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STREAM SEDIMENT, FLOAT, AND BEDROCK SAMPLING IN THE PORCUPINE MINING AREA, SOUTHEAST ALASKA

By Jan C. Still, and Kevin R. Weir, U.S. Bureau of Mines and Wyatt Gilbert, and Earl Redman, State of Alaska Division of Geological and Geophysical Surveys

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UNITED STATES DEPARTMENT OF THE INTERIOR

Donald Paul Hodel, Secretary

BUREAU OF MINES

Robert C. Horton, Director

CONTENTS

ILLUSTRATIONS

UNITS OF MEASURE USED IN THIS REPORT

ft - foot

in - inch

% - percent

ppm - parts per million

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By Jan C. Still [1], and Kevin R. Weir [2],
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ABSTRACT

As part of a cooperative project during 1983 and 1984, personnel from the State of Alaska Division of Geological and Geophysical Surveys and the U.S. Bureau of Mines collected 366 stream sediment, float and bedrock samples in the Porcupine Mining area near Haines in Southeast Alaska. More than 240 of the 366 samples collected contained anomalous concentrations of one or more elements, indicating a variety of mineral deposit types including zinc-copper-silver-barium-gold-lead-cobalt massive sulfide and gold-silver vein or stockwork. Rock samples collected contain up to 531.1 ppm gold, 610.29 ppm silver, 13.4% zinc, 2.33% copper, 15.7% lead, 1070 ppm cobalt, 47% barium, 96 ppm molybdenum, 600 ppm tin, 4000 ppm arsenic, 800 ppm nickel, 2000 ppm bismuth and 7000 ppm antimony. Stream sediment samples collected contain up to 62.25 ppm gold, 4.896 ppm silver, 1810 ppm zinc, 310 ppm lead, 110 ppm cobalt, 2800 ppm barium and 400 ppm arsenic.

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INTRODUCTION

As part of a cooperative project, to evaluate the economic mineral potential of the Porcupine Mining area, the State of Alaska Division of Geological and Geophysical Surveys and the U.S. Bureau of Mines in 1983 and 1984 collected 269 bedrock and float samples, 92 stream sediment and 5 panned concentrate samples in the Porcupine Mining area near Haines in Southeast Alaska. The Porcupine Mining area has been mined for placer gold since the turn of the century. It is bounded by the Tsirku River to the south and east, by the Alaska - British Columbia border to the west, and it extends several miles north of the Haines highway. Figure 1 shows the Porcupine Mining area while figure 2 shows the sample locations, anomalous element concentrations and known or reported mineral occurrences. Samples collected from previously known occurrences are reported in Still (1) and are not repeated here (for more information about area access, history and previous studies see Still (1)). In general, the area geology consists of paleozoic slate, volcanic rocks and limestone intruded by Cretaceous diorite. For more detail see the geologic map by Redman and others (2), which is at the same scale as figure 2 of this report. Previous geologic and geochemical work in the area was done in 1969-1971 by Winkler (3) and Mackevett (4).

ANOMALOUS LEVELS

Samples were often collected in areas where mineralization was known or likely to occur, resulting in a relatively higher percentage of anomalous samples than would have been the case if the samples had been collected on a more random basis. Anomalous levels were assigned by scanning the data and comparing them to anomalous levels determined by more detailed studies to the southwest in Glacier Bay (5) and to the east in the Skagway B-2 Quadrangle (6). Appendix A lists the anomalous levels from the Glacier Bay and Skagway B-2 studies and gives the anomalous levels determined for this report. Appendix B lists the analytical results for the sample locations shown on figure 2. More than 240 of the 366 analyzed samples contained anomalous concentrations of one or more metals.

RESULTS

Indications of massive sulfide type (Zn, Cu, Pb, Co, Ba, Au, Ag) mineralization were found at several locations throughout the study area. The most prominent of these are as follows:

Items in parenthesis are given in a list of references at the end of the text.

