DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

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

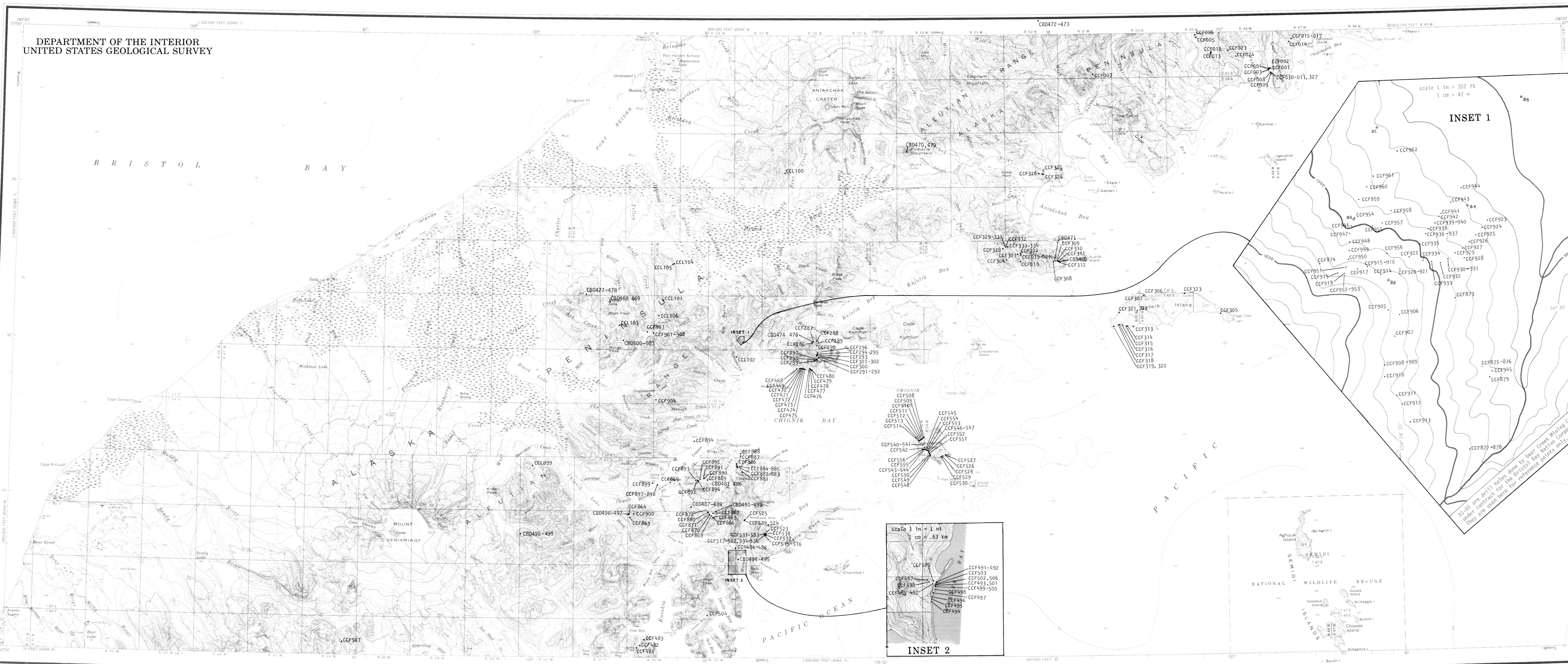

TABLE 1.--ANALYTICAL DATA FROM ROCK SAMPLES, CHIGNIK AND SUTWIK ISLAND QUADRANGLES, ALASKA

Semi-quantitative spectrographic (ppm unless otherwise specified) / Atomic absorption (ppm)

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 | Pb | Zn | Rock type

Sample	Latitude	Longitude	Fe%	Mg%	Ca%	Ti%	Mn	Ag	As	Au	B	Ba	Be	Bi	Cd
@@A1@@
CCF015	56 59 12	156 47 25	5.0	.30	.07	.500	70	N	N	N	70	1,000	2.0	N	N
CCF016	56 59 12	156 47 25	5.0	.30	.05	.500	70	N	N	N	70	500	2.0	N	N
CCF017	56 59 12	156 47 25	3.0	<.02	.05	1.000	<10	N	N	N	<10	>5,000	<1.0	N	N
CCF018	56 38 11	157 35 22	7.0	2.00	2.00	.200	1,000	N	N	N	<10	700	1.0	N	N
CCF019	56 38 41	157 35 21	.2	.50	.20	.200	100	N	N	N	100	1,500	1.0	N	N
CCF020	56 38 41	157 35 21	5.0	1.50	2.00	.200	1,000	N	N	N	100	500	1.0	N	N
CCF021	56 38 41	157 35 21	7.0	1.50	2.00	.200	1,000	N	N	N	30	700	1.0	N	N
CCF022	56 38 57	157 35 25	10.0	2.00	2.00	.500	1,500	N	N	N	50	700	<1.0	N	N
CCF023	56 58 14	156 58 40	7.0	2.00	3.00	.300	700	N	N	N	20	300	<1.0	N	N
CCF024	56 57 41	156 57 16	10.0	2.00	2.00	.500	1,000	N	N	N	<10	300	1.0	N	N
CCF286	56 30 19	158 11 35	15.0	3.00	5.00	>1.000	1,000	N	N	N	10	300	N	N	N
CCF287	56 30 29	158 11 17	3.0	1.50	.50	.500	200	N	N	N	20	200	1.0	N	N
CCF288	56 30 29	158 10 41	10.0	1.50	1.50	.700	1,000	N	N	N	20	500	1.0	N	N
CCF289	56 30 20	158 10 23	5.0	1.50	2.00	.500	1,000	N	N	N	<10	200	1.0	N	N
CCF290	56 30 2	158 10 41	7.0	1.50	3.00	.700	500	N	N	N	<10	100	1.0	N	N
CCF291	56 28 51	158 10 29	3.0	1.50	2.00	.700	500	N	N	N	50	700	1.0	N	N
CCF292	56 28 51	158 10 29	7.0	1.50	1.50	.700	500	N	N	N	100	500	1.0	N	N
CCF293	56 29 13	158 10 35	5.0	1.50	2.00	.500	1,000	N	N	N	20	300	1.0	N	N
CCF294	56 29 17	158 10 35	5.0	1.50	3.00	.500	700	N	N	N	20	200	1.0	N	N
CCF295	56 29 17	158 10 36	5.0	1.50	2.00	.500	500	N	N	N	20	200	1.0	N	N
CCF296	56 29 26	158 10 36	5.0	1.50	3.00	.500	200	N	N	N	20	300	1.0	N	N
CCF297	56 28 47	158 10 53	15.0	1.50	1.50	.500	200	N	N	N	100	700	1.0	N	N
CCF298	56 28 45	158 10 50	10.0	1.50	2.00	.700	700	N	N	N	50	300	1.0	N	N
CCF299	56 28 42	158 10 45	5.0	1.50	1.00	.700	700	N	N	N	200	700	1.0	N	N
CCF300	56 29 3	158 10 41	10.0	1.50	1.50	.700	1,000	N	N	N	500	1,000	1.0	N	N
CCF301	56 29 8	158 10 38	10.0	1.50	3.00	.700	2,000	N	N	N	70	200	N	N	N
CCF302	56 29 8	158 10 38	5.0	1.50	3.00	.700	2,000	N	N	N	15	200	N	N	N
