

3335

A Geochemical Report

on a

Geochemical Soil Survey

on the

KIS Claim Group

for

The Granby Mining Company Limited
PHOENIX COPPER DIVISION

P.O. Box 490, Grand Forks, B. C.

by

J. Paxton

November 1971

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 3335 MAP

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MAPS IN POCKET

1. Kis Group - Copper Geochemical Map
Scale: 1 inch = 400 feet
2. Kis Group - Zinc Geochemical Map
Scale: 1 inch = 400 feet
3. Kis Group - Copper-Zinc Ratio Map
Scale: 1 inch = 400 feet

INTRODUCTION

During the fall of 1970 Mr. E. A. Shannon noticed, on a visit to the local recording office, that there was unstaked ground in the vicinity of the Sappho showing. In November, he staked the Kis 1 to 7 claims to the north of the showing.

Due to the large areas covered by overburden and due to the well developed drainage pattern it was decided that a geochemical soil and stream sediment survey would be worthwhile and could locate hidden zones of mineralization similar to the Sappho showing.

THE SAPPHO SHOWING

This showing was located in 1916 and within the next two years 112 tons of 6% copper ore were mined. The ore is a mixture of pyrite and chalcopyrite and carries values in copper, silver and platinum.

In 1927 and 1928 an adit was driven below the ore zone, a distance of 50 feet, and ten tons of ore mined.

In the 1960's the property was acquired by Triform Mining Limited. They did 2,300 feet of trenching and 1,580 feet of diamond drilling. Apparently the results of this work were discouraging.

In 1967 Silver Standard Mines Limited acquired the property and did geological mapping and magnetometer surveys followed by 1800 feet of trenching. Results of this work were negative.

According to the Minister of Mines Report for 1964, "The rocks exposed in the open cuts are altered andesite porphyry, gabbro and amphibolite, which form part of a body of such rock some 600 feet wide and 1200 feet long trending northeastward. The relationships of the three rock types are not clear, though the andisite porphyry appears to be the oldest.

Mineralization consists of pyrite and chalcopyrite and appears to be confined almost entirely to the amphibolite".

In 1970 the area was covered by the Granby geological mapping program under geologist Kiwan Kim. He considered the basic intrusions associated with the showing to be phases of the Nelson granodiorite. He also postulated a strong fault striking N20E just to the east of the showing and crossing the junction of Hypolite and Norwegian creeks.

METHOD OF SURVEY

Using the Granby 1 inch = 1000 feet scale topographic map of the area a line grid was laid out with 500 foot spacing. The lines were run by compass and chain and marked by flagging and blazing.

Samples were taken, using a mattock in shallow soils or using a standard soil auger in deeper soils. Samples were all taken from the B or C horizons. Copies of sampling field notes are included in the appendix at the end of this report.

The samples were dried and sent for analysis to Bondar Clegg, 1500 Pemberton Avenue, North Vancouver.

In Vancouver they were screened, and the -80 mesh material was treated with a standard hot aqua regia digestion and analysed for copper and zinc on an atomic absorption spectrometer.

Ten stream silt samples were taken in the creeks. They were analysed in the same manner as the soil samples.

TREATMENT OF RESULTS

The base map was enlarged from a scale of 1 inch = 1000 feet to 1 inch = 400 feet with a pantograph and the line grid and sample locations plotted on it.

Three sepia prints were then made and the results for copper, zinc and the copper-zinc ratio were plotted on them. Prints were then made from the sepias and contoured and colored.

CONCLUSIONS FROM THE RESULTS AND RECOMMENDATIONS

In reference to the plotted results it can be seen that no anomalies of economic interest occur in the area. The small mountain immediately to the north of the Sappho showing appears to be the source of two superimposed low copper and zinc anomalies. According to Mr. Kiwan Kim the bedrock here is a chert breccia, which in places is strongly epidotized.

There is also a small high zinc anomaly at 20W, 10S. This may be due to a bedrock source in the immediate vicinity, such as a small sphalerite vein, or it may be a base-of-slope anomaly that owes its high value to the high mobility of zinc ions in sandy soils and their ability to be fixed by clay soils.

On the copper-zinc ratio map the ratio contours usually parallel the topographic contours. It would appear that this is a reflection of the different mobilities of copper and zinc ions if it is assumed that the bedrock ratio of copper and zinc is similar over the area.

An unusual source of either copper or zinc should appear on the ratio map as either a high or a low unrelated to topography. Such is the case at

20W, 10S and therefore this anomaly is probably due to an immediate bedrock source.

It would be worthwhile to investigate this area further with detailed soil sampling and prospecting. Also, all the present high zinc samples (3629 to 3640) should be analysed for silver and lead.

STATEMENT OF QUALIFICATIONS

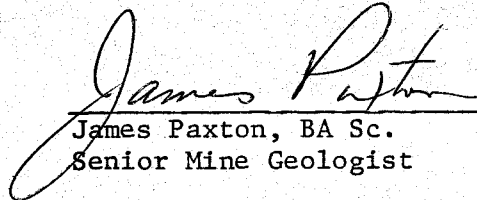
The general supervision and the report writing was done by the author. He graduated in 1953 from the University of Saskatchewan with a bachelor of Arts and Science degree in geology. He also took one year of post graduate work in geology at the University of Manitoba in 1955. He has worked for the Granby Mining Company Limited since December 1964, in charge of exploration and mine geology. He has supervised several soil sampling programmes in previous years.


The detailed planning and field supervision were done by Mr. E. A. Shannon. He graduated from B.C.I.T. in 1969 and has had three summers experience in soil sampling. In 1966 - 67 he worked for Coranex Limited as a soil sample analyst using wet and atomic absorption techniques.

The collection of soil samples was done by Mr. Ross McArthur and Mr. Robert Carmichael. Mr. McArthur is a first-year student at B.C.I.T. and has had several summers experience in soil sampling and geophysical surveys with West Coast Resources Limited. Mr. Carmichael is a third-year Arts student at U.B.C. and had previously worked the summer of 1970 as a geologists helper on the Granby exploration programme. Both Carmichael and McArthur had thorough instruction in soil sampling techniques from Mr. Shannon.

This report is respectfully submitted by:

The Granby Mining Company Limited
PHOENIX COPPER DIVISION
P.O. Box 490, Grand Forks, B. C.


