RECEIVED
JUL 28 1978

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN-FILE REPORT 78-557
YOUNT AND OTHERS
SHEET 1 OF 1

TABLE 1.--ANALYTICAL DATA FROM ROCK SAMPLES, CHIGNIK AND SUTWIK ISLAND QUADRANGLES, ALASKA

Sample	Latitude	Longitude	Fe%	Mg%	Ca%	Ti%	Mn	Ag	As	Au	B	Ba	Be	Bi	Cd	Co	Cr	Cu	La	Mo	Nb	Ni	Pb	Sb	Sc	Sn	Sr	V	W	Y	Zn	Zr	Cu (AA)	Pb (AA)	Zn (AA)	Rock type
			Semi-quantitative spectrographic (ppm unless otherwise specified)																														Atomic absorption (ppm)			
CBD468	56 34 14	158 46 40	10.0	2.00	3.00	.300	1,000	N	N	N	100	700	1.0	N	N	10	30	15	30	N	<20	10	50	N	20	N	700	200	N	30	<200	70	--	--	--	altered intrusive
CBD469	56 34 14	158 46 40	5.0	1.50	2.00	.300	500	N	N	N	50	1,500	1.0	N	N	20	20	70	30	N	<20	10	30	N	20	N	500	200	N	30	<200	50	--	--	--	altered intrusive
CBD470	56 48 50	157 55 1	7.0	3.00	3.00	.500	1,000	N	N	N	20	1,000	<1.0	N	N	20	50	50	30	N	<20	20	50	N	20	N	1,000	200	N	20	<200	50	--	--	--	intrusive
CBD471	56 38 20	157 29 25	15.0	5.00	5.00	.300	1,000	N	N	N	10	200	<1.0	N	N	30	200	200	30	N	<20	70	50	N	30	N	700	200	N	15	<200	30	--	--	--	hypabyssal porphyry
CBD472	57 1 19	157 31 50	[illegible]	5.00	5.00	.500	1,500	N	N	N	10	200	<1.0	N	N	50	50	200	30	N	<20	70	50	N	30	N	700	200	N	50	200	70	--	--	--	intrusive porphyry
CBD473	57 1 19	157 31 50	10.0	5.00	2.00	.300	1,000	N	N	N	10	700	<1.0	N	N	50	70	50	30	N	<20	20	50	N	20	N	700	100	N	30	<200	100	--	--	--	intrusive porphyry
CBD474	56 30 23	158 11 30	7.0	2.00	3.00	.300	2,000	N	N	N	10	500	1.0	N	N	30	30	70	30	N	<20	20	20	N	20	N	700	150	N	30	<200	50	--	--	--	dike
CBD475	56 30 23	158 11 30	15.0	2.00	1.50	.500	1,000	1.0	N	N	20	300	<1.0	N	N	20	100	70	30	N	<20	50	70	N	20	N	700	150	N	20	<200	70	--	--	--	dike
CBD476	56 30 23	158 11 30	7.0	1.50	.50	.300	100	N	N	N	70	300	1.0	N	N	20	20	70	30	N	<20	10	50	N	15	N	500	100	N	20	<200	50	--	--	--	felsic dike
CBD477	56 34 54	158 50 44	10.0	2.00	3.00	.500	1,000	N	N	N	50	700	<1.0	N	N	30	10	70	30	N	<20	20	20	N	20	N	1,000	200	N	50	<200	70	--	--	--	porphyry
CBD478	56 34 54	158 50 44	7.0	1.00	2.00	.300	300	N	N	N	10	700	<1.0	N	N	10	10	50	30	N	<20	10	20	N	20	N	700	200	N	10	<200	70	--	--	--	porphyry
CBD479	56 48 50	157 55 1	10.0	2.00	5.00	.300	1,000	N	N	N	10	1,000	1.0	N	N	50	30	20	30	N	<20	10	20	N	15	N	1,000	150	N	20	<200	70	--	--	--	porphyry
CBD480	56 38 4	157 28 29	10.0	3.00	5.00	.300	1,500	N	N	N	10	300	<1.0	N	N	10	50	100	30	N	<20	30	30	N	30	N	700	200	N	20	<200	30	--	--	--	hypabyssal
CBD481	56 16 54	158 31 9	10.0	3.00	3.00	.300	1,500	N	N	N	10	200	1.0	N	N	20	100	100	30	N	<20	70	50	N	20	N	700	150	N	20	<200	70	--	--	--	intrusive
CBD482	56 16 54	158 31 9	15.0	3.00	1.50	.500	2,000	N	N	N	100	100	<1.0	N	N	30	50	100	30	N	<20	50	20	N	30	N	700	200	N	30	<200	50	--	--	--	intrusive
CBD483	56 16 54	158 31 9	2.0	3.00	.20	.300	700	N	N	N	200	500	1.0	N	N	30	50	15	30	N	<20	20	30	N	20	N	300	150	N	30	<200	150	--	--	--	intrusive
