

STATE OF ALASKA

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Geochemical Report No. 14

Geochemical Investigations  
Willow Creek Southerly to Kenai Lake Region,  
South Central Alaska

By

Martin W. Jasper

Juneau, Alaska  
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GEOCHEMICAL INVESTIGATIONS  
WILLOW CREEK SOUTHERLY TO KENAI LAKE REGION,  
SOUTH CENTRAL ALASKA  
1966

By Martin W. Jasper

SUMMARY

The 1966 geochemical stream sediment sampling along 220 miles of highway and access roads from the Willow Creek District southerly to the head of Kenai Lake, and westerly along the Sterling Highway to Mile 64, did not disclose any strong anomalies in the 113 stream samples taken.

Seven samples had moderately anomalous amounts of copper, two of lead, twenty-two of zinc, and fifteen of molybdenum. No anomalous nickel samples were obtained. All samples were checked for radioactivity, but none was found.

Streams having moderate anomalies of more than 120 parts per million copper, more than 30 ppm lead, more than 160 ppm zinc, or more than 8 ppm molybdenum should be of sufficient interest for follow-up sampling further upstream.

On the Kenai Peninsula, numerous gold-quartz discoveries have been made since the first prospectors arrived in the 1890's, but none of them have proven to be economic to date. Placer deposits discovered in the Resurrection Creek drainage basin had a noteworthy production record, and the Mills Creek and Sunrise areas are reported to have had a substantial placer gold production.

In the Willow Creek and Upper Little Susitna River district following the 1905 gold-quartz discoveries, a number of the mines were highly productive until 1942, when all gold mines were shut down for duration of World War II. After the war only one mine operated for a short period during 1946-1947.

No copper, lead, zinc or other base metal deposits or showings of sufficient value to encourage exploration have been found on the Kenai Peninsula to date. This does not necessarily mean there are no worthwhile hidden ore deposits in that region.

In the Willow Creek district scattered low grade copper occurrences in the Lone Tree Gulch area have long been known. Very little work has been done upon them.

A low grade molybdenum-copper prospect is located on a steep talus slope at head of Reed Creek, about two miles northeast of the Snowbird gold-quartz mine. It was discovered in 1915, and is held by Palmer residents. Past development has been largely limited to annual assessment work.

INTRODUCTION

The geochemical stream sediment sampling program was continued throughout the 1966 field season by the Division of Mines and Minerals in its search for trace amounts of the metallic minerals (copper, lead, zinc, molybdenum, nickel, and other) that might lead to hidden ore deposit locations.

This report covers results obtained from analyses of the 113 geochemical samples taken by the author from selected streams in 14 areas along highway and access roads which extend from the Willow Creek district south to the head of Kenai Lake, and west along the Sterling Highway to Mile 64.

Results from analyses of 106 stream sediment samples taken in 1964 and 1965, by Jasper and Bary in some of the 14 areas covered in 1966, are included in this report for comparison (figures 1 to 14, and table 1).

## TOPOGRAPHY

The topography of the Talkeetna Mountains in the Willow Creek district is largely one of steep slopes, serrated ridges and numerous glacial cirques and hanging valleys. Ridge crests range from 3800 to 5000 feet elevations. Valleys range from 1600 to 2500 feet in the upper Little Susitna area, and 2200 to 3600 feet elevations in the upper Willow Creek - Craigie Creek localities.

In the region between Wolverine Creek in the Palmer area south to head of Kenai Lake and west along the Sterling Highway to Mile 64, the crests of the Chugach Mountains have a range of 5500 to 7500 feet with an average of around 6500 feet above sea level.

## GENERAL GEOLOGY

In the Willow Creek district quartz diorite is the predominant bedrock type. The north side of Bald Mountain Ridge from its westerly limits easterly to Hatcher Pass is largely covered by the Birch Creek schist, which is considered of Pre-Cambrian age, (Capps, 1940). On the south side of the ridge several outcrops are conglomerate and/or arkose sandstone. South of Little Susitna Lodge the Little Susitna River is entrenched in arkose sandstone and conglomerate, (Capps, 1940).

Between Wolverine Creek in the Palmer area southerly to the Hope district, a more or less continuous belt of Pre-Cretaceous lavas, tuffs, and greenstone predominate along the northwest margin of the Chugach Mountains, (Capps, 1940).

From mouth of Ingram Creek (Mile 75, Seward Highway) south to the Kenai Lake region, the bedrock is largely graywacke and slate; a number of acidic dikes have been noted in this formation. The dikes generally are closely associated with gold-quartz occurrences.

## MINERAL DEPOSITS

### Kenai Peninsula

From the 1890's to 1942 there was extensive prospecting activity in accessible areas of the Kenai Peninsula, and numerous gold-quartz discoveries were made. Extensive development programs were undertaken, and small mills were built and operated on a number of the properties. None of these ventures are known to have been profitable over the total period of their operations, and many of the properties were abandoned.

The recent proposals to subsidize the gold mining industry has led to restaking many of the abandoned mines and prospects.

Reopening of the old Primrose mine is reported to be under consideration by the owners. Situated in area of the Primrose community at head of Kenai Lake, mining of the stibnite associated with the gold-quartz veins is said to be the main objective.

Two stibnite discoveries have been reported in the Skilak and Tustemena Lakes area during 1966. No information concerning locations and extent of the occurrences has been received.

### Willow Creek District

Scattered occurrences of low grade copper mineralization have been noted on the steep mountain slopes on south side of Lone Tree Gulch's main (unnamed) tributary; they are situated  $3\frac{1}{2}$  to  $4\frac{1}{2}$  miles northeasterly from the Little Susitna Lodge in the upper Little Susitna River drainage basin. Lack of visible mineralization continuity for appreciable distances has discouraged prospectors.

The long known low grade molybdenum-copper mineralization at head of Reed Creek, two miles northeast of the Snowbird mine in the upper Little Susitna River drainage basin, is situated on a steep talus covered slope which has made it difficult to appraise. A short adit (length not reported) was driven prior to 1917 following its discovery, and has been largely covered with talus. Width and lateral extent of mineralization has not been reported. This prospect is held by Palmer residents.

In the Bald Mountain Ridge area of the Willow Creek district, stream sediment samples taken in that formation generally carried abundant magnetite. This mineral was frequently noted over a distance of several miles in schist outcrops near the ridge crest as thin "platey" magnetite crystals. The abundance of magnetite in the streams sampled and the relative frequency of the disseminated crystalline magnetite suggests that an airborne magnetometer survey may be justified along full length of Bald Mountain Ridge.

### GEOCHEMICAL FIELD INVESTIGATIONS

During the 1966 season 113 stream sediment samples were taken in the region between the Willow district southerly along the Seward Highway to head of Kenai Lake, and westerly along the Sterling Highway to Mile 64.

In field testing the Hawkes method was used in checking for traces of the cold extractable metals (Hawkes, 1963).

Sites for sampling were selected well above bridges, culverts, and other structures or materials that could contaminate the streams. The only two definitely contaminated samples taken in the past three years' program are:

1. A Slate Creek sample by Bary about  $\frac{1}{4}$  mile above the Seward Highway at Gilpatrick, where a relatively high (245 ppm) lead anomaly was reported (Map No. 148, Fig. 8). A follow-up sample by Jasper, 600 feet above the old Hatcher mill and 1 mile upstream from the Highway, was well below the anomalous range (Map No. 147, Fig. 8). Old discarded car batteries found in creek below the mill were responsible for the Bary sample results.

2. A Summit Creek sample by Bary (Map No. 146, Fig. 8), taken 1000 feet above the Seward Highway at Mile 45, and the one taken by Jasper  $\frac{1}{4}$  mile further up stream were both lead-contaminated by old batteries later noted in the creek, (Map No. 145, Fig. 8).

The samples taken averaged about 8 pounds; approximately 2 pounds of each was "grab" sampled from the slightly heaped 11 inch gold pan. The larger portion ( $\pm 2$  lb.) was panned at the sample site, and the concentrates - if any - were saved for identification of any heavy minerals that might be present. The  $\pm 2$  lb. portion was later dried and screened; half of the minus 80 mesh material was sent to the Rocky Mountain Geochemical Laboratory, Salt Lake City, Utah, where analyses for trace amounts (ppm) of copper, lead, zinc, molybdenum and nickel were made. Balance of the minus 80 mesh material was kept for possible future additional checking and study.

A study of each concentrate sample under a binocular microscope was made in the office by Michael Mitchell, Jr., laboratory technician. In samples having relatively abundant magnetite, zircon, or other minerals, the minerals were reported on an estimated percentage basis. Where only a few particles of the heavy minerals were present, they were reported as number of grains. While percentages estimated - especially for magnetite - were frequently high, all of the concentrate samples were very small fractions of the average six-pound portion panned.

Tabulations of estimated percentages and grain counts are included in table 1.

## RESULTS

Of the 113 samples taken in this region, the threshold values are: copper, 100 ppm (parts per million); lead, 30 ppm; zinc, 120 ppm; and molybdenum, 5 ppm.

Of the 60 samples containing threshold values, the following appear to be moderately anomalous and warrant additional sampling further upstream.

Figure No.	Map No.	PPM		
		Cu	Zn	Mo
1	10	120	---	---
1	9	130	---	---
1	15	---	---	10
2	45	---	---	8
6	98	---	160	---
6	99	---	160	---
6	107	---	185	---
6	114	---	170	---
7	118	---	195	---
11	175	---	165	---

## REFERENCES

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- Cobb, E.H., 1960, Copper, lead and zinc occurrences in Alaska: U.S. Geological Survey Mineral Investigations Resource Map MR-9
- Cobb, E.H., 1960a, Molybdenum, tin and tungsten occurrences in Alaska: U.S. Geological Survey Mineral Investigations Resource Map MR-10
- Cobb, E.H., 1960c, Chromite, cobalt, nickel and platinum occurrences in Alaska: U.S. Geological Survey Mineral Investigations Resource Map MR-8
- Hawkes, H.E., 1963, Dithizone field test: Economic Geology, V.58, p. 579-586

