GEOCHEMICAL DATA FOR ROCK, STREAM SEDIMENT, AND PANNED CONCENTRATE SAMPLES, MOUNT HOOD WILDERNESS AREA, OREGON

BY

T. E. C. Keith, M. H. Beeson, K. E. Bargar, and S. P. Marsh

U.S. Geological Survey, Menlo Park, California 94025

Open File Report 80-839

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

CONTENTS

ILLUSTRATIONS

Plates are in pocket

TABLES

INTRODUCTION

Geochemical sampling was conducted in the Mount Hood Wilderness area, Clackamas and Hood River Counties, Oregon (fig. 1), during the summer of 1979. Analyses of the samples provided the basis for a mineral resource evaluation in accordance with the Wilderness Act (Public Law 88-577, Sept. 3, 1964). This report includes a map showing the location of sites sampled (pl. 1) and a tabulation of chemical analyses of stream sediment, panned heavy mineral concentrate, and unaltered and altered rock samples (tables 1, 2, 3, 4, and 5).

SAMPLE COLLECTION AND PREPARATION

Geochemical samples totaling 57 stream sediments, 69 panned concentrates, and 38 rocks were collected at selected sites around Mount Hood volcano and Zigzag Mountain as shown on Plate 1. Above 7000 ft. (2134 m) elevation on Mt. Hood there are no suitable streams for sampling because active glaciers occupy the higher valleys, the porosity of the surface volcanic deposits (mostly block and ash flows) is high, and the slopes of the volcano are steep. Unaltered rock samples were collected from representative volcanic units to determine background geochemical values; hydrothermally altered rock samples were collected where appropriate.

Rock Samples

Unaltered rock samples were collected from typical outcrops of mapped volcanic units which consist of andesite and dacite (after Wise, 1968, 1969) for background geochemical values. Samples from zones of hydrothermal alteration including the presently active fumarolic alteration at the summit of Mt. Hood were also taken. All rock samples were crushed and pulverized before analysis.

Stream Sediment Samples

Stream sediment samples were collected from active streams, as close to the center channel as possible and screened at the site to minus 2 mm (10 mesh) using a stainless steel screen. The minus 2 mm (10 mesh) material was air dried and sieved using a 0.177 mm (80 mesh) stainless steel screen in an aluminum frame. The minus 0.177 mm (80 mesh) fraction was saved for analysis.

Panned Concentrate Samples from Stream Sediments

Bulk sediment from the active stream channel was passed through a 2.0 mm (10 mesh) stainless steel screen and the minus 2.0 mm (10 mesh) material was wet-panned at the sample site to reduce the percentage of the lighter density minerals (feldspar and quartz) and lithic fragments (volcanic glass and aphanitic groundmass). The resulting concentrate was air dried and magnetite was removed using a hand magnet. The sample was separated with bromoform (specific gravity 2.86) into two fractions and the resulting heavy-mineral fraction was further subdivided into a magnetic and nonmagnetic fractions using a

Franz Isodynamic Separator[1/] at a setting of 0.6 amps, with 15° forward and 15° side tilts. The nonmagnetic fraction was pulverized in an agate mortar before chemical analysis.

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

GEOCHEMICAL ANALYSIS

Most of the geochemical analyses were done in the U. S. Geological Survey analytical laboratories in Denver, Colorado. However some stream sediment and rock samples were analyzed by Specomp Services, Inc. under contract to the U. S. Geological Survey. The latter were analyzed for Na and Al (in percent), and Li (in ppm) by semiquantitative emission spectrographic analysis in addition to the elements listed below.

All samples were analyzed for Fe, Mg, Ca, Ti, Mn, Ag, As, Au, B, Ba, Be, Bi, Cd, Co, Cr, Cu, La, Mo, Nb, Ni, Pb, Sc, Sn, Sr, V, W, Y, Zn, Zr, and Th using a six step semiquantitative emmission spectrographic method (Grimes and Marranzino, 1968). For the analysis of panned concentrate material, the following modifications were made to eliminate the spectral interferences caused by high concentrations of iron: 5 mg of prepared sample were mixed with 20 mg of pure

graphite powder, and 5 mg of pure Arkansas quartz, packed into a preformed graphite electrode with a 6.35-mm diameter, were burned in a DC-arc for 135 seconds using a 1.5-m Wadsworth mounted grating spectrograph. Spectra were recorded on 35-mm SA-1 film in groups of 23 per film.

The observed spectra from the 5-mg sample were compared visually to standard spectra based on a 10-mg sample weight, using a 20X comparator. All values were therefore doubled. The results were reported as the approximate midpoints of geometric brackets whose boundaries are 1, 0.7, 0.5, 0.3, 0.2, 0.15, 0.1, etc, and doubled values occuring between midpoints were rounded to higher midpoint (e.g. 20 ppm x 2 = 40 ppm, but is reported as 50 ppm). The precision of a reported value is approximately plus or minus one reporting value at 68 percent confidence and two reporting values at 95 percent confidence.

The approximate visual lower limits of determination by spectrographic methods for the 30 elements included in this report were, for those given in percentage: aluminum, 0.5; iron, 0.05; magnesium, 0.2; calcium, 0.05; sodium, 0.15; and titanium, 0.002; for those reported in ppm; manganese, 10; silver, 0.5; arsenic, 200; gold, 10; boron, 10; barium, 20; beryllium, 1; bismuth, 10; cadmium, 20; cobalt, 5; chromium, 10; copper, 5; lanthanum, 20; lithium, 100; molybdenum, 5; niobium, 20; nickel, 5; lead, 10; antimony, 100; scandium, 5; tin, 10; strontium, 100; tungsten, 50; vanadium, 10;

yttrium, 10; zinc, 200; and zirconium, 10. Selected rock samples (table 5) were also analyzed for As using a colorimetric method (Ward and others, 1963), for Au and Cu by atomic-absorption spectrometry (Ward and others, 1969), for Sb by atomic-absorption spectrometry (Welsch and Chao, 1975), and for Hg using a Hg vapor detector (Vaughn, 1967). The lower limits of detection for these elements are (in ppm): Au, 0.05; Cu, 5; Sb, 1; Hg, 0.02; and As, 10.

Fluorimetric determinations were made for uranium on 32 randomly selected stream sediment samples and 4 unaltered rock samples by GEOCO, INC. under contract to the U. S. Geological Survey. Limit of detection was 1 ppm. Uranium was detected in 3 of the stream sediment samples (table 3).

DESCRIPTION OF TABLES

Geochemical analyses of the Mount Hood Wilderness area samples are grouped as follows: unaltered rock samples (table 1), altered rock samples (table 2), stream sediment samples (table 3) and pan concentrate samples (table 4). Table 5 shows values for selected elements in selected altered rock samples. The first column of each table contains the U. S. Geological Survey assigned field numbers shown on the site location map (plate 1). The laboratory number assigned by the Branch of Exploration Research is given in column 2. Location (in 7 1/2 minute quadrangle), latitude and longitude (in

degrees, minutes and tenths of a minute) are given in columns 3, 4 and 5, respectively. Qualifier codes n.a. (not analyzed) and n.d. (not determined) were used for some elements.

ACKNOWLEDGMENTS

Assistance in the field was provided by Susan M. Green, Karin L. Jones, and Peter M. Shearer.

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.

Vaughn, W. W., 1967, A simple mercury vapor detector for geochemical prospecting: U. S. Geological Survey Circular 540, 8 p.

Viets, J. G ., 1978, Determination of silver, bismuth, cadmium, copper, lead, and zinc in geologic materials by atomic absorption spectrometry with tricaprylymethylammonium chloride: Analytical Chemistry, v. 50, no. 8, p. 1097-1101.

Ward, F. N., Lakin, H. W., Canney, F. C., and others, 1963, Analytical methods used in geochemical exploration by the U. S. Geological Survey: U. S. Geological Survey Bulletin 1152, 100 p.

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

Welsch, E. P., and Chao, T. T., 1975, Determination of trace amounts of antimony in geological materials by atomic absorption spectrometry: Analytica Chimica Acta, v. 76, p. 65-69.

Wise, W. S., 1968, Geology of the Mt. Hood volcano: Andesite Conference Guidebook: International Upper Mantle Project, Scientific Report 16-S and Oregon Department of Geology and Mineral Industries Bulletin 62, p. 81-98.

Wise, W. S., 1969, Geology and petrology of the Mt. Hood area: a study of high Cascade volcanism: Geological Society of America Bulletin, v. 80, p. 969-1006.

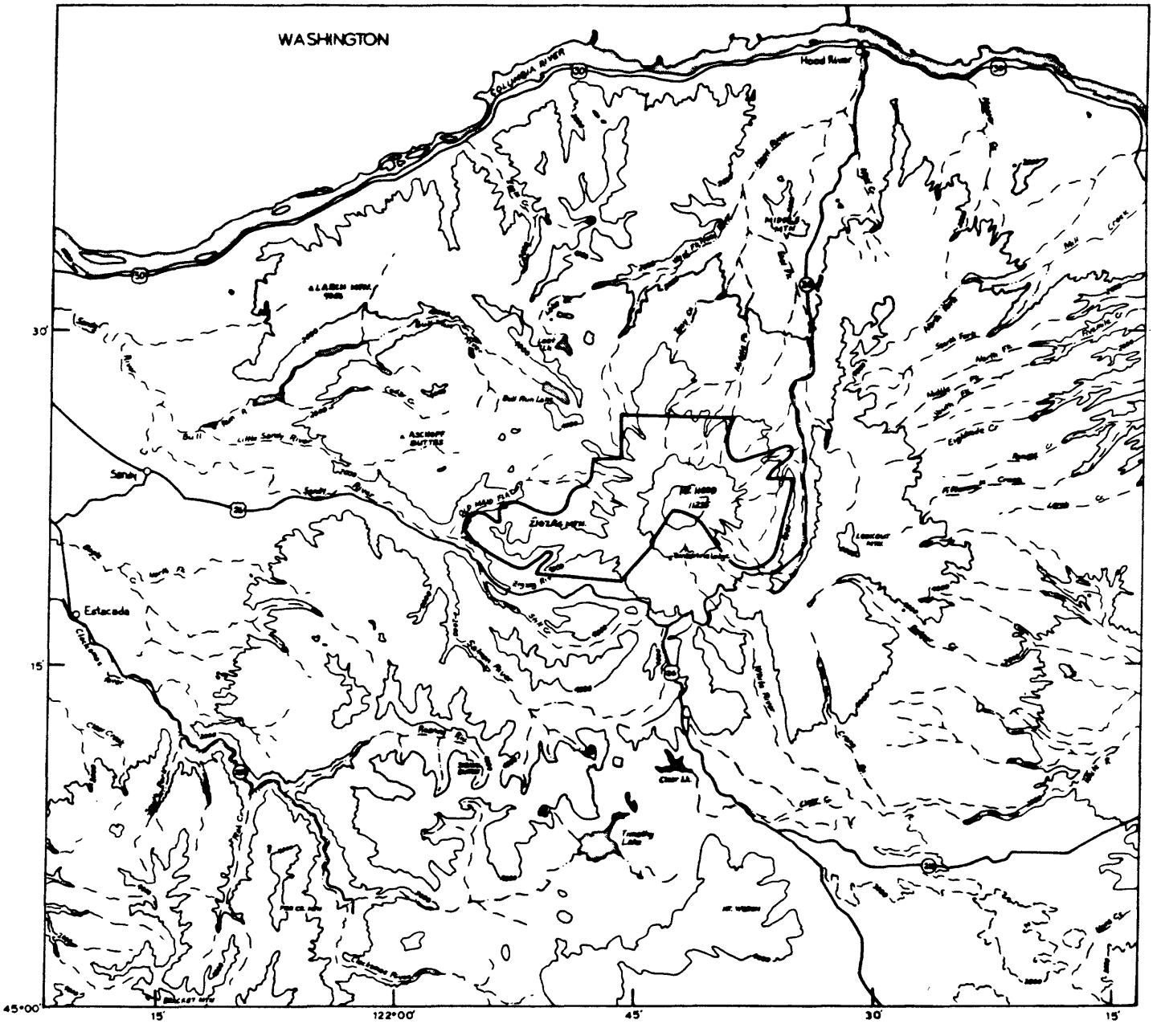

Figure 1.-Location map of the Mount Hood Wilderness area, Oregon

TABLE 1. ANALYTICAL RESULTS FOR UNALTERED ROCK SAMPLES FROM THE MOUNT HOOD WILDERNESS AREA, OREGON.