CBD484	56 16 54	158 31 9	5.0	3.00	1.50	.500	700	N	N	N	20	200	1.0	N	N	50	30	100	30	N	<20	50	10	N	20	N	700	200	N	30	<200	100	--	--	--	intrusive
CBD485	56 16 54	158 31 9	3.0	2.00	.20	.300	500	N	N	N	50	300	1.0	N	N	<5	20	10	30	N	<20	10	50	N	15	N	300	150	N	20	<200	100	--	--	--	porphyry
CBD486	56 16 54	158 31 9	7.0	2.00	1.50	.500	1,500	N	N	N	30	700	1.0	N	N	10	30	50	30	N	<20	20	50	N	15	N	700	150	N	30	<200	100	--	--	--	porphyry
CBD487	56 14 30	158 32 20	7.0	3.00	3.00	.500	1,500	N	N	N	30	150	1.0	N	N	15	70	50	30	N	<20	20	50	N	20	N	1,000	150	N	20	<200	150	--	--	--	porphyry
CBD488	56 14 30	158 32 20	10.0	3.00	1.50	.500	1,500	N	N	N	30	500	<1.0	N	N	15	70	70	30	N	<20	30	70	N	20	N	500	200	N	20	<200	150	--	--	--	porphyry
CBD489	56 14 30	158 32 20	10.0	3.00	3.00	.500	1,500	N	N	N	20	200	<1.0	N	N	20	70	70	30	N	<20	50	30	N	20	N	700	150	N	20	<200	100	--	--	--	porphyry
CBD490	56 14 4	158 28 9	7.0	3.00	3.00	.500	1,000	N	N	N	30	500	<1.0	N	N	15	50	15	30	N	<20	20	30	N	20	N	700	150	N	20	<200	100	--	--	--	porphyry
CBD491	56 14 4	158 28 9	10.0	2.00	3.00	.700	1,000	N	N	N	100	700	2.0	N	N	30	50	20	50	N	<20	50	70	N	20	N	700	150	N	30	500	150	--	--	--	porphyry
CBD492	56 14 4	158 28 9	10.0	7.00	5.00	.500	2,000	N	N	N	20	150	1.0	N	N	50	150	100	30	N	<20	50	20	N	20	N	700	150	N	20	<200	50	--	--	--	porphyry
CBD493	56 14 4	158 28 9	10.0	2.00	3.00	.700	1,500	N	N	N	30	700	1.0	N	N	20	70	10	30	N	<20	50	20	N	20	N	700	150	N	30	<200	150	--	--	--	porphyry
CBD494	56 9 24	158 24 20	20.0	1.50	1.50	.150	1,000	50.0	N	N	50	200	<1.0	<10	N	700	N	10,000	30	70	<20	50	200	N	15	N	200	100	300	30	2,000	20	--	--	--	quartz vein
CBD495	56 9 24	158 24 20	7.0	1.50	2.00	.300	700	N	N	N	10	700	1.0	N	N	30	10	500	50	N	<20	20	<10	N	20	N	700	150	N	50	N	150	--	--	--	vein
CBD496	56 13 45	158 43 14	5.0	1.50	1.50	.300	300	N	N	N	10	200	1.0	N	N	<5	70	30	30	N	<20	20	10	N	15	N	700	150	N	10	N	50	--	--	--	intrusive rock
CBD497	56 13 45	158 43 14	7.0	1.50	3.00	.300	700	N	N	N	10	500	1.0	N	N	30	30	30	30	N	<20	70	15	N	20	N	500	150	N	20	N	70	--	--	--	altered volcanic
CBD498	56 11 47	159 1 40	5.0	.50	.15	.200	1,500	N	N	N	100	300	2.0	N	N	<5	N	<5	30	N	<20	<5	<10	N	10	N	200	10	N	50	N	200	--	--	--	intrusive
CBD499	56 11 47	159 1 40	5.0	.50	.30	.200	1,000	N	N	N	70	300	2.0	N	N	<5	N	<5	30	N	<20	<5	10	N	10	N	200	10	N	50	N	300	--	--	--	intrusive
CBD500	56 30 32	158 44 20	5.0	2.00	2.00	.300	1,000	N	N	N	10	100	1.0	N	N	20	30	70	30	N	<20	50	20	N	20	N	1,000	150	N	30	N	100	--	--	--	intrusive
CBD501	56 30 32	158 44 20	3.0	2.00	5.00	.300	700	N	N	N	10	100	1.0	N	N	20	30	15	50	N	<20	15	10	N	20	N	500	150	N	50	N	50	--	--	--	intrusive
CBD502	56 30 32	158 44 20	7.0	3.00	2.00	.300	1,500	N	N	N	10	150	<1.0	N	N	20	50	70	30	N	<20	20	150	N	20	N	1,000	150	N	10	N	50	--	--	--	intrusive