James Paxton, BA Sc.
Senior Mine Geologist


G. B. Hardwicke, B.Sc., P.Eng.
Mine Manager

APPENDIX "A" - Survey Data

Schedule I - Claims

<u>Name</u>	<u>Tag Number</u>	<u>Record Number</u>	<u>Anniversary Date</u>
Kis 1	953969	34414	November 12, 1971
Kis 2	953970	34415	"
Kis 3	953971	34416	"
Kis 4	953972	34417	"
Kis 5	953973	34418	"
Kis 6	953974	34419	"
Kis 7	953975	34420	"

Schedule II - Personnel

<u>Name</u>	<u>Title</u>	<u>Activity</u>	<u>Time</u>
James Paxton	Senior Mine Geologist	Report Writing	November 1 - 5, 1971
Ed Shannon	Assistant Geologist	Supervision, Planning, Drafting	November 1 - 5, 1971
L. Plamondon (Mrs.)	Stenographer	Typing	November 8, 1971
Ross McArthur	Student Helper	Soil Sampling	August 10 - 21, 1971
Clark Glanville	Student Helper	Soil Sampling	August 10 - 21, 1971

Schedule III - Costs

<u>Name</u>	<u>Dates</u>	<u>Time in Days</u>	<u>Rate Per Work Day</u>	<u>Cost</u>
James Paxton	November 1 - 5, 1971	5	\$50.00	\$250
Ed Shannon	August 10, Nov. 1 -5/71	6	40.00	240
L. Plamondon (Mrs.)	November 8	1	25.00	25
R. Carmichael	August 10-12, 16-21/71	9	28.50	256
R. McArthur	August 10-12, 16-21/71	9	28.50	256
Subtotal				\$1027
Allowance for M.S.A. Canada Pension, Insurance = 18% x 1027.....				185
Vehicle Cost allowance at \$10 per day for 9 days.....				90
Supplies cost, gas, oil and flagging.....				25
Cost of analyses of 92 samples by Bondar Clegg for Cu, Zn at \$1.70 each...				156
Total				<u>\$1483</u>

APPENDIX "B" - Field Notes

GEOCHEMICAL SOIL SURVEY

CAMP

COLLECTOR

RC/SLA

PROJECT

SAMPLE CODE

AREA (Loko, Rivor)

Hy Blime etc

DATE 21/10-8-77

MAP SHEET

AERIAL PHOTO

No.	SAMPLE No.	LOCATION		TOPO.	DRAIN	TERR.	VEG.	SOIL TYPE	DEPTH HORIZ. INCHES	COLOUR	TEXT.	REMARKS	ANALYTICAL RESULTS			
		LINE	STN.										Cu	Zn	Pb	Cd
1	3568	00W	30P	WLD	L	-	FIR	B	12"	B/B	fine	logged down				
2	3569	00W	25S	WILD	L	-	FIR	B	8"	B/B	fine	Kwag		13	68	19
3	3570	00W	20S	WILD	L	-	FIR	B	4"	B/B	fine			18	98	18
4	3571	00W	15S	S	L	-	C-	B	12"	B/B	fine	Jungle		11	62	18
5	3572	00W	15.6S	S	CRK	-	C-	alt.			fine	Jungle		12	45	27
6	3573	00W	10S	S	L	-	C-	B	14"	B/B	fine	Jungle		23	59	39
7	3574	00W	10S	M	L	-	F-L	B	10"	B/B	fine	Jungle		21	67	31
8	3575	00W	5S	M	L	-	F-L	B	12"	B/B	fine			17	44	39
9	3576	BL	0W	M	L	-	F-L	B	10"	B/B	fine			14	40	35
10	3577	BL	2S	M	CRK	No	Sampl.	-				logging in disturbed soil		16	37	43
	3578	00W	5N	M	L	-	FIR	B	8"	B/B	fine	Ab. h.		31	41	76
	3579	00W	10N	M	L	-	FIR	B	10"	B/B	fine	log slash		22	40	55
	3580	00W	15N	M	L	-	FIR	B	12"	B/B	fine			28	37	76
	3581	BL	50	S	L	-	F-L	B	9"	B/B	fine	THE FMS		33	30	100
	3582	SW	5N	M	L	-	clear	B/B	10"	grey	fine	G.T. middle of log		36	37	100
	3583	SW	10N	M	L	-	clear	B/B	8"	grey	fine	middle of field		12	37	32
	3584	SW	15N	M	L	-	FIR	B	10"	B/B	fine	G.T.		18	34	53
	3585	-	-	M	CRK	-	B/B	SILT	-	BLK	fine	EAST FORK		19	31	61
	3586	-	-	M	"	-	"	"	-	"	"	WEST FORK		19	29	65
	3587	BL	10W	M	L	-	CR	B	-	B/B	fine	ROWY		28	57	49
														18	72	25

GEOCHEMICAL SOIL SURVEY

CAMP _____

COLLECTOR RC-DHo

DATE - 8 - 71

PROJECT _____

MAP SHEET _____

SAMPLE CODE _____

AREA (Loko, Rivor) HyB... etc

AERIAL PHOTO: _____

No.	SAMPLE No.	LOCATION			DRAIN	TERR.	VEG.	SOIL TYPE	DEPTH HORIZ. INCHES	COLOUR	TEXT.	REMARKS	ANALYTICAL RESULTS		
		LINE	STN.	TOPO.									Zn	Cu	Zn
1	3588	10W	5N	m	L	-	FSC	B	8"	Blk	fine	"Hot!!"	16	42	38
2	3589	10W	10N	m	L	-	clay	B	10"	Blk	fine	no carbonate with sample	19	28	68
3	3590	10W	15N	m	L	-	clay	B	12"	Blk	fine	100% sample in of same Blk	18	35	50
4	3591	Bl	15W	m	L	-	FIR	B	12"	Blk	fine		18	35	50
5	3592	15W	5N	S	L	-	FIR	B	12"	Blk	fine		14	55	25
6	3593	15W	10N	WILD	L	-	FIR	B	8"	Blk	fine		14	45	31
7	3594	15W	12.15N	m	CR	-	Black dlt.			Blk	fine	Hydrolysis etc	29	45	64
8	3595	15W	15N	S	L	-	FIR	B	14"	Blk	fine	corrosive material 12% in soil	18	44	41
9	3596	Bl	20W	m	L	-	F-L	B	10"	Blk	fine	fine texture	18	44	41
10	3597	20W	50N	S	L	-	F-L	B	12"	Blk	fine		14	41	34
	3598	20W	10N	S	L	-	FIR-L	B	10"	Blk	fine		12	33	36
	3599	20W	15N	S	L	-	FIR	B	8"	Blk	fine	contaminated by heavy	20	34	59
11	3600	Bl	25W	S	L	-	FIR-L	B	10"	Blk	fine		20	45	44
12	3601	25W	5N	S	L	-	black	B	8"	shy	fine	dry 12" layer	21	21	100
13	3602	25W	10N	S	L	-	F-L	B	10"	Blk	fine		14	40	35
14	3603	25W	15N	S	L	-	F-L	B	8"	shy	fine	dry 15 layer	13	30	43
15	3604	Bl	30W	S	L	-	FIR	B	8"	Blk	fine		18	46	49
16	3605	30W	5N	WILD	L	-	F-L	B	10"	Blk	fine		18	39	46
17	3606	30W	10N	WILD	L	-	F-L	B	14"	Blk	fine	dry 15 layer	17	32	53
18	3607	30W	15N	S	L	-	FIR	B	10"	Blk	fine	dry 15 layer	14	50	28

