STATE OF ALASKA

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GEOCHEMICAL REPORT NO. 7

Geochemical Investigations Along Highway and
Secondary Roads in Southcentral Alaska, 1965

By

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TABLE OF CONTENTS

	Page
Summary	1
Introduction	1
Topography	2
General Geology	2
Mineral Deposits	2
Geochemical Field Investigations	3
Results	4
References	8

ILLUSTRATIONS AND TABLES

Diagram showing locations of Figures 1 to 19	9
Figures 1 to 19. Sample location maps	10
Concentration frequency graph for copper, lead, zinc, molybdenum, and nickel for Figure 1	29
Concentration frequency graph for copper and lead for Figures 2 to 19	30
Concentration frequency graph for zinc, molybdenum, and nickel for Figures 2 to 19	31
Tables 1 to 19. Results of analyses	32

GEOCHEMICAL INVESTIGATION OF MAIN HIGHWAY AND
SECONDARY ROADS IN SOUTHCENTRAL ALASKA, 1965

By

M.W. Jasper

SUMMARY

This report presents information obtained during the Division's 1965 geochemical stream sediment sampling program in southcentral Alaska. Sediments of readily accessible streams from the vicinity of the Little Susitna River south to the Seward area were sampled. A direct highway distance of about 190 miles was covered plus an additional 115 miles in sampling streams in areas served by secondary roads.

Two hundred and eight samples were collected and analyzed for copper, lead, zinc, molybdenum, and nickel. Types of bedrock, "float" in stream beds, general geology of the vicinity, and mention of any known or observed mineral occurrences were recorded at each sample site. A sample was panned at each site to collect any heavy minerals that might be present for later laboratory study.

Of the 208 samples collected and analyzed during this investigation, three were found to be strongly anomalous (nickel and lead) and 32 were moderately anomalous.

INTRODUCTION

The geochemical stream sediment sampling program of the Division of Mines and Minerals is a search for trace amounts of metallic minerals (copper, lead, zinc, molybdenum, and nickel) which may lead to the location of hidden ore deposits. It is primarily for benefit of prospectors and others engaged in mineral exploration in an effort to bring new mineral production to the State.

Of the 208 samples covered in this report, 148 were taken by the author, and 60 by Arthur Rose, Division geologist, and his assistant, David Bary. During the period Rose was mapping in the area between Knik River bridge and Eagle River, 17 stream sediment samples taken by them were added to those taken by the author in the same general area (figure 3 to 6). Forty-three samples taken by Bary in the Hope area and at selected points from the Hope road junction south to the Slate Creek are also included (figures 11, 12, 13, 15, and 16).

The stream sediment samples collected, as shown in figures 1 to 19, and the results of field tests, laboratory analyses, and other information, are given in corresponding tables 1 to 19. Three of the samples are strongly anomalous and 12 are moderately anomalous.

TOPOGRAPHY

Along the full length of the area covered, from the headwaters of the Little Susitna River on the north to the Seward area on the south, the topography is largely one of steep slopes with serrated ridges in some areas and well-rounded ridge crests in others. Elevations range from 3,000 to 6,500 feet at the head of the Little Susitna River and from sea level to an 8,020-foot peak between Eklutna Lake and Lake George. South of Turnagain Arm on both sides of the Seward-Anchorage Highway to Seward, ridge crests and peaks range from 3,000 to 5,400 feet.

The drainage systems are relatively short, with the Kenai River and the Little Susitna River being exceptions.

GENERAL GEOLOGY

The predominant rock between Seward and the Matanuska Coal Field is a great thickness of metasediments. A large portion of the stream sediment samples were obtained in areas of this formation. The generally prevailing soil and vegetation cover obscures the bedrock in the vicinity of many of the sample sites.

On the geologic map of the Alaska Railroad Region (Capps, 1940), a more or less continuous belt of pre-Cretaceous basic lavas, tuffs, and greenstone from the Matanuska Coal Field area south to vicinity of Seward is shown. Between Wolverine Creek and Coal Creek, granitic intrusives have invaded the basic lavas, tuffs, and greenstone.

The upper Little Susitna River is in quartz diorite, whereas south of the lodge it is entrenched in arkose sandstone and overlying conglomerate.

MINERAL DEPOSITS

Since the first influx of prospectors into the Seward to Willow Creek region around 1900, the primary interest has been the search for gold-quartz and placer gold deposits. Of the many lode discoveries made in the Seward to Hope area, none have proven to be of real importance to date.

The lower Willow Creek area, in the vicinity of mile 48 on the Seward-Anchorage Highway, is said to have had a substantial production, but the amount is not known. Reliable reports indicate that placer gold production from Resurrection Creek and some of its tributaries has totaled about \$1,150,000 and that a few other streams in this district produced an appreciable amount.

In the shadowed area, several placer properties produced some gold along Crow Creek. Two gold-quartz properties near the head of this stream were unprofitably mined for a short period.

The first important gold-quartz discoveries in the Willow Creek district were made in 1905. During the next 17 years, the lodes associated with the quartz diorite were highly productive, but mining of the gold lodes found in the old schists of Grubstake Gulch has not been profitable. Past efforts to mine Grubstake Creek and Willow Creek for the placer gold have also not been successful.

On the mineral resources maps of the U.S. Geological Survey (Cobb, 1960), approximate locations of 22 single and multiple groups of copper occurrences in the Seward-Willow Creek region are shown. Seventeen of them also contain a little lead and zinc. MR-10 shows three molybdenum locations (Cobb, 1960), MR-11 notes antimony at two points (Cobb, 1960b), MR-8 shows a group of chromite occurrences in the Eklutna area, and one of nickel in the Jonesville-Chickaloon district (Cobb, 1960c). None of the above are known to have been given serious attention to date.

GEOCHEMICAL FIELD INVESTIGATIONS

As previously noted, 60 samples taken by Rose and Bary were added to the 148 taken by Jasper, as two areas were partially covered by both parties. Duplication in sampling ten widely separated streams showed close laboratory check on results. The Hawkes method was used in field testing for traces or the cold extractable heavy metals (Hawkes, 1963).