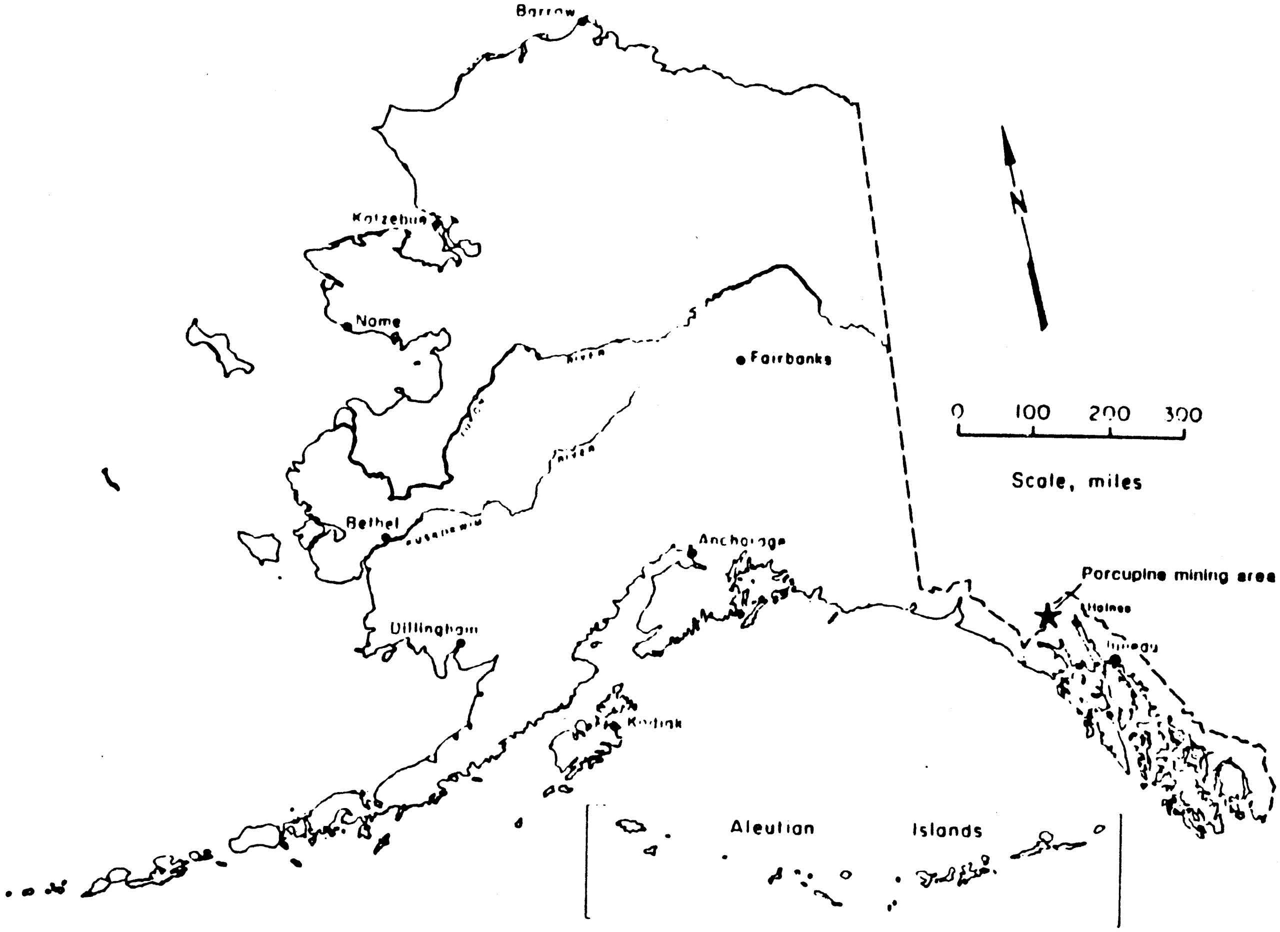

Figure 1.- Alaska, showing the location of the Porcupine mining area

1. Porcupine road area (map no. 67 to 77): stream sediment samples collected on the uphill side of the road contained up to 1810 ppm zinc, 800 ppm barium, 0.092 ppm gold and 4.896 ppm silver whereas float and bedrock samples contained up to 210 ppm zinc, 1.94 ppm silver, 150 ppm lead and 800 ppm barium. This area is underlain by limestone and slate.

2. West of Flower Mountain (map no. 128 to 130) (Claire Bear): bedrock samples collected from a massive sulfide lens at a dike-limestone contact, and similar float material, contained up to 56.16 ppm silver, 2160 ppm copper, 1070 ppm cobalt, 600 ppm tin, 1000 ppm arsenic, 1000 ppm bismuth and 7000 ppm antimony. This area is a roof pendant in diorite composed of slate, limestone and some volcanic rocks.

3. North of Boundary Glacier (map no. 116 to 121): float and bedrock samples of sedimentary and volcanic rocks contain up to 0.034 ppm gold, 1.214 ppm silver, 280 ppm zinc, 1390 ppm copper, 390 ppm cobalt, 47% barium, 400 ppm arsenic and 200 ppm nickel. This is an area of basalt and andesite with subordinate sedimentary rocks.

4. North of the Tsirku Glacier and River (map no. 149 to 168): float and bedrock samples contain up to 6.2% zinc, 2.33% copper, 1.18% lead, 450 ppm cobalt, 49.84 ppm silver, 0.30 ppm gold, 1.13% barium, 200 ppm tin, 400 ppm arsenic, 300 ppm nickel and 900 ppm bismuth; stream sediment samples contain up to 800 ppm zinc, 10 ppm silver, 2800 ppm barium, and 500 ppm tin. Bedrock is composed of volcanic rocks, slate, and limestone.

Placer gold has been reported or mined in Glacier, Porcupine, Cahoon, McKinley, Little Boulder, Big Boulder, Summit, Nugget, and Cottonwood Creeks and the Little Salmon River (7). These placers may indicate potential lode gold sources. Quartz veins and stringer zones hosted in slate have long been known by local prospectors. The following represents new information concerning potential vein gold and/or massive or disseminated sulfide gold mineralization:

1. McKinley Creek (map no. 100 to 109): some of the samples were collected within the Golden Eagle lode claims; samples of narrow quartz sulfide veins hosted in slate and dikes contain up to 182.13 ppm gold while one select native sulfur-sulfide rich sample contained 531.1 ppm gold; samples also contained up to 20.57 ppm silver, 9.5% zinc, 230 ppm cobalt, 430 ppm lead, 1910 ppm barium, 4000 ppm arsenic, and 100 ppm nickel.

2. Head of Porcupine Creek (map no. 132 to 141): an isolated sample of chalcopyrite-bearing quartz float contained 49 ppm gold, 74 ppm silver and 1% copper; samples of slate hosted quartz veins that occur in swarms contained up to 0.148 ppm gold, 390 ppm zinc, 1420 ppm barium, 60 ppm tin, 700 ppm arsenic, 200 ppm nickel and 3000 ppm antimony. This area is a roof pendant composed of slate, basalt and limestone.

3. On the north side of the Tsirku River a south flowing stream drains an area just to the south of the head of Porcupine Creek, (map no. 170). A single isolated stream sediment sample collected at the mouth of this stream contained 2.5 ppm gold and 240 ppm zinc.

A silver occurrence consisting of narrow galena-sphalerite quartz veins hosted in argillite is located 1.5 miles southwest of VABM knob 1720 (map no. 214 to 218) near a logging road locally called the Sunshine Mountain road. Samples collected of the veins contained up to 0.471 ppm gold, 610.29 ppm silver, 5.8% zinc and 15.7% lead.

Other areas of volcanic rocks, slate or limestone also contained anomalous values. The Pleasant Camp area (map no. 18 to 26) and the Glacier Creek area (map no. 57 to 66) are anomalous in gold, silver, lead and copper. Big Boulder Creek (map no. 27 to 43) is anomalous in gold and zinc while the area between Glacier and Jarvis Creeks (map no. 3 to 17) is anomalous in zinc. The Mosquito Lake area (map no. 191 to 204) is anomalous in gold, silver, zinc, copper and cobalt. Numerous other samples at various locations also contained anomalous metal concentrations.

CONCLUSIONS

The high number of anomalous samples (242 of 366) and the broad spectrum of anomalous elements (Au, Ag, Zn, Cu, Pb, Co, Ba, Mo, Sn, As, Ni, Bi, and Sb) reinforced by the previous findings of Redman and others (2) and Still (1) indicate that the Porcupine Mining area has potential for a variety of deposit types and is an exploration target for base and precious metal massive sulfide, and vein or stockwork, gold-silver deposits.

This is a preliminary report, and sampling and sample analysis are not yet complete. Additional work is slated for the 1985 field season, and a final geochemical report with complete sample results will be published in 1986.

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6. Redman, Earl, Retherford, R.M., and Hickock, B.D., 1984, Geology and Geochemistry of the Skagway B-2 Quadrangle, Southeastern Alaska: Alaska Division of Geological and Geophysical Surveys Report of Investigations 84-31, 34 p 1:40,000, 4 sheets.

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APPENDIX A

Anomalous Levels

ANOMALOUS LEVELS

A geochemical study conducted by the U.S. Geological Survey (USGS) in Glacier Bay National Park (bordering the Porcupine Mining Area to the Southwest, see figure 2) was based on over 1800 stream sediment and 1800 rock samples (5). A geochemical study conducted by the Alaska Division of Geological and Geophysical Surveys (ADGGS) in the Skagway B-2 Quadrangle (located to the east of the Porcupine Mining area) was based on 265 stream sediment samples (6). The anomalous levels reported by the above two studies are listed on the left below:

	USGS Glacier Bay		ADGGS B-2	ADGGS-USBM Porcupine Mining Area Rock and Stream Sediment	
Element	Stream Sediment ppm	Rock ppm	Stream Sediment ppm	Anomalous ppm	Highly Anomalous ppm
Au	0.05	-	0.1	any	1.0
Ag	0.5	1	0.15	0.5	3
Zn	200	150	75-120	200	500
Cu	150	150	70-300	200	500
Pb	30	70	9-20	100	200
Co	70	100	13-20	100	200
Ba	-	-	-	750	-
Mo	7	15	4-6	10	-
Sn	10	15	3	any	-
As	200	-	10	100	-
Ni	150	100	30-40	100	-
Bi	-	-	-	any	-
Sb	-	-	1.4	200	-

Anomalous levels for this report were determined by comparison to the USGS and ADGGS studies and scanning the Porcupine Mining area data. The USBM-ADGGS Porcupine Mining area anomalous levels are shown above on the right.