FIELD #	LAB #	QUADRANGLE	LATITUDE	LONGITUDE	Al %	Fe %	Mg %	Ca %	Na %
79HZ004R	LFI015	MT HOOD SO	45 20.24	121 37.55	7	3	2	3	3
79HZ012R	LFI016	GOV'T CAMP	45 19.26	121 49.16	7	3	2	3	3
79HZ028R	LFI017	BULL RUN LK	45 22.8	121 46.55	7	2	1.5	3	3
79HZ047R	LFI018	GOV'T CAMP	45 21.55	121 47.25	7	3	1	1	3
79WC0010A	LFI148	DOG RIVER	45 23.73	121 33.6	n.a.	5	1.5	3	n.a.
79CS0013	LFI149	DOG RIVER	45 25.08	121 35.4	n.a.	5	2	3	n.a.
79CCP0014	LFI150	CATHEDRAL R	45 24.19	121 39.25	n.a.	5	2	5	n.a.
79CTC0024B	LFI153	BULL RUN LK	45 22.59	121 50.97	n.a.	5	2	3	n.a.
79EH0029	LFI157	RHODODEN	45 19.03	121 53.37	n.a.	5	2	5	n.a.
79CH1047A	LFI159	BULL RUN LK	45 23.13	121 51.32	n.a.	5	2	5	n.a.
79SV0070A	LFL958	CATHEDRAL R	45 22.94	121 44	n.a.	5	1.5	2	n.a.
79MH0074A	LFL959	MT HOOD SO	45 21.47	121 43.48	n.a.	5	1.5	1.5	n.a.

TABLE 1. CONTINUED.

FIELD #	Ti %	Mn ppm	Ag ppm	As ppm	Au ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Cd ppm
79HZ004R	0.5	500	n.d.	n.d.	n.d.	<10	300	<1	n.d.	n.d.
79HZ012R	0.3	300	n.d.	n.d.	n.d.	10	200	1	n.d.	n.d.
79HZ028R	0.3	500	n.d.	n.d.	n.d.	n.d.	200	1	n.d.	n.d.
79HZ047R	0.3	500	n.d.	n.d.	n.d.	10	200	1	n.d.	n.d.
79WC0010A	0.5	700	n.d.	n.d.	n.d.	<10	500	1.5	n.d.	n.d.
79CS0013	0.5	700	n.d.	n.d.	n.d.	<10	300	1	n.d.	n.d.
79CCP0014	0.5	700	n.d.	n.d.	n.d.	<10	300	1	n.d.	n.d.
79CTC0024B	0.5	500	n.d.	n.d.	n.d.	<10	700	1	n.d.	n.d.
79EH0029	0.5	1000	n.d.	n.d.	n.d.	<10	300	1.5	n.d.	n.d.
79CH1047A	0.3	1000	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79SV0070A	0.3	700	n.d.	n.d.	n.d.	10	150	1	n.d.	n.d.
79MH0074A	0.5	700	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.

TABLE 1. CONTINUED.

FIELD #	Co ppm	Cr ppm	Cu ppm	La ppm	Li ppm	Mo ppm	Nb ppm	Ni ppm	Pb ppm	Sb ppm
79HZ004R	30	100	50	n.d.	n.d.	n.d.	n.d.	70	10	n.d
79HZ012R	20	70	n.d.	n.d.	n.d.	n.d.	n.d.	50	20	n.d
79HZ028R	15	50	30	n.d.	n.d.	n.d.	n.d.	20	20	n.d
79HZ047R	20	50	50	n.d.	n.d.	n.d.	n.d.	30	20	n.d
79WC0010A	20	20	20	20	n.a.	n.d.	n.d.	10	10	n.d
79CS0013	30	50	70	n.d.	n.a.	n.d.	n.d.	30	10	n.d
79CCP0014	30	70	30	n.d.	n.a.	n.d.	n.d.	50	<10	n.d
79CTC0024B	20	70	20	20	n.a.	n.d.	n.d.	20	<10	n.d
79EH0029	20	20	20	n.d.	n.a.	n.d.	n.d.	15	10	n.d
79CH1047A	30	100	20	n.d.	n.a.	n.d.	n.d.	70	<10	n.d
79SV0070A	20	30	30	n.d.	n.a.	n.d.	n.d.	20	n.d.	n.d
79MH0074A	20	30	30	n.d.	n.a.	n.d.	n.d.	20	<10	n.d

TABLE 1. CONTINUED.

FIELD #	Sc ppm	Sn ppm	Sr ppm	Th ppm	U ppm	V ppm	W ppm	Y ppm	Zn ppm	Zr ppm
79HZ004R	20	n.d.	500	n.d.	<1	100	n.d.	20	n.d.	100
79HZ012R	30	n.d.	500	n.d.	<1	70	n.d.	30	n.d.	150
79HZ028R	15	n.d.	500	n.d.	<1	70	n.d.	20	n.d.	150
79HZ047R	15	n.d.	300	n.d.	<1	70	n.d.	20	n.d.	100
79WC0010A	10	n.d.	500	n.d.	n.a.	100	n.d.	20	n.d.	150
79CS0013	15	n.d.	500	n.d.	n.a.	100	n.d.	20	n.d.	150
79CCP0014	15	n.d.	500	n.d.	n.a.	150	n.d.	20	n.d.	150
79CTC0024B	15	n.d.	300	n.d.	n.a.	100	n.d.	20	n.d.	150
79EH0029	15	n.d.	300	n.d.	n.a.	100	n.d.	20	n.d.	150
79CH1047A	15	n.d.	300	n.d.	n.a.	100	n.d.	20	n.d.	100
79SV0070A	10	n.d.	700	n.d.	n.a.	150	n.d.	15	n.d.	70
79MH0074A	10	n.d.	500	n.d.	n.a.	100	n.d.	20	n.d.	150

TABLE 2. ANALYTICAL RESULTS FOR ALTERED ROCK SAMPLES FROM THE MOUNT HOOD WILDERNESS AREA, OREGON.

FIELD #	LAB #	QUADRANGLE	LATITUDE	LONGITUDE	Al %	Fe %	Mg %	Ca %	Na %
79LH0087	LFL940	GOV'T CAMP	45 18.42	121 49.72	n.a.	10	1	7	n.a.
79IC2039H	LFL941	BADGER LAKE	45 17.06	121 37.4	n.a.	5	1.5	1	n.a.
79IC2039P	LFL942	BADGER LAKE	45 17.06	121 37.4	n.a.	5	1	1.5	n.a.
79WR0008C	LFI147	MT HOOD SO	45 18.84	121 39.57	n.a.	5	1.5	2	n.a.
79SR0018A	LFI151	GOV'T CAMP	45 22.31	121 45.55	n.a.	3	3	1	n.a.
79SC0019B	LFI152	GOV'T CAMP	45 22.31	121 45.63	n.a.	5	1.5	5	n.a.
79CTC0025	LFI154	BULL RUN LK	45 22.54	121 50.94	n.a.	5	1	3	n.a.
79CTC0026A	LFI155	GOV'T CAMP	45 22.36	121 50.72	n.a.	5	2	3	n.a.
79CTC0027	LFI156	GOV'T CAMP	45 22.49	121 50.82	n.a.	3	0.5	1	n.a.
79EH0032	LFI158	GOV'T CAMP	45 18.9	121 51.8	n.a.	7	2	5	n.a.
79CH1047B	LFI160	BULL RUN LK	45 23.13	121 51.32	n.a.	5	2	5	n.a.
79CH1047C	LFI161	BULL RUN LK	45 23.13	121 51.32	n.a.	5	2	5	n.a.
79BL2012A	LFI162	GOV'T CAMP	45 21.43	121 47.8	n.a.	5	2	2	n.a.
79BL2013A	LFI163	GOV'T CAMP	45 21.37	121 47.84	n.a.	3	1	2	n.a.
79CS2019	LFI164	CATHEDRAL R	45 27.55	121 39.57	n.a.	5	1.5	3	n.a.
79MH0058G	LFL956	MT HOOD SO	45 22.44	121 41.7	n.a.	5	0.7	1	n.a.
79MH0058C	LFL964	MT HOOD SO	45 22.44	121 41.7	n.a.	2	1	1.5	n.a.
79MH0063A	LFL957	MT HOOD SO	45 22.44	121 41.8	n.a.	5	0.7	1	n.a.
79MH0063E	LFL965	MT HOOD SO	45 22.44	121 41.8	n.a.	2	0.05	0.1	n.a.
79SV0075A	LFL960	CATHEDRAL R	45 23.19	121 43.62	n.a.	3	0.2	1	n.a.
79SV0075D	LFL961	CATHEDRAL R	45 23.19	121 43.62	n.a.	5	1.5	2	n.a.
79SV2021	LFL967	CATHEDRAL R	45 23.22	121 43.62	n.a.	7	0.1	1	n.a.
79ZM0079	LFL962	GOV'T CAMP	45 20.65	121 47.19	n.a.	7	3	3	n.a.
79ZM0080	LFL963	GOV'T CAMP	45 20.65	121 47.1	n.a.	7	2	1.5	n.a.
79MH0063L	LFL966	MT HOOD SO	45 22.44	121 41.8	n.a.	3	0.7	1.5	n.a.

TABLE 2. CONTINUED.