Samples sites were well above bridges and culverts, or other known objects that might possibly contaminate the streams. All samples were taken under water and consisted of silt, sand, or fine gravel. Some clay was occasionally present. A separate sample taken at each site was panned, and concentrates saved for laboratory study and identification of the heavy minerals. When dried, each geochemical sample was screened and part of the -80 mesh portion was sent to the Rocky Mountain Geochemical Laboratories, Salt Lake City, Utah, where analyses for trace amounts of five metals - copper, lead, zinc, nickel, and molybdenum - were made.

Twenty-four of the Rose and Berg samples and five of the author's were checked for chromium content. Percentage of magnetite was estimated in most of the panned concentrates. In each case, the concentrate was a very small fraction of the total sample. Also grain counts were made for zircon and scheelite in the concentrates. Each of the 11 samples taken in the upper Little Susitna River area contained one or more grains of very fine gold.

RESULTS

In the upper Little Susitna River, anomalous values were chosen as follows: copper +100 parts per million, lead +40, zinc +80, molybdenum +5, and nickel +100.

Anomalous values used from Wolverine Creek to the Seward area were +80 ppm for copper, +60 for lead, +150 for zinc, +5 for molybdenum, and +100 for nickel.

Few field tests indicated the anomalies revealed by laboratory analyses. Tables 1 to 19 show the uncertainty of interpreting anomalies from field tests, which suggests that each sample should be analyzed in the laboratory for trace amounts of heavy metals for positive results.

Little Susitna River Area Figure 1, Samples 1 to 11

Upstream from Little Susitna Lodge, three small streams sampled on the north side of the river were moderately anomalous with an average of 85 ppm zinc, and 110 ppm copper (1964 sample locations, prefixed by "C" are shown on figure 1, as these 15 samples were included in establishing background values for the vicinity).

Wolverine Creek to Nickel Creek Figure 2, Samples 12 to 16

In this area, three of the five samples were moderately anomalous. Sample at No. 12 had anomalous nickel (120 ppm), No. 15, molybdenum (5 ppm), and No. 16, copper (5 ppm), zinc (170 ppm), molybdenum (5 ppm), and nickel (115 ppm).

The three short streams, between samples No. 15 and 16, were dry when visited and therefore not sampled. As local residents report that some copper has been found near the heads of these seasonal streams and that some work has been done on the prospects in the past, the upper reaches of the three creeks should be sampled.

Eklutna Power Plant Area
Figure 3, Samples 17 to 24

Only one anomalous sample (24) was found, with laboratory results showing 600 ppm nickel. While this is a high anomaly, too much importance should not be given to it, as the sample was taken from a stream draining an ultramafic formation which commonly has high nickel background.

Eklutna Lake
Figure 4, Samples 25 to 38

Nine of the 14 samples taken along the east side of Eklutna Lake were moderately anomalous. Five of these had zinc only (average 170 ppm) two of molybdenum (7 ppm) only, one of 100 ppm nickel. Samples 27, 30, 32, and 34 should be followed up especially the two anomalous molybdenum samples.

Eklutna to Peters Creek Area
Figure 5, Samples 39 to 50

In this area, there was one fairly strong anomaly of nickel, five moderately anomalous nickel, and one of zinc; they are probably due to the streams draining ultramafic areas. Field tests suggested two anomalous samples which were not confirmed in the laboratory analyses.

The nickel anomaly in sample No. 39 (250 ppm) should be followed up with additional sampling.

Peters Creek to Eagle River Area
Figure 6, Samples 51 to 72

Of the 22 samples taken in this area only Sample No. 51 was moderately anomalous (170 ppm). Field tests on six samples suggested anomalies which the laboratory analyses did not confirm. The moderately anomalous zinc sample No. 51, is of sufficient interest to follow up with additional sampling.

Little Rabbit Creek to Rainbow
Figure 7, Samples 73 to 76

None of the four samples obtained in this area were anomalous. However, older residents of the area report scattered copper occurrences near the ridge crest of the mountain immediately north of Rainbow that should be checked.

Callie Creek to Mini Creek
Figure 8, Samples 77 to 89

No anomalous samples were obtained in this area, and none of the field tests suggested anomalies. Small scale placer operators report finding a little cinnamon now and then in their sluice boxes, but the source location has not been found.

Woodward Area
Figure 9, Samples 90 to 101

Two moderate anomalies of copper and one of zinc were found in sample Nos. 91 and 92 (90 and 100 ppm copper, 160 ppm zinc). The field testing of Sample 92 indicated an anomaly which the laboratory analysis confirmed. Follow-up sampling for both streams is suggested.

Spokane Creek to Silver Tip
Figure 10, Samples 102A to 104A

One moderate zinc anomaly (150 ppm) was obtained in this area. It is not considered of sufficient interest to follow up.

Hope District Area
Figure 11, Samples 102 to 109

No anomalies were indicated by samples taken in this area, either by field or laboratory results.

Hope to Six-Mile Creek Area
Figure 12, Samples 110 to 122

Laboratory analyses of the stream sediment sampling in this area did not find any anomalous sites, nor were any indicated in field testing results.

Six Mile Creek Area
Figure 13, Samples 123 to 139

In this area, five of the eighteen samples were anomalous, all of which are limited to zinc. The parts per million range was 170 to 190 ppm. A few follow-up samples are suggested. Field test results for these five samples did not indicate the anomalies revealed by the laboratory analyses.

Slate Creek Area

Figure 14, Samples 140 to 155

Laboratory analyses did not detect any anomalies in this area. Field tests suggested nine of the samples were strongly anomalous

Frenchy Creek to Summit Lake Area

Figure 15, Samples 156A to 161

None of the nine samples taken along this section of the highway were found to be anomalous.

Summit Creek to Moose Pass

Figure 16, Samples 162 to 174

Four of the 12 samples obtained in this area were anomalous. Sample 162 showed a lead anomaly (90 ppm), sample 163 had a moderate (60 ppm) lead anomaly, 164 a strong (245 ppm) lead and moderate zinc (170 ppm) anomaly, and 169 a moderately anomalous zinc (165 ppm). The anomaly at 162 was the only one indicated in field test results. The 245 ppm anomaly at the Slate Creek location should be checked and followed up, as there is a possibility it may be partly or largely due to contamination from an old mining operation a mile or more upstream. The lead anomalies at 162 and 163 should be followed up with additional sampling.