APPENDIX B

Analytical Results

See footnotes at the end of Appendix B for list of abbreviations.

MAP NUMBER	FIELD SAMPLE NUMBER	SAMPLE LENGTH IN FEET	SAMPLE TYPE 1	Analyses 2 Fire Assay ICP (ppm)		Analyses 3 AAS (ppm unless marked %)				4 X-Ray (%)	Analyses 5 Spectrographic (ppm)							Comments
				Au	Ag	Zn	Cu	Pb	Co	Ba	W	Mo	Sn	As	Ni	Bi	Sb	Mt. McDonell Area
1	4EK 189		G X	N	0.4	65	87	43	4	—		3		N	3		N	Altered volc. + Mbl. Fe-st w/py
2	191		G X	N	0.1	51	37	4	9	—		3		N	N		N	Fe-st argillite w some py
																		Area Between Jarvis + Glacier Creeks
3	3S165		SS	N	N	160	84	20	58	0.03								
4	166		SS	N	N	140	38	N	46	0.03								
5	167		SS	N	N	200	41	24	55	0.03								
6	168		SS	N	N	230	79	41	44	0.05								
7	169A		SS	N	N	170	46	N	35	0.01								
8	169		SS	N	N	250	60	23	32	0.02								
9	170		SS	N	N	—	48	—	29	0.01								
10	132		G	N	N	100	29	N	27	N								Andesite
11	133		G	N	N	16.1	4.7	N	N	—								Jasper w/ mag in andesite
12	131		SS	N	N	200	86	16	47	0.08								
13	130		G	N	0.44	19.9	7.7	N	N	0.02								Jasper w/ mag in andesite
14	134		F	N	N	90	160	N	78	—								Altered andesite
15	135		SS	N	N	220	75	24	41	0.05								
16	136		G	N	N	140	42	N	74	0.02								Diorite w/ mag
17	171		SS	N	N	180	79	32	54	0.02								
																		Pleasant Camp Area
18	3S061		G	N	N	N	130	N	47	—								Felsite w/py
	62		HG. G	0.013	N	N	47	N	53	—								Felsite w/py
	63		G	N	N	11	330	N	30	—								calc vein w/po
19	60		F	0.008	N	410	12	58	40	—								Schist w/po
20	54		G	N	0.72	4.2	16	N	4.6	—								Schist
	55		G	0.191	N	N	N	N	1	—								Limestone
	56		SS	0.016	1.277	200.	66	N	32	—								
	57		G	N	N	N	15	N	2.7	—								Meta sediment
	58		G	N	N	N	25	N	1.4	—								Meta sediment
	59		G	N	0.39	N	99	N	34	—								fault gouge
21	50		SS	0.581	N	62	55	N	21	—								
	51		G	0.109	0.41	N	91	N	21	—								Meta sediment
	52		G	0.316	N	17	170	N	25	—								Meta sediment
	53		G	0.066	0.47	20	95	N	31	—								Gossan
22	87		SS	N	N	68	110	90	49	—								
	88		F	N	N	N	340	N	50	—								Quartz w/ cp
	89		SS	N	N	52	110	100	52	—								
23	4WG 78		G X	N	0.6	231	40	17	5	—		15		N	46		N	Fe-st hornfelsed calc siltstone w/py
24	35090		SS	1.151	N	130	90	97	53	—								

MAP NUMBER	FIELD SAMPLE NUMBER	SAMPLE LENGTH IN FEET	SAMPLE TYPE 1	Analyses 2 Fire Assay ICP (ppm)		Analyses 3 AAS (ppm unless marked %)				4 X-Ray (%)	Analyses 5 Spectrographic (ppm)							Comments
				Au	Ag	Zn	Cu	Pb	Co	Ba	W	Mo	Sn	As	Ni	Bi	Sb	
25	4WG 74		G x	N	0.7	80	22	33	21	—		9		21	18		N	fe-st argillite w/py
26	202		G x	N	0.4	44	129	12	15	—		26		N	57		N	phyllitic black argillite
																		Big Boulder Creek Area
27	4WG193		SS	N	N	140	56	17	13.4	0.058								
28	173		SS	N	N	130	49	17	16.[illegible]	0.054								
29	178		SS	N	N	190	74	24	48	0.06								
30	182		G x	N	0.3	110	41	8	7	—		3		N	20		N	STATE
	192		SS	N	N	250	100	20	42	0.054								
31	3S091		G	N	N	93	34	66	19	—								Schist w/sulfides
32	4WG185		SS	N	N	150	79	17	20.5	0.054								
33	4WG187		G x	N	0.1	19	59	4	12	—		4		N	54		N	Fe-st qz-calc veinlet in graphitic phyllite
34	3S038		F	0.022	N	N	52	N	12	—								Quartz vein w/ po
35	36		F	0.023	N	23	99	N	29	—								Shale breccia
	37		F	N	N	N	130	N	11	—								Gossan breccia
	39		SS	0.016	N	100	89	N	29	—								
	40		F	N	0.35	11	110	N	27	—								Gossan
36	41		SS	N	0.47	40	110	N	25	—								
37	42		SS	0.023	0.38	[illegible]	76	[illegible]	21	—								
	43		S	N	N	58	83	N	28	—								
38	44		SS	N	0.45	2.7	130	N	27	—								
39	45		F	0.017	0.59	170	41	N	10	—								Quartz w/ inclusions, po
	46		SS	0.269	N	47	110	N	24	—								
40	47		F	2.598	0.47	270	40	N	3.7	—								Argillite w/ po
41	48		SS	62.25	N	44	110	N	24	—								
	49		F	2.182	N	N	16	N	26	—								Porphyritic andesite
42	4WG 87		G x	N	0.8	80	44	10	2	—		5		N	12		N	Graphitic mafic schist
43	90		G x	N	0.1	12	20	4	4	—		2		N	10		N	Quartz vein
																		Little Boulder Creek Area
44	3S010		F	N	0.45	870	400	100	16	—								Schist w/ fe-st
45	15		F	N	0.47	65	46	N	6	—								Phyllite w/dissem po
	16		SS	N	N	110	76	N	21	—								
46	13		C	N	0.39	N	130	N	18	—								Quartz vein in phyllite w/py
	14		SS	N	N	32	78	N	22	—								
47	12		SS	N	N	N	91	N	32	—								
48	11		SS	N	N	34	75	N	20	—								
49	17		SS	N	N	56	85	65	25	—								
	18		F	0.016	0.878	N	140	N	15	—								Quartz w/py

