

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ANALYSES OF STREAM SEDIMENT SAMPLES FROM THE
ORANGE COUNTY COPPER DISTRICT, EAST-CENTRAL VERMONT

by

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OPEN-FILE REPORT 89-544

This report is preliminary and has not been reviewed for conformity with U.S.
Geological Survey editorial standards and stratigraphic nomenclature

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1989

INTRODUCTION

The Orange County copper district is a formerly important but currently inactive belt of mines and prospects located in east-central Vermont. Mining in the district was chiefly for copper, although minor zinc, silver, gold, and pyrrhotite (for sulfuric acid manufacture) also were produced. The Elizabeth mine, the largest and most recent operating mine, closed in 1958. Dominant bedrock lithologies in the district are Paleozoic calcareous schist and quartzose schist, with some associated amphibolite interpreted as mafic metavolcanic rock (White and Eric, 1944; Annis and others, 1983). The copper deposits consist of stratabound and commonly stratiform massive sulfide bodies made up mainly of pyrrhotite, with volumetrically minor chalcopyrite, sphalerite, and pyrite present locally. Galena is extremely rare and has only been observed microscopically as small inclusions in other sulfide minerals.

A geochemical sampling program carried out during 1981-82 focused on areas surrounding the three largest mines in the district (Elizabeth, Ely, and Pike Hill). Most of the samples were collected by J.W. Whitlow in 1981 with help from G.L. Cygan, J.T. Hanley, and C.S. Sears. Additional samples were taken in 1982 by P.J. Atelsek. Sample preparation and mineral separations were performed in the laboratory by D.M. Demichelis. The spectrographic work was done by B.F. Adrian, B.F. Arbogast, R. Baker, and D.E. Baker. Atomic absorption analyses were made by J.E. Gray, A.A. Roemer, and L. Sherlock.

SAMPLING PROCEDURES

Stream sediment samples were taken in most first-order drainages in the study area, including some intermittent streams. Sampling was done by collecting several handfuls of fine-grained, clay- and silt-sized material at each site. Grab samples were obtained by taking a bulk sample of all of the sediment (clay, silt, and sand fractions) from one location for every sample site.

Panned concentrate samples were collected at several locations from each stream with a long-handled shovel, typically from the slow-moving portions. The coarse sediment was sieved to minus 4-mesh and the smaller fraction was concentrated by standard panning techniques.

ANALYTICAL TECHNIQUES

The stream sediment samples were air-dried and sieved to minus 80 mesh (0.177 mm), then pulverized to minus 140 mesh (0.105 mm) prior to analysis. The panned concentrates were first air-dried, then any contained magnetite was removed with a hand magnet. The remainder of the concentrate was separated at specific gravity 2.86 with bromoform. The heavy mineral concentrate was then separated electromagnetically into two fractions by a Frantz¹ isodynamic separator set at forward and side angles of 20 degrees and an ampere setting of 0.6 A. These two fractions, one relatively magnetic and the other non-magnetic, were then ground with a mortar and pestle, and submitted for analysis.

¹ The use of brand names in this report is for descriptive purposes only and does not constitute endorsement by the U.S. Geological Survey.

Each sample was analyzed semiquantitatively for 31 elements by a six-step, D.C. arc, optical emission spectrographic method (Grimes and Marranzino, 1968). Gold was also determined by a quantitative atomic absorption technique (Ward and others, 1969). The semiquantitative spectrographic values are reported as six steps per order of magnitude (1, 0.7, 0.5, 0.3, 0.2, 0.15 or multiples of 10 of these numbers) and are approximate geometric midpoints of the concentration ranges. The precision is within one adjoining step on each side of the reported value 83 percent of the time, and within two adjoining steps 96 percent of the time (Motooka and Grimes, 1976).

EXPLANATION OF DATA TABLE

The data are grouped by sample type, which is indicated at by the center heading at the top of each page. Sample numbers, in the left-hand column, start with the year in which they were collected. The following two-letter code represents the sample area: VT = Vermont including Elizabeth and Ely mine areas; PH = Pike Hill mine area, Vermont. The number after the code is a unique designation for each sample site. Sample numbers are followed by a suffix which identifies the sample type: A1 = panned concentrate, non-magnetic fraction; A2 = panned concentrate, magnetic fraction; B = stream sediment; no suffix = grab sample.

The different sample types from each site carry the same number, except the 1982 series, for which the stream sediments have odd numbers and the panned concentrates from the same site have the next higher sequential even number. For samples 81VT7 and 81VT8 only grab samples were taken. For sample

81VT52 only stream sediment and grab samples were collected. For samples 81VT1 through 81VT10 stream sediment samples were not taken. Grab samples were not taken at any of the 1982 sample sites.

Following the sample number are two columns of X and Y coordinates which are in Universal Transverse Mercator (UTM) format. The X coordinate is the easting value in meters; the Y coordinate is the northing value. UTM coordinates can be found on all modern U.S. Geological Survey topographic maps.

The 32 columns of analytical data that follow the UTM coordinates require three pages for each group of samples. The column headings are the chemical symbol for each element followed by the analytical value. Iron, magnesium, calcium, and titanium values are reported in percent (pct.); values for all other elements are given in parts per million (ppm). Letters beneath the chemical symbols indicate the methods of analysis: s, six-step semiquantitative spectrographic; aa, atomic absorption.

Other symbols on the table are: N, not detected; <, concentration detected is below the lower limit of determination, which is the value shown; >, concentration exceeds the upper limit of determination, which is the value shown.

Lower limits of determination for the 31 elements that were determined spectrographically are listed below. These limits apply to the stream sediment and grab samples; the values are doubled for panned concentrates. The lower detection limits for major elements are (in pct.): Fe, 0.05; Mg, 0.02; Ca, 0.05; Ti, 0.002; Mn, 10. Limits for minor and trace elements are (in ppm): Ag, 0.5; As, 200; Au, 10; B, 10; Ba, 20; Be, 1; Bi, 10; Cd, 20; Co,

5; Cr, 10; Cu, 5; La, 20; Mo, 5; Nb, 20; Ni, 5; Pb, 10; Sb, 100; Sc, 5; Sn, 10; Sr, 100; V, 10; W, 50; Y, 10; Zn, 200; Zr, 10; Th, 100.

The limits for gold determined by atomic absorption are variable and depend on sample weight. These limits range from 0.05-0.71 ppm.

REFERENCES

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- 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.
- Motooka, J.M., and Grimes, D.J., 1976, Analytical precision of one-sixth order semiquantitative spectrographic analysis: U.S. Geological Survey Circular 738, 25 p.
- Ward, F.N., Nakagawa, H.M., Harms, T.F., and Van Sickle, G.H., 1969, Atomic-absorption methods of analysis useful in geochemical exploration: U.S. Geological Survey Bulletin 1289, 45 p.
- White, W.S., and Eric, J.H., 1944, Preliminary report on the geology of the Orange County copper district, Vermont: U.S. Geological Survey Open-File Report, 36 p. [includes 8 separate map sheets].

GRAB SAMPLES

Sample	X coordinate	Y coordinate	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	Be-ppm s
81PH1	718,750	878,420	2.0	1.5	2.0	1.0	2,000	N	N	N	150	300	3.0
81PH2	717,450	878,140	1.5	1.5	2.0	1.0	1,500	N	N	N	300	300	2.0
81PH3	716,130	879,070	2.0	1.5	2.0	.7	1,500	N	N	N	500	500	2.0
81PH4	716,370	879,100	1.5	1.5	3.0	.7	5,000	N	N	N	300	500	2.0
81PH5	716,400	880,360	1.5	1.5	2.0	.7	3,000	N	N	N	200	500	2.0
81PH6	717,430	881,530	2.0	2.0	2.0	.7	2,000	N	N	N	300	500	5.0
81PH7	714,890	881,560	1.5	2.0	2.0	1.0	1,500	N	N	N	500	500	2.0
81PH8	714,790	881,580	1.5	2.0	1.5	1.0	1,000	N	N	N	500	500	1.5
81PH9	714,590	881,130	1.5	2.0	2.0	1.0	1,500	N	N	N	300	300	1.5
81PH10	715,440	880,540	2.0	2.0	2.0	1.0	2,000	N	N	N	500	500	2.0
81PH11	714,720	880,420	1.5	2.0	2.0	1.0	1,500	N	N	N	700	500	2.0
81PH12	714,410	880,330	2.0	1.5	2.0	1.0	2,000	N	N	N	300	500	2.0
81PH13	715,220	880,060	2.0	2.0	2.0	1.0	2,000	<.5	N	N	300	500	2.0
81PH14	717,470	877,950	1.5	1.5	3.0	.7	2,000	N	N	N	300	500	3.0
81PH15	717,640	881,780	7.0	1.5	2.0	1.0	2,000	2.0	N	N	100	300	3.0
81PH16	716,650	882,280	15.0	1.5	2.0	1.0	2,000	5.0	N	N	100	300	3.0
81PH17	716,760	883,770	2.0	2.0	2.0	1.0	2,000	N	N	N	200	300	2.0
81PH18	718,530	884,210	2.0	2.0	3.0	1.0	3,000	N	N	N	200	500	5.0
81PH19	715,970	883,210	2.0	2.0	2.0	.7	1,500	N	N	N	200	300	2.0
81PH20	719,450	881,440	1.5	1.5	2.0	.7	2,000	N	N	N	150	500	3.0
81PH21	719,460	881,300	3.0	2.0	2.0	1.0	2,000	N	N	N	200	500	2.0
81PH22	718,620	881,210	5.0	1.5	1.5	1.0	3,000	N	N	N	200	500	2.0
81VT1	714,430	855,280	20.0	1.5	.7	.5	500	10.0	N	N	700	200	1.0
81VT2	714,870	854,150	5.0	2.0	2.0	1.0	2,000	.7	N	N	150	300	5.0
81VT3	714,850	854,230	7.0	2.0	2.0	1.0	2,000	2.0	N	N	200	300	3.0
81VT4	714,640	853,530	5.0	2.0	1.5	1.0	2,000	N	N	N	200	300	2.0
81VT5	714,790	853,660	3.0	1.5	1.5	1.0	2,000	N	N	N	200	300	2.0
81VT6	714,840	853,520	2.0	1.5	1.0	.7	3,000	N	N	N	200	500	2.0
81VT7	714,870	856,340	15.0	1.0	1.0	1.0	700	5.0	N	N	1,000	200	1.0
81VT8	714,540	856,750	2.0	2.0	1.5	.7	5,000	N	N	N	200	500	2.0
81VT9	714,480	856,670	3.0	2.0	3.0	1.0	3,000	N	N	N	500	300	2.0
81VT10	712,860	857,280	3.0	2.0	2.0	1.0	2,000	N	N	N	200	300	2.0
81VT11	711,320	854,500	3.0	2.0	2.0	1.0	2,000	N	N	N	300	300	2.0
81VT12	711,680	853,190	3.0	2.0	2.0	1.0	2,000	N	N	N	500	500	1.5
81VT13	711,590	853,480	3.0	2.0	2.0	1.0	2,000	N	N	N	500	300	1.5
81VT14	711,810	853,340	3.0	2.0	2.0	1.0	2,000	N	N	N	300	500	1.5
81VT15	713,390	854,690	3.0	1.5	1.5	1.0	2,000	N	N	N	200	500	2.0
81VT16	713,210	856,730	3.0	2.0	3.0	1.0	2,000	N	N	N	300	500	2.0
81VT17	714,150	853,520	3.0	2.0	1.5	1.0	2,000	N	N	N	100	500	2.0
81VT18	716,490	853,000	3.0	1.0	1.0	1.0	2,000	N	N	N	150	500	2.0
81VT19	711,530	856,500	3.0	3.0	3.0	1.0	2,000	N	N	N	500	700	2.0
81VT20	715,750	854,560	3.0	2.0	2.0	1.0	2,000	N	N	N	300	300	1.5
81VT21	718,190	851,440	3.0	1.5	1.5	1.0	3,000	N	N	N	200	500	2.0
81VT22	718,240	851,290	3.0	1.5	1.5	1.0	3,000	N	N	N	150	500	2.0
81VT23	719,940	852,100	2.0	1.0	1.5	1.0	3,000	N	N	N	200	300	2.0