CCF303	56 38 49	157 35 54	5.0	.30	2.00	.200	1,000	<.5	N	N	50	700	1.0	N	N
CCF304	56 38 15	157 37 54	3.0	1.00	2.00	.150	1,000	10.0	N	N	50	500	<1.0	N	N
CCF305	56 32 52	157 0 43	5.0	1.00	3.00	.300	150	N	N	N	20	700	<1.0	N	N
CCF306	56 34 44	157 14 7	5.0	1.50	2.00	.500	1,000	.7	N	N	20	1,000	1.0	N	N
CCF307	56 34 41	157 13 59	2.0	.70	.50	.500	100	N	N	N	30	1,000	1.0	N	N
CCF308	56 33 7	157 29 40	10.0	2.00	5.00	.500	1,000	N	N	N	10	200	<1.0	N	N
CCF309	56 35 12	157 26 58	10.0	2.00	5.00	.500	1,000	<.5	N	N	10	200	<1.0	N	N
CCF310	56 38 12	157 28 50	10.0	2.00	3.00	.500	500	N	N	N	10	150	<1.0	N	N
CCF311	56 33 8	157 28 46	5.0	1.50	2.00	.500	500	N	N	N	10	300	1.0	N	N
CCF312	56 38 7	157 28 38	10.0	1.50	3.00	.500	1,000	N	N	N	10	300	1.0	N	N
CCF313	56 31 46	157 15 51	7.0	1.50	3.00	.500	700	N	N	N	10	1,000	1.0	N	N
CCF314	56 31 47	157 16 46	3.0	1.00	3.00	.500	200	N	N	N	15	500	1.0	N	N
CCF315	56 31 49	157 17 0	5.0	1.50	3.00	.500	700	N	N	N	20	700	1.0	N	N
CCF316	56 31 54	157 17 45	7.0	1.50	1.50	.500	150	N	N	N	70	200	<1.0	N	N
CCF317	56 31 56	157 18 12	10.0	1.50	1.50	.500	150	N	N	N	20	500	1.0	N	N
CCF318	56 31 54	157 18 25	5.0	1.50	2.00	.500	700	N	N	N	20	500	1.0	N	N
CCF319	56 31 46	157 19 14	10.0	1.50	5.00	.500	1,000	N	N	N	100	100	<1.0	N	N
CCF320	56 31 46	157 19 14	10.0	2.00	3.00	.500	1,000	N	N	N	100	200	<1.0	N	N
CCF321	56 33 6	157 18 16	10.0	1.50	3.00	.500	700	N	N	N	30	2,000	1.0	N	N
CCF322	56 33 6	157 18 16	5.0	1.50	2.00	.500	200	N	N	N	70	500	1.0	N	N
CCF323	56 34 53	157 6 52	10.0	1.50	3.00	.500	200	N	N	N	10	500	<1.0	N	N
CCF324	56 46 32	157 31 17	10.0	1.50	5.00	.500	1,000	N	N	N	10	300	<1.0	N	N
CCF325	56 46 33	157 31 26	15.0	1.50	5.00	.500	1,500	<.5	500	N	30	300	<1.0	N	N
CCF326	56 46 38	157 32 4	5.0	2.00	5.00	.500	500	N	N	N	20	1,000	<1.0	N	N
CCF327	56 55 54	156 50 57	1.0	.20	.30	.300	20	N	N	N	10	300	1.0	N	N
CCF328	56 39 24	157 38 27	10.0	2.00	7.00	.500	1,000	N	N	N	10	500	<1.0	N	N
CCF329	56 39 43	157 38 8	7.0	2.00	7.00	.300	700	N	N	N	10	700	<1.0	N	N
CCF330	56 39 43	157 38 8	10.0	.70	5.00	.500	1,000	N	N	N	10	500	<1.0	N	N
CCF331	56 39 43	157 38 8	10.0	3.00	5.00	.700	1,000	N	N	N	10	700	<1.0	N	N
CCF332	56 39 35	157 37 59	10.0	1.50	5.00	.700	500	N	N	N	10	700	<1.0	N	N
CCF333	56 39 34	157 37 33	10.0	1.00	3.00	.700	700	N	N	N	10	100	<1.0	N	N
CCF334	56 39 34	157 37 33	10.0	2.00	5.00	.700	1,000	N	N	N	10	500	<1.0	N	N
CCF468	56 27 48	158 14 8	10.0	3.00	3.00	.300	2,000	N	N	N	50	100	N	N	N