MAP NUMBER	FIELD SAMPLE NUMBER	SAMPLE LENGTH IN FEET	SAMPLE TYPE 1	Analyses 2 Fire Assay ICP (ppm)		Analyses 3 AAS (ppm unless marked %)				4 X-Ray (%)	Analyses 5 Spectrographic (ppm)							Comments
				Au	Ag	Zn	Cu	Pb	Co	Ba	W	Mo	Sn	As	Ni	Bi	Sb	East of Little Jarvis Glacier
50	3E017		G	N	N	56	38	N	N	N								Altered dacite w/py
51	18		G	N	N	[illegible]	38	N	N	N								Quartz w/py
																		West of Little Jarvis Glacier
52	3E02[illegible]		G	N	N	110	38	N	41	0.03								pyritic Andesite
53	25		G	N	N	26.9	16	N	N	0.04								Silicified volcanic rock w/py
54	24		G	N	N	150	14	N	35	N								Andesite
55	3E010		G	N	N	44	76	N	25	N								Limestone
56	11		G	0.180	3.686	57	1200	32	180	—								Limestone w/py
																		Glacier Creek Area
57	3S019		SS	N	N	64	60	N	24	—								
	20		SS	0.406	N	51	56	N	23	—								
	21		G	N	N	N	43	N	N	—								Schist
	22		G	0.008	N	N	16	N	5.5	—								Quartz vein w/sulfides
	23		pc	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
58	24		F	N	N	170	81	N	42	—								Quartz and greenstone
59	26		SS	N	N	270	71	200	37	—								
60	27		SS	0.022	0.39	490	110	38	26	—								
61	28		HG G	0.59	3.048	130	550	140	11	—								Limestone w/py
	29		SS	0.101	N	140	76	39	44	—								
62	30		F	0.044	2.321	N	570	70	48	—								Quartz and cck w/po
	31		SS	N	N	150	84	55	47	—								
63	32		SS	0.033	N	140	79	43	43	—								
	33		F	0.151	1.541	N	35	55	41	—								Shale w/py
	33B		G	0.074	0.39	N	110	N	8.4	—								pink rock
64	34		SS	0.013	N	120	78	N	35	—								
65	35		SS	0.047	N	130	69	N	35	—								
66	56		SS	0.016	1.277	200	66	N	32	—								
	57		G	N	N	N	15	N	2.7	—								Meta sediment
																		Porcupine Road Area
67	3S255		G	N	N	180	56	N	N	0.05								Limestone
68	254		SS	N	N	140	43	N	30	0.08								
69	251		SS	N	N	250.	38	N	N	0.05								
70	253		G	N	N	99	110	N	N	0.08								Andesite
71	250		SS	N	N	490	43	N	30	0.04								
72	252		SS	N	N	150	35	N	35	0.02								
73	249		SS	0.092	N	1810	32	N	N	N								
74	248		SS	N	1.125	760	43	N	N	0.04								
75	247		F	N	1.94	48	16	150	N	N								Calcite w/cu

MAP NUMBER	FIELD SAMPLE NUMBER	SAMPLE LENGTH IN FEET	SAMPLE TYPE 1	Analyses 2 Fire Assay ICP (ppm)		Analyses 3 AAS (ppm unless marked %)				4 X-Ray (%)	Analyses 5 Spectrographic (ppm)							Comments
				Au	Ag	Zn	Cu	Pb	Co	Ba	W	Mo	Sn	As	Ni	Bi	Sb	
76	3S249		SS	N	4.896	—	—	—	—	0.01								
	246		G	N	1.018	74	16	N	N	N								Limestone
77	244		G	N	N	210	75	N	46	N								Phyllite
																		Flower Mountain Area
78	4WG 79		G x	N	1.1	159	12	5	8	—		3		N	70		N	Dark gray siltstone w/py
79	80		G x	N	0.1	7	6	8	1	—		N		N	4		N	Fe-st gray-green chert w/py
80	4WG216		G x	N	N	15	6	7	2	—		N		N	3		N	Limestone breccia
81	3S103		G	N	N	N	140	86	90	—								Amphibolite
82	3E031		G	N	N	140	32	N	51	0.02								Basalt
83	32		G	N	N	110	43	11	24	0.01								Basalt
84	3S101		S	N	N	N	150	310	110	—								
	102		G	N	N	74	100	280	84	—								Gossan
85	100		G	N	N	N	70	58	61	—								Greenstone
86	4WG191a		G x	N	0.3	92	54	33	22	—		2		N	21		N	Gouge w/sulfides
	191b		G x	N	0.3	54	10	59	9	—		N		N	6		3	Qz feldspar dike
87	170		G x	N	0.3	72	50	7	17	—		3		N	25		N	hornfelsed argillite
88	172		G x	N	0.3	50	33	8	4	—		9		17	14		N	Fe-st hornfelsed argillite
																		West of Porcupine Creek
89	4WG218a		G x	N	0.2	150	41	9	28	—		N		18	52		N	felsic dike
	218b		G x	N	0.8	820	66	10	5	—		19		N	37		N	Sheared slate
																		Cahoon Creek Area
90	4WG112		F x	N	0.3	6	59	4	5	—		2		N	19		N	qz vein
91	111		G x	N	0.7	165	73	13	3	—		12		N	16		N	Black slate
92	138		G x	N	0.4	80	36	11	14	—		8		N	16		N	Fe-st argillite
93	223		SS	0.021	N	120	23	N	69	0.031								
	4S208		SS	0.012	N	88	16	17	21.7	0.029								
94	4WG222		G x	N	0.7	98	31	14	41			6		N	11		N	Fe-st slate w/py
95	221		SS	N	N	100	21.1	N	61	0.026								
96	220		SS	0.023	N	110	29.4	17	62	0.021								
97	219		SS	0.033	N	110	22.4	N	61	0.03								
98	102		G x	N	0.3	78	91	4	18	—		7		N	78		N	Fe-st meta sediment
																		Porcupine Peak Area
99	4WG117a		G x	N	0.6	83	41	10	2	—		6		N	7		N	Fe-st slate
	117b		G x	N	N	98	24	3	16	—		N		N	44		N	felsite sill
100	4S144	0.15	C	0.698	N	58	10.7	N	130	N		N	N	400	40	N	N	qz vein
101	145		G	1.03	17.14	140	89	24	19.8	0.053		N	N	N	20	N	N	hornsfel sed slate ? w/fine sulfides
102	4ER 27		G x	N	0.2	101	58	9	14	—		N		N	19		N	Fe-st hornfelsed black slate & siltstone