GRAB SAMPLES

Sample	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	Sn-ppm s
81PH1	N	N	15	100	10	<20	N	20	20	70	N	10	N
81PH2	N	N	10	150	20	<20	N	20	20	30	N	7	N
81PH3	N	N	10	200	10	<20	N	20	20	30	N	7	N
81PH4	N	N	10	100	50	<20	N	20	20	50	N	7	N
81PH5	N	N	30	150	700	<20	N	20	50	50	N	10	N
81PH6	N	N	10	150	10	<20	N	20	20	70	N	7	N
81PH7	N	N	10	150	15	<20	N	20	20	50	N	7	N
81PH8	N	N	10	100	15	<20	N	20	30	30	N	7	N
81PH9	N	N	10	100	10	<20	N	20	20	30	N	7	N
81PH10	N	N	15	200	70	<20	N	20	30	50	N	10	N
81PH11	N	N	10	300	15	<20	N	20	30	50	N	10	N
81PH12	N	N	10	150	15	<20	N	<20	30	50	N	10	N
81PH13	N	N	15	150	20	<20	N	20	50	70	N	10	N
81PH14	N	N	10	100	30	<20	N	<20	30	100	N	7	N
81PH15	N	N	100	70	5,000	<20	N	<20	30	70	N	10	N
81PH16	N	N	50	100	3,000	<20	<5	<20	30	150	N	10	N
81PH17	N	N	15	300	150	<20	N	<20	50	70	N	10	N
81PH18	N	N	10	200	30	<20	N	<20	20	70	N	7	N
81PH19	N	N	15	150	50	<20	N	<20	30	50	N	15	N
81PH20	N	N	10	150	30	<20	N	<20	30	100	N	10	N
81PH21	N	N	15	200	30	<20	N	<20	50	50	N	15	N
81PH22	N	N	20	200	30	<20	N	20	70	70	N	15	N
81VT1	N	N	30	300	5,000	N	50	N	20	300	N	20	N
81VT2	N	N	200	150	2,000	100	N	<20	50	100	N	15	N
81VT3	N	N	200	200	3,000	<20	5	<20	50	150	N	10	N
81VT4	N	N	30	200	150	50	N	<20	70	70	N	20	N
81VT5	N	N	30	200	70	50	N	20	70	70	N	15	N
81VT6	N	N	20	150	30	50	N	N	70	50	N	10	N
81VT7	N	N	70	200	2,000	N	7	<20	20	150	N	15	N
81VT8	N	N	30	300	100	50	N	<20	70	70	N	15	N
81VT9	N	N	30	200	100	<20	N	30	70	50	N	20	N
81VT10	N	N	20	200	50	<20	N	<20	50	30	N	20	N
81VT11	N	N	15	150	30	<20	N	20	50	20	N	10	N
81VT12	N	N	20	200	50	50	N	20	70	70	N	20	N
81VT13	N	N	20	150	30	<20	N	20	50	50	N	20	N
81VT14	N	N	20	200	50	50	N	<20	70	70	N	15	N
81VT15	N	N	30	150	70	50	N	<20	70	70	N	20	N
81VT16	N	N	20	150	150	<20	N	<20	50	50	N	15	N
81VT17	N	N	30	300	50	<20	N	<20	100	50	N	15	N
81VT18	N	N	20	150	30	50	N	<20	70	50	N	15	N
81VT19	N	N	30	300	70	<20	N	<20	100	70	N	20	N
81VT20	N	N	50	200	700	<20	N	<20	100	70	N	15	N
81VT21	N	N	15	200	70	50	N	<20	70	50	N	15	N
81VT22	N	N	20	150	50	<20	N	<20	70	50	N	15	N
81VT23	N	N	15	150	10	<20	N	<20	50	30	N	10	N

GRAB SAMPLES

Sample	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	AU-ppm aa
81PH1	300	100	N	20	N	150	N	N
81PH2	300	100	N	20	N	200	N	N
81PH3	300	100	N	20	N	200	N	N
81PH4	300	100	N	20	<200	100	N	N
81PH5	300	100	N	20	500	100	N	N
81PH6	300	70	N	20	N	100	N	N
81PH7	300	100	N	20	<200	100	N	N
81PH8	300	70	N	20	N	150	N	N
81PH9	300	100	N	20	N	100	N	N
81PH10	300	100	N	30	N	300	N	<.05
81PH11	300	100	N	20	N	300	N	N
81PH12	300	100	N	20	N	200	N	N
81PH13	300	100	N	20	N	200	N	N
81PH14	300	70	N	20	N	150	N	N
81PH15	300	100	N	20	1,500	200	N	N
81PH16	300	100	N	30	700	50	N	.05
81PH17	300	150	N	20	N	150	N	N
81PH18	300	100	N	30	N	100	N	N
81PH19	300	150	N	20	N	100	N	N
81PH20	300	70	N	20	N	100	N	N
81PH21	300	150	N	20	N	150	N	N
81PH22	300	100	N	30	N	150	N	N
81VT1	100	150	N	30	700	70	N	<.05
81VT2	500	100	N	30	1,000	100	N	N
81VT3	300	100	N	50	1,000	100	N	N
81VT4	200	150	N	50	N	300	N	N
81VT5	200	150	N	30	N	200	N	N
81VT6	200	150	N	50	N	200	N	N
81VT7	<100	150	N	15	700	70	N	N
81VT8	300	150	N	50	N	300	N	N
81VT9	500	150	N	30	N	150	N	N
81VT10	300	150	N	30	N	70	N	N
81VT11	500	100	N	20	N	100	N	N
81VT12	500	100	N	50	N	150	N	N
81VT13	500	100	N	30	N	200	N	N
81VT14	500	100	N	30	N	150	N	N
81VT15	300	150	N	50	N	200	N	N
81VT16	500	100	N	30	N	100	N	N
81VT17	300	150	N	50	N	150	N	N
81VT18	300	100	N	70	N	150	N	N
81VT19	500	150	N	50	N	200	N	N
81VT20	500	150	N	50	<200	200	N	N
81VT21	300	150	N	50	N	300	N	N
81VT22	300	100	N	50	N	300	N	N
81VT23	500	100	N	50	N	200	N	N

GRAB SAMPLES--continued

Sample	X coordinate	Y coordinate	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	Be-ppm s
81VT24	719,910	851,980	2.0	1.0	1.0	1.0	2,000	N	N	N	200	200	1.5
81VT25	719,810	853,320	3.0	1.5	1.0	.7	1,000	N	N	N	200	300	2.0
81VT26	719,330	855,020	2.0	1.0	1.0	1.0	2,000	N	N	N	300	300	1.5
81VT27	711,590	857,050	3.0	1.5	1.5	1.0	3,000	N	N	N	300	200	1.0
81VT28	712,190	856,470	2.0	1.5	1.0	1.0	2,000	N	N	N	300	300	1.5
81VT29	714,520	857,050	2.0	1.0	2.0	.7	1,000	N	N	N	200	500	1.5
81VT30	715,820	858,130	2.0	1.5	1.5	1.0	1,500	N	N	N	300	300	3.0
81VT31	717,400	857,020	2.0	1.0	1.0	1.0	2,000	N	N	N	150	300	1.5
81VT32	717,490	856,470	3.0	1.5	2.0	1.0	2,000	.7	N	N	300	300	1.5
81VT33	718,290	856,400	1.5	1.0	1.5	.7	2,000	N	N	N	200	300	2.0
81VT34	719,160	854,820	3.0	1.5	2.0	1.0	2,000	.5	N	N	300	300	2.0
81VT35	718,970	854,790	2.0	1.0	1.5	1.0	3,000	N	N	N	200	300	2.0
81VT36	717,790	855,850	2.0	1.5	2.0	.7	3,000	N	N	N	150	300	2.0
81VT37	716,930	855,360	1.5	1.0	1.0	1.0	3,000	N	N	N	150	300	2.0
81VT50	717,000	866,830	2.0	1.5	5.0	1.0	3,000	N	N	N	300	700	2.0
81VT51	716,970	866,670	3.0	1.0	3.0	1.0	2,000	N	N	N	300	300	2.0
81VT52	715,700	866,880	3.0	1.5	3.0	1.0	2,000	N	N	N	500	500	2.0
81VT53	715,650	866,750	2.0	1.5	3.0	1.0	2,000	N	N	N	300	500	2.0
81VT54	715,640	865,550	3.0	1.5	1.5	1.0	3,000	N	N	N	300	700	2.0
81VT55	716,740	864,580	2.0	1.5	2.0	1.0	1,500	N	N	N	300	500	2.0
81VT56	717,190	866,430	2.0	1.5	2.0	1.0	2,000	N	N	N	300	300	2.0
81VT57	717,870	866,770	10.0	1.5	2.0	1.0	1,000	2.0	N	N	200	500	2.0
81VT581	718,010	866,790	3.0	1.0	1.5	1.0	3,000	N	N	N	150	500	3.0
81VT582	718,010	866,790	10.0	1.5	1.5	1.0	1,500	10.0	N	N	300	300	1.5
81VT59	717,830	866,280	>20.0	1.0	1.0	.7	1,000	15.0	N	N	300	300	1.5
81VT60	717,990	865,890	2.0	1.5	3.0	1.0	3,000	N	N	N	200	300	3.0
81VT61	718,560	865,520	2.0	2.0	2.0	1.0	3,000	N	N	N	300	300	2.0
81VT62	718,550	865,820	2.0	1.5	2.0	1.0	3,000	N	N	N	150	300	2.0
81VT63	719,420	865,410	3.0	2.0	5.0	1.0	3,000	N	N	N	500	500	3.0