TABLE 1.--ANALYTICAL DATA--CONTINUED

TABLE 2.--STATISTICAL SUMMARY

	Element	Number of Samples: N	<	>	--	Analytical values	Statistics from Analytic Values: Range of values	Geometric mean	Geometric deviation	Arithmetic mean	Standard deviation	Limits of Determination: Lower limit	Upper limit
Semi-quantitative Spectrographic	Fe %	0	0	0	0	306	0.2-20	5.8	2.0	7.1	4.0	0.05	20
	Mg %	0	3	0	0	303	0.02-7.0	1.2	2.0	1.5	0.8	0.02	10
	Ca %	0	3	0	0	303	0.05-15	1.4	2.6	1.9	1.5	0.05	20
	Ti %	0	0	1	0	305	0.005-1.0	0.4	1.7	0.4	0.2	0.002	1
	Mn ppm	0	4	1	0	301	20 -3000	552.8	2.7	829.0	678.8	10	5000
	Ag ppm	263	21	0	0	22	0.5-300	4.9	7.1	38.5	88.0	0.5	5000
	As ppm	303	1	0	0	2	500-700	591.6	1.3	600.0	141.4	200	10000
	Au ppm	306	0	0	0	0	--	--	--	--	--	10	500
	B ppm	1	37	0	0	268	10-500	20.7	2.3	31.0	41.6	10	2000
	Ba ppm	0	0	2	0	304	50-2000	463.6	2.1	590.6	402.7	20	5000
	Be ppm	11	200	0	0	95	1-2	1.1	1.2	1.1	0.3	1	1000
	Bi ppm	294	9	0	0	3	70.-200.	111.9	1.7	123.3	68.1	10	1000
	Cd ppm	305	0	0	0	1	200	--	--	--	--	20	500
	Co ppm	3	35	0	0	268	10-700	24.7	1.8	31.8	46.6	5	2000
	Cr ppm	18	19	0	0	269	10-500	52.9	2.5	78.7	75.5	10	5000
	Cu ppm	0	8	3	0	295	5-10000	78.4	3.8	225.5	703.8	5	20000
	La ppm	0	11	0	0	295	30-100	47.3	1.2	47.9	7.0	20	1000
	Mo ppm	223	16	0	0	67	5-700	33.2	3.3	80.1	154.1	5	2000
	Nb ppm	0	306	0	0	0	--	--	--	--	--	20	2000
	Ni ppm	2	36	0	0	268	5-150	25.8	2.0	33.7	27.4	5	5000
	Pb ppm	30	78	1	0	197	10-2000	25.7	2.9	69.9	223.2	10	20000
	Sb ppm	302	1	0	0	3	150-300	208.0	1.4	216.7	76.4	100	10000
	Sc ppm	2	2	0	0	302	5-100	20.9	1.7	24.5	15.6	5	100
	Sn ppm	306	0	0	0	0	--	--	--	--	--	10	1000
	Sr ppm	6	5	0	0	295	100-2000	332.3	1.9	400.0	253.6	100	5000
	V ppm	0	0	0	0	306	10-500	178.3	1.7	199.3	90.7	10	10000
	W ppm	305	0	0	0	1	300	--	--	--	--	50	10000
	Y ppm	1	28	0	0	277	10-70	20.9	1.7	24.1	13.7	10	2000
	Zn ppm	243	49	0	0	14	200-7000	886.0	3.5	1907.1	2507.7	200	10000
	Zr ppm	2	1	0	0	303	20-1000	115.1	1.9	139.8	103.5	10	1000
Atomic Absorption	Cu ppm	0	0	0	36	270	5-75000	71.9	5.3	844.4	5935.2	5.	--
	Pb ppm	0	0	0	36	270	5-110000	16.7	2.8	457.1	6697.4	5.	--
	Zn ppm	0	2	0	36	268	5-8000	41.2	2.6	127.2	677.3	5.	--