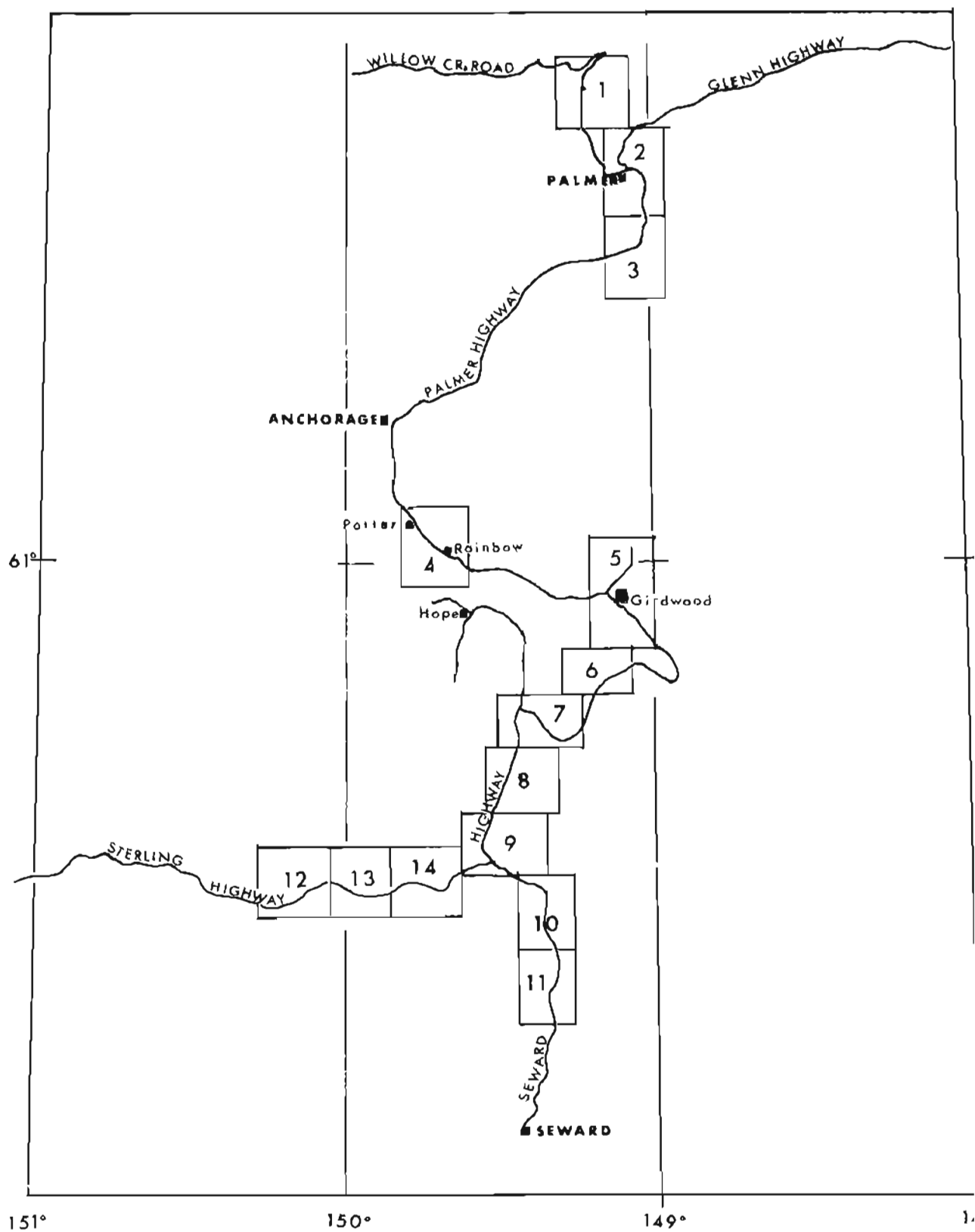


DIAGRAM  
Showing Locations of  
Figs 1 to 14

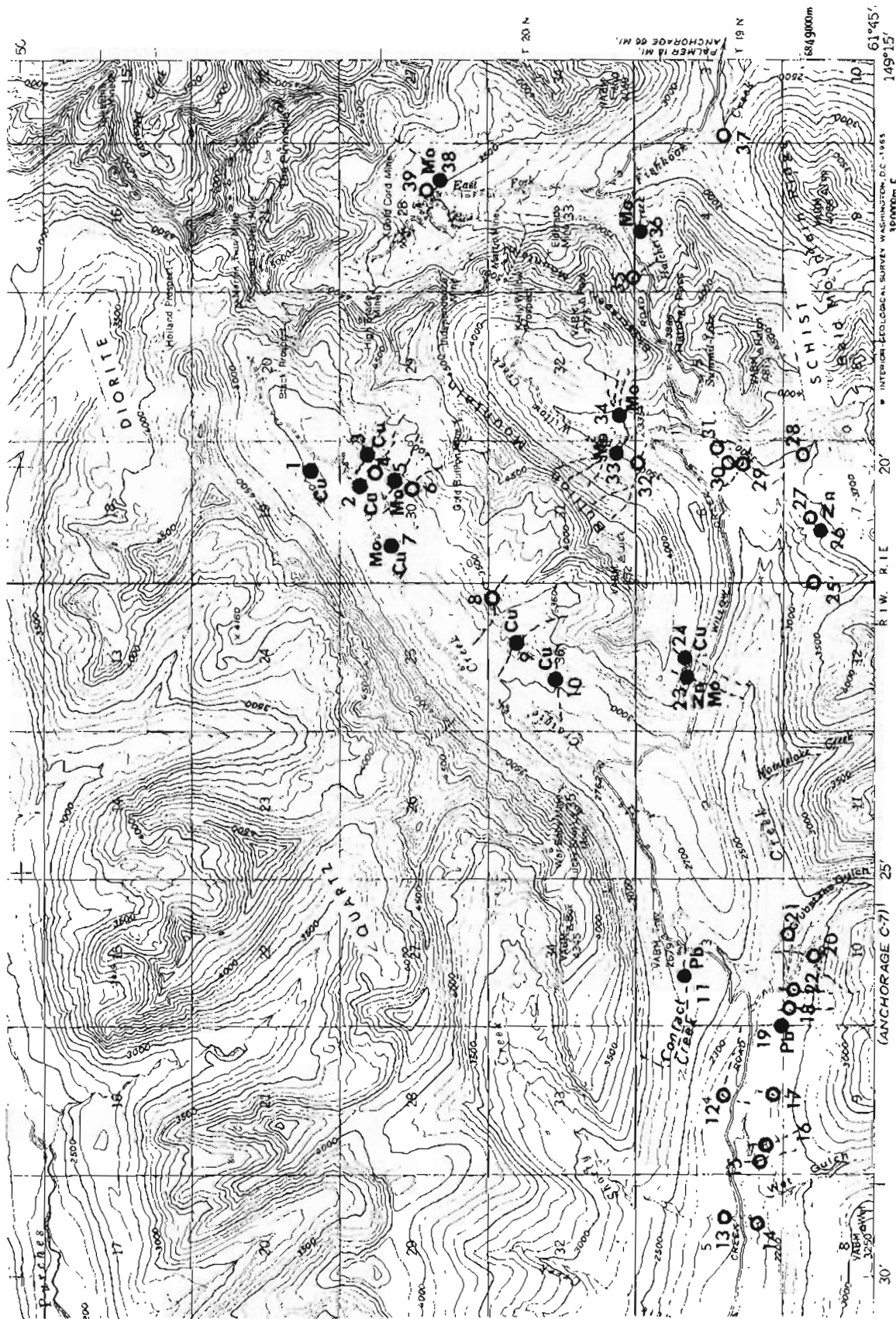


Fig. 1

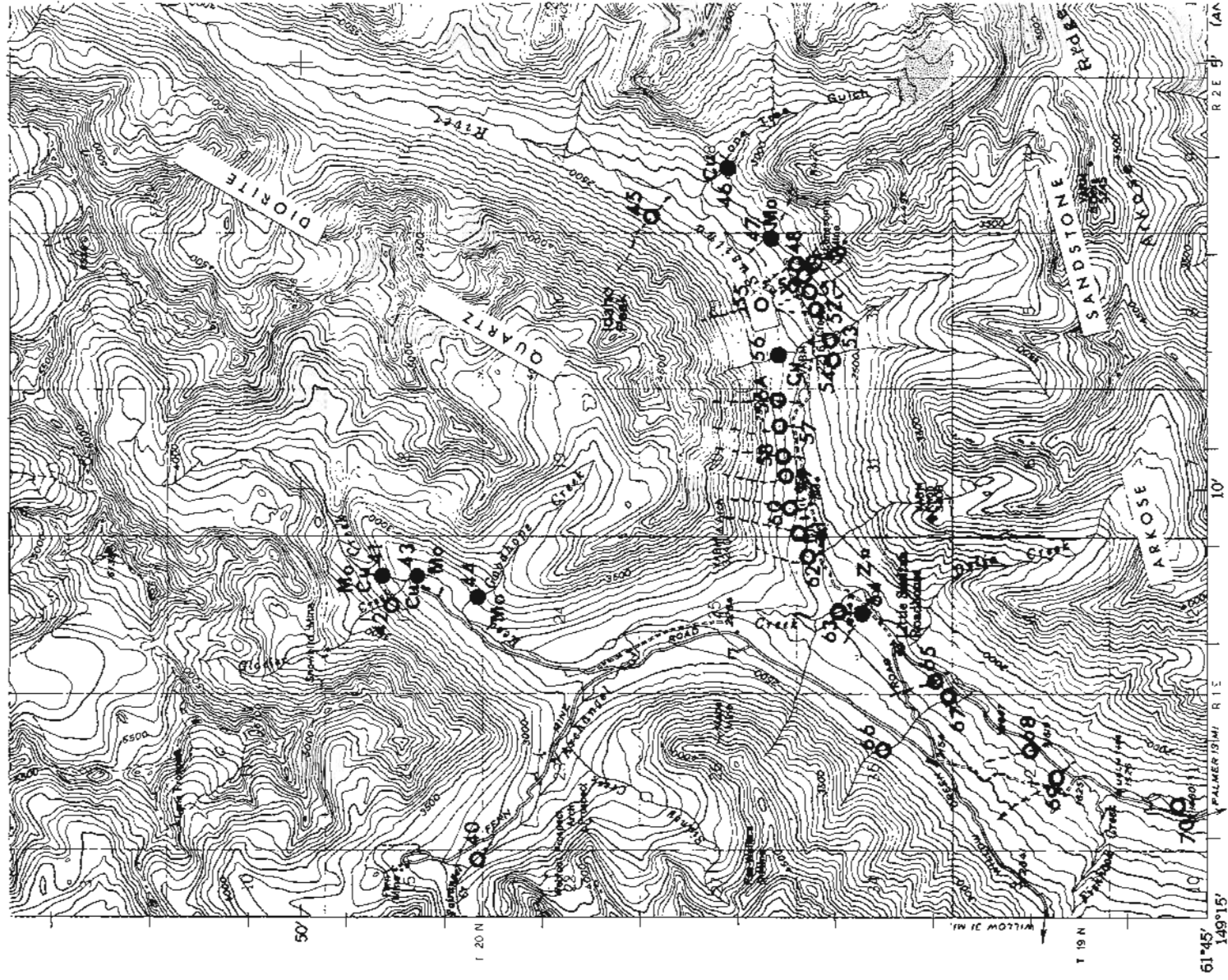


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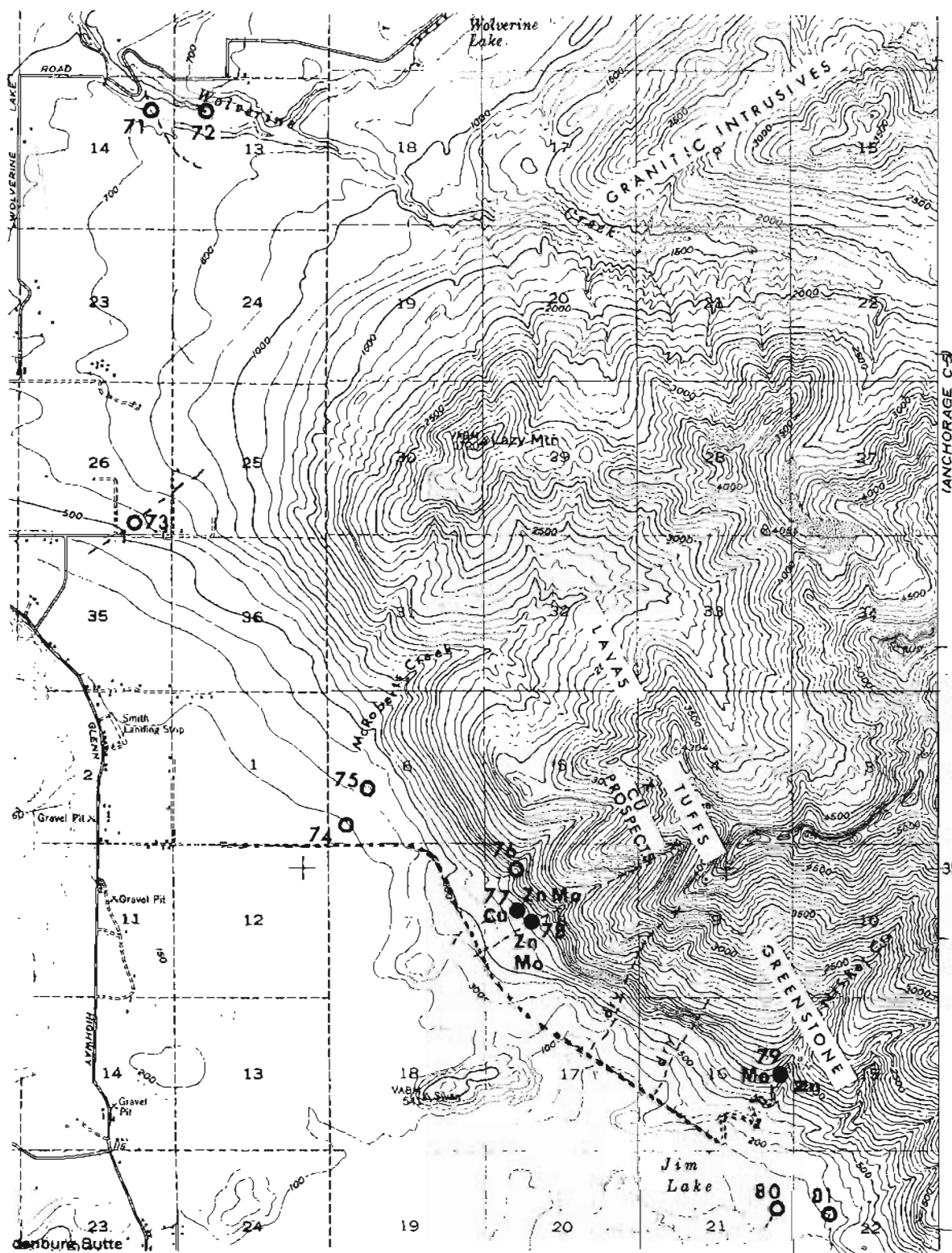
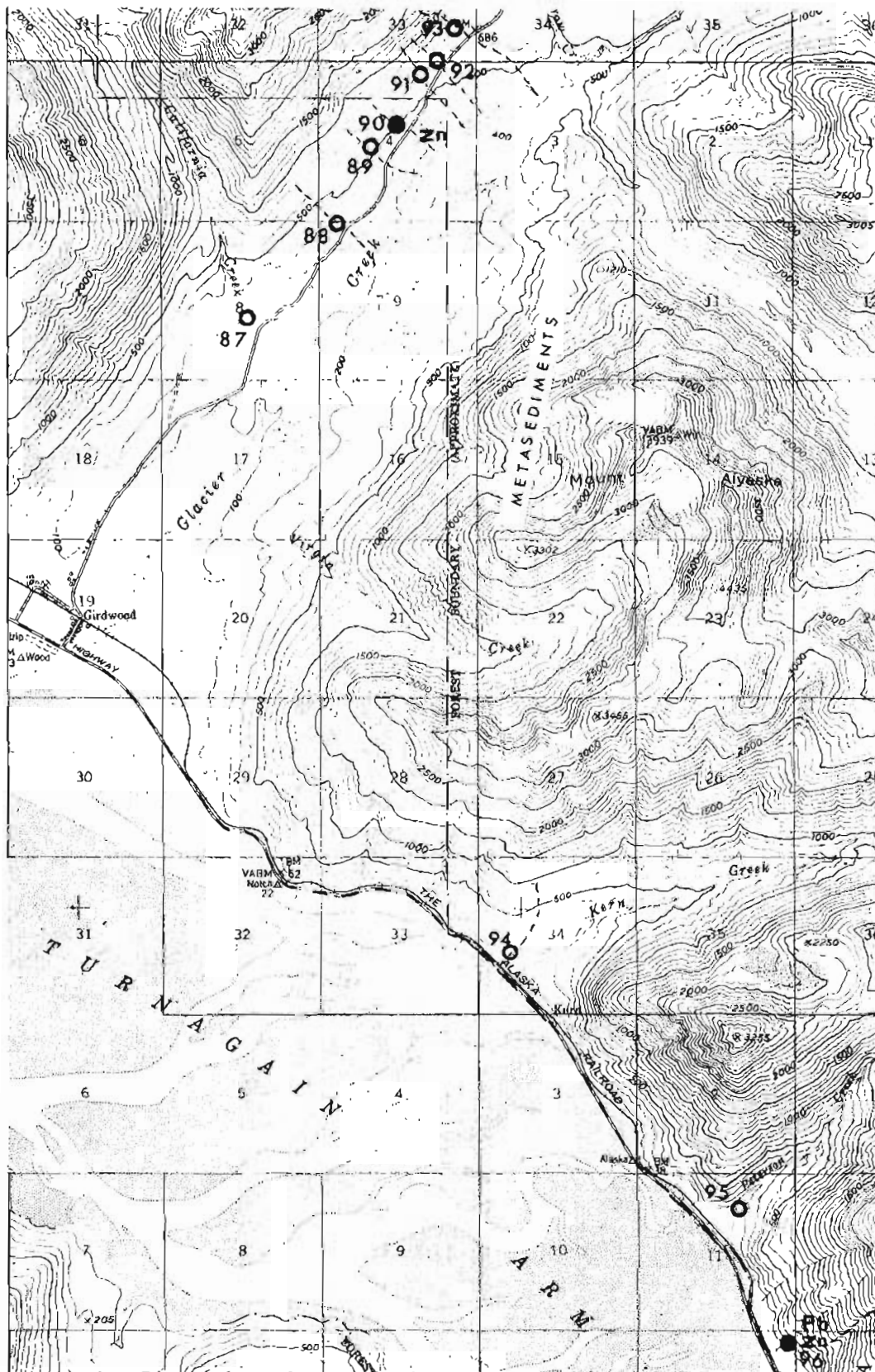