MAP NUMBER	FIELD SAMPLE NUMBER	SAMPLE LENGTH IN FEET	SAMPLE TYPE 1	Analyses 2 Fire Assay ICP (ppm)		Analyses 3 AAS (ppm unless marked %)				4 X-Ray (%)	Analyses 5 Spectrographic (ppm)							Comments
				Au	Ag	Zn	Cu	Pb	Co	Ba	W	Mo	Sn	As	Ni	Bi	Sb	McKinley Creek Area North
103	45 189	2.5	G	24.83	1.274	280	42	N	31	0.19		N	N	N	20	N	N	Limestone band ? w/ py + sl
	190		G	1.369	0.47	650	57	N	89	0.036		N	N	N	40	N	N	3 qz veins w/sulfides
	191	0.4	G	8.959	2.365	9.5 %	41	N	230	0.013		N	N	800	40	N	N	qz w/ py + sl in Tan granitic dike
	192	0.4	G	1.669	0.77	13.4%	41	N	19.8	0.172		N	N	700	30	N	N	sl rich grab - from qz vein in dike
	192 A		SS	0.028	N	240	31	N	21.7	0.102								
	193 A		SS	0.048	N	310	45	20	47	0.095								
104	135	0.25	C	182.13	17.14	39	20.4	N	32	N		N	N	400	30	N	N	qz vein w/ 25% sulfides: py
	136		G	1.501	N	15.9	8.5	N	130	N		N	N	3000	N	N	N	qz vein w/ 25% py
105	137		G	2.474	0.71	260	18.7	N	45	N		N	N	700	50	N	N	qz vein w/ py
	138		SS	0.031	N	200	33	N	18.1	0.092								
																		Golden Eagle Lode
106	45 118	2	C	0.011	N	93	59	19	10	0.50		N	N	N	20	N	N	Slate
	119	1.5	C	0.009	N	140	79	N	13.5	0.43		N	N	N	20	N	N	Slate w/ fe-stained qz stringers
	120	1	C	N	N	450	58	N	46	0.53		N	N	N	30	N	N	fe-stained orange rock
	121	0.9	C	N	N	1730	20.4	N	13.5	0.019		N	N	300	20	N	N	qz vein w/ aspy & [illegible]
	122	10	½C	5.15	0.72	240	100	N	37	0.31		N	N	N	40	N	N	schistose dike w/ qz stringers
	123	0.8	C	N	N	560	11.4	N	N	0.016		N	N	N	20	N	N	qz lens at dike slate contact
	124	1.5	C	0.023	N	280	31	N	6	0.42		N	N	N	20	N	N	slate
	125	0.3	C	0.075	N	51	9.3	N	6	N		N	N	N	20	N	N	qz + sulfides
	126	0.3	C	0.007	N	2710	8.5	N	N	0.041		N	N	N	N	N	N	qz vein
	127		C	1.957	N	25.8	10	N	N	N		N	N	N	20	N	N	qz vein
	128	0.2	C	27.53	4.795	820	20.4	N	21.4	0.013		N	N	2000	50	N	N	qz + boxwork
	129		G	171.36	20.57	800	36	N	40	0.013		N	N	500	70	N	N	sl + sulfur
	130		G	158.37	10.28	510	15.9	N	140	0.016		N	N	2000	50	N	N	aspy + sulfur
	130A		G	531.1	6.86	1320	21.1	57	110	0.018		N	N	4000	30	N	N	sulfur + aspy
	131		G	0.738	N	160	16.6	N	N	N		N	N	300	10	N	N	vuggy qtz
	134		C	20.35	3.279	300	42	N	19.8	0.028		N	N	500	100	N	N	qz vein w/sulfides
	141	0.5	C	0.345	N	26.3	10	N	52	N		N	N	500	20	N	N	qz vein w/ py
	142	0.3	C	5.637	1.089	2.04%	31	N	200	N		N	N	900	100	N	N	qz vein w/ sl + py
																		McKinley Creek Area South
107	139	18 yds.	Sluiced	57.29	6.86	490	120	430	65	0.191		N	N	800	100	N	N	18 yards w/ coarse Au sluced out
	45140	5'×20'	pc	0.189	0.49	430	160	43	43	0.171		N	N	N	60	N	N	
	4WS 227c		G ×	N	0.6	44	35	12	6	—		7		N	17		N	Slate
	227d		G ×	N	N	65	17	4	18	—		2		N	11		N	Felsic dike
	227e		G ×	N	0.1	15	12	3	2	—		2		N	7		N	qz vein in felsic dike
108	45143		pc	0.269	0.49	390	37	24	19.8	0.168		N	N	N	40	N	N	
109	132		G	5.538	0.883	73	6	N	27.6	0.011		N	N	700	20	N	N	fe-stained qz + sulfides
	133		SS	0.058	N	290	59	N	57	0.126		N	N	400	60	N	N	1900' el

MAP NUMBER	FIELD SAMPLE NUMBER	SAMPLE LENGTH IN FEET	SAMPLE TYPE 1	Analyses 2 Fire Assay ICP (ppm)		Analyses 3 AAS (ppm unless marked %)				4 X-Ray (%)	Analyses 5 Spectrographic (ppm)							Comments
				Au	Ag	Zn	Cu	Pb	Co	Ba	W	Mo	Sn	As	Ni	Bi	Sb	Little Salmon River Area
110	4ER 5		G ×	N	0.5	670	168	20	11	—		7		N	44		N	hornfelsed black argillite w/py veinlet
111	7		G ×	N	0.5	151	68	9	15	—		3		N	27		N	hornfelsed black argillite w/py
112	127		G ×	N	0.9	173	38	8	2	—		38		N	10		N	fe-st diorite w/py
113	124		G ×	N	0.3	19	303	4	38	—		26		N	37		2	fe-st hornfelsed slate w/po
114	123		SS	N	0.49	790	100	24	71	0.177								
115	122		SS	N	0.4	340	64	11	20.5	0.193								
																		Boundary Glacier Prospect
116	4S053	2	C	N	N	150	110	N	60	0.09		N	N	N	20	N	N	greenstone
117	54		G	N	N	130	70	41	N	0.18		N	N	N	8	N	N	quartzite + calc + schist + ba
	55		F	N	0.966	280	410	53	74	0.53		N	N	N	80	N	N	schist
	56		G	N	N	45	9.4	22	N	0.20		N	N	400	N	N	N	sericite schist
118	3E030		G	N	N	51	110	N	N	0.08								fe-stained phyllite w/py
119	4S057		G	N	N	26.6	13.5	N	N	0.035		N	N	N	N	N	N	rubble qz calc vein
	4SC58		G	0.012	1.214	57	960	26	330	0.041		N	N	N	200	N	N	rubble qz calc vein w/4" po lens
	59A		C	N	N	21	13.5	N	N	47.0		N	N	N	N	N	N	ba in white phyllite
	59B		G	N	N	53	8.4	N	8	2.98		N	N	300	10	N	N	white phyllite
	60		C	N	N	110	150	30	58	0.118		N	N	N	30	N	N	greenstone (block)
																		Boundary Glacier area
120	3E021		F	0.034	1.177	21.5	710	N	390	N								Quartz vein w/py, cp, + po
121	19			—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	20		F	N	0.71	160	1390	N	N	N								Altered and mineralized volcanic rock w/ [illegible]
122	4S061		F	N	N	67	N	22	N	0.193		N	N	300	N	N	N	green schist, qz calc, 0.25" [illegible]
123	62		G	N	N	210	130	22	56	0.177		N	N	N	40	N	N	fe-stained andesite
124	63		C	N	N	98	31	18	51	0.014		N	N	N	20	N	N	fe-stained greenstone + schist w/py
125	3E023		G	N	N	130	32	N	41	N								Basalt
																		SE of Boundary Glacier
126	4ER65		G ×	N	1.0	243	22	16	2	—		96		N	17		N	Black slate w/py. cut by felsic sills
127	3E028		G	N	N	930	75	N	N	N								Basalt
																		West of Flower Mt. ("Hair Bear")
128	4WG158		G ×	N	1.8	8	2010	10	940	—		3		N	116		N	massive sulfide lens
129	4S095	0.4	F	N	1.709	69	2160	30	1040	N		N	30	600	700	1000	N	massive py + sparse cp boulder
	96A	0.7	F	N	56.16	50	1450	22	1070	N		N	40	N	800	N	7000	massive sulfide po, py + minor cp
	96E	0.3	F	N	N	150	120	N	69	0.016		N	500	400	300	N	2000	hornblendite
130	97	0.3	C	N	1.109	110	1330	22	490	0.013		N	600	300	400	N	3000	Sulfide lens po, py + cp
	98	1.5	C	N	N	95	63	N	63	0.025		N	N	1000	200	N	N	hornblende wall rock
131	4WG156		G ×	N	0.1	7	27	4	2	—		3		N	5		N	Quartz vein
																		Head of Porcupine Cr. area
132	4ER 79		F ×	49.0	74.0	32	1.0%	6	33	—		14		N	11		N	Ml+cp bearing qz float below large inclusion