GEOCHEMICAL SOIL SURVEY

CAMP _____
 COLLECTOR Rc - Dka
 DATE 17-8-71

PROJECT _____
 MAP SHEET _____

SAMPLE CODE _____
 AREA (Loko, Rivor) Hy. P. Loko etc.
 AERIAL PHOTO _____

No.	SAMPLE No.	LOCATION		TOPO.	DRAIN	TERR.	VEG.	SOIL TYPE	DEPTH HORIZ. INCHES	COLOUR	TEXT.	REMARKS	ANALYTICAL RESULTS			
		LINE	STN.										Pb	Cu	Zn	Cd
1	3608	Bc	35N	S	L	-	fir	B	6"	Pk	fine	STP P		28	57	49
2	3609	35W	5N	SS	L	-	fir	B	12"	Pk	fine	fibrous		27	50	54
3	3610	35W	10N	S	L	-	fir	B	10"	Pk	fine	Loamy - (top)		19	56	34
4	3611	35W	15N	S	L	-	fir	B	12"	Pk	fine			15	40	37
5	3612	Pc	40W	S	L	-	fir	B	8"	Bk	fine			23	50	46
6	3613	40W	55N	uncl	L	-	fir	A/B	12"	Pk	fine	poor sample		32	55	58
7	3614	40W	10N	M	L	-	fir	B	10"	Pk	fine			17	44	39
8	3615	40W	15N	S	L	-	P-f	B	14"	Pk	fine	on fence		18	42	43
9	3616	Pc	45W	S	L	-	fir	B	10"	Pk	fine	dry B. Hoiz		26	44	59
10	3617	45W	5N	M	L	-	fir	A/B	8"	Pk	fine	Humus type		27	39	69
	3618	45W	10N	S	L	-	clear	A/B	10"	Pk	fine	Edge of field		19	39	49
	3619	45W	15N	M	L	-	clear	A/B	8"	Pk	fine	farther from		21	36	58
12	3620	45W	5S	M	L	-	clear	A/B	10"	Pk	fine	Hayon field		36	58	62
14	3621	45W	10S	M	L	-	clear	A/B	14"	Pk	fine	Hayon field		36	60	60
15	3622	45W	15S	L	L	-	clear	A	14"	Pk	fine	poor sample		25	45	56
16	3623	45W	5S	L	L	-	clear	A/B	14"	Pk	fine	poor sample		59	82	72
17	3624	40W	10S	L	L	-	clear	A/B	14"	Pk	fine			28	50	56
18	3625	40W	15S	L	L	-	clear	A/B	12"	Pk	fine	Gopmek Hill		42	65	65
19	3626	35W	5S	L	L	-	clear	A/B	12"	Pk	fine	Outcrop - humus		37	73	51
20	3627	35W	10S	L	L	-	clear	A/B	14"	"	"	"		28	73	38