CCF469	56 27 51	158 13 51	10.0	3.00	2.00	.500	1,500	N	N	N	50	500	<1.0	N	N
CCF470	56 27 52	158 13 35	10.0	3.00	2.00	.500	2,000	N	N	N	20	1,000	<1.0	N	N
CCF471	56 27 52	158 13 27	10.0	2.00	.70	.500	1,000	N	N	N	70	1,000	1.5	N	N
CCF472	56 27 52	158 13 23	15.0	2.00	.70	.300	2,000	<.5	N	N	70	1,500	N	N	N
CCF473	56 27 50	158 13 11	5.0	1.00	2.00	.300	2,000	N	N	N	50	1,500	1.0	N	N
CCF474	56 27 48	158 13 4	10.0	1.50	2.00	.300	1,500	N	N	N	15	700	N	N	N
CCF475	56 27 47	158 12 50	15.0	3.00	2.00	.300	2,000	N	N	N	10	700	<1.0	N	N
CCF476	56 27 50	158 12 2	10.0	1.00	1.00	.300	1,500	N	N	N	50	500	1.0	N	N
CCF477	56 27 48	158 11 57	10.0	1.00	1.00	.300	500	N	N	N	50	1,500	<1.0	N	N
CCF478	56 27 47	158 11 49	15.0	1.50	2.00	.300	2,000	N	N	N	70	2,000	1.0	N	N
CCF479	56 27 43	158 11 43	15.0	2.00	1.50	.500	2,000	N	N	N	10	1,000	<1.0	N	N
CCF480	56 27 42	158 11 30	10.0	1.50	1.50	.300	1,000	N	N	N	20	500	1.0	N	N
CCF481	56 0 51	158 41 39	10.0	1.50	1.50	.500	2,000	N	N	N	50	1,000	1.0	N	N
CCF482	56 1 8	158 41 7	10.0	1.50	2.00	.500	2,000	N	N	N	10	1,000	<1.0	N	N
CCF483	56 1 38	158 40 23	10.0	2.00	1.50	.500	1,000	N	N	N	15	1,000	<1.0	N	N
CCF484	56 10 29	158 24 47	15.0	2.00	2.00	.500	2,000	N	N	N	10	700	<1.0	N	N
CCF485	56 10 29	158 24 46	5.0	1.00	3.00	.300	2,000	N	N	N	10	100	1.0	N	N
CCF486	56 10 29	158 24 46	10.0	1.50	1.50	.300	2,000	N	N	N	10	700	<1.0	N	N
CCF487	56 9 41	158 24 30	7.0	1.00	1.00	.300	1,500	N	N	N	10	2,000	1.0	N	N
CCF488	56 9 38	158 24 26	10.0	1.50	1.50	.300	1,500	N	N	N	10	700	<1.0	N	N
CCF489	56 9 34	158 24 19	7.0	1.50	1.50	.300	1,000	N	N	N	10	700	<1.0	N	N
CCF490	56 9 34	158 24 19	7.0	1.50	1.50	.300	1,000	<.5	N	N	10	500	<1.0	N	N
CCF491	56 9 38	158 24 6	1.0	.15	.10	.070	1,000	300.0	N	N	10	500	N	100	200
CCF492	56 9 38	158 24 6	10.0	1.50	1.50	.500	3,000	N	N	N	10	1,000	1.0	<10	N
CCF493	56 9 33	158 24 10	10.0	.10	1.50	.020	3,000	50.0	N	N	N	100	<1.0	70	N
CCF494	56 9 7	158 24 20	10.0	1.50	1.50	.300	1,500	N	N	N	<10	700	<1.0	<10	N
CCF495	56 9 12	158 24 20	10.0	1.50	1.50	.300	1,500	N	N	N	<10	700	<1.0	<10	N
CCF496	56 9 15	158 24 19	10.0	1.50	1.50	.300	1,000	N	N	N	<10	1,000	N	<10	N
CCF497	56 9 21	158 24 16	10.0	1.50	2.00	.300	1,500	N	N	N	<10	1,000	<1.0	<10	N
CCF498	56 9 26	158 24 11	10.0	1.50	2.00	.300	1,000	N	N	N	<10	700	<1.0	<10	N
CCF499	56 9 29	158 24 11	10.0	1.50	1.50	.300	1,000	N	N	N	<10	1,000	<1.0	N	N
CCF500	56 9 29	158 24 10	20.0	.70	.07	.100	>5,000	300.0	N	N	20	50	N	200	N