GRAB SAMPLES--continued

Sample	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	Sn-ppm s
81VT24	N	N	15	100	10	<20	N	<20	30	30	N	15	N
81VT25	N	N	20	200	30	50	N	<20	70	70	N	15	N
81VT26	N	N	20	200	30	<20	N	<20	30	50	N	15	N
81VT27	N	N	20	200	20	<20	N	30	30	50	N	20	N
81VT28	N	N	20	150	20	<20	N	<20	50	50	N	20	N
81VT29	N	N	20	300	20	50	N	<20	70	50	N	10	N
81VT30	N	N	20	200	20	<20	N	<20	50	50	N	20	N
81VT31	N	N	20	200	20	<20	N	<20	70	50	N	20	N
81VT32	N	N	50	200	500	<20	5	20	70	70	N	20	N
81VT33	N	N	15	150	30	<20	N	<20	30	50	N	10	N
81VT34	N	N	30	150	500	<20	N	20	30	70	N	15	N
81VT35	N	N	20	150	20	50	N	<20	30	50	N	15	N
81VT36	N	N	30	200	150	50	N	<20	70	30	N	15	N
81VT37	N	N	15	200	20	<20	N	<20	30	50	N	10	N
81VT50	N	N	20	150	50	50	N	<20	70	70	N	10	N
81VT51	N	N	15	200	20	<20	N	<20	50	50	N	10	N
81VT52	N	N	30	300	50	50	N	20	70	70	N	15	N
81VT53	N	N	20	200	30	<20	N	20	50	70	N	15	N
81VT54	N	N	30	200	50	50	N	<20	70	70	N	20	N
81VT55	N	N	20	200	50	50	N	<20	70	70	N	15	N
81VT56	N	N	15	200	30	<20	N	<20	50	50	N	10	N
81VT57	N	N	50	300	2,000	<20	20	<20	50	100	N	20	N
81VT581	N	N	100	300	2,000	150	N	<20	100	70	N	20	N
81VT582	N	N	30	500	2,000	<20	N	N	50	150	N	30	N
81VT59	N	N	20	200	7,000	<20	20	N	30	150	N	20	N
81VT60	N	N	15	150	150	50	N	<20	50	70	N	10	N
81VT61	N	N	20	200	70	<20	N	<20	70	70	N	20	N
81VT62	N	N	20	200	150	50	N	<20	50	100	N	20	N
81VT63	N	N	70	300	1,000	50	N	20	70	100	N	15	N

GRAB SAMPLES---continued

Sample	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa
81VT24	300	100	N	30	N	150	N	N
81VT25	300	150	N	50	N	150	N	N
81VT26	200	100	N	30	N	100	N	N
81VT27	300	100	N	50	<200	100	N	N
81VT28	300	150	N	30	N	100	N	N
81VT29	200	100	N	50	N	150	N	N
81VT30	300	150	N	50	N	100	N	N
81VT31	200	100	N	50	N	100	N	N
81VT32	500	150	N	50	300	150	N	N
81VT33	200	100	N	30	N	300	N	N
81VT34	300	100	N	30	200	70	N	N
81VT35	200	150	N	50	N	200	N	N
81VT36	300	150	N	50	<200	200	N	N
81VT37	150	100	N	30	<200	150	N	N
81VT50	500	100	N	30	N	150	N	N
81VT51	500	100	N	30	N	150	N	N
81VT52	500	100	N	50	N	150	N	N
81VT53	500	100	N	30	N	150	N	N
81VT54	300	150	N	50	N	150	N	N
81VT55	300	100	N	30	N	200	N	N
81VT56	500	100	N	30	N	200	N	N
81VT57	200	200	N	50	<200	200	N	N
81VT581	150	150	N	70	500	200	N	N
81VT582	200	200	N	50	200	150	N	N
81VT59	<100	200	N	30	500	50	N	.05
81VT60	500	150	N	30	N	300	N	N
81VT61	300	150	N	50	N	300	N	N
81VT62	300	150	N	50	N	300	N	N
81VT63	500	150	N	50	200	200	N	N

PANNED CONCENTRATES (NON-MAGNETIC FRACTION)

Sample	X coordinate	Y coordinate	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppt s	Ag-ppt s	As-ppt s	Au-ppt s	B-ppt s	Ba-ppt s
81PH1A1	718,750	878,420	2.0	3.0	7.0	>2.0	1,500	N	N	N	700	700
81PH2A1	717,450	878,140	2.0	3.0	7.0	>2.0	1,500	N	N	N	500	500
81PH3A1	716,130	879,070	1.5	1.0	5.0	>2.0	1,000	N	N	N	500	700
81PH4A1	716,370	879,100	3.0	5.0	7.0	>2.0	2,000	N	N	N	700	500
81PH5A1	716,400	880,360	5.0	5.0	7.0	>2.0	10,000	N	N	N	700	500
81PH6A1	717,430	881,530	2.0	5.0	10.0	>2.0	2,000	N	N	N	700	700
81PH7A1	714,890	881,560	3.0	3.0	5.0	>2.0	2,000	N	N	N	700	700
81PH8A1	714,790	881,580	3.0	5.0	7.0	>2.0	1,500	N	N	N	1,000	300
81PH9A1	714,590	881,130	2.0	5.0	7.0	>2.0	1,500	N	N	N	1,000	700
81PH10A1	715,440	880,540	2.0	5.0	7.0	>2.0	1,500	N	N	N	1,500	300
81PH11A1	714,720	880,420	2.0	2.0	5.0	>2.0	1,000	N	N	N	700	300
81PH12A1	714,410	880,330	2.0	2.0	3.0	>2.0	1,500	1	N	N	500	300
81PH13A1	715,220	880,060	2.0	5.0	10.0	>2.0	2,000	N	N	N	700	500
81PH14A1	717,470	877,950	3.0	7.0	10.0	>2.0	2,000	N	N	N	700	300
81PH15A1	717,640	881,780	10.0	5.0	7.0	2.0	1,500	30	N	N	500	700
81PH16A1	716,650	882,280	20.0	1.5	1.5	>2.0	>10,000	5	N	N	100	700
81PH17A1	716,760	883,770	2.0	5.0	7.0	>2.0	2,000	N	N	N	500	700
81PH18A1	718,530	884,210	2.0	5.0	10.0	>2.0	1,500	N	N	N	300	700
81PH19A1	715,970	883,210	5.0	5.0	5.0	>2.0	10,000	N	N	N	500	700
81PH20A1	719,450	881,440	1.5	2.0	7.0	>2.0	1,500	N	N	N	300	700
81PH21A1	719,460	881,300	10.0	3.0	5.0	1.5	1,000	50	N	N	200	700
81PH22A1	718,620	881,210	10.0	5.0	7.0	2.0	1,500	50	N	N	500	700
81VT1A1	714,430	855,280	20.0	2.0	.2	>2.0	500	30	N	N	>5,000	200
81VT2A1	714,870	854,150	7.0	1.5	3.0	>2.0	2,000	N	N	N	1,000	700
81VT3A1	714,850	854,230	15.0	1.5	3.0	>2.0	>10,000	N	N	N	150	700
81VT4A1	714,640	853,530	1.0	.5	1.5	>2.0	700	<1	N	N	700	500
81VT5A1	714,790	853,660	3.0	.5	1.5	>2.0	5,000	N	N	N	2,000	500
81VT6A1	714,840	853,520	.7	.5	1.5	>2.0	700	N	N	N	1,500	500
81VT9A1	714,480	856,670	5.0	2.0	3.0	>2.0	5,000	N	N	N	700	300
81VT10A1	712,860	857,280	1.0	.7	5.0	>2.0	1,000	<1	N	N	1,500	500
81VT11A1	711,320	854,500	7.0	1.5	3.0	>2.0	>10,000	N	N	N	50	300
81VT12A1	711,680	853,190	10.0	2.0	3.0	>2.0	>10,000	N	N	N	50	700
81VT13A1	711,590	853,480	3.0	2.0	2.0	>2.0	2,000	N	N	N	500	500
81VT14A1	711,810	853,340	3.0	1.5	2.0	>2.0	1,500	N	N	N	500	300
81VT15A1	713,390	854,690	1.0	.5	1.5	1.5	300	N	N	N	200	700
81VT16A1	713,210	856,730	5.0	2.0	5.0	>2.0	1,500	<1	N	N	500	500
81VT17A1	714,150	853,520	3.0	1.5	1.5	>2.0	1,000	N	N	N	700	500
81VT18A1	716,490	853,000	1.0	.3	1.5	>2.0	1,000	N	N	N	300	500
81VT19A1	711,530	856,500	1.5	1.0	5.0	>2.0	700	<1	N	N	2,000	500
81VT20A1	715,750	854,560	1.0	.2	1.0	>2.0	500	N	N	N	300	700
81VT21A1	718,190	851,440	1.5	1.0	2.0	>2.0	700	N	N	N	1,000	300
81VT22A1	718,240	851,290	1.5	.3	1.0	>2.0	1,000	N	N	N	300	300
81VT23A1	719,940	852,100	.5	.5	1.5	>2.0	200	N	N	N	500	500
81VT24A1	719,910	851,980	2.0	.5	1.0	2.0	2,000	N	N	N	200	700
81VT25A1	719,810	853,320	3.0	1.5	2.0	>2.0	700	N	N	N	500	300

PANED CONCENTRATES (NON-MAGNETIC FRACTION)