FIELD #	Ti %	Mn ppm	As ppm	As ppm	Au ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Cd ppm
79LH0087	0.2	2000	200	500	n.d.	20	n.d.	1.5	n.d.	n.d.
79IC2039H	0.3	700	1.5	n.d.	n.d.	n.d.	500	1	n.d.	n.d.
79IC2039P	0.5	1000	1	n.d.	n.d.	n.d.	1000	1.5	n.d.	n.d.
79WR0008C	0.5	700	n.d.	n.d.	n.d.	10	1500	2	n.d.	n.d.
79SR0018A	0.3	100	n.d.	n.d.	n.d.	10	100	1	n.d.	n.d.
79SC0019B	0.5	300	n.d.	n.d.	n.d.	<10	500	1	n.d.	n.d.
79CTC0025	0.5	500	2	n.d.	n.d.	<10	70	1	n.d.	n.d.
79CTC0026A	0.5	500	0.5	n.d.	n.d.	<10	500	1	n.d.	n.d.
79CTC0027	0.5	70	<0.5	700	n.d.	10	700	n.d.	n.d.	n.d.
79EH0032	0.5	700	n.d.	n.d.	n.d.	<10	300	1	n.d.	n.d.
79CH1047B	0.3	700	n.d.	n.d.	n.d.	<10	300	1	n.d.	n.d.
79CH1047C	0.3	1500	n.d.	n.d.	n.d.	<10	300	1	n.d.	n.d.
79BL2012A	0.5	1000	n.d.	n.d.	n.d.	10	500	1	n.d.	n.d.
79BL2013A	0.1	2000	15	n.d.	n.d.	<10	200	n.d.	n.d.	200
79CS2019	0.5	700	n.d.	n.d.	n.d.	10	500	1.5	n.d.	n.d.
79MH0058G	0.3	300	n.d.	n.d.	n.d.	10	500	<1	n.d.	n.d.
79MH0058C	0.3	200	n.d.	n.d.	n.d.	20	300	1	n.d.	n.d.
79MH0063A	0.3	50	n.d.	n.d.	n.d.	15	300	1	n.d.	n.d.
79MH0063E	0.2	500	n.d.	n.d.	n.d.	10	200	n.d.	n.d.	n.d.
79SV0075A	0.5	300	n.d.	n.d.	n.d.	10	300	<1	n.d.	n.d.
79SV0075D	0.5	2000	n.d.	n.d.	n.d.	<10	300	1.5	n.d.	n.d.
79SV2021	0.3	20	n.d.	n.d.	n.d.	10	300	n.d.	n.d.	n.d.
79ZM0079	0.5	1000	n.d.	n.d.	n.d.	n.d.	150	n.d.	n.d.	n.d.
79ZM0080	0.5	2000	n.d.	n.d.	n.d.	10	300	n.d.	n.d.	n.d.
79MH0063L	0.5	200	n.d.	n.d.	n.d.	10	300	2	n.d.	n.d.

TABLE 2. CONTINUED.

FIELD #	Co ppm	Cr ppm	Cu ppm	La ppm	Li ppm	Mo ppm	Nb ppm	Ni ppm	Pb ppm	Sb ppm
79LH0087	15	30	>20000	n.d.	n.a.	n.d.	n.d.	50	500	n.d.
79IC2039H	15	30	200	20	n.a.	<5	n.d.	30	15	n.d.
79IC2039P	20	10	100	20	n.a.	n.d.	n.d.	10	15	n.d.
79WR0008C	15	n.d.	15	30	n.a.	n.d.	<20	n.d.	15	n.d.
79SR0018A	10	70	100	n.d.	n.a.	20	n.d.	15	15	n.d.
79SC0019B	20	70	30	30	n.a.	5	n.d.	20	10	n.d.
79CTC0025	20	50	2000	n.d.	n.a.	n.d.	n.d.	20	<10	n.d.
79CTC0026A	30	70	200	n.d.	n.a.	n.d.	n.d.	30	10	n.d.
79CTC0027	15	70	20	20	n.a.	n.d.	n.d.	20	n.d.	n.d.
79EH0032	30	100	50	n.d.	n.a.	n.d.	n.d.	70	10	n.d.
79CH1047B	20	150	50	n.d.	n.a.	n.d.	n.d.	100	<10	n.d.
79CH1047C	20	100	50	n.d.	n.a.	n.d.	n.d.	70	<10	n.d.
79BL2012A	20	70	10	30	n.a.	n.d.	n.d.	50	15	n.d.
79BL2013A	10	20	5000	n.d.	n.a.	50	n.d.	7	7000	n.d.
79CS2019	20	30	150	n.d.	n.a.	<5	n.d.	15	50	n.d.
79MH0058G	15	20	70	20	n.a.	n.d.	n.d.	15	10	n.d.
79MH0058C	30	30	70	n.d.	n.a.	n.d.	n.d.	15	<10	n.d.
79MH0063A	15	20	30	n.d.	n.a.	n.d.	n.d.	15	<10	n.d.
79MH0063E	n.d.	<10	20	n.d.	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.
79SV0075A	15	30	20	n.d.	n.a.	n.d.	n.d.	15	<10	n.d.
79SV0075D	20	30	50	n.d.	n.a.	n.d.	n.d.	30	<10	n.d.
79SV2021	n.d.	30	20	n.d.	n.a.	7	n.d.	n.d.	15	n.d.
79ZM0079	50	200	50	n.d.	n.a.	n.d.	n.d.	150	n.d.	n.d.
79ZM0080	30	150	50	n.d.	n.a.	n.d.	n.d.	70	10	n.d.
79MH0063L	30	70	50	20	n.a.	n.d.	n.d.	50	n.d.	n.d.

TABLE 2. CONTINUED.

FIELD #	Sc ppm	Sn ppm	Sr ppm	Th ppm	U ppm	V ppm	W ppm	Y ppm	Zn ppm	Zr ppm
79LH0087	5	50	1000	n.d.	n.a.	100	n.d.	10	1000	50
79IC2039H	7	n.d.	300	n.d.	n.a.	100	n.d.	20	n.d.	150
79IC2039P	10	n.d.	500	n.d.	n.a.	100	n.d.	20	n.d.	200
79WR0008C	10	n.d.	200	n.d.	n.a.	70	n.d.	30	n.d.	200
79SR0018A	15	n.d.	<100	n.d.	n.a.	100	n.d.	10	n.d.	100
79SC0019B	15	n.d.	700	n.d.	n.a.	150	n.d.	20	n.d.	200
79CTC0025	10	n.d.	200	n.d.	n.a.	70	n.d.	10	n.d.	100
79CTC0026A	15	n.d.	500	n.d.	n.a.	150	n.d.	20	n.d.	150
79CTC0027	15	n.d.	100	n.d.	n.a.	150	<50	20	n.d.	150
79EH0032	15	n.d.	500	n.d.	n.a.	150	n.d.	30	n.d.	150
79CH1047B	15	n.d.	500	n.d.	n.a.	100	n.d.	20	n.d.	100
79CH1047C	15	n.d.	500	n.d.	n.a.	100	n.d.	20	n.d.	150
79BL2012A	15	n.d.	200	n.d.	n.a.	150	n.d.	30	n.d.	150
79BL2013A	5	n.d.	n.d.	n.d.	n.a.	30	n.d.	n.d.	>10000	50
79CS2019	15	n.d.	500	n.d.	n.a.	150	n.d.	20	n.d.	150
79MH0058G	7	n.d.	300	n.d.	n.a.	100	n.d.	15	n.d.	100
79MH0058C	15	n.d.	500	n.d.	n.a.	150	n.d.	10	n.d.	150
79MH0063A	10	n.d.	300	n.d.	n.a.	100	n.d.	15	n.d.	100
79MH0063E	n.d.	n.d.	150	n.d.	n.a.	50	n.d.	n.d.	n.d.	100
79SV0075A	7	n.d.	300	n.d.	n.a.	100	n.d.	15	n.d.	200
79SV0075D	10	n.d.	500	n.d.	n.a.	100	n.d.	20	200	100
79SV2021	7	n.d.	1000	n.d.	n.a.	70	n.d.	n.d.	n.d.	100
79ZM0079	15	n.d.	700	n.d.	n.a.	100	n.d.	20	n.d.	70
79ZM0080	15	n.d.	500	n.d.	n.a.	200	n.d.	20	n.d.	200
79MH0063L	20	n.d.	500	n.d.	n.a.	150	n.d.	50	n.d.	100

TABLE 3. ANALYTICAL RESULTS FOR STREAM SEDIMENT SAMPLES FROM THE MOUNT HOOD WILDERNESS AREA, OREGON.

FIELD #	LAB #	QUADRANGLE	LATITUDE	LONGITUDE	Al %	Fe %	Mg %	Ca %	Na %
79HZ001S	LFI052	MT HOOD SO	45 19.82	121 37.92	7	7	1.5	2	2
79HZ004S	LFI053	MT HOOD SO	45 20.24	121 37.55	7	10	2	1.5	3
79HZ005S	LFI059	RHODODEN	45 20.23	121 54.75	7	5	1.5	2	3
79HZ008S	LFI030	GOV'T CAMP	45 21.34	121 52.22	6	3	1.5	2	1.5
79HZ009S	LFI040	BULL RUN LK	45 22.64	121 51.03	6	3	1.5	1.5	2
79HZ010S	LFI060	RHODODEN	45 21.98	121 55.06	7	5	1.5	3	3
79HZ011S	LFI031	GOV'T CAMP	45 19.33	121 49.22	5	3	1	0.5	1.5
79HZ014S	LFI057	BADGER LAKE	45 20.49	121 36.86	7	5	1.5	2	2
79HZ015S	LFI058	BADGER LAKE	45 21.15	121 36.56	7	7	1.5	2	2
79HZ018S	LFI054	DOG RIVER	45 22.72	121 35.86	7	10	2	2	3
79HZ020S	LFI032	GOV'T CAMP	45 18.68	121 46.37	5	10	1	0.5	1.5
79HZ022S	LFI033	GOV'T CAMP	45 18.95	121 48.22	7	5	1.5	3	3
79HZ023S	LFI034	GOV'T CAMP	45 19.34	121 45.99	7	5	2	3	3
79HZ025S	LFI041	BULL RUN LK	45 22.88	121 48.96	6	3	1.5	2	2
79HZ026S	LFI042	BULL RUN LK	45 22.55	121 46.65	6	10	1.5	2	2
79HZ027S	LFI043	BULL RUN LK	45 22.52	121 46.72	6	10	1.5	3	2
79HZ028S	LFI044	BULL RUN LK	45 22.8	121 46.55	7	3	1.5	2	3
79HZ029S	LFI045	BULL RUN LK	45 23.2	121 47.25	7	10	2	2	3
79HZ030S	LFI046	BULL RUN LK	45 23.7	121 37.39	7	10	1.5	2	3
79HZ031S	LFI047	BULL RUN LK	45 23.82	121 47.42	7	7	1.5	2	2
79HZ032S	LFI048	BULL RUN LK	45 23.15	121 47.72	7	15	1.5	2	3
79HZ033S	LFI049	BULL RUN LK	45 24.99	121 45.30	7	7	1.5	3	2
79HZ034S	LFI050	BULL RUN LK	45 24.94	121 45.15	7	5	1.5	2	3
79HZ035S	LFI051	BULL RUN LK	45 28.14	121 46.37	7	7	2	2	3
79HZ039S	LFI055	DOG RIVER	45 24.65	121 35.22	7	10	2	2	3
79HZ041S	LFI035	GOV'T CAMP	45 20.36	121 49.93	6	5	1.5	2	2
79HZ043S	LFI036	GOV'T CAMP	45 18.79	121 51.82	6	3	1.5	2	2

TABLE 3. CONTINUED.