3645 30S 150W T1K 13 8

GEOCHEMICAL SOIL SURVEY

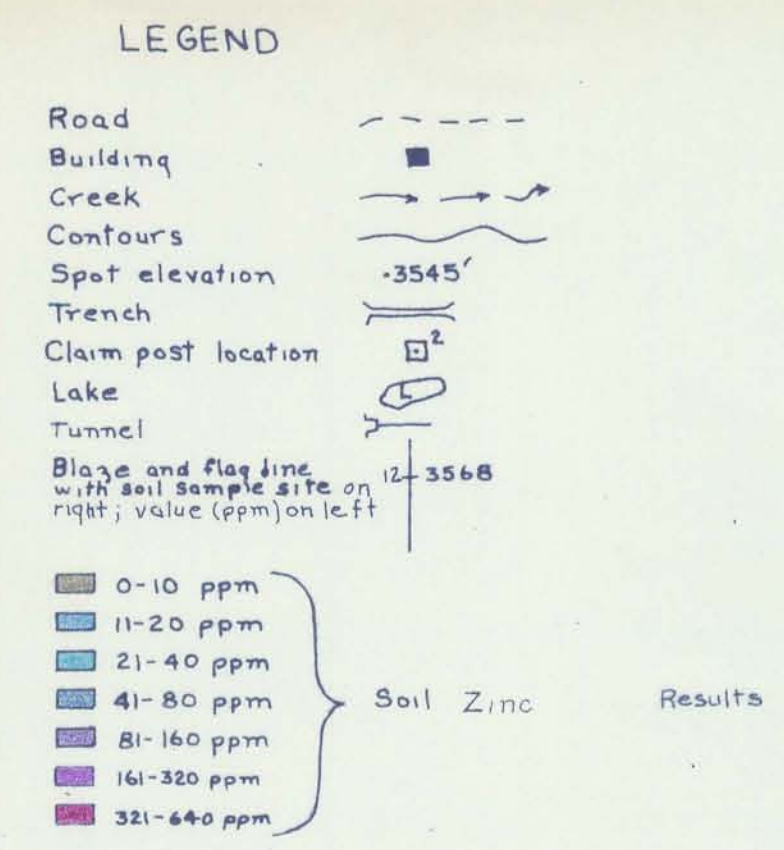
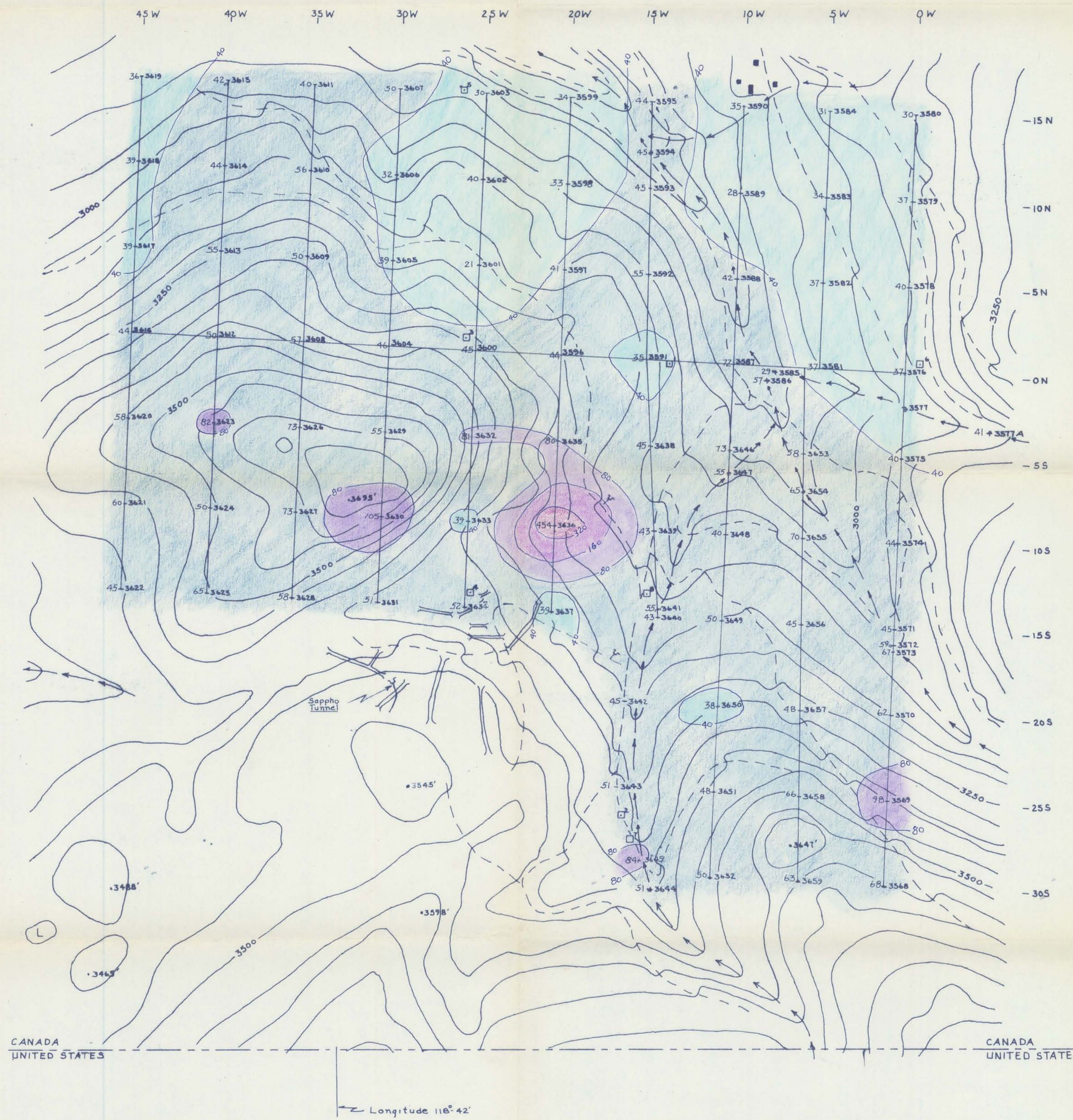
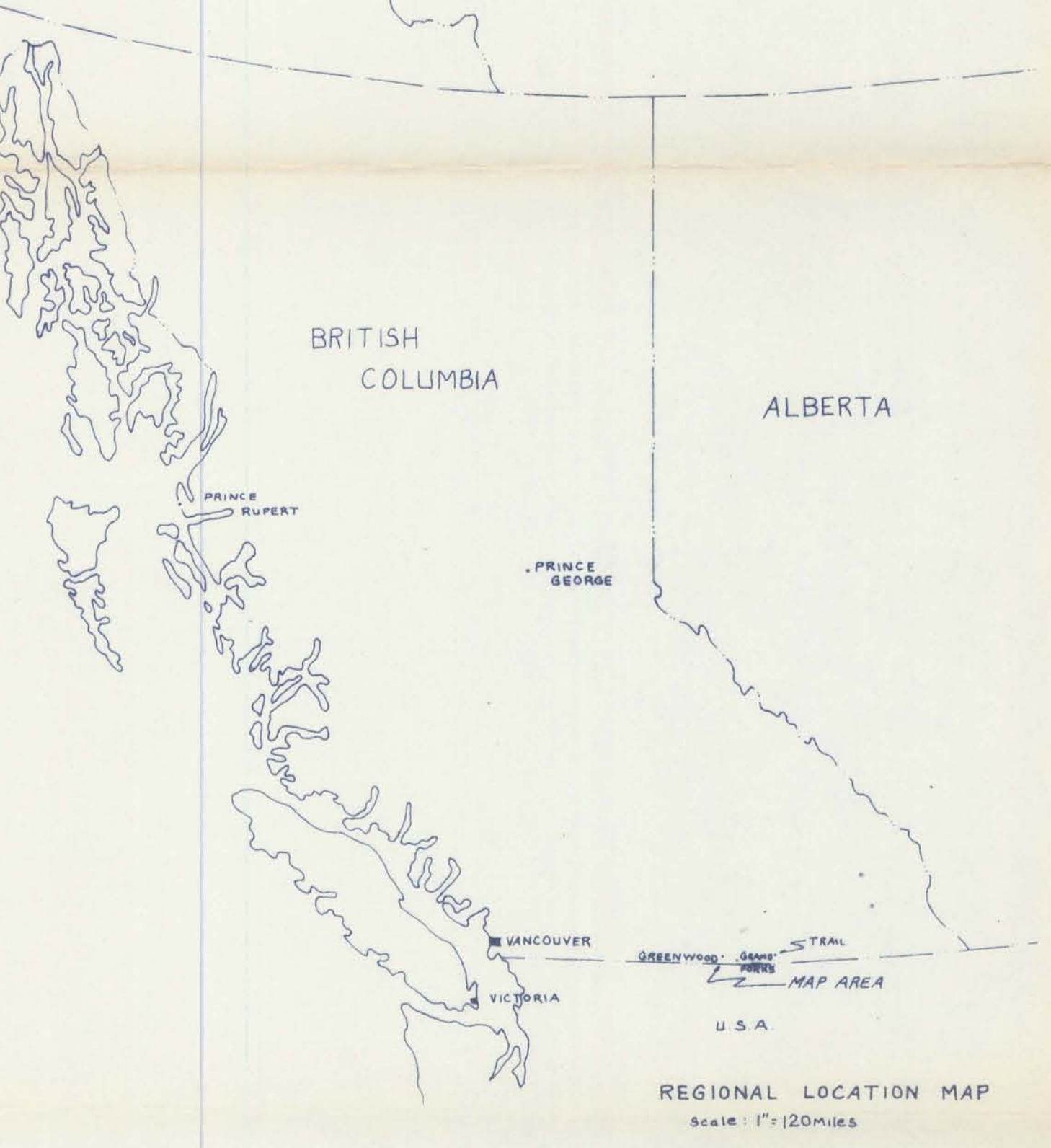
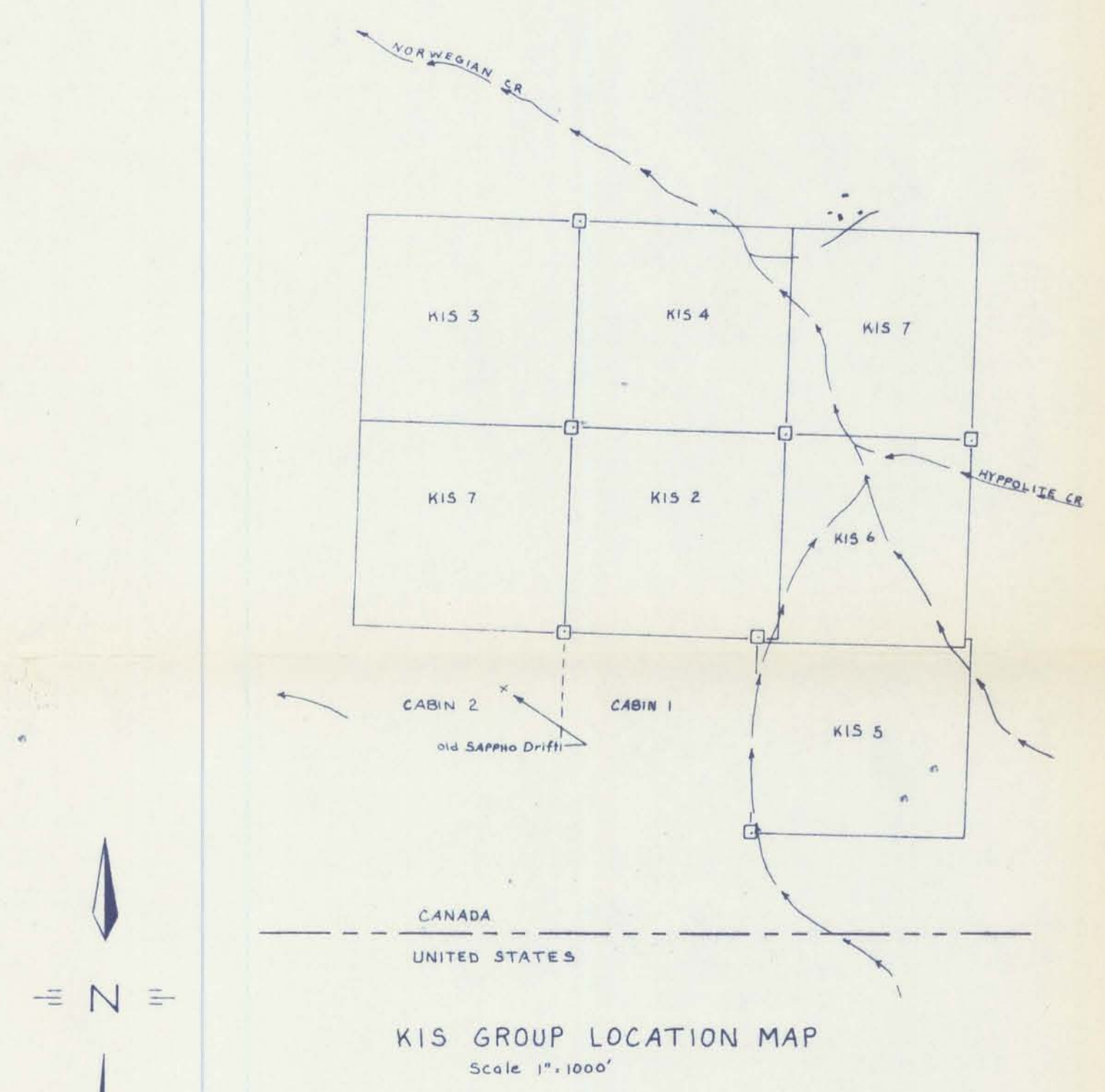
CAMP _____
 COLLECTOR RC - ALM
 DATE 18-8-71

