5	20	<5	20
4M76	<10	700	<1.0	<10	<30	30	200	100	50	<5	<20	150	10
4M07B	30	500	1.5	<10	<30	<5	<10	7	30	<5	<20	7	15
4M80	<10	1,500	1.5	<10	<30	20	<10	15	70	<5	20	<5	20
4M87	20	300	3.0	<10	<30	<5	<10	7	50	<5	30	<5	70
4M99	<10	1,500	1.5	<10	<30	15	<10	15	70	<5	20	<5	30
84BH227R	--	--	--	--	--	--	--	--	--	--	--	--	--
84BH230R	--	--	--	--	--	--	--	--	--	--	--	--	--
84BH233R	--	--	--	--	--	--	--	--	--	--	--	--	--
84BH234R	--	--	--	--	--	--	--	--	--	--	--	--	--
84BH235R	--	--	--	--	--	--	--	--	--	--	--	--	--
84WAG81	10	700	1.0	<10	<30	20	200	50	50	<5	<20	150	20
84WAG83	20	3,000	2.0	<10	<30	<5	<10	15	150	<5	20	<5	70
84WAG84	<10	3,000	2.0	<10	<30	<5	<10	5	150	<5	20	<5	30
84WAG86	<10	3,000	2.0	<10	<30	<5	<10	5	150	<5	30	<5	30
84WAB001	<10	3,000	1.0	<10	<30	30	150	70	70	<5	<20	70	700
84WAB111	15	1,000	2.0	<10	<30	<5	10	10	70	<5	<20	7	20
84WAB119	20	700	1.0	<10	<30	10	70	10	<30	<5	<20	20	20
84WAB121	<10	300	1.5	<10	<30	20	70	10	<30	<5	<20	50	15
84WAB132	20	300	<1.0	<10	<30	15	300	200	<30	<5	<20	70	<10
84WAB134	<10	200	<1.0	<10	<30	7	70	15	<30	<5	<20	30	<10
84WAB142	<10	1,500	2.0	<10	<30	<5	<10	7	100	<5	30	5	20

Table 4. Analyses of rock samples

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	Au-ppm aa	As-ppm aa	Zn-ppm aa
4G91	<100	15	<10	1,000	150	<50	20	<200	200	<200	--	<5	43
4BH102R1	--	--	--	--	--	--	--	--	--	--	.1	--	--
4BH102R2	--	--	--	--	--	--	--	--	--	--	<.1	--	--
4M18	<100	7	<10	150	15	<50	30	<200	300	<200	--	<5	49
4M22	<100	<5	<10	<100	10	<50	<10	<200	50	<200	--	<5	3
4M51B	<100	7	<10	150	<10	<50	50	<200	200	<200	--	<5	56
4M52C	<100	7	<10	200	15	<50	20	<200	150	<200	--	8	16
4M53A	<100	70	<10	300	700	<50	10	<200	20	<200	--	<5	32
4M53D	<100	7	<10	500	150	<50	20	<200	150	<200	--	<5	20
4M54B	<100	20	<10	150	150	<50	<10	700	30	<200	--	<5	397
4M54C	<100	<5	<10	200	30	<50	10	<200	100	<200	--	<5	32
4M55	<100	30	<10	300	300	<50	30	500	100	<200	--	6	255
4M61B	<100	7	10	100	30	<50	20	700	100	<200	--	<5	5
4M62A	<100	15	<10	150	150	<50	30	700	150	<200	--	11	262
4M62B	<100	30	<10	<100	300	<50	20	<200	30	<200	--	25	18
4M65A	<100	30	<10	500	300	<50	15	<200	30	<200	--	<5	19
4M66	<100	30	<10	<100	15	<50	15	<200	30	<200	--	<5	6
4M68	<100	30	<10	500	300	<50	30	<200	300	<200	--	<5	68
4M72	<100	7	<10	500	15	<50	30	<200	300	<200	--	<5	36
4M73A	<100	5	<10	300	70	70	15	200	150	<200	--	56	161
4M73B	<100	70	<10	2,000	70	<50	15	<200	150	<200	--	8	27
4M73C	<100	7	<10	700	70	<50	30	<200	200	<200	--	8	42
4M76	<100	30	<10	1,000	150	<50	20	<200	100	<200	--	<5	49
4M07B	<100	5	<10	150	50	<50	15	<200	70	<200	--	11	51
4M80	<100	20	<10	1,000	200	<50	50	<200	300	<200	--	<5	73
4M87	<100	5	<10	150	15	<50	10	<200	70	<200	--	6	9
4M99	<100	20	<10	1,000	150	<50	30	<200	300	<200	--	<5	77
84BH227R	--	--	--	--	--	--	--	--	--	--	<.1	--	--
84BH230R	--	--	--	--	--	--	--	--	--	--	<.1	--	--
84BH233R	--	--	--	--	--	--	--	--	--	--	<.1	--	--
84BH234R	--	--	--	--	--	--	--	--	--	--	<.1	--	--
84BH235R	--	--	--	--	--	--	--	--	--	--	<.1	--	--
84WAG81	<100	30	<10	1,500	150	<50	20	<200	150	<200	--	<5	11
84WAG83	<100	7	<10	300	15	<50	30	<200	300	<200	--	<5	44
84WAG84	<100	10	<10	1,000	30	<50	50	<200	500	<200	--	<5	42
84WAG86	<100	7	<10	1,000	30	<50	50	<200	500	<200	--	<5	62
84WAB001	<100	30	<10	1,000	300	<50	30	<200	200	<200	--	<5	34
84WAB111	<100	5	<10	200	30	<50	15	<200	100	<200	--	6	37
84WAB119	<100	15	<10	150	100	<50	15	200	30	<200	--	<5	174
84WAB121	<100	30	<10	300	150	<50	15	300	30	<200	--	<5	39
84WAB132	<100	15	<10	300	70	<50	15	<200	30	<200	--	<5	28
84WAB134	<100	7	<10	500	50	<50	<10	<200	30	<200	--	8	13
84WAB142	<100	7	<10	<100	<10	<50	50	<200	300	<200	--	<5	29