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
81PH1A1	5	N	N	10	500	10	<50	N	150	N	50	N	20
81PH2A1	3	N	N	10	300	300	<50	N	200	N	100	N	15
81PH3A1	<2	N	N	10	200	500	100	N	100	N	20	N	20
81PH4A1	2	N	N	15	300	150	100	N	150	N	20	N	30
81PH5A1	2	N	N	20	1,500	500	<50	N	100	N	30	N	50
81PH6A1	5	20	N	10	200	70	100	N	150	N	150	N	30
81PH7A1	3	N	N	10	300	150	100	N	100	N	50	N	20
81PH8A1	7	N	N	20	300	500	200	N	300	<10	100	N	30
81PH9A1	<2	N	N	15	300	10	150	N	150	N	50	N	20
81PH10A1	2	N	N	15	200	20	150	N	150	N	30	N	20
81PH11A1	<2	N	N	20	300	70	100	N	300	N	100	N	20
81PH12A1	7	N	N	15	300	<10	150	N	200	N	70	N	20
81PH13A1	3	N	N	10	300	10	<50	N	100	N	50	N	20
81PH14A1	3	N	N	15	300	300	150	N	150	N	7,000	N	20
81PH15A1	2	N	100	100	150	>50,000	<50	N	50	N	50	N	15
81PH16A1	<2	N	<50	150	2,000	10,000	N	N	<50	50	20	N	100
81PH17A1	2	N	N	N	150	70	N	N	100	N	20	N	<10
81PH18A1	2	N	N	<10	150	100	<50	N	70	N	20	N	<10
81PH19A1	<2	N	N	30	1,500	150	N	N	50	30	70	N	70
81PH20A1	5	N	N	<10	200	15	<50	N	150	N	50	N	15
81PH21A1	2	N	70	30	100	>50,000	<50	N	50	N	50	N	<10
81PH22A1	2	N	50	70	150	>50,000	100	N	100	N	50	N	15
81VT1A1	N	N	N	50	700	>50,000	N	N	70	N	70	N	50
81VT2A1	7	N	N	50	700	300	100	N	200	30	30	N	20
81VT3A1	N	N	N	20	700	200	<50	N	70	N	<20	N	100
81VT4A1	2	N	N	10	300	300	<50	N	150	N	20	N	10
81VT5A1	<2	N	N	10	500	500	<50	N	150	N	20	N	20
81VT6A1	<2	N	N	10	500	70	<50	N	200	N	150	N	10
81VT9A1	2	N	N	50	700	150	100	N	150	20	100	N	50
81VT10A1	<2	N	N	30	500	700	<50	N	300	N	30	N	20
81VT11A1	N	N	N	30	200	15	<50	N	50	N	<20	N	100
81VT12A1	N	N	N	30	300	100	100	N	50	N	<20	N	100
81VT13A1	<2	N	N	30	200	30	100	N	150	20	70	N	20
81VT14A1	<2	N	N	20	500	10	<50	N	200	20	<20	N	15
81VT15A1	<2	N	N	15	70	10	<50	N	50	N	30	N	N
81VT16A1	2	N	N	30	300	1,500	<50	N	150	30	20	N	30
81VT17A1	7	N	N	50	500	500	100	N	200	20	20	N	20
81VT18A1	<2	N	N	<10	300	30	<50	N	200	N	20	N	10
81VT19A1	<2	N	N	100	500	500	<50	N	200	N	30	N	20
81VT20A1	<2	N	N	10	100	500	<50	N	100	N	20	N	N
81VT21A1	2	N	N	20	300	150	<50	N	200	N	70	N	10
81VT22A1	<2	N	N	10	200	<10	<50	N	100	N	20	N	N
81VT23A1	5	N	N	<10	150	50	100	N	150	N	20	N	N
81VT24A1	2	N	N	10	150	30	<50	N	70	N	20	N	10
81VT25A1	5	N	N	20	300	30	100	N	100	15	20	N	10

PANNED CONCENTRATES (NON-MAGNETIC FRACTION)

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
81PH1A1	N	700	150	100	100	<500	500	N	N
81PH2A1	<20	700	200	N	150	N	1,500	N	9.00
81PH3A1	N	700	150	N	70	N	1,000	N	N
81PH4A1	N	700	200	<100	100	500	700	N	6.00
81PH5A1	N	700	150	N	100	500	200	N	N
81PH6A1	50	1,000	200	N	100	N	1,000	N	N
81PH7A1	N	500	150	N	70	500	700	N	.75
81PH8A1	70	700	200	<100	150	<500	>2,000	N	7.50
81PH9A1	30	500	200	200	100	500	>2,000	N	N
81PH10A1	30	700	150	300	100	500	700	N	7.20
81PH11A1	N	500	200	300	100	<500	700	N	6.00
81PH12A1	N	500	200	<100	100	<500	1,000	N	2.90
81PH13A1	30	1,000	150	N	100	<500	700	N	N
81PH14A1	150	1,000	200	N	100	500	1,000	N	41.00
81PH15A1	N	700	150	N	50	10,000	200	N	.05
81PH16A1	N	N	150	N	200	3,000	70	N	N
81PH17A1	N	700	150	N	50	N	150	N	N
81PH18A1	N	700	150	N	70	N	200	N	N
81PH19A1	N	300	200	N	150	<500	200	N	N
81PH20A1	N	700	150	<100	150	N	>2,000	N	N
81PH21A1	N	500	150	N	50	10,000	500	N	N
81PH22A1	<20	700	200	N	100	5,000	1,000	N	N
81VT1A1	N	N	500	N	30	2,000	100	N	N
81VT2A1	N	200	300	N	100	1,500	700	N	N
81VT3A1	N	N	150	N	200	N	150	N	N
81VT4A1	N	200	200	<100	50	500	700	N	N
81VT5A1	N	200	200	200	100	N	300	N	N
81VT6A1	200	200	200	200	100	N	300	N	N
81VT9A1	50	200	300	300	150	500	300	N	N
81VT10A1	20	500	300	<100	150	N	700	N	N
81VT11A1	N	N	200	N	150	N	100	N	N
81VT12A1	N	N	150	N	150	N	100	N	.45
81VT13A1	N	<200	200	N	70	N	150	N	<.07
81VT14A1	N	<200	300	<100	70	N	100	N	1.90
81VT15A1	N	300	100	N	20	N	200	N	.36
81VT16A1	N	300	200	200	70	<500	200	N	.07
81VT17A1	N	<200	200	200	70	1,500	300	N	N
81VT18A1	N	200	150	N	50	N	200	N	N
81VT19A1	50	700	300	<100	150	N	300	N	N
81VT20A1	N	200	150	N	20	N	500	N	N
81VT21A1	500	300	300	300	100	<500	1,000	N	N
81VT22A1	N	200	150	<100	30	N	200	N	N
81VT23A1	N	<200	150	N	50	N	200	N	N
81VT24A1	N	<200	150	N	30	N	200	N	N
81VT25A1	N	<200	300	N	70	1,500	500	N	N

PANNED CONCENTRATES (NON-MAGNETIC FRACTION) -- continued

Sample	X coordinate	Y coordinate	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-pptm s	Ag-pptm s	As-pptm s	Au-pptm s	B-pptm s	Ba-pptm s
81VT26A1	719,330	855,020	1.0	.5	1.5	>2.0	1,000	N	N	N	200	500
81VT27A1	711,590	857,050	.7	.5	5.0	>2.0	200	N	N	N	1,000	300
81VT28A1	712,190	856,470	1.0	1.0	5.0	>2.0	500	N	N	N	3,000	500
81VT29A1	714,520	857,050	3.0	1.0	2.0	>2.0	700	1	N	N	700	500
81VT30A1	715,820	858,130	2.0	.7	2.0	>2.0	700	N	N	N	700	500
81VT31A1	717,400	857,020	5.0	1.5	2.0	>2.0	10,000	N	N	N	200	500
81VT32A1	717,490	856,470	5.0	2.0	5.0	>2.0	1,500	<1	N	N	1,500	500
81VT33A1	718,290	856,400	7.0	2.0	3.0	>2.0	2,000	N	N	N	700	500
81VT34A1	719,160	854,820	1.5	.7	1.5	>2.0	500	N	N	N	500	700
81VT35A1	718,970	854,790	3.0	1.5	3.0	>2.0	1,000	N	N	N	1,000	700
81VT36A1	717,790	855,850	1.5	.3	1.5	2.0	500	N	N	N	200	700
81VT37A1	716,930	855,360	2.0	1.5	3.0	>2.0	700	N	N	N	700	500
81VT50A1	717,000	866,830	2.0	1.0	5.0	>2.0	1,000	N	N	N	300	700
81VT51A1	716,970	866,670	3.0	1.5	5.0	>2.0	1,000	N	N	N	500	700
81VT53A1	715,650	866,750	3.0	1.5	5.0	>2.0	1,000	N	N	N	500	700
81VT54A1	715,640	865,550	3.0	1.5	5.0	>2.0	1,000	N	N	N	1,000	500
81VT55A1	716,740	864,580	.7	.7	1.0	1.5	150	N	N	N	300	1,000
81VT56A1	717,190	866,430	1.5	1.5	3.0	>2.0	700	N	N	N	500	700
81VT57A1	717,870	866,770	3.0	.5	1.5	2.0	700	3	N	N	500	700
81VT58A1	718,010	866,790	3.0	3.0	3.0	>2.0	1,500	N	N	N	5,000	500
81VT59A1	717,830	866,280	30.0	1.0	1.5	>2.0	500	50	N	N	5,000	700
81VT60A1	717,990	865,890	2.0	3.0	5.0	>2.0	1,500	N	N	N	1,500	500
81VT61A1	718,560	865,520	2.0	3.0	5.0	>2.0	1,000	N	N	N	1,500	500
81VT62A1	718,550	865,820	1.5	2.0	5.0	>2.0	700	N	N	N	700	500
81VT63A1	719,420	865,410	1.5	1.0	5.0	>2.0	700	<1	N	N	700	700
82VT58A1	709,725	867,039	1.0	.3	2.0	>2.0	200	N	N	N	300	<50
82VT64A1	712,380	876,390	1.5	.2	2.0	>2.0	200	N	N	N	200	N
82VT66A1	711,980	879,300	.7	.3	1.0	>2.0	100	N	N	N	200	N
82VT68A1	712,950	880,600	2.0	2.0	5.0	>2.0	500	N	N	N	300	N
82VT70A1	713,530	880,200	1.5	1.5	7.0	>2.0	300	N	N	N	150	N
82VT72A1	713,210	880,040	2.0	1.5	7.0	>2.0	300	N	N	N	200	N
82VT74A1	717,250	885,110	1.0	1.0	5.0	>2.0	200	N	N	N	100	N
82VT76A1	714,770	885,690	1.0	1.0	3.0	>2.0	200	N	N	N	150	N
82VT78A1	713,520	884,400	.7	.7	2.0	2.0	100	N	N	N	70	N
82VT80A1	714,743	880,475	2.0	.7	3.0	>2.0	300	N	N	N	100	N
82VT82A1	714,580	877,690	.7	1.0	3.0	>2.0	200	N	N	N	300	N
82VT84A1	718,720	878,440	.7	.7	5.0	>2.0	200	N	N	N	300	N