PROJECT _____
 MAP SHEET _____

SAMPLE CODE _____
 AREA (Lako, River) Hydrote Ch
 AERIAL PHOTO _____

No.	SAMPLE No.	LOCATION		TOPO.	DRAIN	TERR.	VEG.	SOIL TYPE	DEPTH HORIZ. (INCHES)	COLOUR	TEXT.	REMARKS	ANALYTICAL RESULTS			
		LINE	STN.										Zn	Cu	Zn	Cu
1	3628	35W	15S	WILD	L	-	clear	H	10"	Bln	fine	Auger 2 ft	26	58	45	
2	3629	35W	5S	S	L	-	clear	M/Bk	14"	Bln	fine	Auger 1 ft	29	55	53	
3	3630	35W	10S	WILD	L	-	clear	M/Bk	14"	Blk	fine	Vertical auger with side	73	105	70	
4	3631	30W	15S	M	L	-	brush	B	12"	Bln	fine	down hole to	31	51	61	
5	3632	25W	5S	S	L	-	F-P	B	10"	Bln	fine	blow	40	81	49	
6	3633	35W	10S	WILD	L	-	FIR	B	12"	Bln	fine	traces rock	25	39	64	
7	3634	25W	15S	M	L	-	Bk	B	10"	Bln	fine	more than	120	52	23	
8	3635	20W	5S	M	L	-	FIR	B	8"	Bln	fine	traces of	22	80	28	
9	3636	20W	10S	M	L	-	FIR	B	12"	Bln	fine	Trench area	20	454	4	
10	3637	20W	15S	M	L	-	FIR	B	8"	Bln	fine		36	39	92	
11	3638	15W	5S	M	L	-	FIR	B	10"	Bln	fine	blow	23	45	51	
12	3639	15W	10S	M	L	-	Ref-C	B	12"	Bln	fine	Key in 5040	19	43	44	
13	3640	15W	15S	M	L	-	Bk	B	14"	Bln	fine	impossible	26	43	61	
14	3641	15W	14S	M	OK	-	brush	silt	-	-	-	impossible	38	55	69	
15	3642	15W	20S	M	L	-	FIR	B	14"	Bln	fine	Key	32	45	71	
16	3643	40W	25S	M	L	-	FIR	B	12"	Bln	fine	Key - Key	18	51	35	
17	3644	1415W	31S	M	OK	-	brush	silt	-	-	-	cut	18	51	35	
18	3645	15W	25S	M	OK	-	brush	silt	-	-	-	cut	31	84	37	
19	3646	10W	5S	L	L	-	FIR	B	12"	Bln	fine	skid trail	32	73	47	
20	3647	10W	6S	M	OK	-	C	silt	-	Bln	fine	NOISE, 100' OK	46	55	84	