FIELD #	LAB #	QUADRANGLE	LATITUDE	LONGITUDE	Al %	Fe %	Mg %	Ca %	Na %
79HZ045S	LFI061	RHODODEN	45 22.25	121 58.76	7	7	3	3	3
79HZ046S	LFI037	GOV'T CAMP	45 21.43	121 47.61	5	3	1.5	2	2
79HZ047S	LFI038	GOV'T CAMP	45 21.55	121 47.25	7	5	1.5	2	3
79HZ049S	LFI039	GOV'T CAMP	45 21.73	121 48.62	6	3	1	1.5	3
79HZ050S	LFI056	DOG RIVER	45 23.88	121 35.53	7	5	1.5	2	3
79HZ050S	LFL261	DOG RIVER	45 23.88	121 35.53	n.a.	5	1.5	2	n.a.
79HZ052S	LFI445	GOV'T CAMP	45 22.31	121 45.55	n.a.	7	2	5	n.a.
79HZ053S	LFI446	GOV'T CAMP	45 21.52	121 47.8	n.a.	5	2	3	n.a.
79HZ054S	LFI447	GOV'T CAMP	45 22.46	121 51.4	n.a.	5	2	3	n.a.
79HZ055S	LFI448	CATHEDRAL R	45 26.84	121 40.61	n.a.	10	2	5	n.a.
79HZ056S	LFI449	CATHEDRAL R	45 27.30	121 38.16	n.a.	10	2	5	n.a.
79HZ057S	LFI450	MT HOOD SO	45 19.73	121 40.58	n.a.	7	2	5	n.a.
79HZ058S	LFI451	MT HOOD SO	45 21.05	121 37.7	n.a.	10	2	5	n.a.
79HZ060S	LFL968	CATHEDRAL R	45 23.83	121 38.5	n.a.	5	2	2	n.a.
79HZ061S	LFL969	CATHEDRAL R	45 24.04	121 37.77	n.a.	7	2	2	n.a.
79HZ062S	LFL970	CATHEDRAL R	45 24.52	121 41.35	n.a.	10	2	1.5	n.a.
79HZ063S	LFL971	CATHEDRAL R	45 24.43	121 43.33	n.a.	7	2	2	n.a.
79HZ064S	LFL972	CATHEDRAL R	45 24.91	121 44.40	n.a.	5	3	2	n.a.
79HZ065S	LFL973	BADGER LAKE	45 24.3	121 44.73	n.a.	5	2	2	n.a.
79HZ066S	LFL974	BADGER LAKE	45 24.28	121 44.76	n.a.	5	2	2	n.a.
79HZ067S	LFL975	MT HOOD SO	45 20.31	121 43.5	n.a.	10	2	1.5	n.a.
79HZ068S	LFL262	MT HOOD SO	45 20.75	121 44.35	n.a.	10	2	1	n.a.
79HZ069S	LFL263	GOV'T CAMP	45 20.56	121 46.45	n.a.	5	2	2	n.a.
79HZ070S	LFL264	CATHEDRAL R	45 23.5	121 45.02	n.a.	15	2	1.5	n.a.
79HZ071S	LFL265	CATHEDRAL R	45 23.53	121 45.03	n.a.	10	2	2	n.a.
79HZ072S	LFL266	CATHEDRAL R	45 24.34	121 40.53	n.a.	10	2	2	n.a.
79HZ073S	LFL267	CATHEDRAL R	45 24.34	121 42.35	n.a.	7	2	2	n.a.

TABLE 3. CONTINUED.

FIELD #	Ti %	Mn ppm	Ag ppm	As ppm	Au ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Cd ppm
79HZ045S	1	1000	n.d.	n.d.	n.d.	15	300	<1	n.d.	n.d.
79HZ046S	0.3	700	n.d.	n.d.	n.d.	<10	200	2	n.d.	n.d.
79HZ047S	0.5	700	n.d.	n.d.	n.d.	<10	300	1	n.d.	n.d.
79HZ049S	0.3	700	1	n.d.	n.d.	<10	300	2	n.d.	n.d.
79HZ050S	0.3	700	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ050S	0.5	1500	n.d.	n.d.	n.d.	n.d.	300	<1	n.d.	n.d.
79HZ052S	1	1000	n.d.	n.d.	n.d.	<10	500	1	n.d.	n.d.
79HZ053S	0.5	1000	0.5	n.d.	n.d.	15	500	1.5	n.d.	n.d.
79HZ054S	0.7	1000	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ055S	1	1500	n.d.	n.d.	n.d.	10	500	1	n.d.	n.d.
79HZ056S	1	1000	n.d.	n.d.	n.d.	10	500	1	n.d.	n.d.
79HZ057S	1	1000	n.d.	n.d.	n.d.	10	500	1	n.d.	n.d.
79HZ058S	1	1000	n.d.	n.d.	n.d.	10	500	1	n.d.	n.d.
79HZ060S	0.7	1000	n.d.	n.d.	n.d.	n.d.	300	n.d.	n.d.	n.d.
79HZ061S	0.7	1000	n.d.	n.d.	n.d.	10	300	n.d.	n.d.	n.d.
79HZ062S	1	1000	n.d.	n.d.	n.d.	n.d.	200	n.d.	n.d.	n.d.
79HZ063S	0.5	700	n.d.	n.d.	n.d.	n.d.	300	n.d.	n.d.	n.d.
79HZ064S	0.7	1000	n.d.	n.d.	n.d.	n.d.	300	n.d.	n.d.	n.d.
79HZ065S	0.7	1000	n.d.	n.d.	n.d.	n.d.	300	n.d.	n.d.	n.d.
79HZ066S	0.5	700	n.d.	n.d.	n.d.	n.d.	300	<1	n.d.	n.d.
79HZ067S	1	1000	n.d.	n.d.	n.d.	10	300	n.d.	n.d.	n.d.
79HZ068S	1	2000	n.d.	n.d.	n.d.	n.d.	200	n.d.	n.d.	n.d.
79HZ069S	0.5	1000	n.d.	n.d.	n.d.	<10	300	1	n.d.	n.d.
79HZ070S	1	2000	n.d.	n.d.	n.d.	n.d.	300	n.d.	n.d.	n.d.
79HZ071S	1	1500	n.d.	n.d.	n.d.	n.d.	300	n.d.	n.d.	n.d.
79HZ072S	0.7	1000	n.d.	n.d.	n.d.	n.d.	200	n.d.	n.d.	n.d.
79HZ073S	0.7	1000	n.d.	n.d.	n.d.	<10	300	n.d.	n.d.	n.d.

TABLE 3. CONTINUED.

FIELD #	Ti %	Mn PPM	Ag PPM	As PPM	Au PPM	B PPM	Ba PPM	Be PPM	Bi PPM	Cd PPM
79HZ001S	0.002	700	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ004S	0.7	1000	n.d.	n.d.	n.d.	10	300	<1	n.d.	n.d.
79HZ005S	0.3	1000	n.d.	n.d.	n.d.	10	200	1	n.d.	n.d.
79HZ008S	0.3	700	n.d.	n.d.	n.d.	10	200	2	n.d.	n.d.
79HZ009S	0.3	700	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ010S	0.3	700	n.d.	n.d.	n.d.	10	300	2	n.d.	n.d.
79HZ011S	0.3	700	n.d.	n.d.	n.d.	10	300	2	n.d.	n.d.
79HZ014S	0.3	1000	n.d.	n.d.	n.d.	10	300	2	n.d.	n.d.
79HZ015S	0.5	700	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ018S	0.5	700	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ020S	<1	700	n.d.	n.d.	n.d.	15	200	n.d.	n.d.	n.d.
79HZ022S	0.5	700	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ023S	0.5	700	n.d.	n.d.	n.d.	10	300	2	n.d.	n.d.
79HZ025S	0.3	700	n.d.	n.d.	n.d.	10	300	2	n.d.	n.d.
79HZ026S	1	700	n.d.	n.d.	n.d.	15	300	1	n.d.	n.d.
79HZ027S	1	1000	n.d.	n.d.	n.d.	10	200	1	n.d.	n.d.
79HZ028S	0.3	700	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ029S	1	700	n.d.	n.d.	n.d.	10	300	n.d.	n.d.	n.d.
79HZ030S	0.3	1000	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ031S	0.3	1500	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ032S	0.7	700	n.d.	n.d.	n.d.	10	500	1	n.d.	n.d.
79HZ033S	0.5	700	n.d.	n.d.	n.d.	10	300	2	n.d.	n.d.
79HZ034S	0.5	700	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ035S	0.7	700	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ039S	0.002	1000	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ041S	0.3	700	n.d.	n.d.	n.d.	10	300	1	n.d.	n.d.
79HZ043S	0.3	700	n.d.	n.d.	n.d.	10	200	2	n.d.	n.d.

TABLE 3. CONTINUED.