PANNED CONCENTRATES (NON-MAGNETIC FRACTION)--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
81VT26A1	<2	N	N	15	200	10	<50	N	100	N	300	N	<10
81VT27A1	<2	N	N	15	700	<10	<50	N	300	N	50	N	30
81VT28A1	N	N	N	15	500	<10	<50	N	300	N	30	N	20
81VT29A1	5	N	N	20	700	<10	<50	N	300	N	20	N	15
81VT30A1	2	N	N	10	150	100	<50	N	150	N	20	N	10
81VT31A1	3	N	N	20	1,000	20	<50	N	50	20	100	N	100
81VT32A1	3	N	N	70	700	5,000	150	N	200	20	150	N	50
81VT33A1	7	N	N	50	1,500	500	100	N	150	30	20	N	20
81VT34A1	2	N	N	10	150	700	N	N	100	N	20	N	<10
81VT35A1	3	N	N	30	300	100	150	N	150	N	20	N	10
81VT36A1	3	N	N	10	150	20	N	N	50	N	20	N	N
81VT37A1	3	N	N	20	500	<10	<50	N	200	N	20	N	10
81VT50A1	2	N	N	10	150	10	N	N	100	N	20	N	<10
81VT51A1	2	N	N	15	200	70	150	N	150	<10	20	N	<10
81VT53A1	3	N	N	10	200	10	100	N	150	N	30	N	<10
81VT54A1	3	N	N	15	300	20	100	N	200	N	30	N	20
81VT55A1	<2	N	N	N	150	<10	N	N	<50	N	20	N	<10
81VT56A1	2	20	N	N	100	1,000	N	N	70	N	20	N	N
81VT57A1	<2	N	N	30	100	20,000	N	N	70	N	30	N	N
81VT58A1	<2	N	N	20	500	5,000	150	N	150	N	20	N	30
81VT59A1	<2	N	N	20	200	>50,000	<50	30	70	N	20	N	30
81VT60A1	3	N	N	15	300	1,500	100	N	150	N	30	N	20
81VT61A1	3	N	N	15	300	200	<50	N	150	N	30	N	15
81VT62A1	<2	N	N	10	200	70	<50	N	100	N	30	N	10
81VT63A1	3	N	N	10	100	7,000	<50	N	70	N	150	N	N
82VT58A1	2	N	N	N	70	10	N	N	200	N	N	N	20
82VT64A1	<2	N	N	N	100	300	N	N	200	N	300	N	30
82VT66A1	N	N	N	N	50	N	N	N	50	N	N	N	10
82VT68A1	N	N	N	N	150	<10	100	N	100	10	N	N	20
82VT70A1	N	N	N	N	100	100	N	N	70	N	N	N	20
82VT72A1	N	N	N	N	150	<10	50	N	150	10	N	N	30
82VT74A1	<2	N	N	N	100	<10	N	N	70	10	200	N	30
82VT76A1	<2	N	N	N	50	N	N	N	<50	N	N	N	10
82VT78A1	<2	N	N	N	20	N	N	N	N	N	N	N	N
82VT80A1	2	N	N	N	200	N	N	N	70	10	N	N	15
82VT82A1	N	N	N	N	70	50	70	N	70	N	N	N	20
82VT84A1	<2	N	N	N	70	<10	N	N	150	<10	N	N	30

PANNED CONCENTRATES (NON-MAGNETIC FRACTION) --continued

Sample	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zn-ppm s	Th-ppm s	Au-ppm aa
81VT26A1	N	300	200		N	50		N	N
81VT27A1	70	700	500		N	150	1,000	N	N
81VT28A1	50	700	300		N	150	1,000	N	N
81VT29A1	<20	<200	200		N	100	500	N	N
81VT30A1	N	500	200		N	50	<500	N	N
81VT31A1	N	<200	200		N	100	500	N	N
81VT32A1	<20	500	300		N	100	500	N	.40
81VT33A1	N	300	300		N	70	1,500	N	N
81VT34A1	N	300	200		N	20	<500	N	N
81VT35A1	N	500	200		N	100	1,000	N	N
81VT36A1	N	300	150		N	30	500	N	3.00
81VT37A1	N	300	200		N	150	1,000	N	2.40
81VT50A1	N	700	150		N	70	<500	N	<.06
81VT51A1	N	700	150		N	70	<500	N	N
81VT53A1	N	500	150	<100		70	<500	N	.47
81VT54A1	N	500	300		N	100	700	N	N
81VT55A1	N	<200	70		N	20	N	N	N
81VT56A1	N	300	150		N	30	N	N	N
81VT57A1	N	<200	150		N	30	500	N	N
81VT58A1	50	<200	200		N	100	700	N	N
81VT59A1	<20	N	200		N	50	3,000	N	6.90
81VT60A1	N	500	200		N	150	500	N	N
81VT61A1	N	500	200		N	100	500	N	N
81VT62A1	N	500	200		N	100	N	N	N
81VT63A1	100	500	150		N	50	<500	N	N
82VT58A1	N	500	200		<100	50	1,000	N	2.30
82VT64A1	150	200	200		100	70	2,000	N	5.60
82VT66A1	N	N	70		<100	20	2,000	N	N
82VT68A1	20	200	200		300	100	>2,000	N	N
82VT70A1	N	500	150		<100	50	>2,000	N	N
82VT72A1	N	500	200		<100	150	>2,000	N	N
82VT74A1	<20	200	150		200	70	>2,000	N	2.40
82VT76A1	N	200	100		N	20	700	N	N
82VT78A1	N	200	50		N	<20	1,000	N	N
82VT80A1	N	200	100		N	30	2,000	N	1.90
82VT82A1	N	200	100		300	50	>2,000	N	14.00
82VT84A1	N	300	150		<100	30	300	N	N

PANNED CONCENTRATES (MAGNETIC FRACTION)

Sample	X coord- dinate	Y coord- dinate	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
81PH1A2	718,750	878,420	20	1.5	2.0	>2.0	>10,000	2	N	N	200	500
81PH2A2	717,450	878,140	20	1.5	1.5	>2.0	>10,000	N	N	N	150	500
81PH3A2	716,130	879,070	20	1.5	2.0	>2.0	>10,000	N	N	N	200	500
81PH4A2	716,370	879,100	30	1.0	1.5	>2.0	>10,000	N	N	N	150	500
81PH5A2	716,400	880,360	30	1.5	2.0	>2.0	>10,000	N	N	N	200	300
81PH6A2	717,430	881,530	20	2.0	2.0	>2.0	>10,000	N	N	N	200	500
81PH7A2	714,890	881,560	30	1.5	1.5	>2.0	>10,000	N	N	N	150	500
81PH8A2	714,790	881,580	20	1.0	1.5	>2.0	>10,000	N	N	N	100	500
81PH9A2	714,590	881,130	30	1.0	1.5	>2.0	>10,000	3	N	N	200	700
81PH10A2	715,440	880,540	20	1.0	1.0	>2.0	>10,000	N	N	N	100	300
81PH11A2	714,720	880,420	20	1.0	1.5	>2.0	>10,000	N	N	N	200	500
81PH12A2	714,410	880,330	20	1.0	1.5	>2.0	>10,000	N	N	N	150	700
81PH13A2	715,220	880,060	7	1.0	2.0	1.5	>10,000	N	N	N	50	200
81PH14A2	717,470	877,950	30	1.5	2.0	>2.0	>10,000	N	N	N	100	500
81PH15A2	717,640	881,780	30	1.5	2.0	2.0	>10,000	N	N	N	200	500
81PH16A2	716,650	882,280	30	1.5	2.0	>2.0	>10,000	3	N	N	200	500
81PH17A2	716,760	883,770	20	1.5	2.0	>2.0	>10,000	N	N	N	200	500
81PH18A2	718,530	884,210	20	1.5	1.5	>2.0	>10,000	N	N	N	150	500
81PH19A2	715,970	883,210	20	3.0	3.0	>2.0	>10,000	N	N	N	150	500
81PH20A2	719,450	881,440	20	1.5	1.5	>2.0	>10,000	N	N	N	150	500
81PH21A2	719,460	881,300	20	1.5	2.0	>2.0	>10,000	N	N	N	150	300
81PH22A2	718,620	881,210	30	1.5	2.0	>2.0	>10,000	N	N	N	150	500
81VT1A2	714,430	855,280	50	1.0	1.0	2.0	1,500	5	N	N	500	1,000
81VT2A2	714,870	854,150	30	3.0	5.0	>2.0	>10,000	N	N	N	150	700
81VT3A2	714,850	854,230	30	3.0	5.0	>2.0	>10,000	N	N	N	50	700
81VT4A2	714,640	853,530	15	2.0	3.0	>2.0	>10,000	N	N	N	50	500
81VT5A2	714,790	853,660	20	3.0	3.0	>2.0	>10,000	N	N	N	100	700
81VT6A2	714,840	853,520	20	2.0	3.0	>2.0	>10,000	N	N	N	150	500
81VT9A2	714,480	856,670	20	1.5	3.0	>2.0	>10,000	N	N	N	100	500
81VT10A2	712,860	857,280	20	2.0	3.0	>2.0	10,000	N	N	N	100	500
81VT11A2	711,320	854,500	20	1.5	3.0	>2.0	>10,000	N	N	N	100	500
81VT12A2	711,680	853,190	30	2.0	5.0	>2.0	>10,000	N	N	N	100	500
81VT13A2	711,590	853,480	20	2.0	3.0	>2.0	>10,000	N	N	N	100	700
81VT14A2	711,810	853,340	30	2.0	5.0	2.0	10,000	N	N	N	100	500
81VT15A2	713,390	854,690	20	2.0	3.0	>2.0	>10,000	N	N	N	100	500
81VT16A2	713,210	856,730	20	2.0	5.0	>2.0	>10,000	N	N	N	100	500
81VT17A2	714,150	853,520	20	1.5	3.0	>2.0	>10,000	N	N	N	100	500
81VT18A2	716,490	853,000	20	2.0	3.0	>2.0	>10,000	N	N	N	100	500
81VT19A2	711,530	856,500	30	3.0	5.0	>2.0	>10,000	N	N	N	200	500
81VT20A2	715,750	854,560	30	2.0	3.0	>2.0	>10,000	N	N	N	100	700
81VT21A2	718,190	851,440	20	2.0	3.0	>2.0	>10,000	N	N	N	70	500
81VT22A2	718,240	851,290	20	2.0	3.0	>2.0	>10,000	N	N	N	70	500
81VT23A2	719,940	852,100	30	2.0	3.0	>2.0	>10,000	N	N	N	70	500
81VT24A2	719,910	851,980	20	2.0	3.0	>2.0	>10,000	N	N	N	50	500
81VT25A2	719,810	853,320	30	2.0	3.0	>2.0	>10,000	N	N	N	70	500

PANNED CONCENTRATES (MAGNETIC FRACTION)