Fig. 3





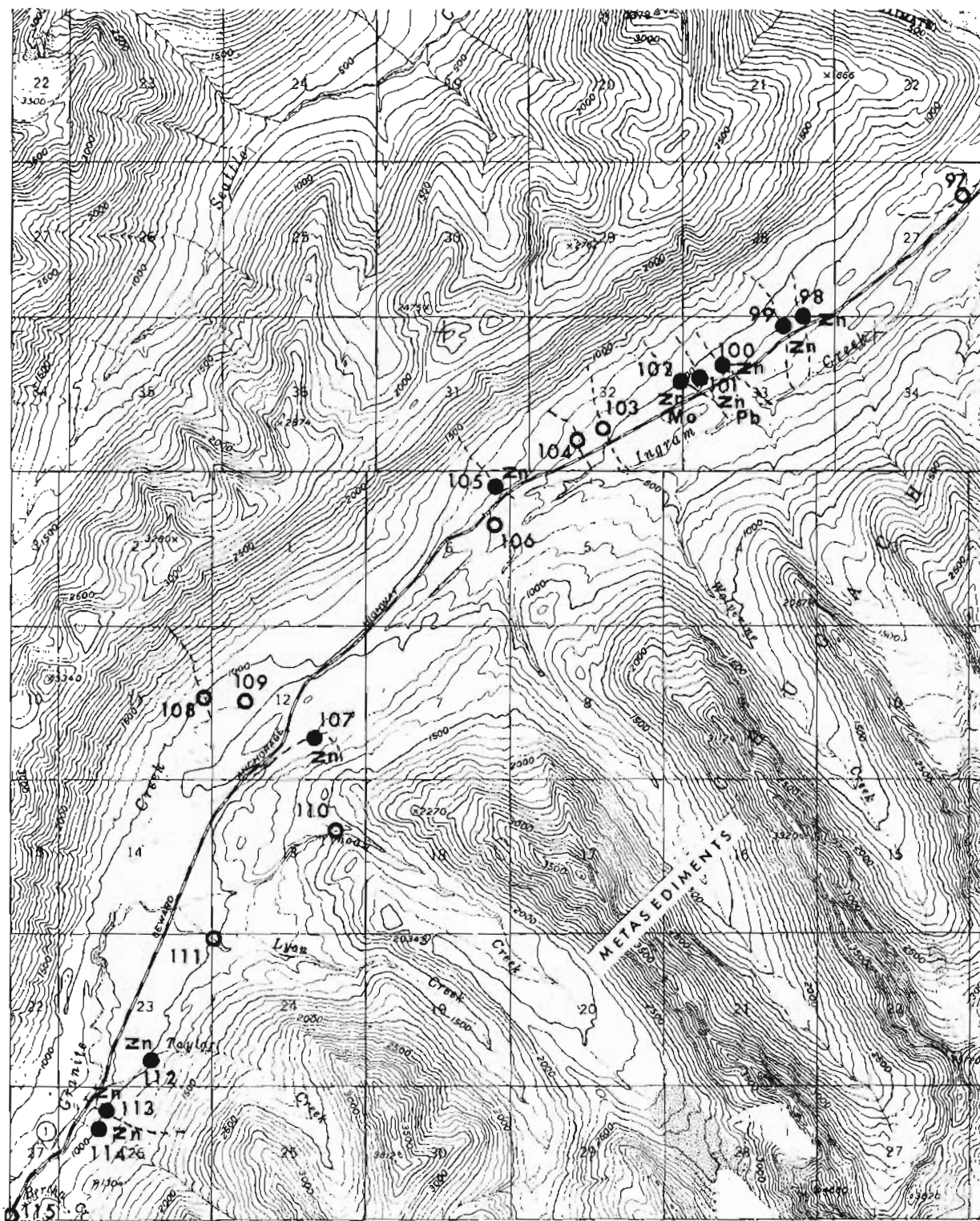


Fig. 6

Fig. 7



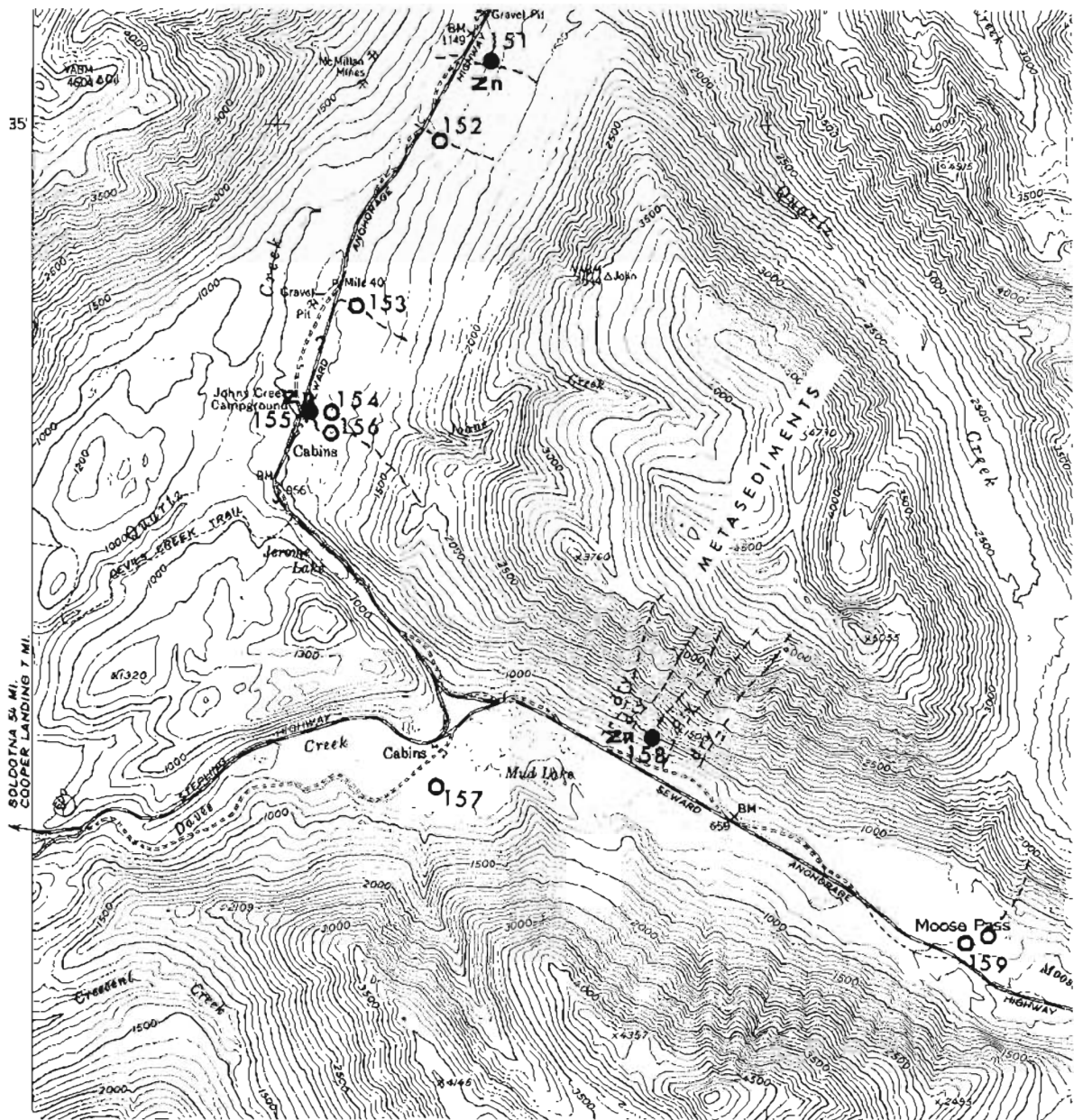


Fig. 9

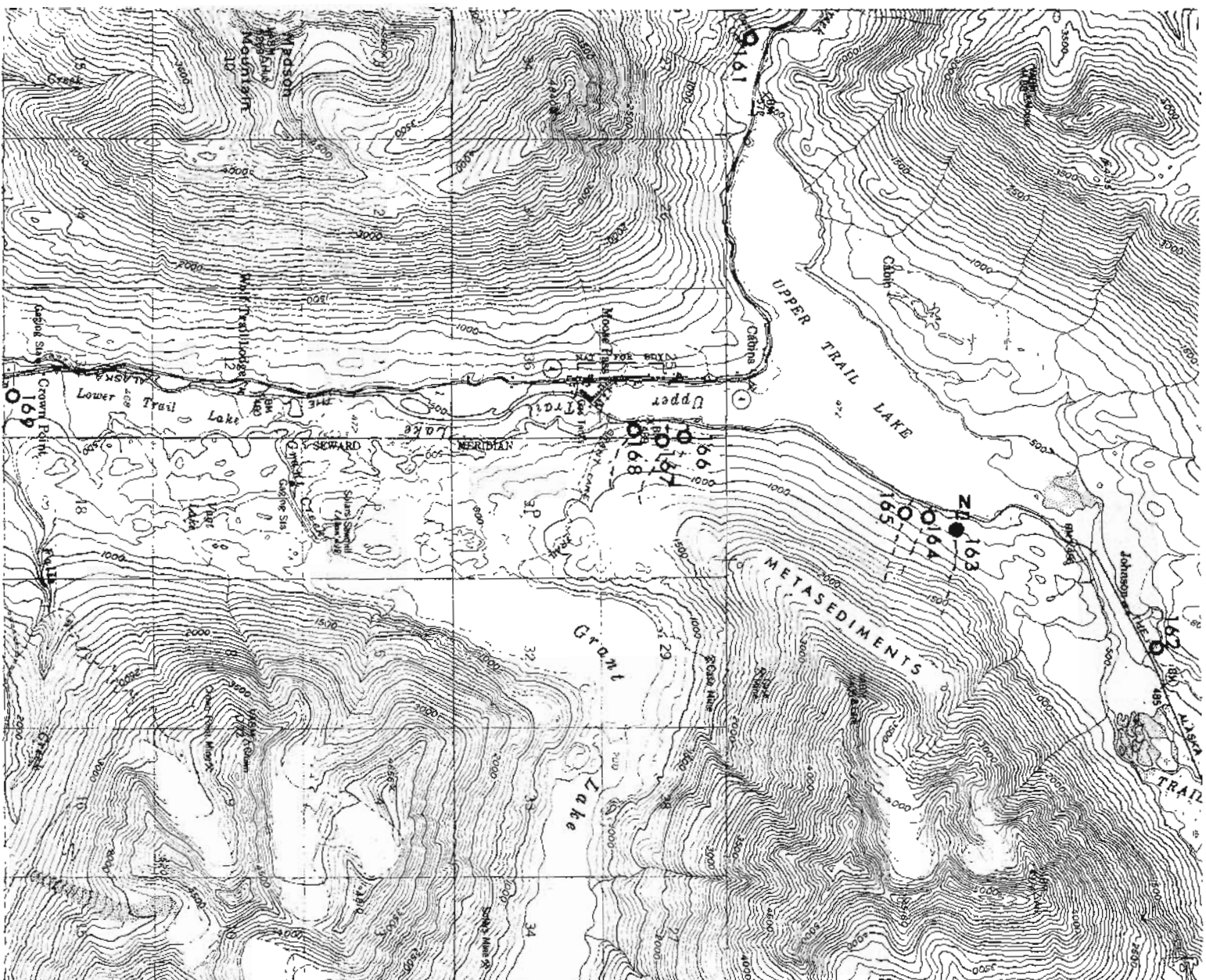


Fig. 10

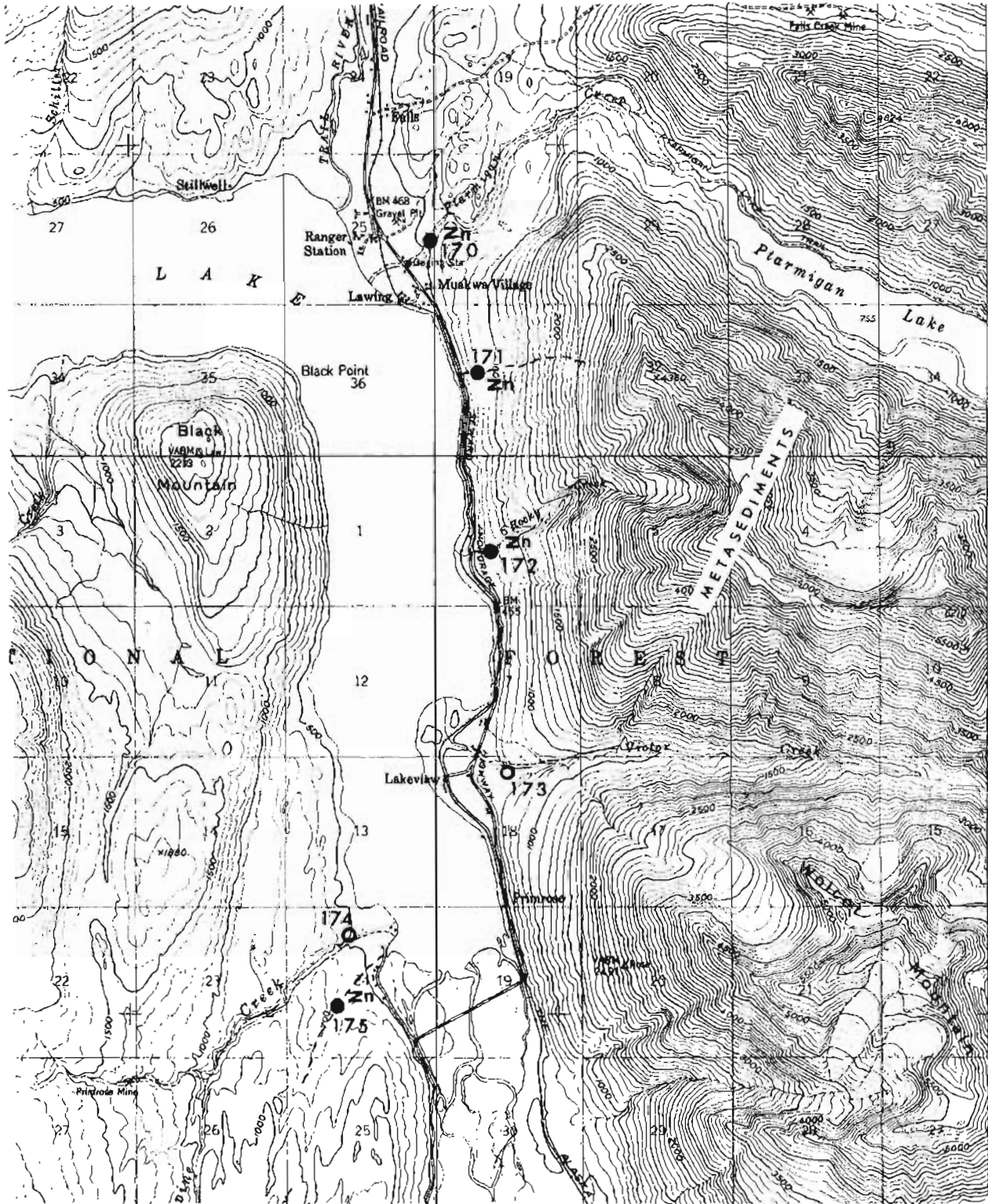


Fig. 11

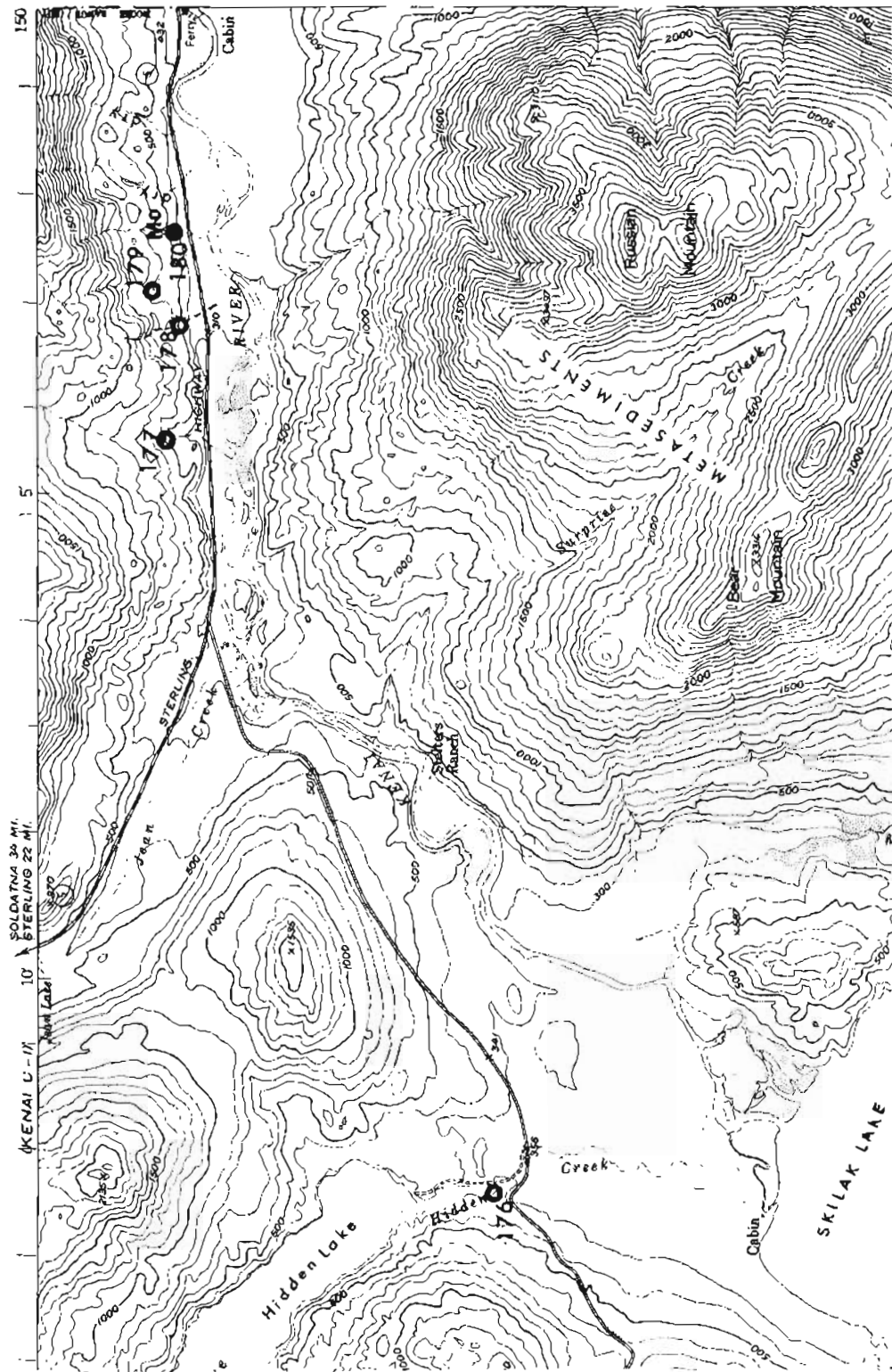


Fig. 12

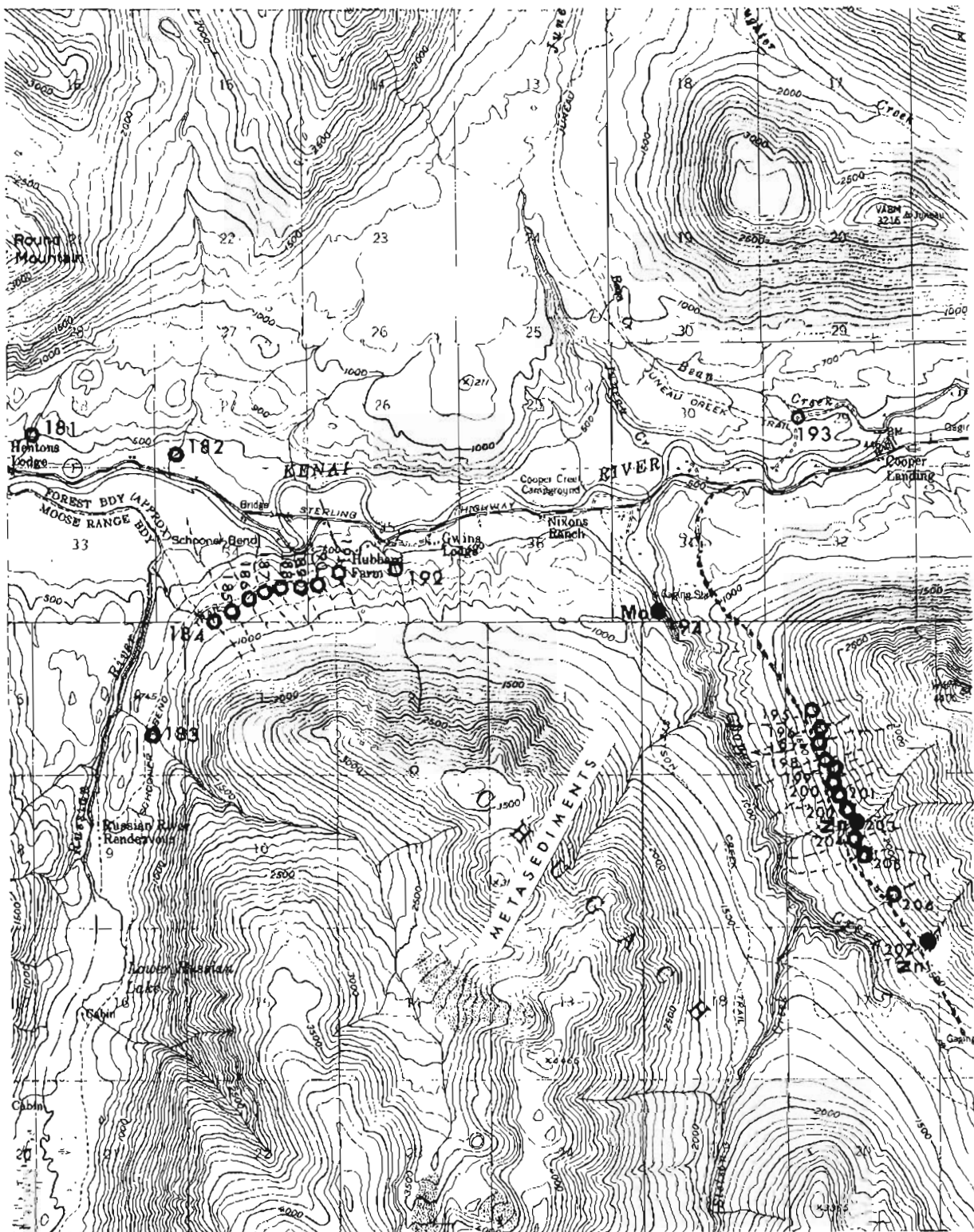


Fig. 13

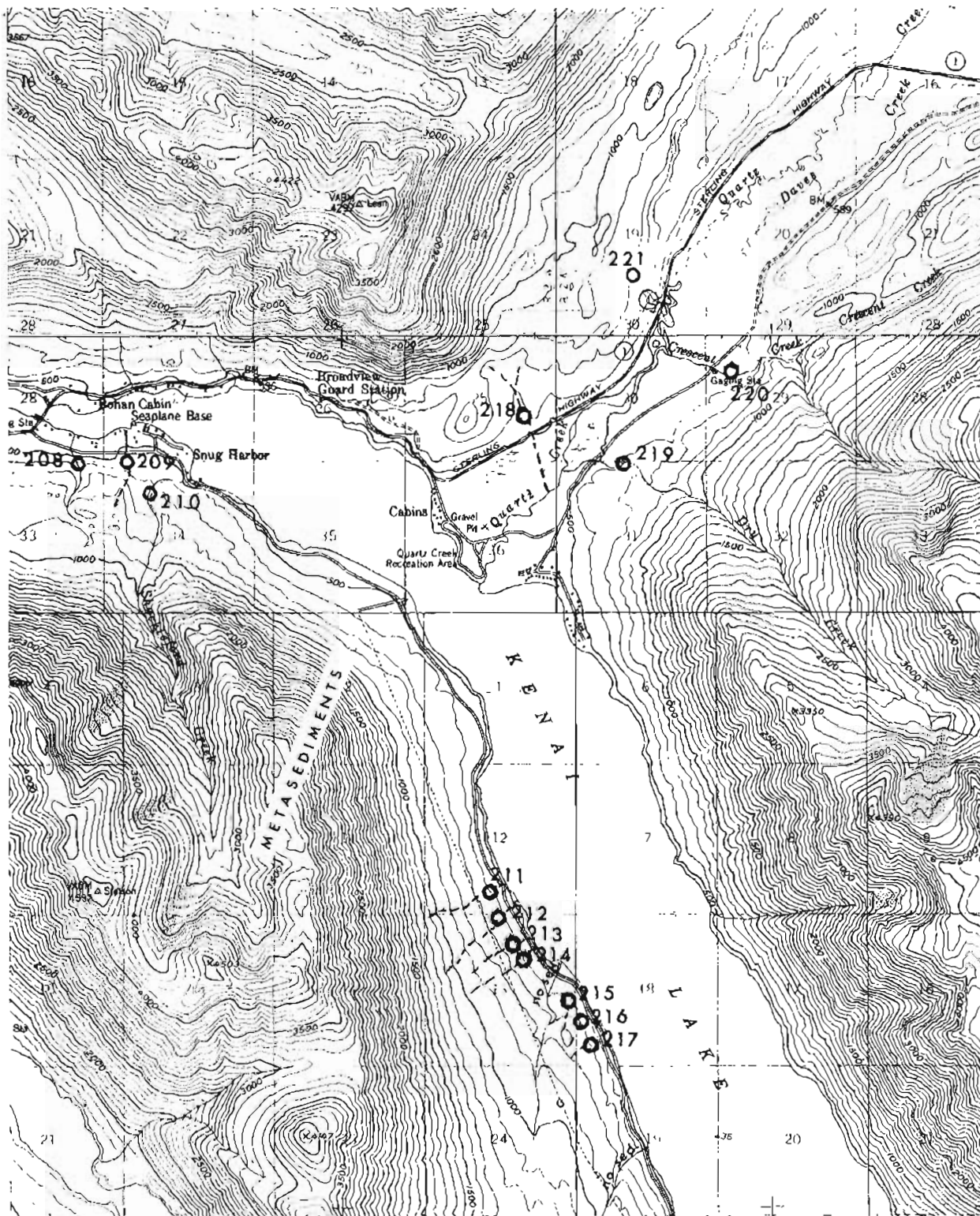
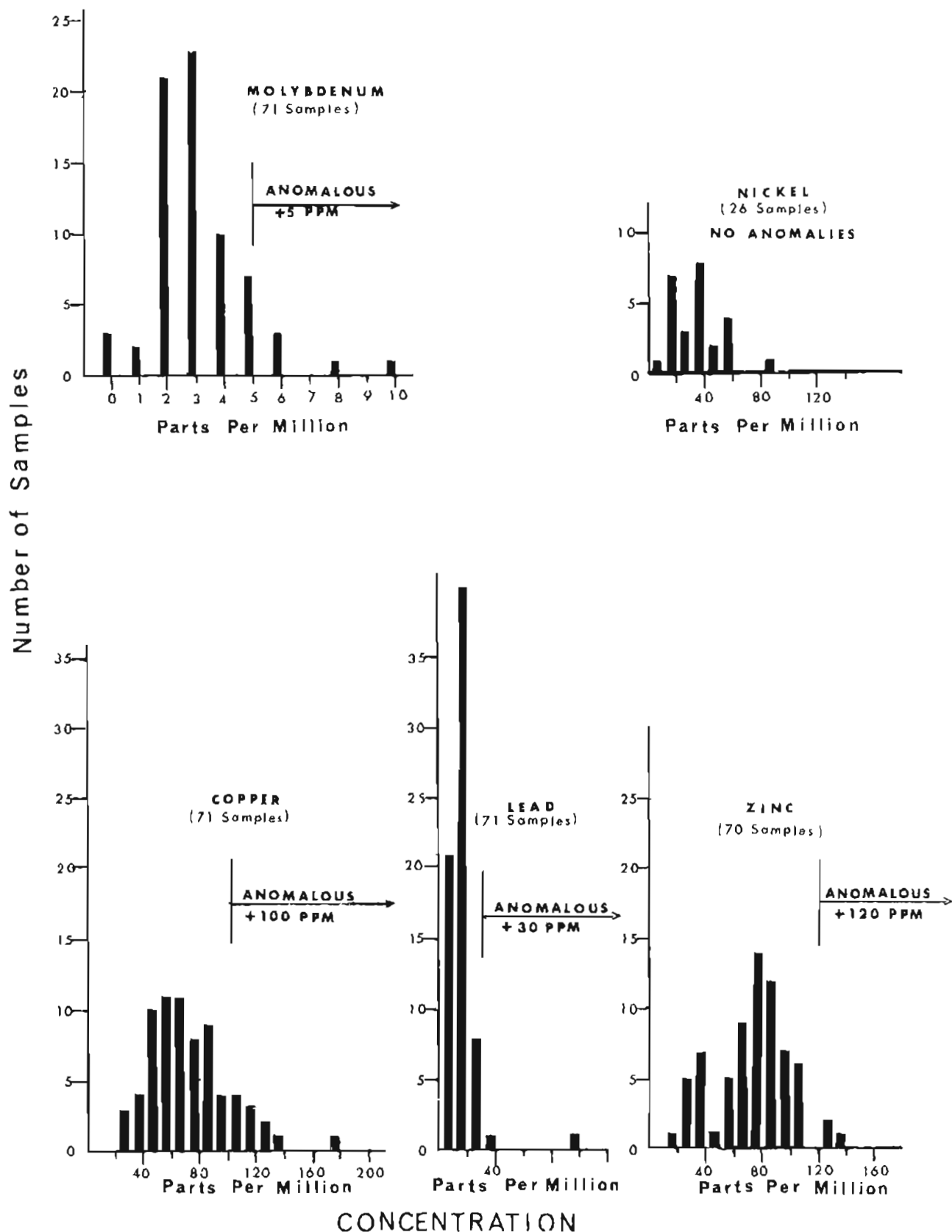


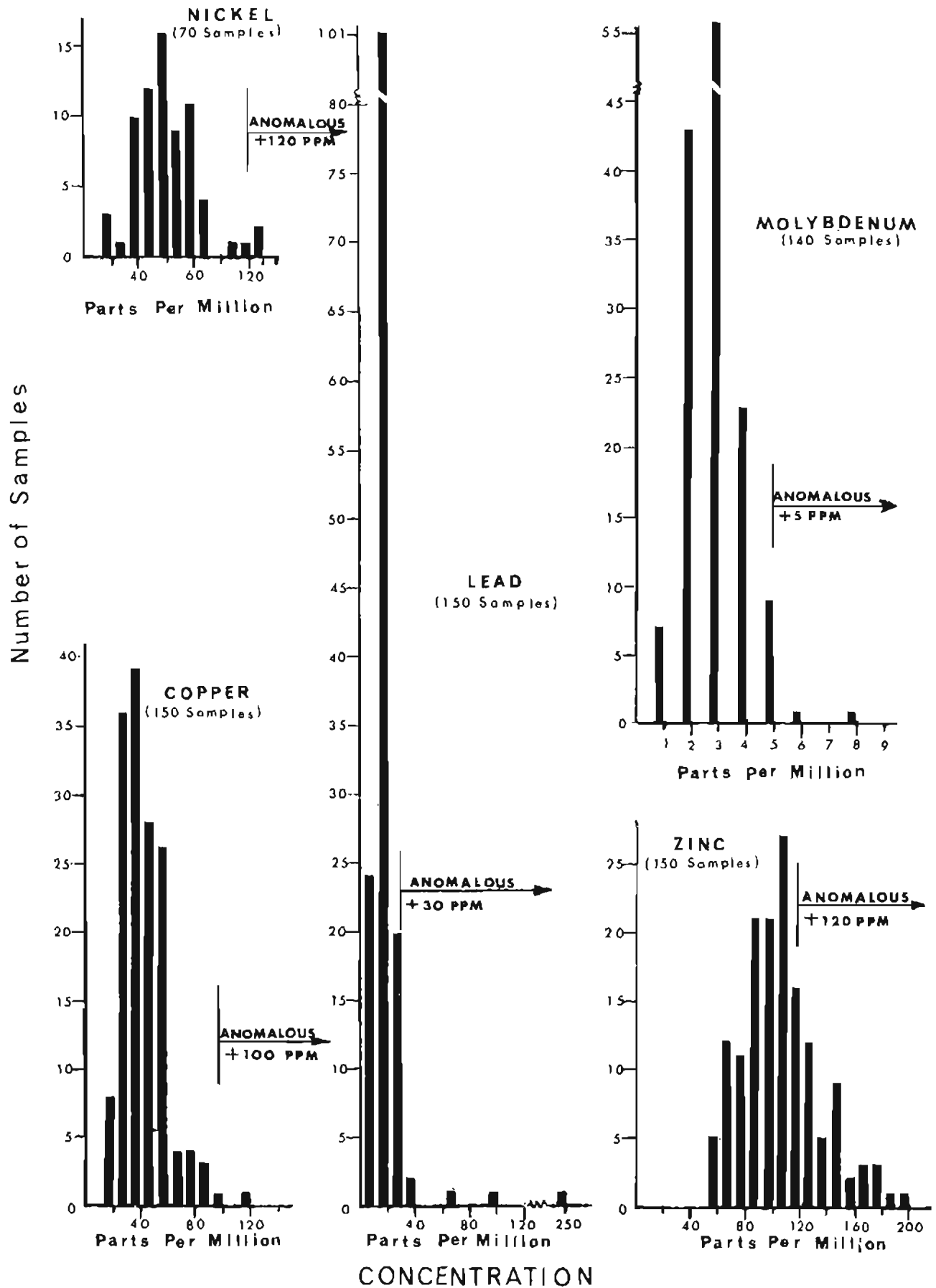
Fig. 14

# WILLOW CREEK DISTRICT



Figures 1 and 2. Frequency—concentration graphs of copper, lead, zinc, molybdenum, and nickel in stream sediment analyses

PALMER-SEWARD-STERLING HIGHWAY REGION