FIELD #	Co ppm	Cr ppm	Cu ppm	La ppm	Li ppm	Mo ppm	Nb ppm	Ni ppm	Pb ppm	Sb ppm
79HZ001S	30	150	30	20	n.d.	n.d.	n.d.	50	10	n.d.
79HZ004S	70	150	30	20	n.d.	n.d.	n.d.	50	10	n.d.
79HZ005S	30	150	50	n.d.	n.d.	n.d.	n.d.	50	20	n.d.
79HZ008S	30	150	50	n.d.	n.d.	n.d.	n.d.	70	10	n.d.
79HZ009S	30	150	50	20	n.d.	n.d.	n.d.	50	20	n.d.
79HZ010S	30	150	50	n.d.	n.d.	n.d.	n.d.	70	20	n.d.
79HZ011S	30	100	30	20	n.d.	n.d.	20	50	50	n.d.
79HZ014S	30	70	20	20	n.d.	n.d.	n.d.	30	20	n.d.
79HZ015S	30	100	20	20	n.d.	n.d.	n.d.	50	20	n.d.
79HZ018S	50	150	30	n.d.	n.d.	n.d.	n.d.	70	20	n.d.
79HZ020S	70	200	50	20	n.d.	n.d.	20	70	n.d.	n.d.
79HZ022S	50	100	30	n.d.	n.d.	n.d.	n.d.	50	10	n.d.
79HZ023S	50	100	20	n.d.	n.d.	n.d.	10	50	20	n.d.
79HZ025S	30	70	30	20	n.d.	n.d.	n.d.	30	10	n.d.
79HZ026S	50	150	30	20	n.d.	n.d.	n.d.	70	<10	n.d.
79HZ027S	50	150	30	n.d.	n.d.	n.d.	n.d.	70	<10	n.d.
79HZ028S	30	70	20	20	n.d.	n.d.	n.d.	30	10	n.d.
79HZ029S	50	150	30	n.d.	n.d.	n.d.	20	70	10	n.d.
79HZ030S	50	150	30	n.d.	n.d.	n.d.	n.d.	50	10	n.d.
79HZ031S	50	100	30	n.d.	n.d.	n.d.	n.d.	50	<10	n.d.
79HZ032S	70	150	30	n.d.	n.d.	n.d.	n.d.	70	n.d.	n.d.
79HZ033S	30	70	20	20	n.d.	n.d.	n.d.	50	10	n.d.
79HZ034S	30	70	30	n.d.	n.d.	n.d.	n.d.	30	20	n.d.
79HZ035S	30	150	30	20	n.d.	n.d.	n.d.	50	20	n.d.
79HZ039S	50	150	30	20	n.d.	n.d.	n.d.	70	20	n.d.
79HZ041S	30	150	50	20	n.d.	n.d.	n.d.	50	20	n.d.
79HZ043S	30	100	30	n.d.	n.d.	n.d.	n.d.	50	30	n.d.

TABLE 3. CONTINUED.

FIELD #	Co ppm	Cr ppm	Cu ppm	La ppm	Li ppm	Mo ppm	Nb ppm	Ni ppm	Pb ppm	Sb ppm
79HZ045S	70	300	70	n.d.	n.d.	n.d.	n.d.	100	20	n.d.
79HZ046S	20	100	30	20	n.d.	n.d.	n.d.	50	20	n.d.
79HZ047S	50	150	30	20	n.d.	n.d.	n.d.	70	30	n.d.
79HZ049S	20	100	50	20	n.d.	n.d.	n.d.	30	30	n.d.
79HZ050S	30	70	20	n.d.	n.d.	n.d.	n.d.	30	20	n.d.
79HZ050S	20	30	50	n.d.	n.a.	n.d.	n.d.	20	<10	n.d.
79HZ052S	30	70	50	n.d.	n.a.	n.d.	n.d.	50	10	n.d.
79HZ053S	30	70	70	n.d.	n.a.	5	n.d.	50	100	n.d.
79HZ054S	30	150	50	n.d.	n.a.	n.d.	n. d.	50	10	n.d.
79HZ055S	50	100	50	n.d.	n.a.	n.d.	n.d.	70	15	n.d.
79HZ056S	50	150	50	n.d.	n.a.	n.d.	n.d.	50	10	n.d.
79HZ057S	30	70	50	n.d.	n.a.	n.d.	n.d.	50	15	n.d.
79HZ058S	50	70	50	n.d.	n.a.	n.d.	<20	50	10	n.d.
79HZ060S	30	50	30	n.d.	n.a.	n.d.	n.d.	20	10	n.d.
79HZ061S	30	70	50	n.d.	n.a.	n.d.	n.d.	30	10	n.d.
79HZ062S	50	100	50	n.d.	n.a.	n.d.	n.d.	50	<10	n.d.
79HZ063S	20	50	20	n.d.	n.a.	n.d.	n.d.	30	<10	n.d.
79HZ064S	30	70	30	n.d.	n.a.	n.d.	n.d.	30	<10	n.d.
79HZ065S	30	70	30	n.d.	n.a.	n.d.	n.d.	30	<10	n.d.
79HZ066S	20	30	30	n.d.	n.a.	n.d.	n.d.	20	<10	n.d.
79HZ067S	30	100	50	n.d.	n.a.	n.d.	n.d.	50	<10	n.d.
79HZ068S	50	100	50	n.d.	n.a.	n.d.	n.d.	50	n.d.	n.d.
79HZ069S	20	50	30	n.d.	n.a.	n.d.	n.d.	20	<10	n.d.
79HZ070S	50	150	50	n.d.	n.a.	n.d.	n.d.	50	n.d.	n.d.
79HZ071S	30	70	50	n.d.	n.a.	n.d.	n.d.	30	n.d.	n.d.
79HZ072S	30	70	50	n.d.	n.a.	n.d.	n.d.	50	n.d.	n.d.
79HZ073S	20	50	30	n.d.	n.a.	n.d.	n.d.	30	20	n.d.

TABLE 3. CONTINUED.

FIELD #	Sc	Sn	Sr	Th	U	V	W	Y	Zn	Zr
	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
79HZ001S	30	n.d.	300	n.d.	<1	300	n.d.	30	300	150
79HZ004S	20	n.d.	300	n.d.	<1	300	n.d.	20	200	70
79HZ005S	15	n.d.	300	n.d.	n.a.	100	n.d.	10	<200	50
79HZ008S	20	n.d.	300	n.d.	<1	150	n.d.	20	n.d.	100
79HZ009S	20	n.d.	300	n.d.	<1	100	n.d.	20	n.d.	100
79HZ010S	20	n.d.	300	n.d.	n.a.	100	n.d.	10	<200	100
79HZ011S	15	n.d.	300	n.d.	<1	100	n.d.	10	300	50
79HZ014S	15	n.d.	500	n.d.	n.a.	100	n.d.	10	<200	50
79HZ015S	20	n.d.	300	n.d.	n.a.	150	n.d.	20	200	100
79HZ018S	20	n.d.	500	n.d.	n.a.	200	n.d.	20	<200	100
79HZ020S	20	n.d.	200	n.d.	n.a.	500	n.d.	20	500	100
79HZ022S	20	n.d.	500	n.d.	3	200	n.d.	20	200	100
79HZ023S	20	n.d.	500	n.d.	<1	100	n.d.	20	200	70
79HZ025S	15	20	500	n.d.	<1	100	n.d.	10	<200	100
79HZ026S	30	n.d.	300	n.d.	<1	300	n.d.	20	200	150
79HZ027S	20	n.d.	300	n.d.	<1	200	n.d.	10	300	70
79HZ028S	15	n.d.	500	n.d.	<1	100	n.d.	20	<200	100
79HZ029S	20	n.d.	300	n.d.	<1	200	n.d.	30	<200	100
79HZ030S	15	n.d.	700	n.d.	<1	150	n.d.	10	<200	50
79HZ031S	15	n.d.	500	n.d.	<1	150	n.d.	10	200	50
79HZ032S	20	n.d.	500	n.d.	2	300	n.d.	30	300	70
79HZ033S	20	n.d.	700	n.d.	<1	200	n.d.	10	<200	100
79HZ034S	15	n.d.	500	n.d.	<1	150	n.d.	20	<200	100
79HZ035S	20	n.d.	700	n.d.	<1	200	n.d.	20	<200	100
79HZ039S	30	n.d.	300	n.d.	n.a.	200	n.d.	20	200	150
79HZ041S	20	n.d.	300	n.d.	<1	100	n.d.	20	n.d.	100
79HZ043S	20	n.d.	300	n.d.	<1	100	n.d.	20	<200	100

TABLE 3. CONTINUED.

FIELD #	Sc ppm	Sn ppm	Sr ppm	Th ppm	U ppm	V ppm	W ppm	Y ppm	Zn ppm	Zr ppm
79HZ045S	30	n.d.	300	n.d.	n.a.	150	n.d.	20	<200	100
79HZ046S	20	n.d.	300	n.d.	<1	100	n.d.	20	n.d.	100
79HZ047S	20	n.d.	300	n.d.	<1	200	n.d.	30	<200	100
79HZ049S	15	n.d.	300	n.d.	<1	100	n.d.	30	200	100
79HZ050S	15	n.d.	500	n.d.	n.a.	100	n.d.	10	<200	70
79HZ050S	10	n.d.	700	n.d.	n.a.	100	n.d.	15	n.d.	100
79HZ052S	15	n.d.	700	n.d.	n.a.	200	n.d.	20	n.d.	150
79HZ053S	15	n.d.	700	n.d.	n.a.	150	n.d.	20	n.d.	150
79HZ054S	15	n.d.	700	n.d.	n.a.	200	n.d.	20	n.d.	100
79HZ055S	20	n.d.	1000	n.d.	n.a.	300	n.d.	20	n.d.	100
79HZ056S	20	n.d.	1500	n.d.	n.a.	300	n.d.	20	n.d.	150
79HZ057S	20	n.d.	1000	n.d.	n.a.	200	n.d.	20	n.d.	200
79HZ058S	15	n.d.	1000	n.d.	n.a.	300	n.d.	20	n.d.	200
79HZ060S	10	n.d.	500	n.d.	n.a.	200	n.d.	20	n.d.	100
79HZ061S	15	n.d.	500	n.d.	n.a.	200	n.d.	20	n.d.	100
79HZ062S	15	n.d.	500	n.d.	n.a.	300	n.d.	15	n.d.	100
79HZ063S	10	n.d.	500	n.d.	n.a.	150	n.d.	20	n.d.	100
79HZ064S	15	n.d.	500	n.d.	n.a.	200	n.d.	20	n.d.	100
79HZ065S	10	n.d.	500	n.d.	n.a.	200	n.d.	20	n.d.	100
79HZ066S	10	n.d.	500	n.d.	n.a.	150	n.d.	15	n.d.	100
79HZ067S	15	n.d.	500	n.d.	n.a.	300	n.d.	20	n.d.	100
79HZ068S	15	n.d.	500	n.d.	n.a.	500	n.d.	15	200	200
79HZ069S	10	n.d.	500	n.d.	n.a.	150	n.d.	15	n.d.	100
79HZ070S	15	n.d.	500	n.d.	n.a.	500	n.d.	10	n.d.	100
79HZ071S	15	n.d.	500	n.d.	n.a.	200	n.d.	15	n.d.	100
79HZ072S	15	n.d.	500	n.d.	n.a.	200	n.d.	15	n.d.	100
79HZ073S	15	n.d.	500	n.d.	n.a.	200	n.d.	15	n.d.	100

TABLE 4. ANALYTICAL RESULTS FOR PAN CONCENTRATE SAMPLES FROM THE MOUNT HOOD WILDERNESS AREA, OREGON.