- CLAIM POST LEGEND**
1. I.P. KIS 1-7
 2. F.P. JIM 20
 3. F.P. KIS 1-2; I.P. KIS 3-4
 4. I.P. KIS 1-2; F.P. (7) CABIN 1-2
 5. F.P. KIS 3-4
 6. F.P. KIS 4-7
 7. F.P. KIS 5
 8. I.P. KIS 5



To Accompany Geochemical Report by James Paxton, B.Sc., on the KIS GROUP, on NORWEGIAN CREEK, Greenwood Mining Division, dated November 3, 1971.

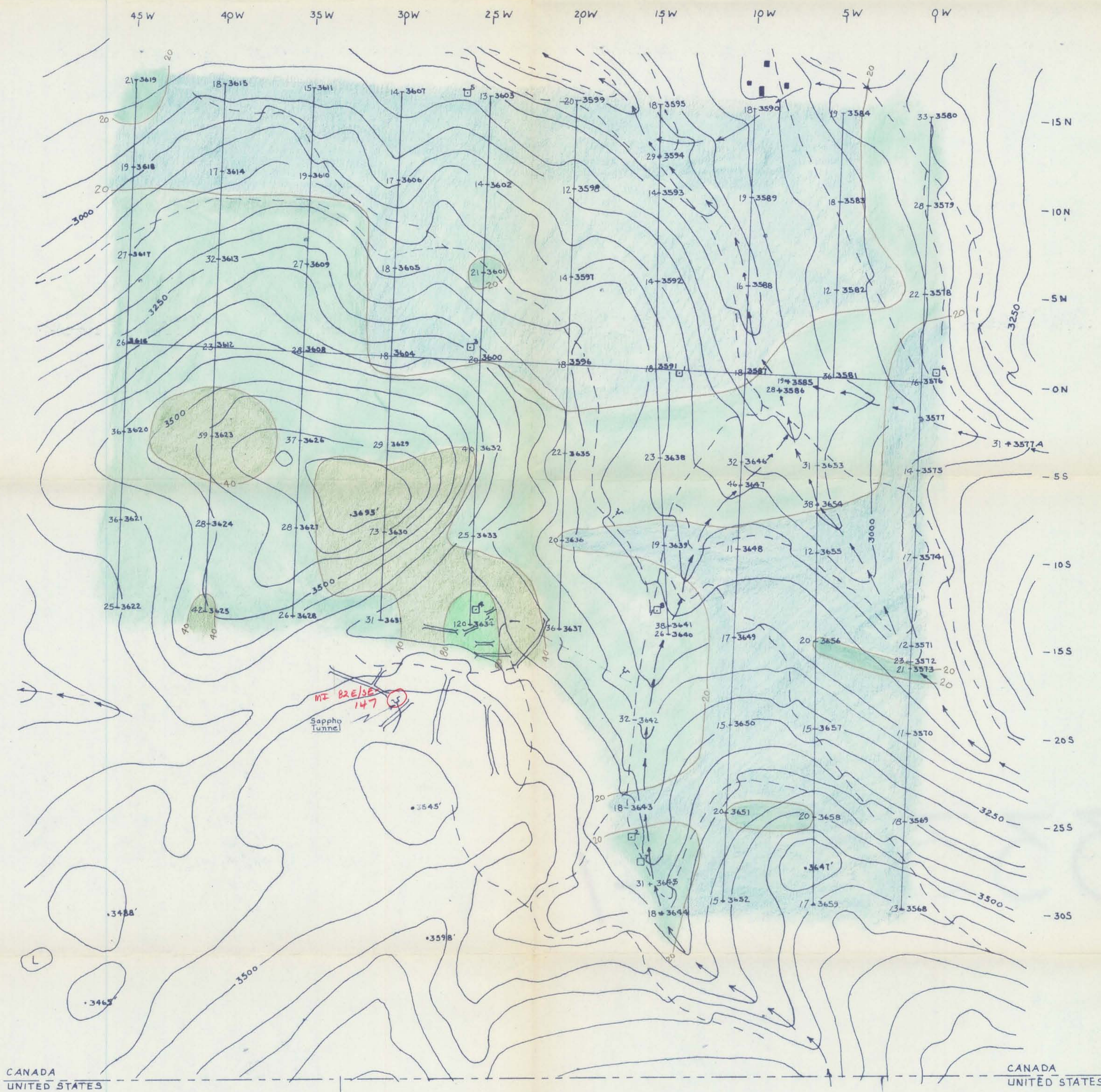
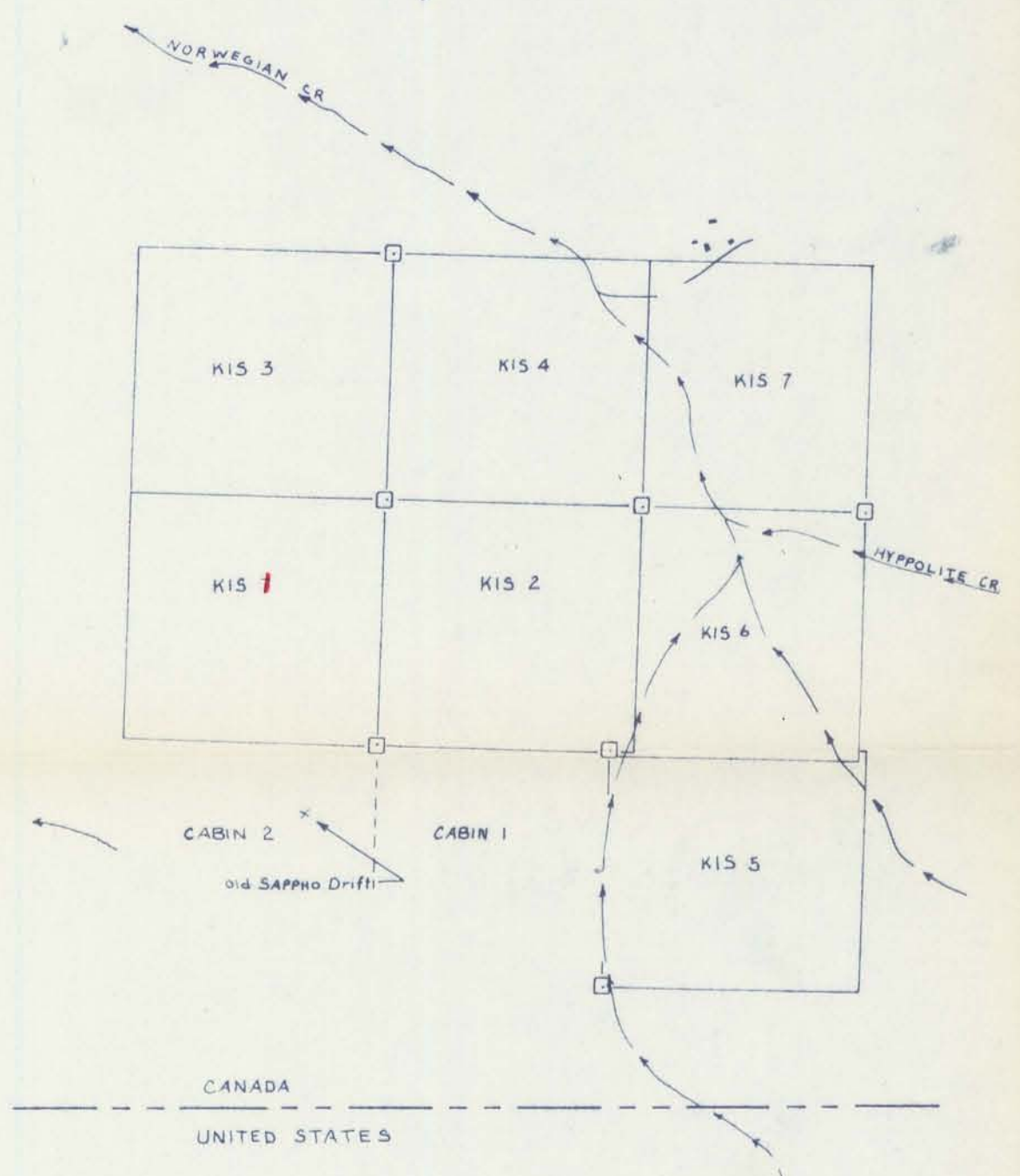
compiled by E.A. Shannon