CCF501	56 9 33	158 24 10	10.0	1.50	1.50	.300	1,000	1.0	N	N	<10	1,000	N	<10	N
CCF502	56 9 35	158 24 8	10.0	1.50	1.50	.300	3,000	N	N	N	<10	1,500	1.0	N	N
CCF503	56 9 37	158 24 6	10.0	1.50	.70	.300	3,000	100.0	N	N	30	1,000	<1.0	N	N
CCF504	56 3 59	158 29 30	10.0	1.50	1.50	.300	1,500	N	N	N	<10	1,500	<1.0	N	N
CCF505	56 9 38	158 24 15	15.0	1.50	1.50	.300	1,000	N	N	N	<10	1,000	<1.0	N	N
CCF506	56 9 33	158 24 8	10.0	1.50	1.50	.300	1,000	<.5	N	N	10	1,500	N	N	N
CCF507	56 1 10	159 32 8	5.0	.70	1.50	.300	300	N	N	N	<10	700	1.0	N	N
CCF508	56 21 14	157 52 23	5.0	2.00	2.00	.300	1,000	N	N	N	10	1,000	1.0	N	N
CCF509	56 21 10	157 52 30	5.0	2.00	2.00	.300	1,000	N	N	N	10	1,000	1.0	N	N
CCF510	56 21 6	157 52 36	7.0	3.00	1.50	.300	1,000	N	N	N	10	500	1.0	N	N
CCF511	56 21 2	157 52 42	5.0	1.50	1.50	.300	1,500	N	N	N	50	300	1.0	N	N
CCF512	56 21 1	157 52 50	2.0	.70	1.50	.200	300	N	N	N	30	200	1.5	N	N
CCF513	56 20 57	157 52 59	5.0	2.00	2.00	.300	2,000	2.0	N	N	30	700	1.0	N	N

Sample	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
@@B1@@
CBD493	20	70	10	30	N	<20	50	20	N	20	N	700	150	N	30	<200	150	--	--	--	porphyry
CBD494	700	N	10,000	30	70	<20	50	200	N	15	N	200	100	300	30	2,000	20	--	--	--	quartz vein
CBD495	30	10	500	50	N	<20	20	<10	N	20	N	700	150	N	50	N	150	--	--	--	vein
CBD496	<5	70	30	30	N	<20	20	10	N	15	N	700	150	N	10	N	50	--	--	--	intrusive rock
CBD497	30	30	30	30	N	<20	70	15	N	20	N	500	150	N	20	N	70	--	--	--	altered volcanic
CBD498	<5	N	<5	30	N	<20	<5	<10	N	10	N	200	10	N	50	N	200	--	--	--	intrusive
CBD499	<5	N	<5	30	N	<20	<5	10	N	10	N	200	10	N	50	N	300	--	--	--	intrusive
CBD500	20	30	70	30	N	<20	50	20	N	20	N	1,000	150	N	30	N	100	--	--	--	intrusive
CBD501	20	30	15	50	N	<20	15	10	N	20	N	500	150	N	50	N	50	--	--	--	intrusive
CBD502	20	50	70	30	N	<20	20	150	N	20	N	1,000	150	N	10	N	50	--	--	--	intrusive
CBD503	20	10	70	30	N	<20	10	20	N	20	N	700	200	N	50	N	150	--	--	--	intrusive
CCF001	20	50	70	50	N	<20	30	50	N	30	N	300	200	N	30	N	150	70	10	65	basalt
CCF002	20	70	15	50	N	<20	10	20	N	30	N	700	150	N	20	N	150	20	5	40	tuff
CCF003	20	50	15	50	N	<20	10	<10	N	20	N	500	150	N	20	N	150	25	10	45	tuff
CCF004	20	100	30	50	N	<20	50	10	N	30	N	500	150	N	30	N	200	55	10	30	tuff
CCF005	20	30	30	50	N	<20	20	10	N	15	N	500	100	N	10	N	150	15	10	40	plutonic
CCF006	<5	50	10	50	N	<20	10	10	N	15	N	1,000	100	N	<10	N	20	10	20	15	plutonic
CCF007	15	70	15	50	N	<20	20	10	N	15	N	100	150	N	20	N	200	10	20	20	sandstone
CCF008	<5	<10	7	50	N	<20	<5	10	N	5	N	100	50	N	20	N	200	10	5	10	rhyodacite