Table 4. Analyses of rock samples

Sample	Cd-ppm aa	Bi-ppm aa	Sb-ppm aa
4G91	.1	<2	<2
4BH102R1	--	--	--
4BH102R2	--	--	--
4M18	<.1	<2	2
4M22	<.1	<2	<2
4M51B	.1	<2	<2
4M52C	<.1	<2	<2
4M53A	<.1	<2	3
4M53D	<.1	<2	<2
4M54B	1.4	<2	3
4M54C	<.1	4	<2
4M55	1.6	<2	5
4M61B	<.1	<2	<2
4M62A	1.3	<2	<2
4M62B	.1	<2	5
4M65A	<.1	<2	<2
4M66	<.1	<2	<2
4M68	.4	<2	<2
4M72	<.1	<2	<2
4M73A	.3	<2	13
4M73B	.1	<2	2
4M73C	<.1	<2	<2
4M76	.1	<2	5
4M07B	.3	<2	3
4M80	.3	<2	<2
4M87	<.1	<2	<2
4M99	.3	2	<2
84BH227R	--	--	--
84BH230R	--	--	--
84BH233R	--	--	--
84BH234R	--	--	--
84BH235R	--	--	--
84WAG81	.1	<2	<2
84WAG83	<.1	<2	<2
84WAG84	<.1	<2	<2
84WAG86	.1	<2	<2
84WAB001	.4	<2	3
84WAB111	<.1	<2	<2
84WAB119	1.0	<2	4
84WAB121	.1	<2	3
84WAB132	.4	<2	3
84WAB134	.3	<2	<2
84WAB142	2.7	<2	<2