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
81PH1A2	<2	N	N	30	1,000	10	N	N	50	20	N	N	100
81PH2A2	2	N	N	50	3,000	15	100	N	70	70	N	N	70
81PH3A2	3	N	N	50	2,000	30	N	N	70	50	N	N	70
81PH4A2	<2	N	N	50	2,000	10	N	N	70	70	N	N	100
81PH5A2	2	N	N	50	1,500	200	150	N	50	50	N	N	100
81PH6A2	3	N	N	50	2,000	20	<50	N	50	70	N	N	70
81PH7A2	<2	N	N	50	1,500	10	N	N	50	20	N	N	200
81PH8A2	<2	N	N	50	2,000	15	N	N	70	70	N	N	100
81PH9A2	<2	N	N	70	5,000	15	100	N	70	100	N	N	100
81PH10A2	2	N	N	50	5,000	30	<50	N	50	100	N	N	100
81PH11A2	2	N	N	50	3,000	10	300	N	70	70	N	N	100
81PH12A2	<2	N	N	50	3,000	15	N	N	50	70	N	N	100
81PH13A2	<2	N	N	10	700	10	N	N	N	15	N	N	70
81PH14A2	<2	N	N	30	1,500	10	<50	N	50	50	<20	N	150
81PH15A2	<2	N	N	100	2,000	5,000	N	N	100	70	N	N	100
81PH16A2	2	N	100	150	1,500	10,000	N	N	50	50	20	N	100
81PH17A2	<2	N	N	30	2,000	100	N	N	50	50	N	N	100
81PH18A2	<2	N	N	30	2,000	20	N	N	50	50	N	N	100
81PH19A2	<2	N	N	70	1,500	100	100	N	50	100	<20	N	150
81PH20A2	<2	N	N	30	7,000	15	<50	N	50	50	N	N	50
81PH21A2	<2	N	N	100	1,500	2,000	N	N	50	30	N	N	70
81PH22A2	<2	N	N	100	2,000	3,000	<50	N	50	70	N	N	70
81VT1A2	N	N	N	200	200	7,000	N	100	N	100	70	N	50
81VT2A2	N	N	N	50	300	150	N	N	50	30	N	N	>200
81VT3A2	N	N	N	50	300	20	N	N	<50	30	N	N	200
81VT4A2	N	N	N	30	200	10	N	N	70	20	N	N	150
81VT5A2	2	N	N	50	300	15	<50	N	70	30	N	N	150
81VT6A2	<2	N	N	50	200	20	N	N	50	30	N	N	150
81VT9A2	N	N	N	30	1,500	50	N	N	70	20	N	N	100
81VT10A2	N	N	N	50	1,000	10	N	N	70	50	N	N	100
81VT11A2	N	N	N	30	200	10	N	N	100	30	N	N	100
81VT12A2	N	N	N	50	1,000	10	N	N	50	70	N	N	150
81VT13A2	N	N	N	30	1,000	<10	N	N	<50	30	N	N	150
81VT14A2	N	N	N	30	200	20	<50	N	50	20	N	N	150
81VT15A2	<2	N	N	50	200	20	N	N	50	30	N	N	150
81VT16A2	N	N	N	50	300	100	N	N	50	30	N	N	150
81VT17A2	N	N	N	30	300	15	N	N	70	20	N	N	100
81VT18A2	N	N	N	50	300	<10	N	N	70	20	N	N	200
81VT19A2	N	N	N	50	1,500	100	N	N	50	70	N	N	200
81VT20A2	<2	N	N	70	500	500	<50	N	100	50	N	N	200
81VT21A2	<2	N	N	50	700	10	N	N	<50	20	N	N	200
81VT22A2	<2	N	N	30	1,500	10	N	N	50	20	N	N	200
81VT23A2	<2	N	N	50	1,000	<10	N	N	50	20	N	N	150
81VT24A2	<2	N	N	30	700	<10	N	N	50	20	N	N	150
81VT25A2	<2	N	N	70	1,000	<10	N	N	70	30	N	N	200

PANNED CONCENTRATES (MAGNETIC FRACTION)

Sample	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zn-ppm s	Th-ppm s	Au-ppm aa
81PH1A2	N	N	150	N	700	<500	200	N	N
81PH2A2	N	N	150	N	300	500	100	N	N
81PH3A2	N	N	150	N	200	500	100	N	N
81PH4A2	N	N	150	N	700	500	150	N	N
81PH5A2	N	N	200	N	500	500	150	N	N
81PH6A2	N	N	150	N	700	500	150	N	N
81PH7A2	N	N	150	N	700	<500	150	N	N
81PH8A2	N	N	150	N	200	500	150	N	N
81PH9A2	N	N	150	N	200	500	150	N	N
81PH10A2	N	N	200	N	200	500	100	N	N
81PH11A2	N	N	150	N	200	500	150	N	N
81PH12A2	N	N	150	N	200	500	150	N	N
81PH13A2	N	N	100	N	150	500	50	N	N
81PH14A2	N	N	200	N	1,000	500	150	N	N
81PH15A2	N	N	200	N	700	3,000	150	N	N
81PH16A2	N	N	150	N	300	5,000	150	N	N
81PH17A2	N	N	200	N	500	500	150	N	N
81PH18A2	N	N	150	N	1,000	500	150	N	N
81PH19A2	N	N	200	N	300	500	150	N	N
81PH20A2	N	N	150	N	700	500	150	N	N
81PH21A2	N	N	150	N	700	1,500	150	N	N
81PH22A2	N	N	150	N	700	700	150	N	N
81VT1A2	N	N	200	N	100	3,000	70	N	N
81VT2A2	N	N	200	N	500	<500	300	N	N
81VT3A2	N	N	200	N	500	500	200	N	N
81VT4A2	N	N	150	N	200	500	200	N	N
81VT5A2	N	N	200	N	300	500	200	N	N
81VT6A2	100	N	200	N	300	500	150	N	N
81VT9A2	N	N	150	N	200	<500	150	N	N
81VT10A2	N	N	300	N	200	<500	150	N	N
81VT11A2	N	N	150	N	200	<500	150	N	N
81VT12A2	N	N	150	N	200	<500	100	N	N
81VT13A2	N	N	150	N	200	<500	150	N	N
81VT14A2	N	N	150	N	200	<500	150	N	N
81VT15A2	N	N	200	N	300	<500	150	N	N
81VT16A2	N	N	200	N	200	<500	150	N	N
81VT17A2	N	N	150	N	200	<500	100	N	N
81VT18A2	N	N	150	N	500	<500	200	N	N
81VT19A2	N	N	300	N	200	<500	150	N	N
81VT20A2	N	N	200	N	500	500	150	N	N
81VT21A2	N	N	150	N	500	500	150	N	N
81VT22A2	N	N	150	N	500	500	150	N	N
81VT23A2	N	N	150	N	500	<500	200	N	N
81VT24A2	N	N	150	N	500	<500	200	N	N
81VT25A2	N	N	200	N	700	500	200	N	N

PANNED CONCENTRATES (MAGNETIC FRACTION)--continued

Sample	X coord- dinate	Y coord- dinate	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
81VT26A2	719,330	855,020	20	2.0	3.0	>2.0	>10,000	N	N	N	300	500
81VT27A2	711,590	857,050	30	2.0	5.0	>2.0	>10,000	N	N	N	150	300
81VT28A2	712,190	856,470	20	3.0	5.0	>2.0	>10,000	N	N	N	100	700
81VT29A2	714,520	857,050	20	1.5	3.0	>2.0	>10,000	N	N	N	70	500
81VT30A2	715,820	858,130	20	2.0	3.0	>2.0	>10,000	N	N	N	70	300
81VT31A2	717,400	857,020	20	1.5	3.0	>2.0	>10,000	N	N	N	150	700
81VT32A2	717,490	856,470	20	2.0	3.0	>2.0	>10,000	N	N	N	100	300
81VT33A2	718,290	856,400	20	1.5	2.0	>2.0	>10,000	N	N	N	70	500
81VT34A2	719,160	854,820	20	1.5	3.0	>2.0	>10,000	N	N	N	100	500
81VT35A2	718,970	854,790	15	1.5	2.0	>2.0	>10,000	N	N	N	70	300
81VT36A2	717,790	855,850	20	2.0	2.0	>2.0	>10,000	N	N	N	100	500
81VT37A2	716,930	855,360	20	1.5	2.0	>2.0	>10,000	N	N	N	100	500
81VT50A2	717,000	866,830	20	1.5	2.0	>2.0	>10,000	N	N	N	100	500
81VT51A2	716,970	866,670	20	1.5	2.0	>2.0	>10,000	N	N	N	100	500
81VT53A2	715,650	866,750	20	1.5	2.0	>2.0	>10,000	N	N	N	100	500
81VT54A2	715,640	865,550	20	1.5	2.0	>2.0	>10,000	N	N	N	100	500
81VT55A2	716,740	864,580	15	2.0	2.0	>2.0	>10,000	N	N	N	100	500
81VT56A2	717,190	866,430	20	2.0	2.0	>2.0	>10,000	N	N	N	70	500
81VT57A2	717,870	866,770	20	3.0	2.0	>2.0	>10,000	N	N	N	70	500
81VT58A2	718,010	866,790	15	1.5	1.5	>2.0	>10,000	N	N	N	70	500
81VT59A2	717,830	866,280	20	1.5	2.0	>2.0	>10,000	N	N	N	70	500
81VT60A2	717,990	865,890	20	3.0	2.0	>2.0	>10,000	N	N	N	70	500
81VT61A2	718,560	865,520	15	2.0	3.0	>2.0	>10,000	N	N	N	70	300
81VT62A2	718,550	865,820	20	2.0	2.0	>2.0	>10,000	N	N	N	70	500
81VT63A2	719,420	865,410	20	2.0	3.0	>2.0	>10,000	N	N	N	50	700

PANNED CONCENTRATES (MAGNETIC FRACTION) --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
81VT26A2	<2	N	N	30	300	<10	N	N	50	20	N	N	150
81VT27A2	N	N	N	70	1,500	50	N	N	70	50	N	N	150
81VT28A2	N	N	N	70	300	10	<50	N	50	70	N	N	150
81VT29A2	N	N	N	30	500	10	N	N	70	20	N	N	150
81VT30A2	N	N	N	50	1,000	<10	N	N	<50	30	N	N	150
81VT31A2	<2	N	N	50	700	10	N	N	<50	20	N	N	200
81VT32A2	N	N	N	70	1,000	100	N	N	50	50	N	N	150
81VT33A2	N	N	N	30	1,000	<10	<50	N	<50	15	N	N	100
81VT34A2	N	N	N	50	1,000	300	N	N	<50	30	N	N	100
81VT35A2	N	N	N	30	700	10	N	N	<50	15	N	N	100
81VT36A2	N	N	N	50	500	50	N	N	<50	30	N	N	150
81VT37A2	N	N	N	30	500	<10	N	N	50	15	N	N	150
81VT50A2	N	N	N	50	1,500	20	50	N	50	50	N	N	150
81VT51A2	N	N	N	50	1,500	15	N	N	50	50	N	N	100
81VT53A2	N	N	N	50	1,500	10	N	N	50	70	N	N	100
81VT54A2	N	N	N	30	1,000	<10	N	N	50	20	N	N	150
81VT55A2	N	N	N	20	700	<10	N	N	<50	20	N	N	70
81VT56A2	N	N	N	30	1,500	50	N	N	<50	50	N	N	100
81VT57A2	N	N	N	70	300	1,000	N	N	<50	30	N	N	70
81VT58A2	<2	N	N	30	700	200	N	N	<50	20	N	N	50
81VT59A2	N	N	N	50	500	2,000	N	N	<50	20	<20	N	70
81VT60A2	N	N	N	30	700	20	N	N	50	20	N	N	100
81VT61A2	N	N	N	20	500	10	N	N	<50	15	N	N	100
81VT62A2	N	N	N	30	1,000	<10	N	N	<50	15	N	N	100
81VT63A2	<2	N	N	70	1,500	1,000	<50	N	<50	50	N	N	100