CCF009	<5	<10	15	50	N	<20	<5	20	N	7	N	100	50	N	20	N	200	10	15	15	
CCF010	<5	<10	15	50	7	<20	<5	10	N	7	N	100	150	N	20	N	300	10	5	<5	rhyodacite
CCF011	<5	<10	10	50	5	<20	<5	<10	N	7	N	100	70	N	10	N	200	10	5	5	rhyodacite
CCF012	30	500	50	50	<5	<20	150	<10	N	30	N	500	200	N	20	<200	100	45	15	60	felsic intrusive
CCF013	15	50	20	50	N	<20	50	<10	N	15	N	100	150	N	15	<200	100	20	5	100	felsic intrusive
CCF014	<5	10	15	50	N	<20	<5	20	N	15	N	500	150	N	30	N	300	15	5	<5	rhyolite
CCF015	10	<10	20	50	<5	<20	<5	300	N	20	N	700	70	N	70	300	500	10	200	400	rhyolite porphyry
CCF016	10	<10	20	50	20	<20	<5	500	N	20	N	1,000	150	N	70	200	500	15	320	130	rhyolite breccia
CCF017	15	<10	10	50	20	<20	<5	50	N	20	N	200	70	N	70	<200	1,000	10	20	180	rhyodacite
CCF018	20	100	30	50	N	<20	20	20	N	20	N	500	150	N	20	N	150	30	15	35	hornblende diorite
CCF019	<5	30	<5	50	20	<20	<5	150	N	15	N	100	150	N	<10	N	100	5	170	10	rhyolite porphyry
CCF020	20	20	20	50	N	<20	10	50	N	15	N	500	150	N	10	N	100	15	20	65	rhyodacite porphyry
CCF021	30	50	15	50	N	<20	15	20	N	15	N	500	150	N	<10	N	150	15	10	65	dacite porphyry
CCF022	50	20	100	50	N	<20	20	10	N	30	N	500	500	N	30	<200	150	70	20	120	andesitic greenstone
CCF023	30	500	70	50	N	<20	100	10	N	30	N	500	200	N	30	N	150	50	20	60	dacite
CCF024	20	100	30	50	N	<20	20	<10	N	30	N	500	200	N	30	N	150	40	15	60	dacite
CCF286	100	150	100	50	<5	<20	30	20	N	70	N	1,000	500	N	20	N	100	60	20	50	quartzite
CCF287	10	50	15	50	N	<20	10	<10	N	20	N	500	150	N	10	N	100	15	15	20	quartzite
CCF288	50	70	50	50	N	<20	20	20	N	50	N	300	200	N	10	<200	150	35	20	100	intrusive
CCF289	20	70	70	50	N	<20	20	<10	N	20	N	500	200	N	10	500	100	70	15	650	conglomerate/sandstone
CCF290	70	30	200	50	N	<20	15	<10	N	20	N	500	200	N	10	N	100	190	10	30	intrusive
CCF291	20	30	50	50	N	<20	10	10	N	30	N	500	200	N	10	N	200	35	15	25	hornfelsed sandstone
CCF292	50	150	50	50	N	<20	50	<10	N	30	N	300	200	N	10	<200	200	30	10	30	hornfels
CCF293	10	<10	5	50	N	<20	<5	<10	N	20	N	500	200	N	10	N	150	5	10	25	rhyolite
CCF294	10	<10	10	50	N	<20	<5	<10	N	20	N	500	200	N	10	N	100	5	10	40	dacite porphyry
CCF295	10	<10	10	50	N	<20	<5	<10	N	20	N	300	200	N	10	<200	150	10	10	25	dacite porphyry
CCF296	10	<10	10	50	N	<20	<5	30	N	20	N	300	300	N	10	<200	200	5	30	25	dacite porphyry
CCF297	50	50	200	50	N	<20	20	<10	N	50	N	200	300	N	20	<200	200	90	20	95	hornfelsed slate
CCF298	30	50	70	50	N	<20	20	<10	N	70	N	300	300	N	20	N	500	45	25	80	dacite porphyry