Introduction

Geologic fieldwork was begun in the Chignik and Sutwik Island 1:250,000 quadrangles in 1977 under the auspices of the Alaska Mineral Resource Assessment Program. This report publishes the sample locations and results of analyses for 306 rock samples collected during 1977 and during a brief reconnaissance of the area in 1976.

Results of 558 stream-sediment and 550 heavy mineral concentrates which were also collected during 1977 will be published separately by Detra and others (1978).

Geochemical work in these quadrangles will continue through the 1978 field season. Final reports and maps are planned for publication in early 1979.

Sample collection

Samples are primarily single grab samples, although a few are composite. In most cases, samples were chosen because of obvious mineralization or alteration of the outcrop. Thus the reader is cautioned that the sample population is heavily biased in favor of mineralized areas. The summary statistics provided in Table 2 should not be interpreted as representative of composition of the rock units in the area. No attempt has been made in this report to differentiate those few samples selected to provide background data.

Sample preparation and analytical procedures

Samples were crushed to minus-0.25 inches (minus-6.35 mm) using a chipmunk crusher. Each sample was split and one fraction ground to minus-150 mesh using a vertical pulverizer with ceramic plates.

Samples were analyzed for thirty elements with a DC-arc emission spectrograph using a six-step, semiquantitative method described by Grimes and Marranzino (1968). In addition, an atomic absorption spectrophotometric method described by Ward and others (1969) was used to determine the concentration of copper lead, and zinc.

Explanation of data

For the semiquantitative spectrographic analyses, results are reported as six steps per order of magnitude (1.0, 1.5, 2.0, 3.0, 5.0, and 7.0 or powers of 10 of these numbers. These values are approximate geometric midpoints of the class intervals shown below.

Reported value	Class interval limits
1.0	0.83 - 1.2
1.5	1.2 - 1.8
2.0	1.8 - 2.6
3.0	2.6 - 3.8
5.0	3.8 - 5.6
7.0	5.6 - 8.3

The precision of the semiquantitative spectrographic method has been evaluated by Matooka and Grimes (1976). Repeatability of a determination within plus or minus one and two reporting value(s) is approximately 83 and 96 percent respectively.

Analyses done by the atomic absorption method are not reported on the six-step scale; they are more sensitive and more precise than spectrographic analyses.

Analytical data are shown in Table 1. A statistical summary is presented in Table 2. In both tables the following symbols are used. An "N" indicates the particular element was not detected in the sample. A less-than symbol (<) followed by a value means the element was present but in an amount below the lower limit of determination. A greater-than symbol (>) followed by a value means the element was present in an amount exceeding the upper limit of determination. Two dashes (--) indicate the sample was not analyzed for that element. "Analytical values" are those which fall on or between the lower and upper limits of determination.

References cited

Detra, D. E., Cooley, E. F., Day, G. W., O'Leary, R. M., Holloway, C. D., and Yount, M. E., 1978, Results and statistical summary from analyses of stream sediment and heavy mineral concentrate samples, Chignik and Sutwik Island quadrangles, Alaska: U.S. Geol. Survey open-file map 78-345, 96 p., 2 sheets, 1:250,000.

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

Matooka, J. M., and Grimes, D. J., 1976, Analytical precision of one-sixth order semiquantitative spectrographic analysis: U.S. Geol. Survey Circ. 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. Geol. Survey Bull. 1289, 45 p.

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

SAMPLE LOCATION MAP, ANALYTICAL DATA, AND STATISTICAL SUMMARY OF ANALYSES OF ROCK SAMPLES, CHIGNIK AND SUTWIK ISLAND QUADRANGLES, ALASKA

by

M. Elizabeth Yount, Elmo F. Cooley, and Richard M. O'Leary

1978