MAP NUMBER	FIELD SAMPLE NUMBER	SAMPLE LENGTH IN FEET	SAMPLE TYPE 1	Analyses 2 Fire Assay ICP (ppm)		Analyses 3 AAS (ppm unless marked %)				4 X-Ray (%)	Analyses 5 Spectrographic (ppm)							Comments
				Au	Ag	Zn	Cu	Pb	Co	Ba	W	Mo	Sn	As	Ni	Bi	Sb	
133	3EG27		G	N	N	88	24.2	N	46	0.03								Basalt
134	4S203		SS	0.148	N	180	50	24	51	0.088								
135	204		SS	N	N	120	45	17	15.8	0.102								
136	205		SS	N	N	100	32	N	10.3	0.096								
137	206		SS	0.008	N	100	35	N	9	0.108								
																		THE STOCKWORKS
138	4S117		F	N	N	260	150	31	78	0.05		N	N	400	80	N	3000	dike w/dissem po + sparse cp
139	114 A	3	C	N	N	220	73	N	24.1	0.094		N	N	500	70	N	N	3 qz veins 50% of sample
	114 B	3	C	N	N	240	100	N	N	0.071		N	N	400	60	N	800	40% quartz
	114 C	2.5	C	0.007	N	71	87	N	31	0.017		N	60	400	20	N	N	qz vein sparse calc & sulfides py
	114 D	4.5	C	0.015	N	260	110	N	N	0.041		N	N	400	70	N	2000	qz veins 0.2 & 0.8' knot of po
	114 E	3	C	—	—	83	15.4	N	N	—		N	20	500	10	N	N	irregular qz vein
	114 F	1.5	C	N	N	390	110	N	57	0.118		N	N	N	100	N	2000	Fe-stained slate
	4S114 G	1	C	N	N	130	25.6	N	N	0.017		N	40	400	10	N	N	qz vein
140	115 A		C	N	N	18.7	7.8	N	N	0.007		N	N	400	10	N	N	
	115 B		C	N	N	19.5	9.1	N	N	0.027		N	N	500	10	N	N	
	115 C		C	N	N	25.1	10.3	N	N	N		N	N	300	9	N	N	
	116 A	2.1	C	N	N	76	7.2	N	N	N		N	N	N	N	N	N	qz vein & calc
	116 B	1.6	C	N	N	20.5	9.1	N	N	0.062		N	N	500	10	N	N	qz vein
	116 C	1.1	C	N	N	35	10.3	N	N	0.01		N	60	700	20	N	N	qz vein
	116 D	0.9	C	N	N	13.7	9.1	N	N	0.017		N	20	500	10	N	N	qz vein
	116 E	2	C	N	N	260	96	N	45	0.142		N	N	400	200	N	N	dike (green, brown)
	116 F	1.8	C	N	N	46	38	N	N	N		N	30	400	20	N	N	qz vein
141	167	0.8	C	0.023	N	240	24.8	N	N	N		N	N	N	N	N	N	qz vein
																		Summit Creek Area
142	4ER 76		G x	N	0.5	5	31	13	2	—		25		N	6		N	Fe-st hornfelsed phyllite w/py & qz veins
143	75		G x	N	0.3	128	65	17	3	—		12		N	21		N	Black phyllite w/qz veins & py
144	47		G x	N	0.5	210	94	14	14	—		9		N	24		N	hornfelsed black argillite w/py on fractures
145	4WG143		G x	N	0.2	97	30	5	17	—		2		N	30		N	Po-bearing qz-feldspar dike
146	225		SS	0.01	0.69	1000	110	24	35	0.168								
147	226		SS	0.007	N	120	32	N	51	0.054								
148	146		G x	N	0.4	71	18	13	2	—		6		N	11		N	Slate
																		North of Tsirku Glacier
149	4EK 69		G x	N	0.7	8	335	4	47	—		N		N	37		N	Po-bearing qz vein in slate
150	4S076		SS	N	0.76	400	78	N	22.3	0.164		N	N	N	50	N	N	3000' el
	77	1	F	N	0.66	23.4	190	N	76	0.065		N	N	N	20	N	N	qz boulder w/0.1' band po
151	78		SS	N	N	350	92	22	44	0.14		N	N	N	20	N	N	2900' el
	79	3.5	F	0.058	1.742	26	540	22	450	N		N	N	N	300	900	N	qz boulder w/0.75' band po, little cp