Figures 3 to 14 Frequency-concentration graphs of copper, lead, zinc, molybdenum, and nickel in stream sediment analyses

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	4MJ83	1	<u>175</u>	20	65	2	3	Blank	Covered	Quartz Diorite, little dike	Little magnetite
2	4MJ84	1	<u>100</u>	15	50	<u>5</u>	3	Blank	Covered	Quartz diorite	Little magnetite
3	6F113	1	<u>100</u>	15	100	3	30	Purple 12ml	Quartz diorite	Quartz diorite	65-75% magnetite + 1% pyrite 5-10% scheelite
4	6F114	1	80	15	95	4	10	Pink 4 ml	Quartz diorite	Quartz diorite	80-90% magnetite 7-8% zircon 10 gr. pyrite
5	6F115	1	80	10	90	<u>5</u>	40	Pale purple	Quartz diorite	Quartz diorite	70-80% magnetite 10-15% scheelite 5 gr. pyrite
6	6F116	1	80	25	100	3	50	Pink, 1 ml Red, 13 ml	Quartz diorite	Quartz diorite	80-90% magnetite 5-10% zircon 8 gr. pyrite
7	4MJ85	1	<u>110</u>	20	70	<u>5</u>	0	Blank	Covered	Quartz diorite	Little magnetite
8	6F117	1	65	15	95	4	30	Red 13 ml Purple 7 ml	Covered	Quartz diorite	60-70% magnetite 5-10% zircon 2 gr. pyrite
9	6F118	1	<u>130</u>	20	95	2	30	Pink 3 ml Purple 11 ml Blue-gray 6 ml	Covered	Quartz diorite	80-90% magnetite 1-5% zircon 1 gr. pyrite
10	6F119	1	<u>120</u>	10	80	2	50	Pink 10 ml Purple 10 ml	Covered	Quartz diorite	65-75% magnetite 3-4% zircon 4 gr. pyrite 2 gr. scheelite
11	4MJ77	1	35	<u>95</u>	20	2	1	Blank	Covered	Quartz diorite, gneiss, greenstone, & dikes	Little magnetite