CCF299	20	50	50	50	N	<20	20	<10	N	70	N	300	300	N	10	N	200	30	15	60	hornfelsed shale
CCF300	20	50	70	50	N	<20	20	<10	N	50	N	300	300	N	20	N	700	40	10	30	hornfelsed shale
CCF301	20	N	20	50	N	<20	10	<10	N	15	N	300	300	N	10	N	300	10	15	60	amphibole dacite
CCF302	15	N	10	50	N	<20	10	20	N	15	N	300	300	N	10	N	300	10	40	100	dacite
CCF303	20	100	20	50	N	<20	20	30	N	30	N	100	200	N	<10	<200	100	25	35	90	hornfelsed basaltic tuff
CCF304	15	70	300	50	N	<20	15	2,000	N	10	N	150	150	N	<10	5,000	70	200	2,500	3,500	rhyodacite
CCF305	15	70	20	50	N	<20	10	30	N	20	N	500	200	N	<10	<200	200	10	15	10	diabase
CCF306	20	200	50	50	N	<20	50	500	N	20	N	500	200	N	<10	<200	200	30	320	120	andesite
CCF307	<5	200	30	50	N	<20	10	10	N	30	N	200	200	N	<10	N	200	35	30	20	andesite
CCF308	50	150	300	50	N	<20	20	70	N	70	N	300	300	N	15	N	100	320	25	85	andesitic greenstone
CCF309	50	50	200	50	N	<20	20	20	N	70	N	500	300	N	10	<200	70	210	20	80	dike
CCF310	30	100	200	50	N	<20	20	10	N	70	N	300	500	N	20	N	70	320	15	25	basalt
CCF311	20	50	2,000	50	N	<20	30	20	N	30	N	300	200	N	20	N	150	2,200	40	30	rhyolite porphyry
CCF312	30	10	100	50	N	<20	15	10	N	30	N	500	300	N	20	N	70	35	20	120	greenstone
CCF313	20	200	30	50	N	<20	20	20	N	20	N	500	200	N	10	N	100	15	10	25	andesite
CCF314	15	70	30	50	N	<20	15	<10	N	30	N	300	200	N	10	N	100	50	15	40	andesite
CCF315	20	70	50	50	N	<20	20	20	N	30	N	500	200	N	10	N	200	15	10	20	andesite
CCF316	30	150	100	50	N	<20	30	20	N	50	N	500	300	N	10	N	70	70	25	40	dacite porphyry
CCF317	20	100	100	50	N	<20	20	20	N	50	N	300	300	N	10	N	150	50	20	25	basaltic andesite
CCF318	30	200	70	50	N	<20	50	20	N	50	N	300	300	N	15	N	200	30	20	35	andesite
CCF319	30	50	100	50	N	<20	50	30	N	50	N	150	200	N	10	N	150	50	35	35	andesite
CCF320	50	100	100	50	N	<20	100	20	N	70	N	300	300	N	10	N	200	40	25	45	altered zone
CCF321	30	70	20	50	N	<20	15	50	N	20	N	500	200	N	10	N	500	10	35	90	dacite porphyry
CCF322	50	50	100	50	N	<20	15	10	N	50	N	300	200	N	20	N	500	50	15	30	andesite
CCF323	50	70	100	50	N	<20	50	<10	N	70	N	500	500	N	15	N	300	60	15	25	diorite
CCF324	30	50	100	50	N	<20	15	<10	N	50	N	500	300	N	15	<200	100	70	20	70	basalt
CCF325	30	100	150	50	N	<20	50	100	N	70	N	300	500	N	10	<200	100	70	70	120	diorite
CCF326	50	100	50	50	N	<20	20	<10	N	50	N	700	100	N	10	N	100	35	10	25	diorite
CCF327	<5	10	7	50	N	<20	<5	<10	N	10	N	200	50	N	<10	N	300	5	5	5	rhyolite
CCF328	50	70	100	50	N	<20	20	15	N	70	N	500	300	N	10	<200	100	45	20	30	diorite