MAP NUMBER	FIELD SAMPLE NUMBER	SAMPLE LENGTH IN FEET	SAMPLE TYPE 1	Analyses 2 Fire Assay ICP (ppm)		Analyses 3 AAS (ppm unless marked %)				4 X-Ray (%)	Analyses 5 Spectrographic (ppm)							Comments
				Au	Ag	Zn	Cu	Pb	Co	Ba	W	Mo	Sn	As	Ni	Bi	Sb	
151	4ER71		F X	N	3.0	5	324	5	235	—		N		N	235		N	massive po in qz boulder
152	4S080		SS	N	1.3	320	65	N	22.3	0.131		N	N	N	20	N	N	2640' el
153	73	1	F	N	2.101	23.4	310	18	130	0.01		N	N	N	N	2000	N	fe-stained qz vein w/0.4' lens po
	74	1	F	N	0.42	750.	160	N	43	0.023		N	200	N	80	N	N	po & sl in qz boulder
	75		SS	N	10	780	120	N	33	0.078		N	N	N	30	N	N	3100' el
154	69		SS	N	N	240	22.4	N	30	0.059		N	N	N	N	N	N	fe-stained spring deposit 3500' el
	70		SS	N	N	78	5.9	N	22.2	0.03		N	500	N	N	N	N	fe-stained spring deposit 3500' el
	71		SS	N	N	800	110	53	65	0.28		N	N	N	60	N	N	creek below spring
	72	6	G	N	N	84	18.[illegible]	N	7	0.163		N	N	N	N	N	N	fe-stained shale
155	81	0.3	F	N	1.334	67	240	45	130	0.071		N	N	N	N	N	N	massive po boulder w/sparse qz
156	82	0.7	F	N	2.203	91	230	91	150	0.91		N	N	N	N	N	N	boulder pink & siliceous w/bands po
	83		SS	N	0.86	190	49	N	24.2	0.094		N	N	N	20	N	N	2470' el
	84	0.9	C	0.30	49.84	6.2 %	2.33 %	1.18 %	8	1.13		N	70	N	8	N	N	70% silica 30% sulfides - po, cp & sl
	4ER 73		F X	0.2	32.5	2.4 %	1.8 %	6750	—	—		6		180	4		3	altered volc boulder w/massive sl, cp, gal
157	4S085		SS	N	0.66	270	65	30	52	0.105		N	N	N	30	N	N	
158	86	0.4	F	N	0.7	380	350	120	120	0.032		N	N	N	N	N	N	boulder siliceous w/ po & cp
	4S090		F	N	N	13.5	69	N	N	N		N	60	400	20	N	N	qz boulder w/ lens of po
159	87		SS	N	0.84	230	63	N	28.7	0.104		N	N	N	20	N	N	2250' el
160	88	0.4	F	N	0.77	130	350	64	76	0.014		N	N	N	N	N	N	light siliceous volcanic? rock w/ lenses po
	89		F	N	N	72	74	N	11	0.092		N	N	300	30	N	N	po lens in fine grained qz
161	4ER 91		G X	N	0.5	15	218	20	197	—		10		N	170		N	fe-st argillite w/ py on fractures
162	88		G X	N	0.2	27	40	11	25	—		3		N	15		N	silicified marble w/dissem py
																		North of the Tsirku R. Area
163	4ER 94		G X	N	0.2	74	42	6	36	—		4		N	5		N	altered andesite w/ dissem py
164	4WG 141		G X	N	0.2	65	7	9	15	—		4		N	5		N	Gossan at contact with greenstone
165	142		G X	N	0.8	107	39	25	24	—		4.		33	24		N	Gossan at contact with greenstone
166	3S295		G	—	—	290	95	N	59	N		N	N	N	20	N	N	Altered basalt w/ py + mag
	296		G	—	—	110	8.8	28	35	0.33		N	N	N	20	N	N	metasediment w/ py
	297		F	N	N	127	240	N	49	N		N	N	N	80	N	N	qz vein w/ po + cp
167	298		G	N	N	55	N	28	14	0.63		N	N	N	N	N	N	phyllite w/ py
	299		F	N	0.1	56	140	41	67	0.46		N	N	N	50	N	N	phyllite w/ po, cp + py
	300		F	N	Tr	140	190	32	50	0.26		N	N	N	30	N	N	schist w/ py + mag
168	301		F	N	Tr	18.4	320	N	130	N		N	N	N	100	N	N	qz w/ po
	302		F	—	—	150	21	32	34	0.06		N	N	N	90	N	N	calc phyllite w/ py
	303		G	—	—	120	6.6	N	24	0.03		N	N	N	10	N	N	andesite
	304		C	N	0.2	37	450	N	120	0.10		N	N	N	N	N	N	qz vein w/ po + sericite
169	4ER 64		G X	N	0.4	53	36	5	4	—		24		N	43		N	fe-st hornfelsed slate cut by a[illegible] dikes
170	4S183		SS	2.504	0.35	240	51	24	48	0.083								

MAP NUMBER	FIELD SAMPLE NUMBER	SAMPLE LENGTH IN FEET	SAMPLE TYPE 1	Analyses 2 Fire Assay ICP (ppm)		Analyses 3 AAS (ppm unless marked %)				4 X-Ray (%)	Analyses 5 Spectrographic (ppm)							Comments
				Au	Ag	Zn	Cu	Pb	Co	Ba	W	Mo	Sn	As	Ni	Bi	Sb	
171	4WG131		G x	N	0.1	84	36	6	5	—		4		N	16		N	fe-st argillite
172	134		G x	N	0.3	37	22	4	1	—		9		N	2		N	hornfelsed argillite at pluton contact
173	4S182		SS	0.039	N	140	51	N	6	0.083								
174	4WG136		G x	N	0.5	220.	33	4	3	—		44		N	22		N	hornfelsed argillite at pluton contact
175	4S181		SS	N	N	240	40	N	13.4	0.106								
176	4WG195		G x	N	0.9	207	73	8	10	—		18		N	40		N	hornfelsed argillite
177	4ER208		SS	N	N	120	37	N	21.7	0.137								
178	4WG161		G x	N	0.3	53	36	8	3	—		7		N	7		N	fe-st slate
179	4S180		SS	N	N	260	45	N	15.8	0.221								
180	179A		SS	N	N	460	100	N	72	0.186		N	N	N	70	N	N	
	179B		PC	0.027	N	400	87	38	57	0.22		N	N	N	50	N	N	
																		South of the Tsirku R. Area
181	4WG119		G x	N	0.1	66	24	9	19	—		3		N	7		N	Gossan w/py + cp
182	120		G x	N	0.2	64	45	10	30	—		2		46	12		N	Gossan
183	121a		G x	N	0.5	40	73	5	22	—		2		N	54		N	Gossan
184	122		G x	N	0.4	27	28	21	30	—		4		190	4		N	Altered argillite + marble
185	123		G x	N	N	20	35	8	10	—		N		N	1		N	fe-st argillite w/py
186	4ER 53		G x	N	0.2	41	30	5	13	—		2		25	4		N	Altered hornfelsed argillite
187	55		G x	N	0.2	37	40	7	13	—		2		N	18		N	fe-st altered diorite + arg.
188	57		G x	N	0.1	44	20	14	21	—		3		N	44		N	fe-st crushed limestone hornfels w/py
189	84		G x	N	0.5	90	52	15	11	—		10		N	43		N	fe-st marble w/py
170	4WG159		G x	N	N	14	20	6	8	—		2		N	10		18	marble w/py