FIELD #	LAB #	QUADRANGLE	LATITUDE	LONGITUDE	Al %	Fe %	Mg %	Ca %	Na %
79HZ001C	LFB586	MT HOOD SO	45 19.82	121 37.92	n.a.	7	5	10	n.a.
79HZ002C	LFB587	MT HOOD SO	45 19.89	121 37.78	n.a.	2	0.5	10	n.a.
79HZ003C	LFB588	MT HOOD SO	45 20.02	121 37.78	n.a.	10	5	10	n.a.
79HZ004C	LFB589	MT HOOD SO	45 20.24	121 37.55	n.a.	5	2	10	n.a.
79HZ005C	LFI001	RHODODEN	45 20.23	121 54.75	n.a.	7	7	10	n.a.
79HZ006C	LFI002	RHODODEN	45 20.56	121 55.21	n.a.	7	10	10	n.a.
79HZ007C	LFB557	GOV'T CAMP	45 21.36	121 52.18	n.a.	7	7	10	n.a.
79HZ008C	LFB558	GOV'T CAMP	45 21.34	121 52.22	n.a.	7	5	7	n.a.
79HZ009C	LFB574	BULL RUN LK	45 22.64	121 51.03	n.a.	7	5	10	n.a.
79HZ010C	LFI003	RHODODEN	45 21.98	121 55.06	n.a.	7	5	7	n.a.
79HZ011C	LFB559	GOV'T CAMP	45 19.33	121 49.22	n.a.	7	1.5	5	n.a.
79HZ012C	LFB560	GOV'T CAMP	45 19.26	121 49.16	n.a.	7	5	7	n.a.
79HZ013C	LFI004	RHODODEN	45 19.8	121 53.85	n.a.	10	10	15	n.a.
79HZ014C	LFB590	BADGER LAKE	45 20.49	121 36.86	n.a.	10	7	7	n.a.
79HZ015C	LFB591	BADGER LAKE	45 21.15	121 36.56	n.a.	10	7	7	n.a.
79HZ016C	LFB592	BADGER LAKE	45 21.12	121 36.56	n.a.	7	5	10	n.a.
79HZ017C	LFI007	DOG RIVER	45 22.83	121 35.74	n.a.	20	7	5	n.a.
79HZ018C	LFI008	DOG RIVER	45 22.72	121 35.86	n.a.	10	7	10	n.a.
79HZ019C	LFB561	GOV'T CAMP	45 18.65	121 46.36	n.a.	7	5	3	n.a.
79HZ020C	LFB562	GOV'T CAMP	45 18.68	121 46.37	n.a.	7	5	3	n.a.
79HZ021C	LFB563	GOV'T CAMP	45 19.01	121 48.1	n.a.	2	1	10	n.a.
79HZ022C	LFB564	GOV'T CAMP	45 18.95	121 48.22	n.a.	7	5	5	n.a.
79HZ023C	LFB565	GOV'T CAMP	45 19.34	121 45.97	n.a.	10	7	5	n.a.
79HZ024C	LFB566	GOV'T CAMP	45 19.21	121 45.91	n.a.	7	3	5	n.a.
79HZ025C	LFB575	BULL RUN LK	45 22.88	121 48.96	n.a.	2	2	5	n.a.

TABLE 4. CONTINUED.

FIELD #	LAB #	QUADRANGLE	LATITUDE	LONGITUDE	Al %	Fe %	Mg %	Ca %	Na %
79HZ026C	LFB576	BULL RUN LK	45 22.55	121 46.65	n.a.	7	1	5	n.a
79HZ027C	LFB577	BULL RUN LK	45 22.52	121 46.72	n.a.	3	1.5	7	n.a
79HZ028C	LFB578	BULL RUN LK	45 22.8	121 46.55	n.a.	5	2	7	n.a
79HZ029C	LFB579	BULL RUN LK	45 23.2	121 47.25	n.a.	2	1	7	n.a
79HZ030C	LFB580	BULL RUN LK	45 23.7	121 37.39	n.a.	5	2	7	n.a
79HZ031C	LFB581	BULL RUN LK	45 23.82	121 47.42	n.a.	5	2	7	n.a
79HZ032C	LFB582	BULL RUN LK	45 23.15	121 47.72	n.a.	10	3	5	n.a
79HZ033C	LFB583	BULL RUN LK	45 24.99	121 45.3	n.a.	2	1.5	5	n.a
79HZ034C	LFB584	BULL RUN LK	45 24.94	121 45.15	n.a.	7	3	7	n.a
79HZ035C	LFB585	BULL RUN LK	45 28.14	121 46.37	n.a.	2	0.7	5	n.a
79HZ036C	LFI012	CATHEDRAL R	45 26.7	121 44.9	n.a.	5	3	7	n.a
79HZ037C	LFI013	CATHEDRAL R	45 24.1	121 42.62	n.a.	5	3	10	n.a
79HZ038C	LFI014	CATHEDRAL R	45 26.06	121 40.03	n.a.	5	2	10	n.a
79HZ039C	LFI009	DOG RIVER	45 24.65	121 35.22	n.a.	15	7	20	n.a
79HZ040C	LFB567	GOV'T CAMP	45 20.35	121 50.85	n.a.	7	7	7	n.a
79HZ041C	LFI452	GOV'T CAMP	45 20.36	121 49.93	n.a.	5	7	10	n.a
79HZ042C	LFB568	GOV'T CAMP	45 19.96	121 50.8	n.a.	7	5	10	n.a
79HZ043C	LFB569	GOV'T CAMP	45 18.79	121 51.82	n.a.	7	7	7	n.a
79HZ044C	LFI005	RHODODEN	45 22.25	121 53.03	n.a.	10	10	15	n.a
79HZ045C	LFI006	RHODODEN	45 22.25	121 53.76	n.a.	10	10	15	n.a
79HZ046C	LFB570	GOV'T CAMP	45 21.43	121 47.61	n.a.	7	2	7	n.a
79HZ047C	LFB571	GOV'T CAMP	45 21.55	121 47.25	n.a.	10	3	5	n.a
79HZ048C	LFB572	GOV'T CAMP	45 21.58	121 47.25	n.a.	3	1.5	7	n.a
79HZ049C	LFB573	GOV'T CAMP	45 21.73	121 48.62	n.a.	10	2	5	n.a
79HZ050C	LFI010	DOG RIVER	45 23.88	121 35.53	n.a.	10	7	15	n.a

TABLE 4. CONTINUED.

FIELD #	LAB #	QUADRANGLE	LATITUDE	LONGITUDE	Al %	Fe %	Mg %	Ca %	Na %
79HZ051C	LFI011	DOG RIVER	45 22.07	121 35.32	n.a.	10	7	10	n.a.
79HZ053C	LFI453	GOV'T CAMP	45 21.52	121 47.8	n.a.	15	0.5	3	n.a.
79HZ054C	LFI454	GOV'T CAMP	45 22.46	121 51.4	n.a.	10	5	7	n.a.
79HZ055C	LFI455	CATHEDRAL R	45 26.84	121 40.61	n.a.	5	3	7	n.a.
79HZ056C	LFI456	CATHEDRAL R	45 27.3	121 38.16	n.a.	5	3	10	n.a.
79HZ058C	LFI457	MT HOOD SO	45 21.35	121 37.7	n.a.	1.5	0.5	10	n.a.
79HZ060C	LFL943	CATHEDRAL R	45 23.83	121 38.5	n.a.	5	1.5	5	n.a.
79HZ061C	LFL944	CATHEDRAL R	45 24.04	121 39.77	n.a.	7	3	5	n.a.
79HZ062C	LFL945	CATHEDRAL R	45 24.52	121 41.35	n.a.	1.5	0.3	5	n.a.
79HZ063C	LFL946	CATHEDRAL R	45 24.48	121 43.38	n.a.	1.5	0.5	5	n.a.
79HZ064C	LFL947	CATHEDRAL R	45 24.91	121 44.4	n.a.	1.5	0.5	5	n.a.
79HZ065C	LFL948	BADGER LAKE	45 24.3	121 44.73	n.a.	5	0.3	5	n.a.
79HZ066C	LFL949	BADGER LAKE	45 24.28	121 44.76	n.a.	3	1	5	n.a.
79HZ067C	LFL950	MT HOOD SO	45 20.31	121 43.5	n.a.	3	1	7	n.a.
79HZ068C	LFL951	MT HOOD SO	45 20.75	121 44.35	n.a.	1	0.2	5	n.a.
79HZ069C	LFL952	GOV'T CAMP	45 20.56	121 46.35	n.a.	5	1.5	5	n.a.
79HZ070C	LFL953	CATHEDRAL R	45 23.5	121 45.02	n.a.	7	0.3	3	n.a.
79HZ071C	LFL954	CATHEDRAL R	45 23.53	121 45.03	n.a.	7	1	5	n.a.
79HZ072C	LFL955	CATHEDRAL R	45 24.34	121 40.53	n.a.	1.5	0.5	5	n.a.

TABLE 4. CONTINUED.

FIELD #	Ti	Mn	Ag	As	Au	B	Ba	Be	Bi	Cd
	%	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
79HZ001C	0.7	1500	n.d.	n.d.	n.d.	<20	200	2	n.d.	n.d
79HZ002C	0.5	500	n.d.	n.d.	n.d.	<20	300	n.d.	n.d.	n.d
79HZ003C	1	2000	n.d.	n.d.	n.d.	<20	200	n.d.	n.d.	n.d
79HZ004C	1	1000	n.d.	n.d.	n.d.	<20	300	2	n.d.	n.d
79HZ005C	2	1500	n.d.	n.d.	n.d.	<20	n.d.	n.d.	n.d.	n.d
79HZ006C	2	2000	n.d.	n.d.	n.d.	<20	n.d.	n.d.	n.d.	n.d
79HZ007C	0.3	1500	n.d.	n.d.	n.d.	<20	300	n.d.	n.d.	n.d
79HZ008C	2	1500	n.d.	n.d.	n.d.	20	150	n.d.	n.d.	n.d
79HZ009C	0.7	1500	1	n.d.	n.d.	<20	n.d.	n.d.	n.d.	n.d
79HZ010C	0.5	700	n.d.	n.d.	n.d.	<20	n.d.	n.d.	n.d.	n.d
79HZ011C	2	1000	1	n.d.	n.d.	20	150	n.d.	n.d.	n.d
79HZ012C	1.5	1500	n.d.	n.d.	n.d.	20	100	n.d.	n.d.	n.d
79HZ013C	1.5	2000	n.d.	n.d.	n.d.	<20	n.d.	n.d.	n.d.	n.d
79HZ014C	1	1500	n.d.	n.d.	n.d.	<20	100	n.d.	n.d.	n.d
79HZ015C	1.5	2000	n.d.	n.d.	n.d.	20	100	n.d.	n.d.	n.d
79HZ016C	0.7	1000	n.d.	n.d.	n.d.	<20	200	n.d.	n.d.	n.d
79HZ017C	2	3000	n.d.	n.d.	n.d.	20	100	n.d.	n.d.	n.d
79HZ018C	2	2000	n.d.	n.d.	n.d.	<20	300	n.d.	n.d.	n.d.
79HZ019C	0.7	1000	n.d.	n.d.	n.d.	<20	100	n.d.	n.d.	n.d
79HZ020C	0.7	1000	n.d.	n.d.	n.d.	<20	100	n.d.	n.d.	n.d.
79HZ021C	0.2	500	n.d.	n.d.	n.d.	n.d.	200	n.d.	n.d.	n.d.
79HZ022C	1	1000	n.d.	n.d.	n.d.	<20	200	n.d.	n.d.	n.d.
79HZ023C	1	1500	n.d.	n.d.	n.d.	<20	150	n.d.	n.d.	n.d.
79HZ024C	0.5	1000	n.d.	n.d.	n.d.	<20	150	n.d.	n.d.	n.d.
79HZ025C	0.3	500	n.d.	n.d.	n.d.	<20	150	n.d.	n.d.	n.d.