PANNED CONCENTRATES (MAGNETIC FRACTION) --continued

Sample	Sn-ppm \$	Sr-ppm \$	V-ppm \$	W-ppm \$	Y-ppm \$	Zn-ppm \$	Zr-ppm \$	Th-ppm \$	Au-ppm aa
81VT26A2	N	N	200	N	500	<500	100	N	N
81VT27A2	N	N	150	N	200	<500	150	N	N
81VT28A2	N	N	200	N	150	<500	150	N	N
81VT29A2	N	N	150	N	300	<500	150	N	N
81VT30A2	N	N	200	N	300	<500	150	N	N
81VT31A2	N	N	150	N	700	<500	200	N	N
81VT32A2	N	N	200	N	200	<500	150	N	N
81VT33A2	N	N	150	N	200	<500	150	N	N
81VT34A2	N	N	200	N	200	<500	150	N	N
81VT35A2	N	N	150	N	300	<500	150	N	N
81VT36A2	N	N	200	N	500	<500	150	N	N
81VT37A2	N	N	150	N	500	<500	150	N	N
81VT50A2	N	N	150	N	500	<500	150	N	N
81VT51A2	N	N	150	N	200	<500	150	N	N
81VT53A2	N	N	150	N	300	<500	150	N	N
81VT54A2	N	N	150	N	300	<500	150	N	N
81VT55A2	N	N	150	N	200	<500	100	N	N
81VT56A2	N	N	150	N	300	<500	150	N	N
81VT57A2	N	N	200	N	150	500	150	N	N
81VT58A2	N	N	200	N	150	<500	100	N	N
81VT59A2	N	N	200	N	150	500	150	N	N
81VT60A2	N	N	200	N	200	<500	150	N	N
81VT61A2	N	N	200	N	300	<500	200	N	N
81VT62A2	N	N	200	N	300	<500	150	N	N
81VT63A2	N	N	150	N	200	500	100	N	N

STREAM SEDIMENTS

Sample	X coordinate	Y coordinate	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	Be-ppm s
81PH1B	718,750	878,420	2.0	2.0	2.0	.7	5,000	N	N	N	150	500	2.0
81PH2B	717,450	878,140	2.0	2.0	3.0	1.0	3,000	N	N	N	300	300	1.5
81PH3B	716,130	879,070	2.0	1.5	3.0	1.0	2,000	N	N	N	300	300	1.5
81PH4B	716,370	879,100	1.5	2.0	2.0	1.0	5,000	N	N	N	200	300	1.5
81PH5B	716,400	880,360	1.5	3.0	3.0	1.0	5,000	N	N	N	500	500	2.0
81PH6B	717,430	881,530	1.5	2.0	2.0	1.0	3,000	N	N	N	300	300	1.5
81PH7B	714,890	881,560	1.5	2.0	2.0	.7	2,000	1.5	N	N	300	300	2.0
81PH8B	714,790	881,580	2.0	2.0	1.5	1.0	1,000	<.5	N	N	500	300	2.0
81PH9B	714,590	881,130	1.5	2.0	1.5	1.0	2,000	N	N	N	500	300	1.5
81PH10B	715,440	880,540	2.0	3.0	3.0	1.0	3,000	N	N	N	300	500	1.5
81PH11B	714,720	880,420	2.0	2.0	3.0	1.0	2,000	<.5	N	N	300	300	1.5
81PH12B	714,410	880,330	2.0	1.5	2.0	>1.0	2,000	2.0	N	N	300	300	1.5
81PH13B	715,220	880,060	1.5	2.0	3.0	.5	1,500	N	N	N	300	500	2.0
81PH14B	717,470	877,950	1.5	1.5	2.0	.7	2,000	N	N	N	200	300	3.0
81PH15B	717,640	881,780	3.0	1.5	3.0	.5	3,000	1.0	N	N	200	500	3.0
81PH16B	716,650	882,280	15.0	1.0	1.0	.5	2,000	5.0	N	N	100	300	2.0
81PH17B	716,760	883,770	3.0	3.0	3.0	1.0	3,000	N	N	N	200	500	2.0
81PH18B	718,530	884,210	2.0	2.0	2.0	.7	3,000	N	N	N	200	500	3.0
81PH19B	715,970	883,210	2.0	3.0	3.0	1.0	3,000	N	N	N	200	300	1.0
81PH20B	719,450	881,440	1.5	.7	1.5	.7	1,000	N	N	N	100	200	2.0
81PH21B	719,460	881,300	5.0	1.5	2.0	1.0	5,000	1.5	N	N	100	300	1.5
81PH22B	718,620	881,210	3.0	2.0	2.0	1.0	2,000	.5	N	N	150	300	1.5
81VT11B	711,320	854,500	2.0	2.0	2.0	1.0	2,000	N	N	N	500	300	1.5
81VT12B	711,680	853,190	3.0	2.0	2.0	>1.0	3,000	N	N	N	300	500	1.5
81VT13B	711,590	853,480	3.0	1.5	2.0	1.0	3,000	N	N	N	500	500	1.5
81VT14B	711,810	853,340	3.0	2.0	2.0	1.0	2,000	N	N	N	300	500	1.5
81VT15B	713,390	854,690	5.0	2.0	1.5	1.0	2,000	N	N	N	100	500	1.5
81VT16B	713,210	856,730	3.0	2.0	3.0	1.0	3,000	N	N	N	500	300	1.5
81VT17B	714,150	853,520	3.0	2.0	1.5	1.0	2,000	N	N	N	150	500	1.0
81VT18B	716,490	853,000	2.0	1.5	1.0	1.0	3,000	N	N	N	150	500	1.5
81VT19B	711,530	856,500	3.0	2.0	5.0	1.0	2,000	N	N	N	300	500	1.0
81VT20B	715,750	854,650	2.0	2.0	2.0	1.0	3,000	N	N	N	200	500	1.5
81VT21B	718,190	851,440	2.0	1.5	1.0	1.0	3,000	N	N	N	150	500	1.5
81VT22B	718,240	851,290	3.0	2.0	1.5	1.0	3,000	N	N	N	100	500	1.5
81VT23B	719,940	852,100	2.0	1.5	1.0	1.0	3,000	N	N	N	100	300	1.5
81VT24B	719,910	851,980	3.0	1.5	1.0	>1.0	3,000	N	N	N	150	300	1.5
81VT25B	719,810	853,320	1.5	.7	.5	.7	3,000	N	N	N	100	150	1.0
81VT26B	719,330	855,020	3.0	2.0	1.0	1.0	700	N	N	N	100	500	1.5
81VT27B	711,590	857,050	3.0	2.0	1.5	>1.0	3,000	N	N	N	500	500	1.5
81VT28B	712,190	856,470	3.0	2.0	2.0	>1.0	3,000	N	N	N	300	500	1.0
81VT29B	714,520	857,050	3.0	2.0	1.0	1.0	1,500	<.5	N	N	200	500	1.5
81VT30B	715,820	858,130	2.0	1.5	1.0	.7	1,500	N	N	N	200	500	1.5
81VT31B	717,400	857,020	3.0	2.0	2.0	1.0	2,000	N	N	N	200	500	1.5
81VT32B	717,490	856,470	3.0	1.5	1.0	1.0	2,000	N	N	N	150	500	1.5
81VT33B	718,290	856,400	5.0	2.0	2.0	1.0	2,000	.7	N	N	500	500	1.5

STREAM SEDIMENTS

Sample	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	Sn-ppm s
81PH1B	N	N	20	200	50	50	N	<20	70	70	N	15	N
81PH2B	N	N	15	500	30	<20	N	20	30	30	N	15	N
81PH3B	N	N	15	300	50	<20	N	20	30	30	N	10	N
81PH4B	N	N	70	150	700	50	N	<20	50	30	N	15	N
81PH5B	N	N	15	200	70	50	N	<20	50	50	N	15	N
81PH6B	N	N	10	500	30	<20	N	<20	30	50	N	15	N
81PH7B	N	N	15	200	70	50	N	<20	30	50	N	10	N
81PH8B	N	N	10	300	30	50	N	<20	30	30	N	15	N
81PH9B	N	N	10	500	20	50	N	<20	30	50	N	10	N
81PH10B	N	N	20	300	70	50	N	<20	70	50	N	15	N
81PH11B	N	N	15	500	30	50	N	20	30	30	N	15	N
81PH12B	N	N	15	700	20	50	N	20	30	30	N	15	N
81PH13B	N	N	15	150	30	50	N	<20	50	50	N	10	N
81PH14B	N	N	10	300	30	<20	N	<20	30	100	N	10	N
81PH15B	N	N	200	150	2,000	50	N	<20	100	70	N	15	N
81PH16B	N	N	500	100	7,000	50	5	<20	30	100	N	10	N
81PH17B	N	N	30	300	150	<20	N	<20	50	50	N	20	N
81PH18B	N	N	15	150	20	<20	N	<20	30	70	N	10	N
81PH19B	N	N	30	500	50	<20	N	<20	70	50	N	30	N
81PH20B	N	N	5	200	20	<20	N	N	10	20	N	15	N
81PH21B	N	20	700	300	7,000	50	N	20	100	70	N	20	N
81PH22B	N	N	200	500	1,500	<20	N	20	70	70	N	20	N
81VT11B	N	N	20	200	100	<20	N	30	50	50	N	15	N
81VT12B	N	N	20	150	30	N	N	30	50	50	N	20	N
81VT13B	N	N	20	150	50	50	N	30	50	50	N	20	N
81VT14B	N	N	20	150	50	50	N	20	50	50	N	20	N
81VT15B	N	N	30	300	50	50	N	<20	70	50	N	20	N
81VT16B	N	N	30	150	150	<20	N	30	30	30	N	20	N
81VT17B	N	N	30	300	50	<20	N	20	70	50	N	20	N
81VT18B	N	N	20	150	30	50	N	<20	50	50	N	15	N
81VT19B	N	N	20	200	30	50	N	20	50	50	N	20	N
81VT20B	N	N	50	200	500	50	N	20	100	50	N	20	N
81VT21B	N	N	30	200	30	50	N	20	50	50	N	20	N
81VT22B	N	N	30	200	30	50	N	20	50	50	N	20	N
81VT23B	N	N	30	150	30	50	N	<20	30	50	N	15	N
81VT24B	N	N	20	200	20	<20	N	30	30	50	N	20	N
81VT25B	N	N	15	100	15	N	N	<20	30	15	N	15	N
81VT26B	N	N	30	200	20	50	N	20	50	30	N	20	N
81VT27B	N	N	20	200	30	50	N	30	30	50	N	20	N
81VT28B	N	N	20	150	20	<20	N	20	30	30	N	20	N
81VT29B	N	N	20	200	50	50	N	20	70	70	N	20	N
81VT30B	N	N	15	150	20	<20	N	<20	50	50	N	20	N
81VT31B	N	N	20	200	20	<20	N	<20	50	50	N	20	N
81VT32B	N	N	20	150	50	50	N	<20	70	70	N	20	N
81VT33B	N	N	30	150	500	<20	N	20	30	70	N	20	N