MAP NUMBER	FIELD SAMPLE NUMBER	SAMPLE LENGTH IN FEET	SAMPLE TYPE 1	Analyses 2 Fire Assay ICP (ppm)		Analyses 3 AAS (ppm unless marked %)				4 X-Ray (%)	Analyses 5 Spectrographic (ppm)							Comments
				Au	Ag	Zn	Cu	Pb	Co	Ba	W	Mo	Sn	As	Ni	Bi	Sb	Mosquito LAKE AREA
191	3S233		G	N	N	220	190	500	N	N								Phyllite w/ py
	234		G	N	0.43	140	38	N	120	N								qz - hnbd. phyllite w/po
192	182		G	N	N	34	N	N	N	N								qz - calc vein w/ ml
	183		G	N	1.437	120	11	N	68	N								calcite w/ ml + qz
193	232		G	N	0.952	85	40	N	N	0.02								calcite phyllite w/ po + py
194	214		G	N	N	49	29.6	N	N	0.04								Limestone w/ py
	215		G	N	N	81	11	N	N	0.03								Gneiss
195	180		G	N	N	130	26.9	N	41	N								Phyllite
	181		G	N	N	120	320	N	57	N								Phyllitic Amphibolite w/ po, ~p + ml
196	173		G	N	N	120	43	N	51	N								Amphibolite
197	174		G	N	N	83	40	N	N	0.03								Hnbd. dike
198	172		G	N	N	26.4	N	N	N	0.02								qz - musc pn,llite
199	213		G	N	N	190	40	N	51	N								Basalt
200	231		SS	N	0.56	120	51	N	30	N								
201	178		G	N	N	150	29.6	N	51	0.02								Amphibolite
	179		C	0.033	N	19.4	62	N	N	N								qz vein w/ cp
	4S020	60	½ C	N	N	230	38	71	72	0.09	—	N	N	N	9	N	N	Fe-st blocky Basalt
202	3S177		G	N	N	76	N	N	41	N								Amphibolite
203	175		G	N	N	180	29.6	N	N	0.02								metasediment
204	176		G	N	N	120	32	N	N	0.03								metasediment
																		MUNCASTER CREEK AREA
205	3S094		SS	0.047	N	170	100	100	71	—								
	95		G	N	N	24	38	84	45	—								Schist
206	96		SS	0.068	N	170	99	99	70	—								
	97		F	0.165	1.881	N	1500	70	360	—								qz w/ po + cp
	98		SS	N	N	140	110	110	73	—								
207	92		G	N	N	N	50	47	65	—								Schist
	93		F	N	N	N	6.2	N	6.5	—								qz vein w/ po
	99		G	N	N	150	66	250	49	—								qz vein w/ sulfides
																		HERMAN CREEK
208	3S243		SS	N	N	140	43	N	30	0.06								
																		SUNSHINE MOUNTAIN
209	3S161	1	C	N	N	40	20	N	36	N								qz vein
	162		G	N	N	79	65	N	16	0.05								Schist
210	163		G	N	N	40	23	N	15	0.06								Phyllite

MAP NUMBER	FIELD SAMPLE NUMBER	SAMPLE LENGTH IN FEET	SAMPLE TYPE 1	Analyses 2 Fire Assay ICP (ppm)		Analyses 3 AAS (ppm unless marked %)				4 X-Ray (%)	Analyses 5 Spectrographic (ppm)							Comments
				Au	Ag	Zn	Cu	Pb	Co	Ba	W	Mo	Sn	As	Ni	Bi	Sb	Sunshine Mt. Road
211	35069		G	N	N	N	17	N	34	—								Schist.
	70		G	N	N	N	17	N	2.6	—								Siltstone
212	71		F	N	0.4	N	73	N	66	—								qz w/ po
	72		F	N	N	N	110	N	50	—								schist w/ py
213	164		G	N	N	8.5	7.6	N	1.8	N								Quartz vein
																		Sunshine Mt. Silver Occurrence
214	35237		C	0.023	1.309	1.01%	16	410	N	N	N							qz vein w/ sl, gn, py and ml
	238		G	N	0.58	1.02%	16	410	N	N	N							argillite
215	239		C	0.059	3.495	7700	89	280	N	N	N							qz calc w/ sl + py
216	235		C	0.343	610.29	5400	29.6	15.7%	N	N	N							qz gossan breccia w/ gn
	236		G	0.471	22.23	1.89%	170	5500	62	N	N							argillite w/ sl and gn
217	242		F	—	96.0	5.8%	1640	1.37%	N	N	N							qz calc breccia w/ gn + sl
218	240		F	0.01	253.7	5700	24.2	3.9%	N	0.01	N							qz vein w/ gn + sl
	241		F	N	0.79	59	N	190	N	0.03	N							Quartz w/ sulfides
																		South of Little Salmon River
219	4ER115		SS	0.032	N	470	78	N	61	0.115								
220	35142		G	N	N	96	190	20	83	0.08								Diorite w/ py + po
221	140		G	N	N	140	52	N	130	0.01								Phyllite
	141		G	N	0.43	48	25	N	31	0.15								Quartz
222	137		C	N	N	100	58	N	64	0.05								Diorite w/ po
	138		HS. G	N	N	110	91	N	63	0.06								Andesite w/ py + po
	139		C	N	N	33	29	N	23	N								Limestone
223	143		SS	N	0.36	210	77	N	59	0.04								
224	73		SS	N	N	92	64	N	29	—								
225	74		SS	N	N	N	42	N	23	—								
226	76		G	0.014	N	N	7.1	N	30	—								Greenstone
227	75		G	N	N	210.	68	N	21	—								Shale w/ py
228	217		G	N	N	170	14	91	N	N								Altered metasediment
229	216		G	N	N	240	62	N	30	0.09								Limestone
																		Tsirku River Mouth Area
230	35068		G	N	N	N	49	N	36	—								Schist
231	67		G	0.018	N	N	20	N	35	—								Schist
232	66		G	N	0.39	N	120	N	17	—								metasediment w/ py
																		South of Summit Creek
233	WG152		G x	N	0.5	51	26	21	20	—		3		1700	11		N	Fe-st silicified argillite
234	WG150		G x	N	0.6	24	21	12	3	—		18		26	8		N	Silicified argillite w/ py

1. C - Chip sample
   CH - Channel sample
   F - Float sample
   G - Grab sample
   HG - High grade sample
   PC - Panned concentrate sample
   S - Soil sample
   SS - Stream sediment sample

   X - signifies sample analyzed by ADGGS by Atomic Absorption Spectroscopy (AAS) methods.

2. Au, Ag analyses were by fire assay - Inductively Coupled Plasma Analysis (ICP), or by fire assay unless marked X.

3. Zn, Pb analysis was by Atomic Absorption Spectroscopy (AAS) while Cu, Co analysis was by ICP unless marked X.

4. Ba analysis was by X-ray diffraction.

5. Mo, Sn, As, Ni, Bi, and Sb analyses by semiquantitative spectrographic analysis.

Sample analyses were by the Bureau of Mines Research Center in Reno, Nevada unless marked X (see #1).

Units of measure abbreviations used:

ppm - parts per million
n - not detected
% - percent
__ - not analyzed

Mineral abbreviations used:

ba - barite	gn - galena
calc - calcite	mag - magnetite
chl - chlorite	ml - malachite
cp - chalcopyrite	po - pyrrhotite
ep - epidote	py - pyrite
qz - quartz	sl - sphalerite
	td - tetrahedirite

Additional abbreviations:

dissem - disseminated
fe-st - iron stained (rusty weathering)
w/ - with