TABLE I  
Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM					CX m	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
12	4MJ78	1	40	5	85	1		1	Blank	Covered	Quartz diorite, dike, porphyry & schist	Little magnetite & pyrite
13	4MJ79	1	35	25	30	0		1	Blank	Schist	Schist, little quartz diorite	Little magnetite
14	4MJ88	1	40	15	60	2		1	Blank	Schist	Schist, little quartz diorite	Little magnetite
15	4MJ87	1	45	0	20	1		8	Yellow	Schist	Schist, little quartz diorite	Little magnetite
16	4MJ86	1	40	5	50	0		12	Brown	Schist	Schist, little quartz diorite	Little magnetite
17	4MJ89	1	60	25	100	3		1	Blank	Schist	Schist, little quartz diorite	Little magnetite
18	4MJ90	1	45	25	60	0		1	Blank	Schist	Schist, little quartz diorite	Little magnetite
19	4MJ91	1	50	35	65	3		5	Yellow	Schist	Schist, little quartz diorite	Abundant magnetite Little zircon
20	4MJ92	1	60	15	75	4		15	Yellow	Schist	Schist, little quartz diorite	Little magnetite
21	4MJ93	1	60	15	85	2		1	Blank	Schist	Schist, quartz diorite, greenstone, gneiss, & dike	Little magnetite & pyrite
22	4MJ99	1	60	15	80	3		16	Yellow	Schist	Schist	Little magnetite

TABLE I

## Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM						CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni						
23	6F120	1	90	15	<u>130</u>	10	50	19	Pink 5 ml Purple 14 ml	Schist	Schist & quartz diorite	40-50% magnetite 4-6% zircon ± 1% pyrite	
24	6F121	1	<u>105</u>	10	100	4	50	19	Red 7 ml Purple 12 ml	Quartz diorite	Quartz diorite	50-60% magnetite 4-6% zircon 2 grs. pyrite	
25	4MJ132	1	65	15	80	2	80	1	Blank	Covered	Schist	None noted	
26	4MJ133	1	75	10	<u>125</u>	3		1	Blank	Schist	Schist	None noted	
27	6MJ134	1	75	15	100	3		1	Blank	Schist	Schist	Very little	
28	4MJ135	1	55	15	90	3		1	Blank	Schist	Schist	Little magnetite & pyrite	
29	4MJ136	1	90	15	100	3		1	Blank	Schist	Schist	Little magnetite & pyrite	
30	4MJ128	1	70	15	75	2		14	Yellow	Covered	Schist, quartz diorite & greenstone	None noted	
31	4MJ127	1	70	15	70	3		13	Yellow	Schist	Schist, quartz diorite & greenstone	None noted	
32	6F122	1	65	10	65	3	40	14	Red 6 ml Brown 8ml	Covered	Quartz diorite	60-70% magnetite 5-10% zircon 28 grs. pyrite 1 gr. chalcopyrite	
33	6F123	1	50	10	80	5	30	14	Purple 6ml Yellow 8 ml	Quartz diorite	Quartz diorite	60-70% magnetite 5-10% zircon 5 gr. pyrite	

TABLE I

## Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM					CX dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
34	6F124	1	55	10	80	6	30	6	Red 1 ml Purple 1 ml Brown 4 ml	Quartz diorite	Quartz diorite	70-80% magnetite 5-10% zircon 7 gr. pyrite 1 gr. chalcopyrite 1 gr. gold
35	6F125	1	55	10	90	3		3	Purple	Quartz diorite	Quartz diorite	50-60% magnetite 5-10% zircon 4 gr. pyrite 1 gr. gold
36	4MJ126	1	50	10	70	5		1	Blank	Schist	Schist & quartz diorite	Few grs. magnetite
37	4MJ123	1	50	10	70	4		9	Yellow	Covered	Quartz diorite, little green-stone, & dike	Abundant magnetite
38	4MJ125	1	80	15	75	6		14	Yellow	Covered	Quartz diorite	Little magnetite
39	4MJ124	1	80	10	50	4		12	Yellow 1 ml Pink 11 ml	Covered	Quartz diorite	Abundant magnetite
40	4MJ121	2	75	10	45	2		13	Yellow	Covered	Quartz diorite & dike	Abundant magnetite
41	6F111	2	100	5	70	6	20	3	Purple	Quartz diorite	Quartz diorite, little dike & ultramafic	60-70% magnetite 15-20% zircon 25 gr. scheelite 6 gr. pyrite
42	6F112	2	85	5	75	2	30	5	Purple	Quartz diorite	Quartz diorite, little dike & ultramafic	90-95% magnetite 3-4% zircon 1% sphene 24 gr. pyrite

TABLE I  
Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM				CX dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni				
43	4MJ122	2	<u>120</u>	10	55	<u>8</u>		15 Yellow	Quartz diorite	Quartz diorite, dike & gneiss	Abundant magnetite
44	6F126	2	75	5	60	<u>5</u>		4 Pink 2 ml Red 2 ml	Quartz diorite	Quartz diorite, little dike, ± 1% qtz.	Abundant magnetite
45	5F51	2	80	15	80	3	20	+20 Red 18 ml Pink ± 2ml	Quartz diorite	Quartz diorite	Abundant magnetite, 45 gr. zircon, few grs. pyrite
46	6F151	2	<u>110</u>	5	70	2		2 Purple	Quartz diorite	Quartz diorite, pink granite, greenstone & sandstone	Few grs. magnetite sediments scarce
47	6F152	2	80	5	70	<u>5</u>		12 Purple 5 ml Blue-gray 7 ml	Quartz diorite	Quartz diorite ± 1% qtz.	Few grs. magnetite Sediments scarce
48	6F153	2	90	10	85	2		3 Purple	Quartz diorite	Quartz diorite ± 1% qtz.	Few grs. magnetite sediments scarce
49	6F154	2	70	5	80	2		5 Pink 1 ml Purple 3 ml Blue-gray 1ml	Quartz diorite	Quartz diorite ± 1% qtz.	60-70% magnetite -1% zircon, 2 gr. scheelite, 2 gr. pyrite
50	6F150	2	70	10	75	2		5 Pink 1 ml Purple 2 ml Blue-gray 2ml	Covered	Quartz diorite, little dike	Few grs. magnetite sediments scarce
51	6F149	2	65	10	75	3		8 Purple 6 ml Blue-gray 2ml	Covered	Quartz diorite, little dike	Few grs. magnetite sediments scarce

TABLE I  
Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
52	6F148	2	60	5	90	2		12	Red 2 ml Brown 10 ml	Covered	Quartz diorite, little dike	Few grs. magnetite sediments scarce
53	6F147	2	55	15	85	2		+20	Pink 1 ml Red 7 ml Purple 10ml Brown +3 ml	Covered	Quartz diorite, little dike	70-80% magnetite 5-10% zircon 3 gr. chalcopyrite
54	6F110	2	50	15	70	3	10	3	Purple	Covered	Quartz diorite, dike, ultramafic, little sandstone	60-70% magnetite 15-20% zircon
55	5F52	2	55	5	50	3	20	6	Pink 2 ml Purple 4 ml	Quartz diorite	Quartz diorite, little greenstone	± 50% magnetite, 35 gr. zircon few grs. pyrite & chalcopyrite
56	5F53	2	<u>110</u>	10	85	4	35	5	Pink 2 ml Purple 3 ml	Quartz diorite	Quartz diorite, & greenstone, & gabbro	± 50% magnetite, 3 gr. scheelite, 45 gr. zircon, little pyrite
56-A	5F45	2	30	5	30	4	10	7	Pink	Quartz diorite	Quartz diorite	Magnetite abundant
57	5F46	2	65	15	80	4	30	6	Red	Quartz diorite	Quartz diorite	-1% magnetite, 4 gr. scheelite
58	5F47	2	20	5	25	3	10	6	Purple	Quartz diorite	Quartz diorite	-1% magnetite, 27 gr. zircon, little pyrite
59	5F48	2	90	10	65	3	15	8	Red 3 ml Purple 5 ml	Quartz diorite	Quartz diorite	-50% magnetite, 4 gr. scheelite, ± 70 gr. zircon, little pyrite

TABLE I

## Results of Analyses

Map No.	Sample No. *	Fig. No.	PPM					CX ml dye	Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
60	5F49	2	40	10	65	4	10	15	Red 3 ml Purple 12ml	Quartz diorite	Quartz diorite	-1% magnetite, 30gr. scheelite, little pyrite
61	5F50	2	25	5	15	3	5	7	Pink 2 ml Purple 5 ml	Quartz diorite	Quartz diorite	-50% magnetite, 25 gr. zircon, few grs. pyrite & chalcopyrite
62	5F54	2	20	5	35	10		14	Purple	Quartz diorite	Quartz diorite, granite & green- stone	-10% magnetite, few grains pyrite
63	4MJ118	2	40	5	25	3		4	Yellow	Covered	Quartz diorite	± 50% magnetite
64	6F55	2	65	15	120	2		0	Blank	Covered	Quartz diorite, granite & green- stone	Concentrates lost
65	4MJ120	2	40	5	35	2		14	Yellow	Covered	Quartz diorite, granite, green- stone & gneiss	Concentrates lost
66	4MJ119	2	80	20	60	3		13	Yellow	Covered	Quartz diorite, gabbro, granite, greenstone & porphyry	± 50% magnetite, little pyrite
67	4MJ117	2	55	5	35	3		4	Blank	Covered	Quartz diorite	± 50% magnetite, little pyrite
68	4MJ115	2	45	5	30	2		14	Yellow	Covered	Quartz diorite greenstone, dike, & sandstone	± 50% magnetite, little pyrite

TABLE I

## Results of Analyses

Map No.	Sample No. *	Fig. No.	PPM					CX m l dye	Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
69	4MJ114	2	45	5	25	2	2	13	Yellow	Covered	Quartz diorite, greenstone, dike & sandstone	± 50% magnetite, little pyrite
70	4MJ113	2	35	5	35	2	2	12	Yellow	Covered	Quartz diorite, schist, greenstone & gneiss	± 1% magnetite
71	5F1	3	50	10	85	4	120	1	Yellow	Graywacke	Granite, porphyry, dike, sandstone	-1% magnetite, few grains pyrite
72	5F2	3	30	5	50	3	55	1	Yellow	Graywacke	Granite, porphyry, dike, sandstone	-1% magnetite, few grains pyrite
73	5F3	3	20	10	105	3	35	1	Yellow	Covered	Granite, diorite, greenstone, dike, sandstone	-1% magnetite, few grains pyrite
74	5F5	3	50	10	90	5	50	1	Yellow	Covered	Granite & dike	-1% magnetite, few grains pyrite
75	6F127	3	50	5	70	2	40	11	Pink 4 ml Purple 7 ml	Covered	Granite, greenstone & ultra-mafics	50-60% magnetite, -1% scheelite, ± 1% pyrite, few grs. ilmenite, 1 gr. cinnabar
76	6F109	3	80	10	80	3	10	14	Purple 1 ml Red 3 ml Brown 10 ml	Covered	Granite, greenstone, dike, graywacke, argillite	55-65% magnetite, ± 1% pyrite, -0.05 zircon
77	6F108	3	110	5	140	5	40	+20	Purple 5 ml Red 10 ml Brown +5 ml	Covered	Fine sands & silt only	little magnetite & pyrite

TABLE I

## Results of Analyses

Map No.	Sample No. *	Fig. No.	PPM					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
78	6F107	3	95	5	125	5	50	4	Pink 1 ml Red 2 ml Purple 1 ml	Covered	Granite, green-stone breccia, dike, argillite some hematite	-0.05% magnetite 1-2% pyrite -0.05% zircon 2 gr. galena
79	5F4	3	85	10	170	5	115	1	Yellow	Covered	Fine sands & silt only in spring	-1% magnetite little pyrite
80	6F105	3	70	10	105	2	60	4	Purple	Covered	Fine sands & silt only in spring	1-5% magnetite, -1% zircon 7 gr. pyrite
81	6F106	3	75	5	105	3	120	2	Purple	Covered	Granite, green-stone, dike, gray-wacke, slate, argillite	-0.05% magnetite, -0.05% zircon, ± 1% pyrite, 2 gr. scheelite, 1 gr. ilmenite
82	5F56	4	15	5	50	3	20	1	Purple	Covered	Granite, dike, greenstone, limestone, sandstone, argillite	-1% magnetite, little pyrite
83	6F26	4	20	5	55	1		19	Purple 1ml Red 18 ml	covered	Graywacke, sandstone, argillite, greenstone	45-55% magnetite, -1% zircon, 1 gr. molybdenite, 8 gr. pyrite
84	5F57	4	45	10	65	3	35	1	Purple	Graywacke	Graywacke, greenstone, argillite, granite, ± 1% qtz.	-0.5% magnetite, little pyrite
85	6F25	4	30	15	90	2		+20	Purple 1 ml Red 15 ml Brown +4 ml	Graywacke	Graywacke, sandstone, argillite, dike, greenstone	70-80% magnetite, -0.05% zircon, 3gr. pyrite

TABLE I

## Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
86	5F58	4	45	10	80	3	15	1	Purple	Graywacke	Graywacke, sandstone, argillite, dike, greenstone	little magnetite, and pyrite
86-A	5F59	4	35	15	80	3	40	1	Purple	Graywacke	Graywacke, sandstone, granite, greenstone, dike, greenstone breccia	±50% magnetite, little pyrite
87	5F72	5	40	15	105	3	55	1	Purple	Covered	Graywacke, argillite, granite	-0.5% magnetite, 20 gr. scheelite, little pyrite ± 20 gr. zircon
88	5F11	5	20	15	105	3	55	0	Blank	Covered	Graywacke, granite, argillite	None noted
89	5F70	5	25	10	80	4	45	0	Blank	Covered	Graywacke, greenstone, argillite, granite, -2% qtz.	-0.5% magnetite little pyrite
90	5F69	5	45	20	<u>125</u>	3	75	3	Purple	Covered	Argillite, graywacke, slates, granite, greenstone, -2% qtz.	-0.5% magnetite little pyrite
91	5F65	5	20	15	85	4	45	0	Blank	Covered	Argillite, graywacke, slates, granite, greenstone, -2% qtz.	-0.5% magnetite little pyrite
92	5F64	5	20	15	95	4	40	1	Purple	Covered	Argillite, graywacke, slate, granite, greenstone, schist	-0.5% magnetite little pyrite