Upper Kenai Lake Area

Figure 17, Samples 175 to 179

Sample 176 had the only anomaly obtained along this section of the highway. The three metals, copper (80 ppm), zinc (150 ppm), and nickel (105 ppm), are slightly anomalous, but with the metal content in the other four samples taken in the area being markedly lower, a few follow-up samples taken above No. 176 are desirable.

Snow River to Seward Area

Figure 18, Samples 180 to 185

None of eight samples taken in this area were found to be anomalous, nor were there any anomalies suggested in the field tests.

Seward-Resurrection Bay Area

Figure 19, Samples 187 to 199

Fourteen samples were taken in this area. Laboratory analyses did not detect anomalous metals in any of them.

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DIAGRAM
Showing Locations of
Figs 1 to 19

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 8

Fig. 9

Fig. 10

Fig. 11

Fig. 12

Fig. 15

LITTLE SUSITNA RIVER, WILLOW CREEK DISTRICT
 LONE TREE GULCH TO GAUGING STATION
 Figure 1

HIGHWAY STRIP AREA
 WOLVERINE CREEK TO THUMB COVE, RESURRECTION BAY
 FIGURES 2 to 19

HIGHWAY STRIP AREA
WOLVERINE CREEK TO THUMB COVE, RESURRECTION BAY
FIGURES 2 to 19

Table 1
Results of Analyses

Map No.	Sample No.*	Fig. No.	Ppm				CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni				
1	SF51	1	80	15	80	3	20	Red 18 ml Pink 2 ml	Qtz diorite	Quartz diorite	(All samples panned) + 50% magnetite & 45 gr zircon, few gr pyrite & chalcopyrite
2	SF52	1	55	5	50	3	20	Pink 2 ml Purple 4 ml	Qtz diorite	Quartz diorite, Greenstone	+50% magnetite, 35 gr zircon, few gr pyrite & chalcopyrite
3	SF53	1	110	10	85	4	35	Pink 2 ml Purple 3 ml	Qtz diorite	Quartz diorite, little gabbro & greenstone	+50% magnetite, 45, gr zircon, 3 gr scheelite, few grains pyrite
4	SF54	1	30	5	30	4	10	Pink	Qtz diorite	Quartz diorite	+50% magnetite, few grains zircon, little pyrite
5	SF46	1	65	15	80	4	30	Red	Qtz diorite	Quartz diorite	-1% magnetite, few grains scheelite
6	SF47	1	20	5	25	3	10	Purple	Qtz diorite	Quartz diorite	-1% magnetite, 20 grains zircon, little pyrite
7	SF48	1	90	10	65	3	15	Red 3 ml Purple 5 ml	Qtz diorite	Quartz diorite	+50% magnetite, +70 gr zircon, 4 gr scheelite, few gr pyrite
8	SF49	1	40	10	65	4	10	Red 3 ml Purple 15 ml	Qtz diorite	Quartz diorite	-1% magnetite, 30 gr zircon, few grains pyrite
9	SF50	1	25	5	15	3	5	Pink 2 ml Purple 5 ml	Qtz diorite	Quartz diorite	-50% magnetite, 25 gr zircon, few grains pyrite & chalcopyrite
10	SF54	1	20	5	35	3	10	Purple 14 ml	Qtz diorite	Quartz diorite, granite & greenstone	-10% magnetite, few gr pyrite

Table 1 (Continued)

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
11	SF55	1	75	10	50	2	15	0	Blank	Qtz diorite	Quartz diorite, granite & greenstone	-75% magnetite, 70 gr zircon, few gr pyrite & chalcopyrite

* Samples marked in field with prefix "SF" taken by Jasper.

Table 2

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
12	5F1	2	50	10	85	4	120	1	Yellow	Graywacke	Granite, porphyry, dike, sandstone	-1% magnetite, few grains pyrite
13	5F2	2	30	5	50	3	55	1	Yellow	Graywacke	Granite, porphyry, dike, sandstone	-1% magnetite, few grains pyrite
14	5F3	2	20	10	105	3	35	1	Yellow	Covered	Granite, diorite, greenstone, dike, sandstone	-1% magnetite, few grains pyrite
15	5F5	2	50	10	90	5	50	1	Yellow	Covered	Granite & dike	-1% magnetite, little pyrite
16	5F4	2	85	10	170	5	115	1	Yellow	Covered	Granite, greenstone, quartzite, marble	-1% magnetite, little pyrite

* Samples marked in field with prefix "5F" taken by Jasper.

Table 3

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
17	5F6	3	50	15	110	3	55	1	Yellow	Covered	Granite, greenstone, graywacke	-1% magnetite, little pyrite
18	5F7	3	55	15	140	3	65	1	Yellow	Dike	Granite, dike, graywacke, sandstone	-1% magnetite, little pyrite
19	5F8	3	35	10	120	4	45	1	Yellow	Covered	Granite, dike, graywacke, sandstone	-1% magnetite, little pyrite
20	5F9	3	40	10	110	4	50	1	Yellow	Covered	Greenstone, limestone, quartzite, breccia	-1% magnetite, 3 gr zircon, little pyrite
21	5E160	3	SAMPLE LOST								Graywacke, ultramatics	-10% magnetite, 8% chromium, 10 gr zircon
22	5E201	3	50	10	135	3	<u>600</u>	3		Covered	Graywacke & argillite	-10% magnetite, 13% chromium, 10 gr zircon
23	5F44	3	45	15	140	3	40	4	Purple	Covered	Greenstone, granite, sandstone, argillite	-1% magnetite
24	5E202	3	35	10	135	2	60	3		Covered	Greenstone, argillite	0.7% chromium, 10 gr zircon, -5% magnetite

* Samples marked in field with prefix "5F" taken by Jasper.
 Samples marked in field with prefix "5E" taken by Rose.