CCF329	30	70	70	50	N	<20	20	15	N	50	N	500	200	N	10	<200	100	30	15	40	diorite
CCF330	100	70	100	50	N	<20	50	10	N	50	N	500	300	N	10	<200	100	50	25	60	diorite
CCF331	50	300	150	50	N	<20	70	10	N	100	N	500	500	N	<10	N	150	55	10	10	diorite
CCF332	15	300	150	50	N	<20	70	10	N	100	N	500	500	N	<10	N	200	85	15	30	diorite
CCF333	15	50	70	50	N	<20	20	<10	N	50	N	500	500	N	<10	N	200	110	10	65	basaltic andesite
CCF334	100	200	150	50	N	<20	100	<10	N	100	N	500	500	N	10	<200	200	55	10	50	basaltic andesite
CCF468	50	100	50	50	N	<20	100	10	N	50	N	100	200	N	30	N	70	45	20	65	hornfelsed sandstone
CCF469	50	50	150	50	N	<20	70	10	N	50	N	300	200	N	50	N	200	75	20	45	diorite
CCF470	30	50	150	50	<5	<20	50	20	N	50	N	300	200	N	50	N	200	90	20	65	diorite
CCF471	20	150	70	50	N	<20	70	20	N	50	N	200	200	N	50	N	300	55	20	110	diorite
CCF472	30	200	100	50	<5	<20	100	200	N	20	N	200	150	N	30	N	200	30	130	220	sandstone
CCF473	20	150	10	50	N	<20	50	10	N	20	N	200	100	N	30	N	300	15	15	60	carbonaceous sandstone
CCF474	30	10	70	50	<5	<20	20	20	N	20	N	300	200	N	30	N	200	55	15	55	diorite dike
CCF475	30	10	100	50	N	<20	20	10	N	30	N	300	300	N	30	N	200	36	20	70	diorite sill
CCF476	20	100	70	50	N	<20	100	20	N	20	N	300	150	N	30	N	200	50	25	110	diorite sill
CCF477	20	100	20	50	N	<20	100	10	N	20	N	100	150	N	20	N	200	15	15	20	sandstone
CCF478	30	100	200	50	N	<20	100	50	N	20	N	200	150	N	30	N	200	140	55	80	sandstone
CCF479	50	200	200	50	N	<20	100	20	N	30	N	200	300	N	50	N	300	65	15	80	diorite
CCF480	30	50	70	50	N	<20	70	20	N	20	N	200	200	N	30	N	100	50	20	85	sandstone
CCF481	20	100	100	50	N	<20	50	10	N	20	N	100	300	N	50	N	300	55	10	35	quartzite
CCF482	20	20	30	50	N	<20	20	10	N	20	N	300	200	N	50	N	300	15	5	30	hornblende diorite
CCF483	30	100	150	50	N	<20	100	10	N	30	N	200	200	N	50	N	200	110	15	55	metasiltstone
CCF484	50	20	70	50	N	<20	30	10	N	30	N	500	300	N	50	N	100	30	10	35	granodiorite
CCF485	20	50	100	50	7	<20	50	10	N	30	N	700	150	N	50	N	150	75	25	55	hornfels
CCF486	30	50	20	50	N	<20	30	100	N	20	N	500	150	N	50	N	150	10	55	70	sandstone
CCF487	15	20	70	50	N	<20	30	20	N	20	N	200	150	N	50	N	200	50	5	70	sandstone
CCF488	15	15	150	50	5	<20	15	<10	N	20	N	200	200	N	50	N	300	130	5	45	quartz monzonite
CCF489	15	10	30	50	5	<20	15	<10	N	20	N	300	200	N	50	N	300	25	5	25	intrusive
CCF490	15	10	1,500	50	20	<20	15	50	N	20	N	200	200	N	50	N	100	940	25	90	granodiorite