Table 4. Analyses of rock samples--continued

Sample	Latitude	Longitude	Rock Type	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s
84WAB149	33 38 25	113 8 9	diorite	7.0	7.00	7.00	.300	2,000	<.5	<700	<15
84WAB150	33 38 25	113 8 9	diorite	.7	.20	1.50	.100	100	<.5	<700	<15
84WAB151	33 38 25	113 8 9	granite	1.5	.50	1.50	.150	300	<.5	<700	<15
84WAB158	33 37 22	113 8 59	rhyolite	1.5	.30	1.50	.200	700	<.5	<700	<15
84WAB160	33 37 34	113 9 17	rhyolite	1.0	.20	.50	.200	1,000	2.0	<700	<15
84WAB161	33 37 36	113 9 16	gouge	2.0	1.50	5.00	.300	700	<.5	<700	<15
84WAB161	33 37 36	113 9 16	gouge	3.0	2.00	3.00	.500	700	<.5	<700	<15
84WAB165	33 38 3	113 7 22	diorite dike	.5	.15	.15	.020	100	<.5	<700	<15
84WAB175	33 37 2	113 8 15	tuff	1.5	.70	1.50	.150	300	<.5	<700	<15
84WAB176	33 37 15	113 8 22	rhyolite	1.5	.50	1.00	.300	1,000	<.5	<700	<15
84WAB187	33 33 54	113 7 15	rhyolite	1.5	1.50	2.00	.200	1,000	<.5	<700	<15
84WAB20	33 37 56	113 10 55	granite	3.0	1.50	3.00	.300	700	<.5	<700	<15
84WAB03	33 35 45	113 10 35	rhyolite	2.0	1.00	1.50	.200	700	<.5	<700	<15
84WAB32	33 37 50	113 10 18	granite	5.0	2.00	3.00	.300	700	<.5	<700	<15
84WAB34	33 37 48	113 10 20	altered granit	7.0	1.50	1.50	.300	700	.7	<700	<15
84WAB37	33 37 32	113 10 55	gouge	.7	.70	15.00	.070	100	<.5	<700	<15
84WAB04	33 36 20	113 9 42	rhyolite	1.5	.70	1.50	.200	700	<.5	<700	<15
84WAB40	33 39 10	113 10 20	rhyolite gouge	1.5	1.00	3.00	.150	700	1.5	<700	<15
84WAB05	33 36 27	113 9 42	basalt	7.0	7.00	7.00	1.000	1,000	<.5	<700	<15
84WAB72	33 36 25	113 6 15	basalt	5.0	3.00	1.00	.500	500	<.5	<700	<15
84WAB84	33 36 38	113 6 10	gouge	2.0	.70	10.00	.200	700	<.5	<700	<15
84WAB94	33 37 40	113 6 58	quartz vein	5.0	.03	.70	.007	300	5.0	<700	<15
84WAG33	33 39 5	113 8 55	sandstone	.7	.70	2.00	.100	300	<.5	<700	<15
84WAG53	33 37 6	113 6 54	gouge	5.0	3.00	15.00	.300	1,500	<.5	<700	<15
84WAG59	33 39 5	113 8 32	granite	.7	.10	.70	.070	70	<.5	<700	<15
84WAG63	33 38 12	113 8 7	rhyolite	1.0	.20	.30	.200	700	<.5	<700	<15
84WAG88	33 39 25	113 9 55	granite	1.0	2.00	15.00	.100	200	<.5	<700	<15
84WAG09	33 35 56	113 10 14	rhyolite	1.5	.50	3.00	.300	1,000	<.5	<700	<15
84WAG96	33 35 53	113 9 1	andesite	5.0	2.00	5.00	.700	700	<.5	<700	<15

Table 4. Analyses of rock samples--continued

Sample	B-ppm s	Ba-ppm s	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
84WAB149	<10	300	<1.0	<10	<30	50	200	150	<30	<5	<20	70	<10
84WAB150	10	3,000	1.0	<10	<30	<5	<10	30	<30	<5	<20	<5	10
84WAB151	10	2,000	1.5	<10	<30	5	<10	7	<30	<5	<20	5	15
84WAB158	20	1,500	3.0	<10	<30	5	<10	10	70	<5	20	5	30
84WAB160	10	1,500	3.0	<10	<30	<5	<10	5	150	5	30	<5	70
84WAB161	10	1,500	2.0	<10	<30	10	20	20	100	<5	20	20	20
84WAB161	10	1,500	1.5	<10	<30	15	70	30	70	<5	<20	30	15
84WAB165	700	150	1.5	<10	<30	<5	<10	<5	<30	<5	20	<5	20
84WAB175	<10	2,000	1.0	<10	<30	<5	10	7	150	<5	<20	5	30
84WAB176	20	3,000	2.0	<10	<30	<5	<10	<5	150	<5	20	<5	30
84WAB187	20	3,000	1.5	<10	<30	7	10	30	70	<5	<20	10	30
84WAB20	10	2,000	1.5	<10	<30	15	20	700	50	<5	<20	15	50
84WAB03	15	2,000	1.5	<10	<30	7	15	20	70	<5	<20	10	50
84WAB32	15	1,500	1.5	<10	<30	15	30	70	50	<5	<20	20	100
84WAB34	15	500	1.5	30	<30	20	30	>20,000	300	150	<20	50	30
84WAB37	10	150	2.0	<10	<30	<5	<10	70	<30	<5	<20	<5	15
84WAB04	<10	1,500	2.0	<10	<30	<5	<10	7	100	<5	20	<5	30
84WAB40	10	3,000	3.0	<10	<30	<5	<10	700	150	<5	20	<5	30
84WAB05	<10	1,000	1.0	<10	<30	30	300	70	100	<5	20	100	300
84WAB72	<10	3,000	1.5	<10	<30	20	150	70	50	<5	<20	100	10
84WAB84	10	300	1.0	<10	<30	15	70	50	30	<5	<20	20	<10
84WAB94	30	70	1.5	15	<30	<5	<10	150	<30	<5	<20	7	70
84WAG33	<10	1,000	1.5	<10	<30	<5	15	10	<30	<5	<20	7	15
84WAG53	<10	300	<1.0	<10	<30	30	100	70	<30	<5	<20	70	<10
84WAG59	10	700	1.0	<10	<30	<5	<10	30	50	<5	<20	<5	100
84WAG63	20	1,500	2.0	<10	<30	<5	<10	<5	150	<5	30	<5	70
84WAG88	<10	500	<1.0	<10	<30	5	<10	50	<30	<5	<20	5	<10
84WAG09	20	3,000	2.0	<10	<30	<5	<10	7	150	<5	20	<5	1,000
84WAG96	<10	1,500	1.0	<10	<30	15	15	50	100	<5	20	20	15