Table A

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
25	5F43	4	25	10	105	3	30	4	Purple 4	Covered	Graywacke, argillite, granite, greenstone	-1% magnetite, .04% chromium
26	5F10	4	65	20	<u>160</u>	3	70	1	Yellow	Covered	Standstone, greenstone, argillite	Concentrate contaminated, discarded
27	5E206	4	60	15	<u>170</u>	1	80	2		Covered	Graywacke & slate	
28	5F11	4	45	20	135	4	60	1	Yellow	Covered	Greenstone, volcanics, slate, argillite	-1% magnetite, 2 gr zircon, little pyrite
29	5F12	4	60	20	<u>170</u>	4	65	1	Yellow	Covered	Greenstone, slate, argillite, sandstone	-1% magnetite, 8 gr zircon, little pyrite
30	5E205	4	60	15	<u>190</u>	2	<u>100</u>	3		Covered	Graywacke, slate	
31	5F13	4	60	20	<u>165</u>	4	60	1	Yellow	Covered	Greenstone, slate, argillite, sandstone	-1% magnetite, no sulfides
32	5F14	4	70	20	<u>175</u>	2	85	1	Yellow	Covered	Greenstone, slate, argillite, sandstone	no magnetite or sulfides
33	5E204	4	65	15	<u>170</u>	3	80	4		Covered	Graywacke & green tuff	
34	5F15	4	35	10	110	2	45	1	Yellow	Covered	Greenstone, slate, sandstone	-1% magnetite, no sulfides noted
35	5F16	4	30	10	95	3	40	1	Yellow	Covered	Greenstone, slate, dike, argillite, sandstone	-1% magnetite, no sulfides noted

Table 4 (Continued)

Map No.	Sample No.*	Fig. No.	Ppm				CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni				
36	5F17	4	40	15	105	4	40	Yellow	Covered	Greenstone, slate, dike, argillite, sandstone	-1% magnetite
37	5F18	4	40	15	115	2	60	Yellow	Covered	Slate, argillite, greenstone	-1% magnetite, little pyrite
38	5E203	4	50	10	145	2	80		Covered	Graywacke & slate	-1% magnetite, 1% chromium, 5 gr scheelite, +10 gr zircon

* Samples marked in field with prefix "5F" taken by Jasper.
 Samples marked in field with prefix "5E" taken by Rose.

Table 5

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
39	5F19	5	40	5	80	3	250	1	Yellow	Greenstone schist	Greenstone schist, +25% quartz	No concentrates
40	5E198	5	35	5	75	3	150	2		Covered	Graywacke, greenstone, argillite	-5% magnetite, 3% chromium
41	5E22	5	40	15	120	4	145	0		Covered	Greenstone, granite	-1% magnetite, no sulfides, 6% chromium, 3 gr scheelite, +20 gr zircon
42	5E23	5	35	15	115	3	65	12	Pink 1 ml Purple 12 ml		Diorite, greenstone granite, argillite	Concentrates contaminated, discarded
43	5E24	5	20	15	100	4	80	9	Pink 1 ml	Covered	Diorite, greenstone, quartz	+1% magnetite, 1.5% chromium
44	5E25	5	30	10	105	3	60	3	Purple	Covered	Quartzite, granite, argillite, greenstone	-10% magnetite, 1% chromium, 5 gr zircon
45	5N289	5	35	10	130		110	1		Covered	Diorite, schist, gabbro	-5% magnetite, 10 gr zircon, -2% chromium
46	5E611	5	25	10	120		60	4		Covered	Sand only	None
47	5N295	5	35	10	110		160	1		Covered	Schist, andesite, dunite	
48	5E615	5	35	10	105		125	4		Covered	Graywacke, greenstone, chert	
49	5N290	5	35	10	135		60	1		Covered	Blackslate	-5% magnetite, 1.5% chromium
50	5N291	5	75	15	170		55	2		Covered	Blackslate	0.4% chromium

Samples marked in field with prefix "5F" taken by Jasper.

Samples marked in field with prefix "5E" taken by Rose.

Samples marked in field with prefix "5N" taken by Bary.

TABLE 3

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
51	5N292	6	55	20	170		55	0		Black Slate	Black slate	-1% magnetite, ± 10 gr. zircon, 0.5% chromium
52	5N293	6	50	15	145		50	0		Covered	Black slate	0.5% chromium, ± 10 gr zircon, -1% magnetite
53	5N294	6	35	10	90		40	0		Covered	Black slate, greenstone, andesite	0.4% chromium, ± 10 gr zircon, -1% magnetite
54	5F20	6	35	15	125	4	65	1	Yellow	Covered	Granite, greenstone, volcanics, shale	-1% magnetite, little pyrite
55	5F21	6	35	10	85	3	55	1	Yellow	Covered	Granite, greenstone, volcanics, shale	-1% magnetite, little pyrite
56	5F27	6	25	10	85	3	55	9	Pink 1 ml Purple 8 ml	Covered	Granite, gneiss, greenstone, argillite	-1% magnetite, little pyrite
57	5F26	6	35	15	120	3	70	3	Pink 1 ml Purple 3 ml	Covered	Greenstone, sandstone, granite, slate	$\pm 25\%$ magnetite, 3 gr zircon, little pyrite
58	5F41	6	30	10	80	3	45	1	Purple	Covered	Granite, greenstone	-1% magnetite, little pyrite
59	5F42	6	20	10	80	3	35	1	Purple	Covered	Granite, greenstone, sandstone, dike, argillite	-1% magnetite, little pyrite
60	5F28	6	25	15	105	3	40	17	Purple	Covered	Granite, greenstone, breccia, argillite, quartz	-1% magnetite, little pyrite
61	5F29	6	30	10	85	2	35	8	Purple	Covered	Granite, greenstone, breccia, argillite, quartz	-1% Magnetite, little pyrite

Table 6 (Continued)