Chaining, blazing, flagging and sampling by D.R. McArthur & R. Carmichael. Distances corrected for slope.

Analysis by Bondar-Clegg & Company Ltd. on the -80 mesh soil or silt using hot aqua regia digestion and atomic absorption.

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3335 MAP #2

- CLAIM POST LEGEND
1. I.P. KIS 1-7
 2. F.P. KIS 20
 3. F.P. KIS 1-2; I.P. KIS 3-4
 4. F.P. KIS 1-2; F.P. (7) CABIN 1-2
 5. F.P. KIS 3-4
 6. F.P. KIS 6-7
 7. F.P. KIS 5
 8. I.P. KIS 5

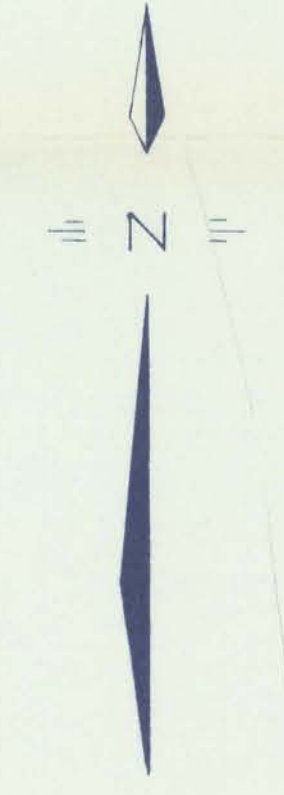
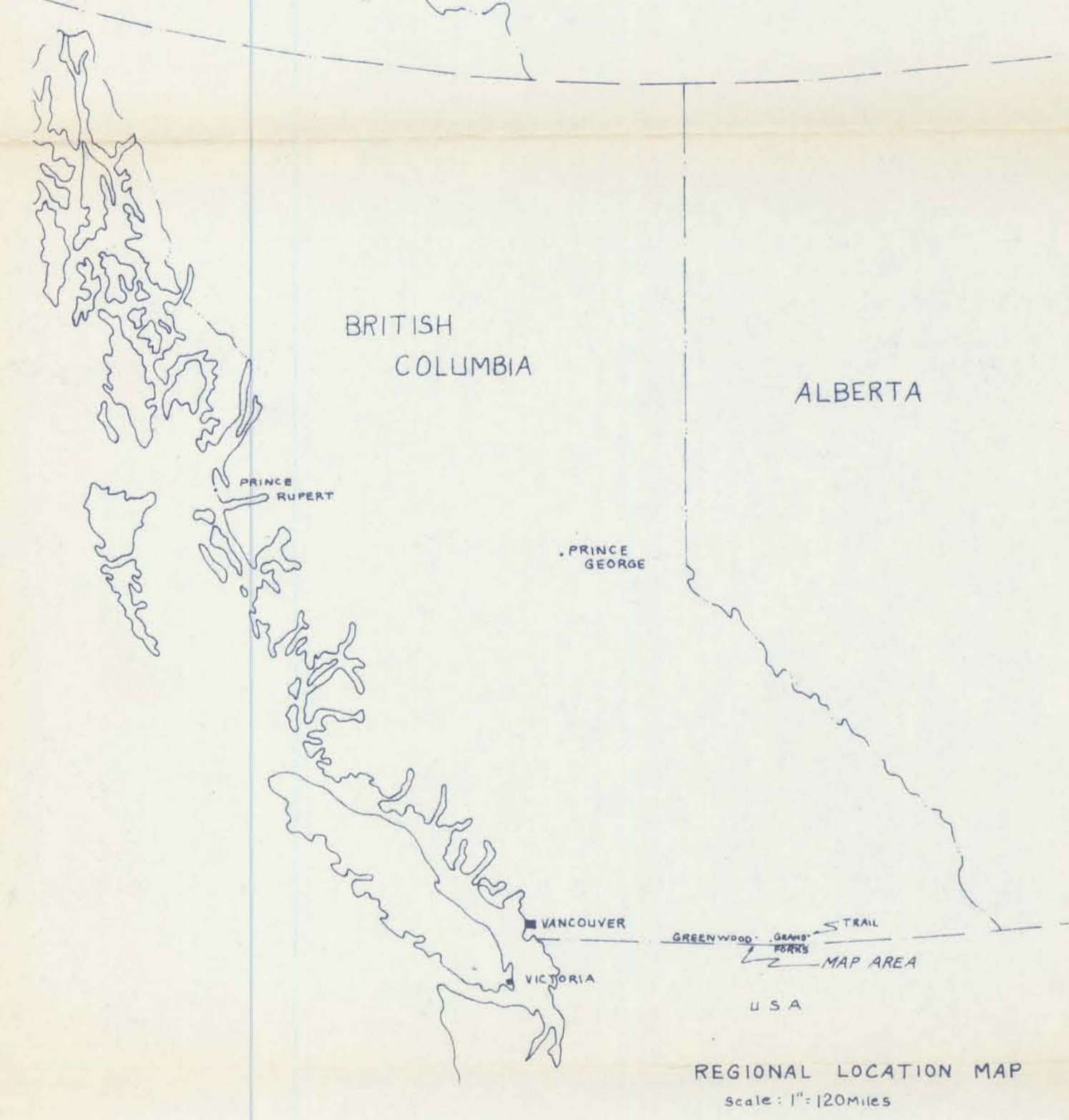