TABLE I

## Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
93	5F63	5	20	20	80	3	35	2	Red 1 ml Purple 1 ml	Covered	Argillite, gray-wacke, slate, granite, greenstone, schist	-0.5% magnetite little pyrite
94	6F24	5	40	25	105	3		6	Pink 2 ml Purple 4 ml	Covered	Graywacke, sandstone, argillite, little greenstone	60-70% magnetite, -0.05% zircon, 2 gr. pyrite, 1 gr. chalcopyrite
95	6F23	5	45	15	95	3		+20	Pink 1 ml Purple 1 ml Red 7 ml Purple +11 ml	Covered	Graywacke, slate, sandstone, dike	60-70% magnetite, -1% zircon, 10 gr. pyrite, 1 gr. scheelite, 1 gr. chalcopyrite, 1 gr. native Cu
96	6F22	5	55	30	<u>140</u>	2		6	Purple 6 ml	Slate	Graywacke, slate sandstone, dike	70-80% magnetite, -0.05% zircon, 4 gr. pyrite
97	6F197	6	30	5	85	3		0	Blank	Covered	Argillite, gray-wacke, slate, sandstone, greenstone, granite, ± 1% qtz.	-1% magnetite, 10-15% zircon, 1 gr. scheelite, few gr. ilmenite
98	6F198	6	50	20	<u>160</u>	3		5	Red 3 ml Purple 2 ml	Covered	Graywacke, greenstone, argillite, -2% qtz.	40-50% magnetite, -1% zircon
99	6F199	6	65	20	<u>160</u>	2		10	Purple 5 ml Blue-gray 5ml	Covered	Graywacke, sandstone, granite, greenstone, -2% qtz.	70-80% magnetite, -1% zircon, 4 gr. pyrite

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## Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
100	6F200	6	35	15	<u>130</u>	4		8	Red 4 ml Purple 4 ml	Covered	Slate, shale, graywacke, sandstone, greenstone, dike, -2%qtz.	40-50% magnetite, -0.05% zircon
101	6F20	6	35	<u>30</u>	<u>140</u>	4		+20	Pink 15 ml Purple +5 ml	Covered	Graywacke, slate, argillite	50-60% magnetite, -0.05 zircon
102	6F21	6	40	15	<u>130</u>	<u>6</u>		+20	Pink 2 ml Purple +18ml	Covered	Graywacke, slate, argillite	None noted
103	6F19	6	15	10	65	2		8	Pink 2 ml Purple 4 ml Blue-gray 2ml	Covered	Graywacke, dike, argillite, shale	30-40% magnetite, -1% scheelite 2 gr. pyrite
104	6F18	6	10	10	60	2		0	Blank	Covered	Graywacke, shale, argillite	Sediments scarce, no concentrates noted.
105	6F17	6	70	25	<u>140</u>	3		20	Pink 10 ml Purple 10 ml	Meta-sediments	Graywacke, shale, argillite	60-70% magnetite, -1% zircon, 1 gr. chalcopryite, 7 gr. pyrite
106	6F16	6	30	10	75	3		14	Pink 2 ml Purple 10 ml Blue-gray 2ml	Covered	Graywacke, shale, argillite, dike, -2% qtz.	5-10% magnetite, 20-30% zircon, 1 gr. scheelite, 1 gr. ilmenite
107	6F15	6	40	20	<u>185</u>	4		7	Pink 2 ml Blue-gray 5ml	Graywacke, argillite	Graywacke, greenstone, argillite	5-10% magnetite, 10-15% zircon, 1 gr. scheelite, 1 gr. ilmenite
108	6F201	6	40	10	100	4		6	Purple 4 ml Blue-gray 2ml	Covered	Graywacke, slate, argillite, greenstone, dike	5-10% magnetite, -0.05% zircon

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## Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
109	6F202	6	50	15	115	2		2	Purple 1 ml Pink 1 ml	Covered	Slate, shale, gray-wacke, greenstone, dike, $\pm$ 1% qtz.	40-50% magnetite, -1% zircon
110	6F207	6	35	10	100	1		4	Pink 1 ml Purple 3 ml	Covered	Slate, shale, gray-wacke, greenstone, dike, $\pm$ 5% qtz.	1-5% magnetite, 2-3% zircon, 3 gr. chalcopyrite, 4 gr. pyrite, 5 gr. scheelite
111	6F14	6	40	10	105	2		7	Pink 1 ml Purple 6 ml	Covered	Graywacke, shale, argillite	70-80% magnetite, $\pm$ 1% zircon, 5 gr. pyrite
112	6F13	6	45	20	<u>135</u>	2		6	Pink 1 ml Purple 5 ml	Covered	Graywacke, shale, slate, greenstone, dike, -2% qtz.	70-80% magnetite, 0.05% zircon
113	6F12	6	60	20	<u>140</u>	2		2	Pink 1 ml Purple 1 ml	Graywacke, & shale	Graywacke, shale, argillite, greenstone, -2% qtz.	60-70% magnetite, 5-10% pyrite, -0.05% zircon, -2gr. gold
114	6F11	6	40	15	<u>170</u>	4		11	Pink 1 ml Red 1 ml Blue-gray 1ml	Graywacke	Graywacke, greenstone, argillite, granite	70-80% magnetite, -0.05% zircon
115	6F10	6	50	20	115	4		2	Purple 1 ml Blue-gray 1ml	Graywacke, argillite	Graywacke, greenstone, argillite	55-65% magnetite, 2-3% pyrite, 5-10% zircon, 1 gr. cinnabar
116	6F9	7	25	10	90	<u>5</u>		1	Blue-gray	Covered	Graywacke, greenstone, argillite	60-70% magnetite, -0.05% pyrite
117	5F148	7	50	15	105	3	60	3	Purple	Covered	Argillite, gray-wacke, slate, dike, greenstone	-0.5% magnetite, 16 gr. zircon, little pyrite

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## Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM				CX dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni				
118	6F206	7	70	25	195	2	13	Pink 1 ml Purple 3 ml Blue-gray 4 ml	Covered	Argillite, gray-wacke, slate, dike, greenstone	50-60% magnetite, -0.05% zircon, 1 gr. pyrite
119	6F205	7	40	10	100	5	1	Purple	Covered	Graywacke, slate, argillite, shale, sandstone, greenstone	-1% magnetite 1-2% zircon, 1 gr. scheelite
120	6F204	7	25	10	115	3	2	Pink 1 ml Blue-gray 1 ml	covered	Graywacke, slate, argillite, shale, sandstone, greenstone, $\pm 1\%$ qtz.	50-60% magnetite, -0.05% zircon, 1 gr. pyrite
121	6F203	7	50	20	140	2	6	Pink 2 ml Purple 2 ml Blue-gray 2 ml	Covered	Graywacke, slate, argillite, shale, sandstone, greenstone, $\pm 2\%$ qtz.	Sediments scarce
122	5F147	7	55	15	150	3	4	Purple	Covered	Graywacke, slate, argillite, shale, sandstone, greenstone	-0.5% magnetite, little pyrite
123	6F8	7	30	10	110	5	13	Pink 1 ml Purple 8 ml Blue-gray 4 ml	Covered	Graywacke, dike, argillite, greenstone	60-70% magnetite, 1-2% zircon, 1 gr. scheelite
124	6F7	7	25	10	90	5	1	Blue-gray	Covered	Graywacke, dike, argillite, greenstone, $\pm 1\%$ qtz.	Sediments scarce
125	6F6	7	15	15	85	4	2	Pink 1 ml Blue-gray 1 ml	Covered	Graywacke, shale argillite, greenstone, -1% qtz.	50-60% magnetite, -0.05% zircon

TABLE I  
Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM					CX dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
126	5F145	7	30	15	105	3	55	2	Pink 1 ml Purple 1 ml	Shale & slate	Shale, slate, greenstone	-0.1% magnetite, little pyrite
127	5F144	7	35	10	115	3	55	4	Pink 1 ml Purple 3 ml	Graywacke, Argillite	Shale, slate, greenstone	-0.1% magnetite, little pyrite
128	5N334	7	20	10	85		30	1	Blank	Covered	Slate	-1% magnetite, few grs. pyrite
129	5F143	7	45	10	<u>125</u>	3	70	3	Pink 1 ml Purple 2 ml	Argillite	Graywacke, dike, argillite, greenstone	Few grs. magnetite, and pyrite
130	5N335	7	45	15	<u>145</u>		65	0	Blank	Graywacke	Graywacke & slate	
131	5N336	7	50	15	<u>145</u>		55	0	Blank	Graywacke shale	Graywacke & slate	
132	5F140	7	55	10	<u>125</u>	3	70	2	Purple	Covered	Graywacke, shale, argillite, sandstone, greenstone, dike, -2% qtz.	Contaminated - discarded
133	6F5	7	30	10	110	2	+20		Pink	Graywacke, shale	Graywacke, shale, argillite	70-80% magnetite, -0.05% zircon, 1 gr. galena
134	5F142	7	30	15	105	4	55	2	Purple	Graywacke	Graywacke, dike, argillite, greenstone	magnetite, little pyrite
135	5N337	7	35	10	<u>120</u>		70	0	Blank	Graywacke, slate	Graywacke & slate	-5.0% magnetite, 10 gr. zircon
136	5F141	7	35	15	100	3	65	2	Pink 1 ml Blue-gray 1ml	Slate, shale	Shale, slate, greenstone & dike	-1% magnetite few gr. pyrite

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## Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM			Mo	Ni	CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn							
137	5F139	8	20	5	70	4	50	3	Pink 1 ml Purple 1 ml Blue-gray 1ml	Covered	Argillite,gray-wacke,sandstone,greenstone,dike,-2% qtz.	-1% magnetite, 20 gr. zircon, little pyrite
138	5N338	8	30	10	110		35	0	Blank	Covered	Graywacke,slate	No heavy minerals
139	5F138	8	35	10	100	3	65	4	Pink 1 ml Purple 2 ml Blue-gray 1 ml	Covered	Argillite,gray-wacke,sandstone,greenstone,dike,-2% qtz.	No heavy minerals
140	5F120	8	35	15	80	2	65	0	Blank	Covered	Graywacke,slate, argillite, shale, sandstone,granite, greenstone	-1% magnetite, little pyrite
141	5N339	8	35	15	<u>120</u>		75	1		Covered	Graywacke & slate	-5% magnetite 10 gr. zircon little pyrite
142	6F4	8	45	10	105	4		3	Pink 1 ml Purple 2 ml	Covered	Graywacke,greenstone,argillite	no concentrates noted
143	6F3	8	40	15	110	4		3	Pink 1 ml Purple 2 ml	Covered	Graywacke,greenstone,argillite	no concentrates noted
144	6F2	8	35	15	90	3		4	Pink 2 ml Purple 2 ml	Covered	Graywacke,greenstone,argillite	70-80% magnetite, -1% zircon, 8 grs. pyrite, 3 grs. galena
145	5F119	8	35	<u>90</u>	100	3	50	11	Red 1 ml Purple 10 ml	Covered	Graywacke,slate, argillite,shale, sandstone,granite, greenstone	-1% magnetite, little pyrite

TABLE I  
Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM				CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni				
146	5N340	8	35	60	140	50	0	Blank	Covered	Graywacke & slate	-5% magnetite 10 gr. zircon
147	5N341	8	50	245	170	70	0	Blank	Covered	Graywacke & slate	-5% magnetite 12 gr. zircon
148	6F1	8	40	15	105	3	16	Pink 2 ml Purple 4 ml Blue-gray 10ml	Graywacke & slate	Graywacke & slate	60-70% magnetite, -0.05% zircon 3 gr. pyrite
149	5N342	8	50	15	135	60	0	Blank	Covered	Graywacke & slate	-5% magnetite + 10 gr. zircon
150	5F118	8	40	15	80	3	70	Blank	Covered	Graywacke & slate, -2% qtz.	-1% magnetite little pyrite
151	6F192	9	55	15	120	2	3	Pink 1 ml Purple 2 ml	Covered	Graywacke, slate, shale, argillite, sandstone, dike, ± 1% qtz.	70-80% magnetite -0.05% zircon
152	6F191	9	45	20	105	1	3	Red	Covered	Graywacke, slate, shale, argillite, sandstone, dike, ± 1% qtz.	60-70% magnetite 0.05% zircon
153	6F190	9	25	10	90	1	2	Purple	Covered	Graywacke, slate, shale, argillite, sandstone, dike, ± 1% qtz.	50-60% magnetite 1-2% zircon
154	5F117	9	55	20	110	3	85	Blank	Shale & slate	Shale, slate, gray-wacke, granite, greenstone, -3% qtz.	-1% magnetite little pyrite