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
62	5F30	6	35	20	130	3	40	8	Pink 1 ml Purple 7 ml	Covered	Granite, greenstone, breccia, argillite, quartz	-1% magnetite, little pyrite
63	5F31	6	50	20	140	3	55	7	Blue-Gray	Covered	Granite, greenstone, breccia, argillite, quartz	-1% magnetite, little pyrite
64	5F32	6	35	15	100	3	45	3	Purple	Covered	Granite, greenstone, breccia, argillite, quartz	-1% magnetite, little pyrite, 5 gr zircon
65	5F33	6	30	10	80	3	70	3	Pink 1 ml Pale purple 2 ml	Covered	Greenstone, granite, breccia, porphyry, sandstone, quartz, argillite	No concentrates
66	5F34	6	30	10	95	4	45	2	Pink	Covered	Granite, greenstone, dike, porphyry, sandstone, quartz	-1% magnetite, little pyrite
67	5F35	6	40	15	120	4	50	3	Pink 1 ml Purple 2 ml	Covered	Granite, greenstone, dike, porphyry, sandstone, quartz	Contaminated, discarded
68	5F36	6	40	10	95	3	50	13	Red 4 ml Purple 9 ml	Covered	Granite, greenstone, dike, porphyry, sandstone, quartz	Contaminated, discarded
69	5F37	6	35	10	105	4	60	3	Pink 1 ml Purple 2 ml	Covered	Granite, greenstone, dike, porphyry, sandstone, quartz	None noted
70	5F38	6	45	10	110	3	60	3	Pink 1 ml Purple 2 ml	Covered	Granite, greenstone, dike, porphyry, sandstone, quartz	-1% magnetite, little pyrite

Table 6 (Continued)

Map No.	Sample No.*	Fig. No.	Ppm				CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni				
71	5F39	6	40	10	85	3	45	Pink 1 ml Purple 2 ml	Covered	Greenstone, granite, sandstone & argillite	None noted
72	5F40	6	35	10	80	3	40	Pink 1 ml Purple 2 ml	Covered	Sild & sand only	None noted

* Samples marked in field with prefix "5F" taken by Jasper.

Samples marked in field with prefix "5N" taken by Bary.

Table 7

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
73	5F56	7	15	5	50	3	20	1	Purple	Covered	Granite, limestone, dike, greenstone, sandstone & argillite	-1% magnetite, little pyrite
74	5F57	7	45	10	65	3	35	1	Purple	Graywacke	Graywacke, granite, argillite, green- stone, dike	-0.5% magnetite, little pyrite
75	5F59	7	35	15	80	3	40	1	Purple	Graywacke	Graywacke, sand- stone, granite, greenstone, dike, little breccia	+50% magnetite, little pyrite
76	5F58	7	45	10	80	3	15	1	Purple	Graywacke, limestone, and marble	Graywacke, green- stone, argillite, granite, dike, & breccia	-0.5% magnetite, little pyrite

Samples marked in field with prefix "5F" taken by Jasper.

Table 3

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
77	5F60	8	35	20	95	3	55	0	Blank	Graywacke	Graywacke, granite, argillite, greenstone, dike, and breccia -2% quartz	-0.5% magnetite, little pyrite
78	5F78	8	25	10	60	2	35	0	Blank	Covered	Argillite, granite, graywacke, sandstone, & dike	-1% magnetite, 20 gr zircon, little pyrite
79	5F77	8	30	15	90	3	25	0	Blank	Covered	Argillite, graywacke, slate, sandstone, granite, greenstone, & porphyry -2% quartz	-1% magnetite, little pyrite, <u>+20</u> gr zircon
80	5F73	8	20	10	60	3	35	2	Purple	Covered	Argillite, graywacke, sandstone, slate, -2% quartz	-1% magnetite, little pyrite, <u>+20</u> gr zircon
81	5F74	8	20	10	55	3	30	1	Purple	Covered	Argillite, slate, greenstone, granite -2% quartz	-1% magnetite, little pyrite, <u>+20</u> gr zircon, 3 gr scheelite
82	5F75	8	25	10	50	2	30	1	Red	Covered	Graywacke, granite, argillite, slate, greenstone, dike & porphyry -2% quartz	-1% magnetite, little pyrite, <u>+20</u> gr zircon
83	5F76	8	35	10	60	3	45	1	Purple	Covered	Graywacke, granite, argillite, slate greenstone, argillite breccia -2% quartz	-1% magnetite, little pyrite, <u>+20</u> gr zircon

Table 8 (Continued)

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu.	Pb	Zn	Mo	Ni					
84	5F84	8	35	10	85	3	55	0	Blank	Graywacke	Arkose sandstone, graywacke, argillite, granite	-1% magnetite, little pyrite, +20 gr zircon, few grains scheelite
85	5F83	8	35	15	85	3	60	0	Blank	Graywacke	Arkose sandstone, argillite, graywacke, granite, greenstone -2% quartz	-1% magnetite, few gr scheelite
86	5F82	8	30	15	80	2	55	0	Blank	Graywacke, arkose sandstone	Graywacke, arkose sandstone, little granite, greenstone	-1% magnetite, little pyrite, few gr scheelite
87	5F79	8	30	15	90	3	55	1	Purple	Covered	Argillite, slate, sandstone, porphyry, dike	-1% magnetite, little pyrite, few gr scheelite, +20 gr zircon
88	5F81	8	25	10	80	2	55	1	Purple	Covered	Arkose sandstone, argillite, little granite, -2% quartz	-1% magnetite, little pyrite, few gr scheelite, +20 gr zircon
89	5F80	8	15	10	80	4	20	2	Red	Covered	Arkose sandstone, argillite, little granite, -2% quartz	-1% magnetite, little pyrite, few gr scheelite

* Samples marked in field with prefix "5F" taken by Jasper.

Table 9

Map No.	Sample No. *	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
90	5F67	9	40	15	85	3	70	1	Purple	Graywacke, Argillite	Argillite, graywacke, slate, greenstone, & little porphyry	-0.5% magnetite, little pyrite and few gr chalcopyrite
91	5F66	9	90	25	115	4	75	1	Purple	Covered	Argillite, graywacke, slate, granite, greenstone, dike, -2% qtz	-0.5% magnetite, little pyrite
92	5F68	9	100	20	160	4	75	15	Purple	Graywacke	Graywacke, argillite, slate, granite, & carbonaceous schist, -2% quartz	Contaminated, destroyed
93	5F61	9	45	15	90	3	70	1	Purple	Argillite & slate	Argillite, greenstone, slate, granite	-0.5% magnetite, little pyrite
94	5F62	9	35	15	90	2	55	1	Purple	Covered	Argillite, greenstone, slate, granite, -2% quartz	-0.5% magnetite, little pyrite
95	5F63	9	20	20	80	3	35	2	Red 1 ml Purple 1 ml	Covered	Argillite, greenstone, slate, granite, -2% quartz	-0.5% magnetite, little pyrite
96	5F64	9	20	15	95	4	40	1	Purple	Covered	Argillite, graywacke, slate, granite, greenstone, schist, -2% quartz	-0.5% magnetite, little pyrite
97	5F65	9	20	15	85	4	45	0	Blank	Covered	Argillite, graywacke, slate, granite, greenstone	-0.5% magnetite, little pyrite
98	5F69	9	45	20	125	3	75	3	Purple	Covered	Argillite, graywacke, slate, granite, greenstone, -2% quartz	-0.5% magnetite, little pyrite