STREAM SEDIMENTS

Sample	Sr -ppm s	V -ppm s	W -ppm s	Y -ppm s	Zn -ppm s	Zr -ppm s	Th -ppm s	Au -ppm aa
81PH1B	300	100	N	50	N	300	N	.05
81PH2B	500	70	N	30	N	500	N	<.05
81PH3B	500	100	N	30	N	500	N	<.05
81PH4B	300	100	N	50	700	200	N	<.05
81PH5B	500	70	N	30	<200	150	N	N
81PH6B	300	70	N	50	N	150	N	N
81PH7B	300	70	N	30	N	100	N	N
81PH8B	500	100	N	30	N	150	N	N
81PH9B	300	70	N	30	N	100	N	N
81PH10B	500	100	N	50	N	200	N	N
81PH11B	300	100	N	30	N	150	N	N
81PH12B	300	100	N	50	N	500	N	N
81PH13B	500	70	N	30	N	150	N	<.05
81PH14B	300	100	N	30	N	200	N	.50
81PH15B	500	100	N	50	500	200	N	.35
81PH16B	200	70	N	50	700	100	N	<.05
81PH17B	500	150	N	50	N	100	N	N
81PH18B	500	70	N	30	N	150	N	.05
81PH19B	300	200	N	50	N	150	N	<.05
81PH20B	200	70	N	30	N	200	N	N
81PH21B	300	150	N	70	1,500	100	N	N
81PH22B	300	100	N	70	200	300	N	<.05
81VT11B	500	150	N	50	N	300	N	<.05
81VT12B	500	150	N	50	N	300	N	<.05
81VT13B	500	150	N	50	N	150	N	.15
81VT14B	500	150	N	30	N	200	N	N
81VT15B	300	150	N	50	N	150	N	N
81VT16B	500	150	N	50	N	200	N	N
81VT17B	200	100	N	50	N	300	N	N
81VT18B	200	100	N	50	N	150	N	N
81VT19B	500	150	N	50	N	100	N	N
81VT20B	200	100	N	50	300	200	N	N
81VT21B	300	150	N	50	N	200	N	N
81VT22B	200	150	N	50	N	150	N	N
81VT23B	200	100	N	50	N	150	N	N
81VT24B	200	100	N	50	N	150	N	N
81VT25B	150	100	N	30	N	100	N	N
81VT26B	200	100	N	50	N	200	N	<.05
81VT27B	300	100	N	50	N	150	N	N
81VT28B	500	150	N	30	N	100	N	N
81VT29B	300	150	N	50	N	150	N	N
81VT30B	300	100	N	30	N	100	N	N
81VT31B	500	150	N	50	N	150	N	N
81VT32B	200	100	N	50	N	150	N	N
81VT33B	300	100	N	50	300	100	N	N

STREAM SEDIMENTS--continued

Sample	X coordinate	Y coordinate	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppt s	Ag-ppt s	As-ppt s	Au-ppt s	B-ppt s	Ba-ppt s	Be-ppt s
81VT34B	719,160	854,820	3.0	2.0	1.5	1.0	3,000	N	N	N	200	500	1.5
81VT35B	718,970	854,790	1.5	.7	.7	.5	2,000	N	N	N	200	200	2.0
81VT36B	717,790	855,850	2.0	1.5	1.5	1.0	3,000	N	N	N	200	300	2.0
81VT37B	716,930	855,360	2.0	.7	.7	.7	1,500	N	N	N	150	200	2.0
81VT50B	717,000	866,830	2.0	1.5	3.0	1.0	2,000	N	N	N	500	500	1.5
81VT51B	716,970	866,670	2.0	1.5	3.0	1.0	2,000	N	N	N	300	300	2.0
81VT52B	715,700	866,880	2.0	1.5	2.0	1.0	1,500	N	N	N	300	300	2.0
81VT53B	715,650	866,750	1.5	1.5	3.0	.7	1,500	N	N	N	300	300	2.0
81VT54B	715,640	865,550	2.0	1.5	1.0	1.0	5,000	N	N	N	300	500	2.0
81VT55B	716,740	864,580	2.0	1.5	1.0	1.0	1,500	N	N	N	300	300	2.0
81VT56B	717,190	866,430	2.0	1.5	1.5	1.0	2,000	N	N	N	300	300	2.0
81VT57B	717,870	866,770	3.0	1.5	1.0	1.0	3,000	.7	N	N	200	200	1.5
81VT58B	718,010	866,790	3.0	1.5	1.0	1.0	2,000	1.0	N	N	150	300	1.5
81VT59B	717,830	866,280	20.0	.5	.5	.5	2,000	5.0	N	N	150	150	1.0
81VT60B	717,990	865,890	2.0	1.5	1.5	.7	3,000	N	N	N	200	300	2.0
81VT61B	718,560	865,520	2.0	1.5	1.5	1.0	2,000	N	N	N	200	300	2.0
81VT62B	718,550	865,820	2.0	1.5	1.5	1.0	3,000	N	N	N	150	300	1.5
81VT63B	719,420	865,410	2.0	2.0	2.0	1.0	2,000	N	N	N	300	300	2.0
82VT57B	709,690	867,030	2.0	.7	1.0	.5	700	N	N	N	300	150	1.0
82VT63B	712,380	876,380	2.0	.7	1.0	.3	300	N	N	N	100	100	1.5
82VT65B	711,980	879,300	2.0	1.0	1.0	.3	700	N	N	N	200	150	1.0
82VT67B	712,950	880,590	1.5	.7	.7	.7	200	N	N	N	300	20	<1.0
82VT69B	713,530	880,190	2.0	1.5	1.0	.3	1,000	N	N	N	300	100	1.0
82VT71B	713,210	880,040	1.5	.5	1.0	.7	700	N	N	N	200	100	<1.0
82VT73B	717,110	885,250	1.0	.7	1.0	.2	1,500	N	N	N	20	200	2.0
82VT75B	714,780	885,690	2.0	.5	.7	>1.0	500	N	N	N	150	70	1.5
82VT77B	713,520	884,400	1.0	.7	1.0	.3	500	N	N	N	50	100	1.0
82VT79B	714,720	880,460	1.0	.7	1.0	.5	500	N	N	N	150	50	<1.0
82VT81B	714,580	887,690	3.0	.7	1.0	>1.0	700	N	N	N	200	100	<1.0
82VT83B	718,740	878,430	3.0	1.0	1.5	1.0	700	N	N	N	70	150	1.5

STREAM SEDIMENTS--continued

Sample	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	Sn-ppm s
81VT34B	N	N	20	200	50	50	N	<20	70	70	N	20	N
81VT35B	N	N	10	50	10	<20	N	<20	20	30	N	10	N
81VT36B	N	N	30	100	150	<20	N	<20	50	50	N	15	N
81VT37B	N	N	10	70	15	50	N	<20	20	20	N	10	N
81VT50B	N	N	20	150	70	50	N	20	70	70	N	15	N
81VT51B	N	N	15	100	30	<20	N	20	30	50	N	15	N
81VT52B	N	N	15	150	50	50	N	<20	30	50	N	15	N
81VT53B	N	N	15	150	30	50	N	<20	30	70	N	15	N
81VT54B	N	N	20	150	30	50	N	<20	70	70	N	15	N
81VT55B	N	N	20	150	30	50	N	<20	50	70	N	15	N
81VT56B	N	N	15	150	50	50	N	<20	30	50	N	15	N
81VT57B	N	N	100	150	2,000	50	N	<20	50	100	N	20	N
81VT58B	N	N	30	150	1,000	<20	N	<20	30	50	N	20	N
81VT59B	N	N	30	100	5,000	N	5	N	15	70	N	15	N
81VT60B	N	N	15	100	30	100	N	<20	30	50	N	10	N
81VT61B	N	N	15	300	30	N	N	<20	30	50	N	15	N
81VT62B	N	N	15	150	70	<20	N	<20	30	50	N	15	N
81VT63B	N	N	30	150	500	50	N	<20	50	50	N	15	N
82VT57B	N	N	10	70	10	20	N	N	30	10	N	7	N
82VT63B	N	N	10	50	7	N	N	N	20	10	N	5	N
82VT65B	N	N	15	50	10	20	N	N	20	10	N	7	N
82VT67B	N	N	5	20	5	N	N	N	15	N	N	5	N
82VT69B	N	N	10	50	7	20	N	N	30	N	N	5	N
82VT71B	N	N	10	100	5	N	N	N	15	N	N	5	N
82VT73B	N	N	N	20	<5	N	N	N	10	15	N	<5	N
82VT75B	N	N	10	30	<5	N	N	<20	15	N	N	10	N
82VT77B	N	N	10	20	<5	N	N	N	15	N	N	<5	N
82VT79B	N	N	5	20	5	N	N	N	10	N	N	5	N
82VT81B	N	N	10	100	20	N	N	N	20	N	N	7	N
82VT83B	N	N	20	70	15	20	N	N	30	15	N	10	N

STREAM SEDIMENTS--continued

Sample	Sr-ppm S	V-ppm S	W-ppm S	Y-ppm S	Zn-ppm S	Zr-ppm S	Th-ppm S	Au-ppm aa
81VT34B	300	100	N	50	N	200	N	N
81VT35B	200	100	N	20	<200	100	N	N
81VT36B	300	100	N	30	<200	150	N	N
81VT37B	150	70	N	20	N	100	N	N
81VT50B	500	100	N	30	N	100	N	N
81VT51B	300	100	N	30	N	100	N	N
81VT52B	500	100	N	30	N	100	N	N
81VT53B	500	100	N	30	N	150	N	N
81VT54B	300	100	N	50	N	150	N	<.05
81VT55B	300	100	N	50	N	150	N	N
81VT56B	300	100	N	30	N	100	N	N
81VT57B	200	100	N	50	<200	200	N	N
81VT58B	200	150	N	30	<200	200	N	.05
81VT59B	150	100	N	20	500	50	N	.25
81VT60B	300	100	N	30	N	100	N	.05
81VT61B	200	100	N	30	N	150	N	N
81VT62B	200	150	N	50	N	200	N	N
81VT63B	300	150	N	30	<200	100	N	N
82VT57B	200	70	N	10	N	100	N	N
82VT63B	200	50	N	10	N	50	N	N
82VT65B	200	50	N	10	N	100	N	N
82VT67B	150	30	N	N	N	70	N	.55
82VT69B	300	50	N	10	N	70	N	N
82VT71B	200	50	N	10	N	70	N	N
82VT73B	200	20	N	N	N	30	N	N
82VT75B	150	50	N	10	N	500	N	N
82VT77B	200	30	N	10	N	70	N	N
82VT79B	200	30	N	15	N	150	N	N
82VT81B	200	50	N	20	N	1,000	N	N
82VT83B	300	70	N	15	N	150	N	N