TABLE I

## Results of Analyses

Map No.	Sample No. *	Fig. No.	PPM				CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni				
155	5N343	9	65	15	165		70	0	Blank	Slate	-5% magnetite
156	5F116	9	55	20	115	3	80	1	Purple	Graywacke, slate, argillite, dike, greenstone	-5% magnetite
157	5F137	9	50	10	115	3	80	2	Purple 1 ml Blue-gray 1ml	Argillite, graywacke, sandstone, shale, dike, greenstone, granite	-1% magnetite ± 40 gr. zircon little pyrite
158	5F115	9	50	15	125	2	70	1	Purple	Graywacke, sandstone, argillite, breccia, greenstone, granite	-1% magnetite little pyrite
159	5F114	9	20	10	60	2	40	0	Blank	Graywacke, argillite, shale, sandstone, granite, greenstone	-1% magnetite, ±28 gr. zircon, little pyrite
160	5F113	9	10	10	60	2	35	2	Blank	Graywacke, shale, argillite, sandstone, granite, greenstone, -2%qtz.	-1% magnetite little pyrite
161	5F112	10	35	10	60	3	45	0	Blank	Graywacke, shale, argillite, sandstone, granite, greenstone	-1% magnetite little pyrite
162	6F193	10	30	10	90	2		1	Pink	Graywacke, shale, argillite, sandstone, granite, greenstone	5-10% magnetite 5-10% zircon 2 gr. pyrite

TABLE I

## Results of Analyses

Map No.	Sample No. *	Fig. No.	PPM					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
163	6F194	10	30	15	120	3		1	Purple	Covered	Graywacke, slate, shale, granite, sandstone, dike	70-80% magnetite -1% zircon
164	6F195	10	25	10	105	2		3	Pink 1ml Blue-gray 2 ml	Covered	Graywacke, slate, shale, granite, sandstone, dike	Sediments scarce
165	6F196	10	20	10	90	2		2	Purple	Covered	Graywacke, slate, shale, granite, sandstone, dike	Sediments scarce
166	6F159	10	20	5	75	2		3	Pink 2 ml Purple 1ml	Covered	Sandstone, graywacke, slate, dike, argillite, granite	50-60% magnetite, 1-2% zircon
167	6F158	10	20	5	80	4		5	Purple 3 ml Blue-gray 2 ml	Covered	Sandstone, shale, slate, granite, graywacke	60-70% magnetite -1% zircon
168	6F157	10	25	10	80	3		11	Pink 3 ml Purple 4 ml Blue-gray 4 ml	Covered	Shale, slate, graywacke, greenstone, dike, granite	50-60% magnetite -1% zircon 2 gr. chalcopyrite
169	5F111	10	25	10	70	2	45	0	Blank	Covered	Sandstone, graywacke, argillite, shale, granite, greenstone, -2% qtz.	-1% magnetite little pyrite
170	5F110	11	30	25	150	3	105	1	Purple	Covered	Graywacke, shale, argillite, greenstone, -2% qtz.	-1% magnetite little pyrite
171	5F109	11	35	15	120	4	60	1	Purple	Graywacke & shale	Graywacke, shale, argillite, greenstone, -2% qtz.	-1% magnetite little pyrite

TABLE I

## Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
172	5F108	11	50	20	120	3	65	0	Blank	Graywacke	Graywacke, shale, argillite, greenstone, -2% qtz.	-1% magnetite ± 40 gr. zircon little pyrite
173	5F107	11	30	10	60	3	10	0	Blank	Slate	Graywacke, greenstone, argillite	-1% magnetite ± 40 gr. zircon little pyrite
174	6F156	11	30	10	95	2		2	Pink 1 ml Purple 1 ml	Covered	Shale & slate	40-50% magnetite 2-3% zircon 4 gr. pyrite 2 gr. chalcopyrite
175	6F155	11	50	15	165	2		20	Red 8 ml Purple 12ml	Covered	Shale & slate	Sediments scarce
176	6F160	12	15	5	60	2		2	Purple	Covered	Graywacke, sandstone, argillite, greenstone, granite ± 1% qtz.	45-55% magnetite 1-2% zircon
177	6F161	12	30	5	90	4		6	Pink 2 ml Purple 2 ml Blue-gray 2 ml	Covered	Granite, dike, greenstone, graywacke, argillite, shale, sandstone, ± 1% qtz.	60-70% magnetite -1% zircon, 3 gr. scheelite
178	6F162	12	55	5	95	2		9	Red 4 ml Purple 3 ml Brown 2 ml	Covered	Granite, dike, greenstone, graywacke, argillite, shale, sandstone, ± 1% qtz.	50-60% magnetite -0.05% zircon
179	6F163	12	65	5	75	4		3	Red 1 ml Purple 2ml	Covered	Greenstone, graywacke, argillite, granite	Sediments scarce

TABLE I  
Results of Analyses

Map No.	Sample No. *	Fig. No.	PPM				CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni				
180	6F164	12	50	5	95	8		Red 1 ml Purple 3ml	Covered	Granite, greenstone, dike, graywacke, argillite	65-75% magnetite, -0.05% zircon 1 gr. scheelite
181	6F165	13	30	-5	70	4		Red 1 ml Purple 1 ml	Covered	Greenstone, granite, dike, sandstone, graywacke, argillite, $\pm$ 1% qtz.	sediments scarce
182	6F166	13	15	5	75	2		Red 1 ml Purple 1ml	Covered	Graywacke, shale, argillite, slate, sandstone, granite, greenstone, dike	55-65% magnetite 1-2% zircon
183	6F179	13	45	15	110	3		Pink 1 ml Purple 1 ml	Covered	Graywacke, shale, argillite, slate, sandstone, granite greenstone, dike, $\pm$ 2% qtz.	65-75% magnetite -0.05% zircon
184	6F180	13	35	10	100	2		Pink 4 ml Purple 7 ml	Covered	Graywacke, slate, shale, sandstone, greenstone, granite, dike, $\pm$ 1% qtz.	60-70% magnetite -0.05% zircon
185	6F181	13	25	5	75	2		Purple 2 ml	Covered	Graywacke, slate, shale, sandstone, greenstone, granite, dike, $\pm$ 1% qtz.	50-60% magnetite -1% zircon
186	6F182	13	25	10	85	2		Red 3 ml Purple 2 ml Blue-gray 2ml	Covered	Graywacke, slate, shale, sandstone, greenstone, granite dike -2% qtz.	Sediments scarce

TABLE I

## Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
187	6F183	13	20	10	90	3		+20	Purple ± 20 ml	Covered	Slate, argillite, little granite	55-65% magnetite -1% zircon
188	6F184	13	25	10	95	4		16	Pink 1 ml Purple 15ml	Graywacke	Graywacke, sand- stone, argillite, granite, dike, -1% qtz.	50-60% magnetite 3-4% zircon
189	6F185	13	25	10	80	3		+20	Red 11 ml Purple +9ml	Covered	Graywacke, sand- stone, argillite, granite, dike, -1% qtz.	Sediments scarce
190	6F186	13	25	10	80	2		+20	Red 6 ml Purple +14ml	Graywacke, argillite, sandstone	Graywacke, slate, sandstone, granite porphyry, green- stone, ± 2% qtz.	Sediments scarce
191	6F187	13	25	5	80	1		+20	Red 7 ml Purple 13ml	Covered	Graywacke, slate, sandstone, granite porphyry, green- stone, ± 2% qtz.	50-60% magnetite 2-3% zircon
192	6F188	13	25	10	80	3		2	Purple	Covered	Fine sands only ± 2% qtz.	45-55% magnetite -1% zircon
193	6F189	13	20	5	80	3		0	Blank	Covered	Graywacke, slate, argillite, ± 1% qtz.	Sediments scarce
194	5F123	13	50	10	70	5	40	6	Pink 5 ml Purple 1ml	Argillite	Argillite, gray- wacke, greenstone	-0.5% magnetite little pyrite
195	6F175-A	13	45	20	115	2		7	Pink 3 ml Purple 4ml	Shale & slate	Shale, slate, sand- stone, granite, greenstone, ± 2% qtz.	70-80% magnetite -0.05% zircon

TABLE I

## Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM				CX m <sup>3</sup> dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo					
196	6F175	13	35	15	110	1	6	Purple	Covered	Shale, slate, sandstone, granite, greenstone	Sediments scarce
197	6F174	13	35	10	95	3	6	Purple	Covered	Shale, sandstone, argillite, granite greenstone	60-70% magnetite -1% zircon
198	6F173	13	45	15	100	2	6	Pink 3 ml Purple 3ml	Shale	Shale, sandstone, argillite, granite, greenstone, $\pm 1\%$ qtz.	75-85% magnetite -0.05% zircon 1 gr. pyrite
199	6F172	13	35	10	95	2	6	Pink 3 ml Purple 3 ml	Shale	Shale, sandstone, argillite, granite, greenstone, $\pm 1\%$ qtz.	80-90% magnetite -0.05% zircon
200	6F171	13	40	15	95	3	+20	Pink 2 ml Purple 2ml Red 12ml Purple +4ml	Shale	Shale, sandstone, graywacke, greenstone, granite, -1% qtz.	70-80% magnetite -1% zircon
201	6F170	13	40	10	105	3	5	Pink 1 ml Purple 2 ml Blue-gray 2ml	Shale	Shale, sandstone, graywacke, granite, dike	60-70% magnetite -0.05% zircon
202	6F169	13	35	15	100	3	13	Pink 2 ml Purple 11 ml	Graywacke, shale, slate	Graywacke, sandstone, argillite, granite, dike	75-85% magnetite -1% zircon
203	6F168	13	50	20	<u>120</u>	3	4	Pink 2 ml Purple 2 ml	Shale, slate, sandstone	Sandstone, shale, slate, argillite, greenstone, dike, granite, $\pm 1\%$ qtz.	60-70% magnetite -1% zircon 2 gr. cinnabar
204	6F167	13	40	15	100	2	3	Purple 2 ml Blue-gray 1ml	Covered	Shale, slate, sandstone, dike, greenstone, $\pm 1\%$ qtz.	70-80% magnetite -0.05% zircon

TABLE I  
Results of Analyses

Map No.	Sample No.*	Fig. No.	PPM					CX ml dye	Color Reaction	Bedrock	Creek Float	Concentrates
			Cu	Pb	Zn	Mo	Ni					
205	6F176	13	40	15	110	2		2	Purple	Shale, slate	Shale, slate, granite, ±1% qtz.	80-90% magnetite -1% zircon
206	6F177	13	30	15	95	4		6	Pink 3ml Purple 3 ml	Shale	Shale & argillite	70-80% magnetite -0.05% zircon
207	6F178	13	55	20	<u>130</u>	1		+20	Pink 3 ml Purple +17 ml	Shale	Shale, slate, greenstone	80-90% magnetite -0.05% zircon
208	5F126	14	20	5	55	2	40	8	Pink 7ml Purple 1ml	Covered	Graywacke, dike, argillite, granite -2% qtz.	-1% magnetite 4 gr. zircon, little pyrite
209	5F127	14	25	10	90	3	55	+20	Pink +20ml	Covered	Graywacke, dike, argillite, granite -2% qtz.	-1% magnetite little pyrite
210	5F124	14	35	15	105	2	70	15	Pink 5 ml Purple 10ml	Covered	Argillite, graywacke, dike, greenstone	-1% magnetite 3 gr. zircon little pyrite
211	5F128	14	30	10	70	3	40	+20	Pink 8 ml Purple 12ml	Covered	Argillite, graywacke, dike, greenstone	-1% magnetite 16 gr. zircon little pyrite
212	5F129	14	25	10	65	3	35	+20	Pink 2 ml Purple 19ml	Covered	Argillite, graywacke, sandstone, greenstone, dike	-1% magnetite little pyrite
213	5F130	14	20	10	65	3	35	12	Purple	Covered	Argillite, graywacke, sandstone, greenstone, dike	Contaminated, discarded
214	5F131	14	20	15	80	3	50	1	Purple	Covered	Slate, graywacke, sandstone, greenstone, dike	-1% magnetite little pyrite

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					
215	5F132	14	20	5	65	2	50	8	Pink 2 ml Purple 6ml	Covered	Slate, graywacke, sandstone, greenstone, dike, - 2% qtz.	-1% magnetite 4 gr. zircon little pyrite
216	5F133	14	15	5	55	4	35	3	Purple	Covered	Slate, graywacke, sandstone, greenstone, dike, -2%qtz.	-1% magnetite little pyrite
217	5F134	14	35	10	100	2	55	10	Purple 8 ml Blue-gray 2ml	Covered	Argillite, graywacke, sandstone, dike, granite	-1% magnetite little pyrite
218	5F122	14	20	10	65	2	35	+20	Pink 15 ml Purple 5ml	Graywacke	Graywacke, shale, argillite, greenstone	-5% magnetite little pyrite
219	5F135	14	45	10	110	3	70	4	Pink 1 ml Purple 3 ml	Covered	Argillite, graywacke, sandstone, andesite, dike	-5% magnetite little pyrite

\* Samples marked in field with prefix 4MJ, 5F, and 6F taken by Jasper, 1964, 1965, and 1966

\* Samples marked in field with prefix 5N taken by Bary, 1965