Table 9 (Continued)

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
99	5F70	9	25	10	80	4	45	0	Blank	Covered	Argillite, graywacke, slate, granite, greenstone, -2% quartz	-0.5% magnetite, little pyrite
100	5F71	9	20	15	105	3	55	0	Blank	Covered	Graywacke, argillite, granite	none noted
101	5F72	9	40	15	105	3	55	1	Purple	Covered	Graywacke, argillite, granite	-0.5% magnetite, little pyrite, +20 gr scheelite, +20 gr zircon

* Samples marked in field with prefix "5F" taken by Jasper.

Table 10

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Pb	Ni					
102A	5F148	10	50	15	105	3	60	3	Purple	Covered	Argillite, graywacke, slate, dike, greenstone, -2% quartz	-0.5% magnetite, little pyrite, 16 gr zircon
103A	5F147	10	55	15	150	3	80	4	Purple	Covered	Slate, shale, graywacke, argillite, greenstone, & dike	-0.5% magnetite, little pyrite
104A	5F146	10	40	10	125	3	65	1	Purple	Covered	Sands--mostly slate & shale, little greenstone, -2% quartz	-0.5% magnetite, little pyrite

* Samples marked in field with prefix "5F" taken by Jasper.

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
102	5N312	11	40	10	105		45	1		Covered	Graywacke	-5% magnetite, $\pm$ 10 gr zircon, few grains pyrite
103	5N313	11	20	10	95		30	0	Blank	Covered	Graywacke, conglomerate	
104	5N311	11	45	10	115		40	1		Covered	Conglomerate	
105	5N314	11	20	10	80		40	1		Covered	Conglomerate	-5% magnetite, $\pm$ 10 gr zircon
106	5N307	11	30	15	110		35	0	Blank	Covered	Graywacke & black argillite	0.4% chromium, $\pm$ 10 gr zircon, -5% magnetite
107	5N315	11	35	10	105		45	0	Blank	Covered	Conglomerate, graywacke, argillite	-5% magnetite, $\pm$ 10 gr zircon
108	5N324	11	20	10	105		50	1		Covered	Black slate & graywacke	-5% magnetite, $\pm$ 10 gr zircon
109	5N323	11	25	5	90		40	0	Blank	Covered		-5% magnetite, $\pm$ 10 gr zircon

* Samples marked in field with prefix "5N" taken by Bary.

Table 12

Map No.	Sample No.*	Fig. No.	Ppm				CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni				
110	5N316	12	35	25	135		65	0	Covered	Slate, graywacke	-5% magnetite, +10 gr zircon, scheelite 1 grain
111	5N305	12	50	20	120		60	0	Covered	Slate	
112	5N304	12	35	15	115		45	1	Covered	Slate	0.5% chromium, +10 gr zircon, -5% magnetite
113	5N303	12	65	15	115		55	0	Covered	Slate	0.3% chromium, +10 gr zircon, -5% magnetite
114	5N301	12	50	20	145		80	0	Covered	Slate, graywacke	0.4% chromium, -5% magnetite
115	5N302	12	35	15	120		55	0	Covered	Slate	-5% magnetite, 0.4% chromium, +10 gr zircon
116	5N300	12	45	15	135		75	0	Covered	Slate	-5% magnetite
117	5N344	12	20	10	85		30	1	Covered	Slate	-5% magnetite, +10 gr zircon
118	5N299	12	35	10	110		45	0	Covered	Slate	0.4% chromium, -1% magnetite
119	5N333	12	50	25	140		50	0	Covered	Graywacke, slate	
120	5N332	12	50	30	145		70	0	Covered	Graywacke, slate	-10% magnetite, +10 gr zircon
121	5N331	12	25	10	80		40	1	Covered	Graywacke, slate	
122	5N330	12	40	15	115		45	0	Covered	Graywacke, slate	-10% magnetite, +10 gr zircon

* Samples marked in field with prefix "5N" taken by Bary.

Table 13

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
123	5N329	13	65	15	190		80	0	Blank	Covered	Slate, graywacke	-10% magnetite, +10 gr zircon
124	5N328	13	30	10	120		55	0	Blank	Covered	Slate, graywacke & conglomerate	-5% magnetite, +10 gr zircon
125	5N327	13	25	15	175		60	0	Blank	Covered	Slate, graywacke	
126	5N326	13	50	15	115		70	0	Blank	Covered	Slate, graywacke	-5% magnetite, +10 gr zircon
127	5N325	13	50	50	170		85	0	Blank	Covered	Slate, graywacke	-1% magnetite
128	5N298	13	45	15	115		60	0	Blank	Covered	Slate, graywacke & conglomerate	0.4% chromium, -5% magnetite, +10 gr zircon
129	5N297	13	65	20	185		65	0	Blank	Black slate	Slate	0.4% chromium, -5% magnetite
130	5N296	13	60	15	170		65	1		Covered	Slate, argillite	0.4% chromium, -5% magnetite
130A	5F145	13	30	15	105		55	2	Pink 1 ml Purple 1 ml	Shale, slate	Shale, slate, little greenstone, -2% qtz	Little magnetite & pyrite
131	5F144	13	35	10	115	3	55	4	Pink 1 ml Purple 3 ml	Graywacke, argillite	Graywacke, argillite, dike, greenstone	Little magnetite & pyrite
132	5F143	13	45	10	125	3	70	3	Pink 1 ml Purple 2 ml	Argillite	Graywacke, argillite, dike, greenstone	Few grains of pyrite and magnetite
133	5N335	13	45	15	145		65	0	Blank	Schistose graywacke	Graywacke & slate	Magnetite -1%
134	5N336	13	50	15	145		55	0	Blank	Graywacke shale	Graywacke & slate	-1% magnetite, +10 gr zircon

Table 13 (Continued)

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
135	5N317	13	30	10	110		50	1		Covered	Slate, andesite (?)	-5% magnetite, +10 gr zircon
136	5N318	13	35	15	125		55	0		Covered	Graywacke, slate	-5% Magnetite, +5 gr zircon
137	5N322	13	20	10	100		55	0		Black slate	Graywacke, slate	-5% magnetite, +10 gr zircon
138	5N321	13	20	10	110		55	0		Andesite (?)	Andesite (?)	-5% magnetite, +10 gr zircon
139	5N319	13	25	10	110		60	0		Covered	Graywacke	-5% magnetite, +10 gr zircon

* Samples marked in field with prefix "5F" taken by Jasper.
 Samples marked in field with prefix "5N" taken by Bary.