TABLE 4. CONTINUED.

FIELD #	Ti %	Mn PPM	Ag PPM	As PPM	Au PPM	B PPM	Ba PPM	Be PPM	Bi PPM	Cd PPM
79HZ026C	0.3	200	n.d.	n.d.	n.d.	<20	150	n.d.	n.d.	n.d.
79HZ027C	0.3	300	n.d.	n.d.	n.d.	<20	500	n.d.	n.d.	n.d.
79HZ028C	0.3	700	n.d.	n.d.	n.d.	<20	200	n.d.	n.d.	n.d.
79HZ029C	0.2	300	n.d.	n.d.	n.d.	<20	200	n.d.	n.d.	n.d.
79HZ030C	0.2	700	n.d.	n.d.	n.d.	<20	1000	n.d.	n.d.	n.d.
79HZ031C	0.3	700	n.d.	n.d.	n.d.	<20	1000	n.d.	n.d.	n.d.
79HZ032C	0.5	1500	n.d.	n.d.	n.d.	<20	150	n.d.	n.d.	n.d.
79HZ033C	0.3	500	n.d.	n.d.	n.d.	<20	150	n.d.	n.d.	n.d.
79HZ034C	1	700	n.d.	n.d.	n.d.	<20	150	n.d.	n.d.	n.d.
79HZ035C	0.2	200	n.d.	n.d.	n.d.	<20	200	n.d.	n.d.	n.d.
79HZ036C	0.3	500	n.d.	n.d.	n.d.	<20	200	n.d.	n.d.	n.d.
79HZ037C	0.7	1000	n.d.	n.d.	n.d.	<20	200	n.d.	n.d.	n.d.
79HZ038C	0.7	1000	n.d.	n.d.	n.d.	<20	200	n.d.	n.d.	n.d.
79HZ039C	1.5	3000	n.d.	n.d.	n.d.	<20	150	n.d.	n.d.	n.d.
79HZ040C	0.5	1000	n.d.	n.d.	n.d.	<20	70	n.d.	n.d.	n.d.
79HZ041C	0.5	1000	n.d.	n.d.	n.d.	<20	200	n.d.	n.d.	n.d.
79HZ042C	1	1500	n.d.	n.d.	n.d.	20	70	n.d.	n.d.	n.d.
79HZ043C	0.5	1500	n.d.	n.d.	n.d.	<20	50	n.d.	n.d.	n.d.
79HZ044C	1	2000	n.d.	n.d.	n.d.	<20	n.d.	n.d.	n.d.	n.d.
79HZ045C	0.7	2000	n.d.	n.d.	n.d.	<20	n.d.	n.d.	n.d.	n.d.
79HZ046C	2	2000	n.d.	n.d.	n.d.	30	200	3	n.d.	n.d.
79HZ047C	2	1500	5	n.d.	n.d.	30	5000	<2	n.d.	100
79HZ048C	0.2	500	n.d.	n.d.	n.d.	<20	300	n.d.	n.d.	n.d.
79HZ049C	2	1000	7	n.d.	n.d.	20	300	<2	n.d.	n.d.
79HZ050C	2	3000	n.d.	n.d.	n.d.	<20	300	n.d.	n.d.	n.d.

TABLE 4. CONTINUED.

FIELD #	Ti %	Mn PPM	Ag PPM	As PPM	Au PPM	B PPM	Ba PPM	Be PPM	Bi PPM	Cd PPM
79HZ051C	2	2000	n.d.	n.d.	n.d.	20	200	n.d.	n.d.	n.d.
79HZ053C	2	500	30	500	n.d.	20	>10000	n.d.	n.d.	50
79HZ054C	2	3000	10	n.d.	n.d.	<20	700	n.d.	n.d.	20
79HZ055C	0.5	500	n.d.	n.d.	n.d.	<20	300	n.d.	n.d.	n.d.
79HZ056C	0.5	700	n.d.	n.d.	n.d.	<20	300	n.d.	n.d.	n.d.
79HZ058C	0.2	200	n.d.	n.d.	n.d.	<20	500	2	n.d.	n.d.
79HZ060C	0.7	500	n.d.	n.d.	n.d.	n.d.	700	n.d.	n.d.	n.d.
79HZ061C	0.7	1000	n.d.	n.d.	n.d.	n.d.	150	n.d.	n.d.	n.d.
79HZ062C	0.2	500	n.d.	n.d.	n.d.	n.d.	500	n.d.	n.d.	n.d.
79HZ063C	0.2	500	n.d.	n.d.	n.d.	n.d.	200	n.d.	n.d.	n.d.
79HZ064C	0.15	200	n.d.	n.d.	n.d.	n.d.	150	n.d.	n.d.	n.d.
79HZ065C	0.3	200	n.d.	n.d.	n.d.	n.d.	300	n.d.	n.d.	n.d.
79HZ066C	0.2	300	n.d.	n.d.	n.d.	n.d.	200	n.d.	n.d.	n.d.
79HZ067C	0.7	500	n.d.	n.d.	n.d.	n.d.	300	n.d.	n.d.	n.d.
79HZ068C	0.15	150	n.d.	n.d.	n.d.	n.d.	150	n.d.	n.d.	n.d.
79HZ069C	0.5	500	n.d.	n.d.	n.d.	500	200	n.d.	n.d.	n.d.
79HZ070C	0.3	200	n.d.	n.d.	n.d.	n.d.	>10000	n.d.	n.d.	n.d.
79HZ071C	0.5	500	n.d.	n.d.	n.d.	n.d.	>10000	n.d.	n.d.	n.d.
79HZ072C	0.5	200	n.d.	n.d.	n.d.	n.d.	300	n.d.	n.d.	n.d.

TABLE 4. CONTINUED.

FIELD #	Co	Cr	Cu	La	Li	Mo	Nb	Ni	Pb	Sb
	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
79HZ001C	50	150	200	150	n.a.	n.d.	n.d.	50	20	n.d.
79HZ002C	n.d.	50	20	n.d.	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.
79HZ003C	70	200	50	100	n.a.	n.d.	n.d.	70	n.d.	n.d.
79HZ004C	20	300	50	70	n.a.	n.d.	n.d.	30	n.d.	n.d.
79HZ005C	50	2000	20	100	n.a.	n.d.	<50	150	n.d.	n.d.
79HZ006C	50	3000	30	n.d.	n.a.	n.d.	n.d.	300	n.d.	n.d.
79HZ007C	70	2000	10	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ008C	30	1000	200	n.d.	n.a.	15	<50	150	200	n.d.
79HZ009C	50	2000	70	70	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ010C	50	2000	20	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ011C	20	300	700	n.d.	n.a.	15	50	50	1000	n.d.
79HZ012C	50	500	30	n.d.	n.a.	n.d.	n.d.	150	20	n.d.
79HZ013C	100	3000	50	150	n.a.	n.d.	n.d.	300	20	n.d.
79HZ014C	70	700	30	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ015C	70	700	70	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ016C	50	700	30	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ017C	100	700	100	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ018C	70	1000	70	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ019C	70	700	20	n.d.	n.a.	n.d.	n.d.	200	50	n.d.
79HZ020C	70	700	50	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ021C	15	150	20	70	n.a.	n.d.	n.d.	20	n.d.	n.d.
79HZ022C	50	500	50	n.d.	n.a.	n.d.	n.d.	150	n.d.	n.d.
79HZ023C	70	500	30	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ024C	50	200	20	n.d.	n.a.	n.d.	n.d.	100	n.d.	n.d.
79HZ025C	20	200	15	n.d.	n.a.	n.d.	n.d.	50	n.d.	n.d.

TABLE 4. CONTINUED.

FIELD #	Co ppm	Cr ppm	Cu ppm	La ppm	Li ppm	Mo ppm	Nb ppm	Ni ppm	Pb ppm	Sb ppm
79HZ026C	30	200	20	n.d.	n.a.	n.d.	n.d.	50	n.d.	n.d.
79HZ027C	20	200	30	50	n.a.	n.d.	n.d.	50	n.d.	n.d.
79HZ028C	30	300	20	n.d.	n.a.	n.d.	n.d.	70	n.d.	n.d.
79HZ029C	15	150	15	n.d.	n.a.	n.d.	n.d.	50	n.d.	n.d.
79HZ030C	20	200	20	n.d.	n.a.	n.d.	n.d.	30	n.d.	n.d.
79HZ031C	20	500	20	300	n.a.	n.d.	n.d.	70	n.d.	n.d.
79HZ032C	70	200	70	n.d.	n.a.	n.d.	n.d.	100	n.d.	n.d.
79HZ033C	15	100	20	n.d.	n.a.	n.d.	n.d.	50	n.d.	n.d.
79HZ034C	50	300	50	n.d.	n.a.	n.d.	n.d.	70	30	n.d.
79HZ035C	10	50	20	n.d.	n.a.	n.d.	n.d.	n.d.	<20	n.d.
79HZ036C	30	700	15	n.d.	n.a.	n.d.	n.d.	150	n.d.	n.d.
79HZ037C	50	300	50	n.d.	n.a.	n.d.	n.d.	100	n.d.	n.d.
79HZ038C	30	200	30	50	n.a.	n.d.	n.d.	70	n.d.	n.d.
79HZ039C	100	1000	100	150	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ040C	50	3000	20	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ041C	50	3000	50	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ042C	50	2000	20	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ043C	50	3000	20	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ044C	70	3000	30	n.d.	n.a.	n.d.	n.d.	300	n.d.	n.d.
79HZ045C	100	5000	20	n.d.	n.a.	n.d.	n.d.	300	n.d.	n.d.
79HZ046C	20	300	20	50	n.a.	n.d.	<50	100	30	n.d.
79HZ047C	100	300	500	50	n.a.	n.d.	<50	200	500	n.d.
79HZ048C	15	70	20	100	n.a.	n.d.	n.d.	30	20	n.d.
79HZ049C	70	500	200	n.d.	n.a.	n.d.	<50	100	70	n.d.
79HZ050C	100	1000	70	n.d.	n.a.	n.d.	n.d.	200	<20	n.d.

TABLE 4. CONTINUED.