CCF491	<5	N	700	50	700	<20	<5	>20,000	300	N	N	N	20	N	<10	7,000	20	910	110,000	6,800	quartz vein
CCF492	10	<10	300	<20	7	<20	20	1,000	N	20	N	500	200	N	50	500	100	250	140	380	conglomerate
CCF493	30	N	>20,000	<20	20	<20	<5	2,000	N	N	N	N	20	N	10	7,000	N	75,000	3,800	8,000	vein
CCF494	20	10	300	50	N	<20	15	100	N	20	N	300	200	N	30	N	150	200	10	45	granodiorite
CCF495	20	10	500	50	10	<20	10	200	N	20	N	300	200	N	50	N	100	260	30	35	granodiorite
CCF496	20	10	500	<20	10	<20	10	50	N	15	N	200	200	N	20	N	50	320	10	25	granodiorite
CCF497	20	10	300	<20	5	<20	10	30	N	15	N	300	200	N	20	N	150	260	5	20	granodiorite
CCF498	30	20	700	50	N	<20	20	30	N	20	N	200	300	N	30	N	100	650	10	20	granodiorite
CCF499	20	10	1,000	<20	700	<20	15	30	N	20	N	200	200	N	50	N	200	1,800	15	25	granodiorite
CCF500	200	N	>20,000	<20	700	<20	10	700	N	5	N	N	70	N	20	2,000	<10	52,000	1,100	1,600	vein
CCF501	20	10	300	<20	20	<20	15	20	N	15	N	200	200	N	20	N	100	150	10	25	granodiorite
CCF502	20	10	300	<20	N	<20	10	15	N	15	N	500	200	N	30	N	300	540	10	110	granodiorite
CCF503	15	N	>20,000	<20	30	<20	10	150	N	10	N	100	100	N	10	500	100	35,000	110	180	vein
CCF504	10	N	100	50	N	<20	10	10	N	10	N	200	150	N	30	N	100	40	5	20	quartz diorite
CCF505	20	10	500	50	20	<20	20	15	N	20	N	300	200	N	30	N	100	340	10	25	biotite quartz monzonite
CCF506	20	10	700	50	500	<20	10	10	N	15	N	200	150	N	30	N	100	1,100	10	40	granodiorite
CCF507	10	15	50	50	N	<20	20	10	N	20	N	300	100	N	20	N	100	40	15	35	dacite porphyry
CCF508	20	150	30	50	N	<20	70	20	N	20	N	500	100	N	20	N	70	35	20	55	altered diorite
CCF509	20	100	50	50	N	<20	50	20	N	15	N	500	100	N	15	N	70	35	20	60	altered diorite
CCF510	20	150	100	50	N	<20	50	100	N	20	N	500	100	N	20	N	70	60	40	85	altered diorite
CCF511	15	100	30	50	N	<20	50	20	N	20	N	200	100	N	10	N	70	35	30	100	altered diorite
CCF512	10	10	10	50	N	<20	10	10	N	10	N	200	70	N	10	N	50	25	20	45	altered diorite
CCF513	20	500	500	50	N	<20	100	200	N	20	N	300	100	N	10	N	70	320	110	220	altered diorite

TABLE 1.--ANALYTICAL DATA--CONTINUED

Semiquantitative spectrographic (ppm unless otherwise specified) / Atomic absorption (ppm)

@@C1@@

Scale 1:250,000

TABLE 2.--STATISTICAL SUMMARY

Element	Number of Samples: N	<	>	--	Analytical values	Range of values	Geometric mean	Geometric deviation	Arithmetic mean	Standard deviation	Limits of Determination: Lower limit	Upper limit
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.

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