Table 14

Map No.	Sample No. *	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
140	5F121	14	35	40	120	2	55	14	Purple	Graywacke, argillite, shale	Graywacke, argillite, shale	-0.5% magnetite, little pyrite
141	5F135	14	45	10	110	3	70	4	Pink 1 ml Purple 3 ml	Covered	Argillite, graywacke, sandstone, andesite, dike	-0.5% magnetite, little pyrite
142	5F136	14	55	10	130	3	70	3	Purple	Covered	Argillite, graywacke, sandstone, andesite, dike	-0.5% magnetite, little pyrite
143	5F122	14	20	10	65	2	35	+20	Pink 15 ml Purple 5 ml	Graywacke	Graywacke, argillite, shale, greenstone	-0.5% magnetite, little pyrite
144	5F123	14	45	10	105	2	75	6	Pink 5 ml Purple 1 ml	Argillite	Argillite, graywacke, greenstone	-0.5% magnetite, little pyrite
145	5F126	14	20	5	55	2	40	8	Pink 7 ml Purple 1 ml	Covered	Graywacke, argillite, granite, & dike, -2% quartz	-1% magnetite, 4 gr zircon, pyrite
146	5F127	14	25	10	90	3	55	+20	Pink	Covered	Graywacke, argillite, granite, & dike, -2% quartz	-1% magnetite, little pyrite
147	5F124	14	35	15	105	2	70	15	Pink 5 ml Purple 10 ml	Covered	Argillite, graywacke, greenstone, dike	-1% magnetite, 8 gr zircon, little pyrite
148	5F128	14	30	10	70	3	40	+20	Pink 8 ml Purple 12 ml	Covered	Argillite, graywacke greenstone, dike	-1% magnetite, 16 gr zircon little pyrite.
149	5F129	14	25	10	65	3	35	+20	Pink 2 ml Purple 18 ml	Covered	Argillite, graywacke sandstone, greenstone, dike	-1% magnetite, little pyrite

Table 14 (Continued)

Map No.	Sample No. *	Fig. No.	Ppm				CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni				
150	5F130	14	20	10	65	3	35	12 Pinkish-Purple	Covered	Argillite, graywacke, sandstone, greenstone, dike, -2% quartz	Contaminated, discarded
151	5F131	14	20	15	80	3	50	1 Purple	Covered	Slate, graywacke, sandstone, greenstone, dike, -2% quartz	-1% magnetite, little pyrite
152	5F132	14	20	5	65	2	50	8 Pink 2 ml Purple 6 ml	Covered	Argillite, graywacke, sandstone, greenstone, & dike, -2% quartz	-1% magnetite, 4 gr zircon, little pyrite
153	5F133	14	15	5	55	4	35	3 Purple	Covered	Argillite, graywacke, sandstone, greenstone, -2% quartz	-1% magnetite, little pyrite
154	5F134	14	35	10	100	2	55	10 Purple 8 ml Blue-gray 2 ml	Covered	Argillite, graywacke, shale, sandstone, dike, granite	-1% magnetite, little pyrite
155	5F125	14	35	10	110	3	65	13 Pink 3 ml Purple 6 ml Blue-gray 4 ml	Covered	Argillite, graywacke, shale, sandstone, dike, granite, -2% quartz	-1% magnetite, little pyrite

* Samples marked in field with prefix "5F" taken by Jasper.

Map No.	Sample No.	Fig. No.	Grain				CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Ag	Ni					
155A	5N142	15	30	15	105	4	55	Purple	Graywacke	Graywacke, argillite, dike, greenstone	-1% magnetite, little pyrite
156B	5N140	15	55	10	125	3	70	Purple	Covered	Graywacke, argillite, shale, sandstone, greenstone, & dike, -2% quartz	Contaminated, discarded
156C	5N141	15	35	15	110	2	65	Pink 1 ml Blue-gray 1 ml	Shale & slate	Shale, greenstone, slate, and dike	-1% magnetite, little pyrite
157	5N147	15	35	10	120	2	70	Blank	Graywacke & slate	Graywacke & slate	-5% magnetite, +10 gr zircon
158	5N148	15	20	5	70	4	50	Pink 1 ml Purple 1 ml Blue-gray 1 ml	Covered	Argillite, graywacke, sandstone, greenstone, dike, -2% quartz	-1% magnetite, 20 gr zircon; little pyrite
159	5N158	15	35	10	120	3	65	Pink 1 ml purple 2 ml Blue-gray 1 ml	Covered	Argillite, graywacke, sandstone, greenstone, dike, -2% quartz	No heavy minerals
159	5N158	15	30	10	110	2	50		Covered	Graywacke & slate	-1% magnetite, +10 gr zircon
160	5N120	15	35	5	110	2	60	Blank	Covered	Graywacke, argillite, slate, shale, sandstone, little granite, & greenstone	-1% magnetite, little pyrite
161	5N339	15	35	15	120	2	70		Covered	Graywacke & slate	-5% magnetite, +10 gr zircon

Samples marked in field with flag - "BX" taken by Jasper.
 Samples marked in field with profile - "P" taken by Eary.