FIELD #	Co PPM	Cr PPM	Cu PPM	La PPM	Li PPM	Mo PPM	Nb PPM	Ni PPM	Pb PPM	Sb PPM
79HZ051C	100	1500	100	n.d.	n.a.	n.d.	n.d.	200	n.d.	n.d.
79HZ053C	100	150	5000	n.d.	n.a.	15	<50	100	2000	n.d.
79HZ054C	100	2000	200	n.d.	n.a.	50	n.d.	200	100	n.d.
79HZ055C	30	300	20	n.d.	n.a.	n.d.	n.d.	100	n.d.	n.d.
79HZ056C	30	300	30	n.d.	n.a.	n.d.	n.d.	100	n.d.	n.d.
79HZ058C	n.d.	20	15	n.d.	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.
79HZ060C	15	100	50	n.d.	n.a.	n.d.	n.d.	20	30	n.d.
79HZ061C	30	300	50	n.d.	n.a.	n.d.	n.d.	70	n.d.	n.d.
79HZ062C	n.d.	n.d.	30	n.d.	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.
79HZ063C	n.d.	n.d.	20	n.d.	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.
79HZ064C	n.d.	n.d.	15	n.d.	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.
79HZ065C	15	30	50	50	n.a.	30	n.d.	n.d.	n.d.	n.d.
79HZ066C	10	20	30	50	n.a.	n.d.	n.d.	10	n.d.	n.d.
79HZ067C	10	30	50	100	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.
79HZ068C	n.d.	n.d.	15	50	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.
79HZ069C	15	30	50	n.d.	n.a.	n.d.	n.d.	20	50	n.d.
79HZ070C	20	20	30	n.d.	n.a.	n.d.	n.d.	15	n.d.	n.d.
79HZ071C	30	20	1000	50	n.a.	n.d.	n.d.	15	n.d.	n.d.
79HZ072C	n.d.	20	30	n.d.	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.

TABLE 4. CONTINUED.

FIELD #	Sc ppm	Sn ppm	Sr ppm	Th ppm	U ppm	V ppm	W ppm	Y ppm	Zn ppm	Zr ppm
79HZ001C	50	n.d.	700	n.d.	n.a.	150	n.d.	150	n.d.	2000
79HZ002C	n.d.	n.d.	1500	n.d.	n.a.	100	n.d.	n.d.	n.d.	2000
79HZ003C	70	n.d.	700	n.d.	n.a.	200	n.d.	100	n.d.	2000
79HZ004C	50	n.d.	700	n.d.	n.a.	200	n.d.	200	n.d.	2000
79HZ005C	100	n.d.	<200	n.d.	n.a.	300	n.d.	150	n.d.	2000
79HZ006C	100	n.d.	<200	n.d.	n.a.	300	n.d.	50	n.d.	2000
79HZ007C	100	n.d.	200	n.d.	n.a.	200	n.d.	50	n.d.	200
79HZ008C	70	n.d.	500	n.d.	n.a.	300	n.d.	50	1500	1000
79HZ009C	70	n.d.	<200	n.d.	n.a.	200	n.d.	50	n.d.	500
79HZ010C	70	n.d.	n.d.	n.d.	n.a.	300	n.d.	30	n.d.	2000
79HZ011C	50	n.d.	500	n.d.	n.a.	200	n.d.	50	2000	200
79HZ012C	100	n.d.	300	n.d.	n.a.	200	n.d.	70	n.d.	2000
79HZ013C	200	n.d.	200	n.d.	n.a.	700	n.d.	100	n.d.	2000
79HZ014C	70	n.d.	200	n.d.	n.a.	200	n.d.	50	n.d.	2000
79HZ015C	70	n.d.	200	n.d.	n.a.	200	n.d.	70	n.d.	2000
79HZ016C	50	n.d.	1000	n.d.	n.a.	200	n.d.	30	n.d.	2000
79HZ017C	70	n.d.	<200	n.d.	n.a.	300	n.d.	70	n.d.	2000
79HZ018C	70	n.d.	500	n.d.	n.a.	200	n.d.	100	n.d.	2000
79HZ019C	100	n.d.	200	n.d.	n.a.	200	n.d.	100	n.d.	2000
79HZ020C	100	n.d.	200	n.d.	n.a.	200	n.d.	150	n.d.	2000
79HZ021C	20	n.d.	1000	n.d.	n.a.	70	n.d.	70	n.d.	2000
79HZ022C	50	n.d.	500	n.d.	n.a.	200	n.d.	100	n.d.	2000
79HZ023C	50	n.d.	200	n.d.	n.a.	200	n.d.	50	n.d.	2000
79HZ024C	30	n.d.	700	n.d.	n.a.	150	n.d.	30	n.d.	2000
79HZ025C	20	n.d.	1000	n.d.	n.a.	100	n.d.	20	n.d.	2000

TABLE 4. CONTINUED.

FIELD #	Sc PPM	Sn PPM	Sr PPM	Th PPM	U PPM	V PPM	W PPM	Y PPM	Zn PPM	Zr PPM
79HZ026C	10	n.d.	700	n.d.	n.a.	70	n.d.	20	n.d.	2000
79HZ027C	10	n.d.	1000	n.d.	n.a.	70	n.d.	70	n.d.	>2000
79HZ028C	20	n.d.	700	n.d.	n.a.	100	n.d.	30	n.d.	>2000
79HZ029C	15	n.d.	1000	n.d.	n.a.	100	n.d.	30	n.d.	>2000
79HZ030C	20	n.d.	1000	n.d.	n.a.	100	n.d.	20	n.d.	500
79HZ031C	20	n.d.	700	n.d.	n.a.	100	n.d.	70	n.d.	>2000
79HZ032C	20	n.d.	500	n.d.	n.a.	150	n.d.	30	n.d.	>2000
79HZ033C	15	n.d.	700	n.d.	n.a.	70	n.d.	30	n.d.	>2000
79HZ034C	30	n.d.	700	n.d.	n.a.	150	n.d.	50	n.d.	1000
79HZ035C	<10	n.d.	1000	n.d.	n.a.	50	n.d.	50	n.d.	>2000
79HZ036C	30	n.d.	700	n.d.	n.a.	150	n.d.	20	n.d.	1500
79HZ037C	50	n.d.	1000	n.d.	n.a.	200	n.d.	70	n.d.	>2000
79HZ038C	30	n.d.	700	n.d.	n.a.	150	n.d.	70	n.d.	>2000
79HZ039C	150	n.d.	500	n.d.	n.a.	300	n.d.	200	n.d.	>2000
79HZ040C	70	n.d.	200	n.d.	n.a.	200	n.d.	30	n.d.	150
79HZ041C	100	n.d.	<200	n.d.	n.a.	300	n.d.	50	n.d.	2000
79HZ042C	100	n.d.	300	n.d.	n.a.	300	n.d.	50	n.d.	700
79HZ043C	100	n.d.	200	n.d.	n.a.	300	n.d.	30	n.d.	100
79HZ044C	150	n.d.	n.d.	n.d.	n.a.	500	n.d.	50	n.d.	500
79HZ045C	200	n.d.	n.d.	n.d.	n.a.	500	n.d.	50	n.d.	300
79HZ046C	50	n.d.	700	n.d.	n.a.	500	n.d.	50	n.d.	200
79HZ047C	30	n.d.	500	n.d.	n.a.	300	n.d.	70	10000	1500
79HZ048C	15	n.d.	1000	n.d.	n.a.	100	n.d.	20	n.d.	1500
79HZ049C	50	n.d.	500	n.d.	n.a.	200	n.d.	50	n.d.	500
79HZ050C	150	n.d.	700	n.d.	n.a.	500	n.d.	70	n.d.	>2000

TABLE 4. CONTINUED.

FIELD #	Sc PPM	Sn PPM	Sr PPM	Th PPM	U PPM	V PPM	W PPM	Y PPM	Zn PPM	Zr PPM
79HZ051C	100	n.d.	500	n.d.	n.a.	300	n.d.	150	n.d.	>2000
79HZ053C	20	n.d.	1000	n.d.	n.a.	150	n.d.	30	15000	200
79HZ054C	70	n.d.	200	n.d.	n.a.	300	100	50	1000	700
79HZ055C	30	n.d.	1000	n.d.	n.a.	150	n.d.	30	n.d.	2000
79HZ056C	30	n.d.	1000	n.d.	n.a.	150	n.d.	50	n.d.	>2000
79HZ058C	<10	n.d.	1000	n.d.	n.a.	50	n.d.	30	n.d.	2000
79HZ060C	n.d.	n.d.	1000	n.d.	n.a.	100	n.d.	50	n.d.	2000
79HZ061C	20	n.d.	500	n.d.	n.a.	150	n.d.	30	n.d.	>2000
79HZ062C	n.d.	n.d.	1000	n.d.	n.a.	30	n.d.	20	n.d.	>2000
79HZ063C	n.d.	n.d.	1000	n.d.	n.a.	30	n.d.	20	n.d.	>2000
79HZ064C	n.d.	20	1000	n.d.	n.a.	20	n.d.	30	n.d.	>2000
79HZ065C	n.d.	n.d.	1000	n.d.	n.a.	50	n.d.	50	n.d.	>2000
79HZ066C	n.d.	n.d.	1000	n.d.	n.a.	70	n.d.	50	n.d.	>2000
79HZ067C	10	n.d.	1000	n.d.	n.a.	100	n.d.	150	n.d.	>2000
79HZ068C	n.d.	n.d.	1000	n.d.	n.a.	20	n.d.	30	n.d.	>2000
79HZ069C	10	30	1000	n.d.	n.a.	100	n.d.	30	n.d.	>2000
79HZ070C	n.d.	n.d.	1500	n.d.	n.a.	50	n.d.	30	n.d.	>2000
79HZ071C	n.d.	n.d.	1000	n.d.	n.a.	70	n.d.	70	n.d.	>2000
79HZ072C	n.d.	n.d.	1000	n.d.	n.a.	100	n.d.	30	n.d.	200

TABLE 5. ANALYTICAL RESULTS ON GOLD, SILVER, COPPER, MERCURY, AND ANTIMONY FOR SELECTED ALTERED ROCK SAMPLES FROM THE MOUNT HOOD WILDERNESS AREA, OREGON.

FIELD #	LAB #	QUADRANGLE	LATITUDE	LONGITUDE	As ppm	Au ppm	Cu ppm	Hg ppm	Sb ppm
79LH0087	LFL940	GOV'T CAMP	45 18.42	121 49.72	n.a.	0.1	16980	n.a.	n.a.
79IC2039H	LFL941	BADGER LAKE	45 17.06	121 37.4	n.a.	<0.05	170	n.a.	n.a.
79IC2039P	LFL942	BADGER LAKE	45 17.06	121 37.4	n.a.	<0.05	n.d.	n.a.	n.a.
79MH0058C	LFL964	MT HOOD SO	45 22.44	121 41.7	n.d.	<0.05	n.a.	0.55	n.d.
79MH0063E	LFL965	MT HOOD SO	45 22.44	121 41.8	n.d.	<0.05	n.a.	0.04	n.d.
79SV2021	LFL967	CATHEDRAL R	45 23.22	121 43.62	n.d.	<0.05	n.a.	0.08	n.d.
79MH0063L	LFL966	MT HOOD SO	45 22.44	121 41.8	n.d.	<0.05	n.a.	0.12	n.d.