Table 4. Analyses of rock samples--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	Au-ppm aa	As-ppm aa	Zn-ppm aa
84WAB149	<100	50	<10	300	300	<50	15	<200	50	<200	--	<5	15
84WAB150	<100	<5	<10	500	20	<50	10	<200	100	<200	--	<5	4
84WAB151	<100	5	<10	700	30	<50	<10	<200	100	<200	--	<5	25
84WAB158	<100	7	<10	500	30	<50	30	<200	200	<200	--	<5	22
84WAB160	<100	7	<10	100	10	<50	50	<200	300	<200	--	<5	57
84WAB161	<100	10	<10	700	70	<50	20	<200	200	<200	--	<5	21
84WAB161	<100	20	<10	500	100	<50	20	<200	150	<200	--	<5	249
84WAB165	<100	5	<10	<100	10	<50	30	<200	100	<200	--	<5	51
84WAB175	<100	<5	<10	1,000	30	<50	15	<200	100	<200	--	<5	24
84WAB176	<100	7	<10	300	30	<50	50	<200	300	<200	--	<5	50
84WAB187	<100	7	<10	1,000	50	<50	15	<200	150	<200	--	<5	26
84WAB20	<100	10	<10	1,000	150	<50	20	<200	100	<200	--	<5	21
84WAB03	<100	7	<10	1,000	50	<50	15	<200	200	<200	--	<5	23
84WAB32	<100	15	<10	1,000	150	<50	15	<200	200	<200	--	<5	29
84WAB34	<100	15	<10	300	300	<50	30	<200	300	<200	--	<5	112
84WAB37	<100	<5	<10	150	10	<50	10	<200	150	<200	--	<5	5
84WAB04	<100	7	<10	500	15	<50	30	<200	300	<200	--	<5	41
84WAB40	<100	10	<10	3,000	15	<50	30	<200	300	<200	--	<5	42
84WAB05	<100	70	<10	700	300	<50	30	<200	200	<200	--	<5	56
84WAB72	<100	15	<10	200	150	<50	30	<200	200	<200	--	38	46
84WAB84	<100	15	<10	150	150	<50	10	<200	70	<200	--	47	8
84WAB94	<100	<5	<10	<100	<10	<50	<10	<200	<10	<200	--	19	63
84WAG33	<100	<5	<10	3,000	50	<50	<10	<200	70	<200	--	<5	46
84WAG53	<100	20	<10	500	70	<50	10	<200	30	<200	--	47	27
84WAG59	<100	<5	<10	500	20	<50	<10	<200	70	<200	--	<5	5
84WAG63	<100	7	<10	150	<10	<50	50	<200	300	<200	--	<5	48
84WAG88	<100	5	<10	300	30	<50	10	<200	50	<200	--	<5	14
84WAG09	<100	10	<10	150	30	<50	50	<200	300	<200	--	<5	47
84WAG96	<100	20	<10	2,000	200	<50	20	<200	200	<200	--	<5	55

Table 4. Analyses of rock samples--continued

Sample	Cd-ppm aa	Bi-ppm aa	Sb-ppm aa
84WAB149	.2	<2	2
84WAB150	<.1	<2	<2
84WAB151	<.1	<2	<2
84WAB158	.2	<2	<2
84WAB160	<.1	<2	<2
84WAB161	.1	<2	<2
84WAB161	.5	<2	<2
84WAB165	.1	<2	<2
84WAB175	3.8	<2	<2
84WAB176	<.1	<2	<2
84WAB187	.2	<2	<2
84WAB20	<.1	2	<2
84WAB03	<.1	<2	<2
84WAB32	.2	<2	2
84WAB34	<.1	21	<2
84WAB37	<.1	<2	<2
84WAB04	.2	<2	<2
84WAB40	<.1	<2	<2
84WAB05	.3	<2	3
84WAB72	.1	<2	9
84WAB84	.4	<2	3
84WAB94	.7	14	6
84WAG33	<.1	<2	<2
84WAG53	.7	<2	5
84WAG59	<.1	<2	<2
84WAG63	<.1	<2	<2
84WAG88	.2	<2	3
84WAG09	.2	<2	<2
84WAG96	.4	<2	<2