Sample No.	SP	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1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Table 14 (Continued)

Map No.	Sample No. *	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
150	5F130	14	20	10	65	3	35	12	Pinkish-Purple	Covered	Argillite, graywacke, sandstone, greenstone, dike, -2% quartz	Contaminated, discarded
151	5F131	14	20	15	80	3	50	1	Purple	Covered	Slate, graywacke, sandstone, greenstone, dike, -2% quartz	-1% magnetite, little pyrite
152	5F132	14	20	5	65	2	50	8	Pink 2 ml Purple 6 ml	Covered	Argillite, graywacke, sandstone, greenstone, & dike, -2% quartz	-1% magnetite, 4 gr zircon, little pyrite
153	5F133	14	15	5	55	4	35	3	Purple	Covered	Argillite, graywacke, sandstone, greenstone, -2% quartz	-1% magnetite, little pyrite
154	5F134	14	35	10	100	2	55	10	Purple 3 ml Blue-gray 2 ml	Covered	Argillite, graywacke, shale, sandstone, dike, granite	-1% magnetite, little pyrite
155	5F125	14	35	10	110	3	65	13	Pink 3 ml Purple 6 ml Blue-gray 4 ml	Covered	Argillite, graywacke, shale, sandstone, dike, granite, -2% quartz	-1% magnetite, little pyrite

* Samples marked in field with prefix "5F" taken by Jasper.

Map No.	Sample No.*	Fig. No.	P.P.T.					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	W					
175	5P111	17	25	15	70	2	45	0	Blank	Covered	Sandstone, graywacke argillite, shale, granite, greenstone, -2% quartz	-1% magnetite, little pyrite
176	5P110	17	30	25	150	3	105	1	Purple	Covered	Graywacke, argillite, shale, greenstone, -2% quartz	-1% magnetite, little pyrite
177	5P109	17	35	15	120	2	60	1	Purple	Graywacke & shale	Graywacke, argillite, shale, greenstone, -2% quartz	-1% magnetite, little pyrite
178	5P108	17	50	20	130	3	55	0	Blank	Graywacke	Graywacke, argillite, shale, greenstone breccia	-1% magnetite, little pyrite
179	5P107	17	30	10	60	3	10	0	Blank	Slate	Graywacke, argillite, little greenstone, slate	-1% magnetite, little pyrite, -40 gr zircon

* Samples marked in field with prefix "5P" taken by Jasper.

Table 18

Map No.	Sample No.*	Fig. No.	Ppm					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
180	5F106	18	20	15	115	2	60	0	Blank	Slate	Slate, graywacke, argillite, little greenstone, -2% qtz	-1% magnetite, little pyrite
181	5F105	18	20	5	50	2	30	0	Blank	Covered	Graywacke, argillite, slate, little greenstone	-1% magnetite, little pyrite
182	5F104	18	20	5	65	3	40	1	Purple	Covered	Graywacke, argillite, shale	-1% magnetite, +32 gr zircon, little pyrite
183A	5F103	18	65	20	130	3	85	0	Blank	Shale	Graphitic shale, graywacke, argillite	-1% magnetite, little pyrite
183	5F102	18	35	15	125	2	75	1	Purple	Covered	Graphitic shale, graywacke, argillite, little greenstone	-1% magnetite, little pyrite
184	5F100	18	20	10	90	4	40	0	Blank	Slate	Arkose sandstone, slate, graywacke, little greenstone, -2% quartz	-1% magnetite, little pyrite
185	5F101	18	45	15	90	3	40	2	Purple	Covered	Arkose sandstone, little greenstone, graywacke, slate, -2% quartz	-1% magnetite, little pyrite, 14 gr zircon
186	5F92	18	50	10	85	3	70	0	Blank	Covered	Graywacke, argillite, slate, arkose sandstone, little granite, greenstone	Few grains magnetite & pyrite, 3 gr zircon

* Samples marked in field with prefix "5F" taken by Jasper.

Table 19

Map No.	Sample No.*	Fig. No.	Parts					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
187	5F91	19	55	20	110	3	60	0	Blank	Covered	Arkose sandstone, argillite, greenstone, slate, little granite	Few grains magnetite & pyrite, 8 gr zircon
188	5F87	19	25	15	75	3	25	0	Blank	Covered	Marsh area--fine sand and silt only	none
188A	5F88	19	25	10	70	3	30	0	Blank	Covered	Marsh area--fine sand and silt only	none
189	5F86	19	20	10	70	4	45	1	Blue-gray	Covered	Marsh area--fine sand and silt only	none
189A	5F89	19	25	10	50	2	20	6	Purple	Covered	Marsh area--fine sand and silt only	none
191	5F90	19	45	25	135	3	55	0	Blank	Covered	Graywacke, greenstone, arkose sandstone, slate, granite, dike, -2% quartz	-1% Magnetite, little pyrite
192	5F89	19	60	20	110	3	70	0	Blank	Covered	Graywacke, argillite, slate, arkose sandstone, granite, little greenstone, dike, -2% quartz	-1% magnetite, little pyrite
193	5F99	19	50	15	95	2	70	0	Blank	Covered	Graywacke, argillite, slate, arkose sandstone, granite, little greenstone, dike, -2% quartz	-1% magnetite, little pyrite
194	5F92	19	35	10	80	2	50	1	Purple	Covered	Graywacke, argillite, slate, arkose sandstone, granite, little greenstone, dike -2% quartz	-1% magnetite, little pyrite

Table 19 (Continued)

Map No.	Sample No.*	Fig. No.	Ppm					CK ml. conc.	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
195	5894	19	30	5	55	3	20	1	Purple	Covered	Graywacke, argillite, slate, arkose sandstone, granite, little greenstone, dike -2% quartz	-1% magnetite, little pyrite
	5895	20	30	15	50	3	20	0	Blank	Covered	Graywacke, argillite slate, arkose sandstone, granite, little greenstone, dike, -2% quartz	-1% magnetite, little pyrite
196	5896	19	20	10	20	2	40	0	Blank	Graywacke & slate	Graywacke, argillite, slate, arkose sandstone, porphyry, dike, Granite, -2% quartz	-0.5% magnetite, little pyrite
	5898	19	20	15	20	0	40	0	Blank	Graywacke & slate	Graywacke, argillite, slate, arkose sandstone, greenstone, granite, dike	Little magnetite & pyrite, 4 gr zircon
197	5897	19	20	5	60	3	45	0	Blank	Graywacke & slate	Graywacke, argillite, slate, arkose sandstone, greenstone, granite, dike	Magnetite abundant, little pyrite, 40 gr zircon, 4 gr scheelite

* Samples marked in field with prefix "52" taken by Jasper.