- LEGEND
- Road
 - Building
 - Creek
 - Contours
 - Spot elevation
 - Trench
 - Claim post location
 - Lake
 - Tunnel
 - Blag and flag line with soil sample site on right; values (ppm) on left
- Soil Copper Results
- 0-10 ppm
 - 11-20 ppm
 - 21-40 ppm
 - 41-80 ppm
 - 81-160 ppm
 - 161-320 ppm
 - 321-640 ppm

3335 M-1

To Accompany Geochemical Report by James Paxton, B.Sc., on the KIS GROUP, on NORWEGIAN CREEK, Greenwood Mining Division, dated November 3, 1971.

compiled by E.A. Shannon

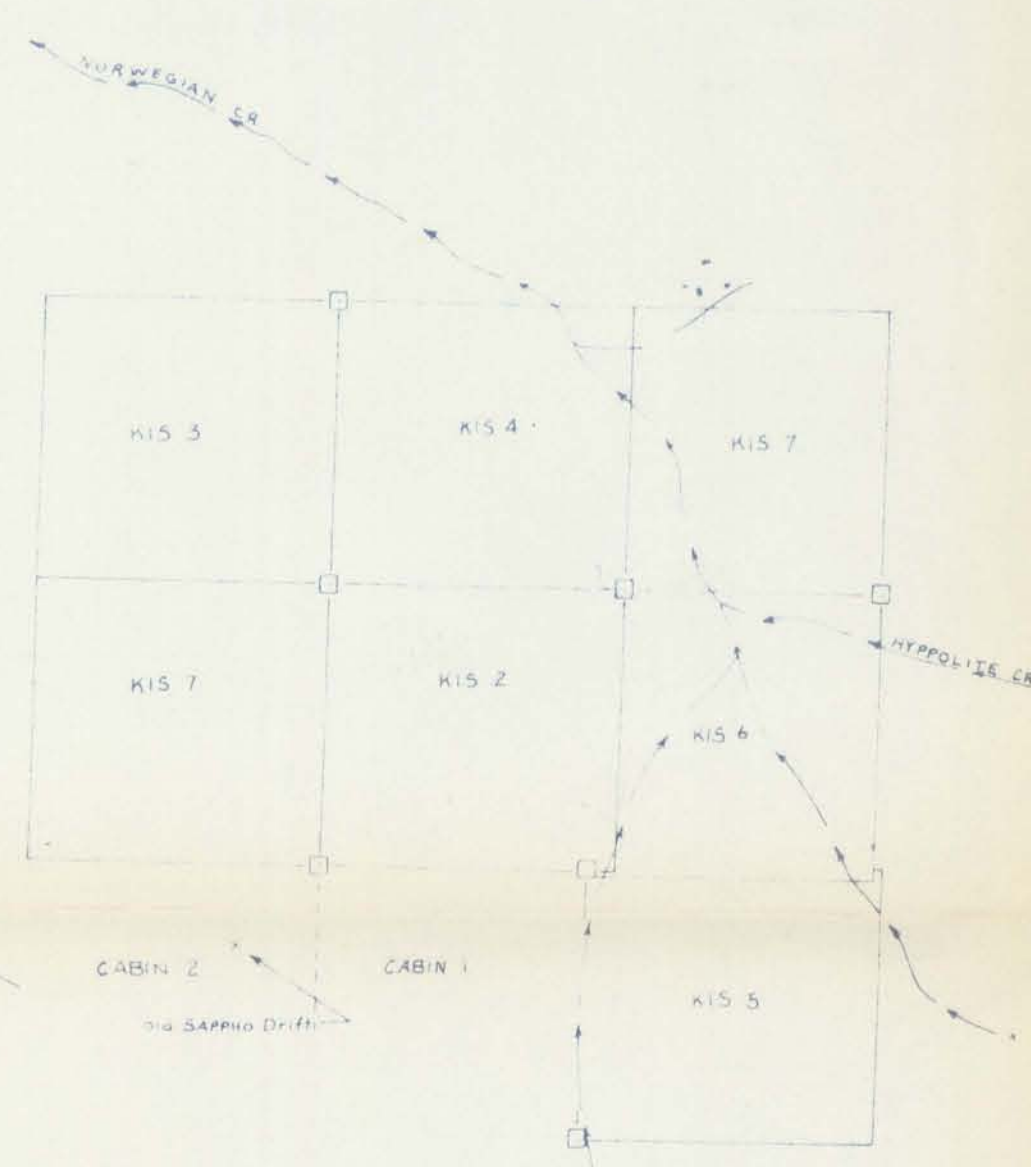


Longitude 116° 42'

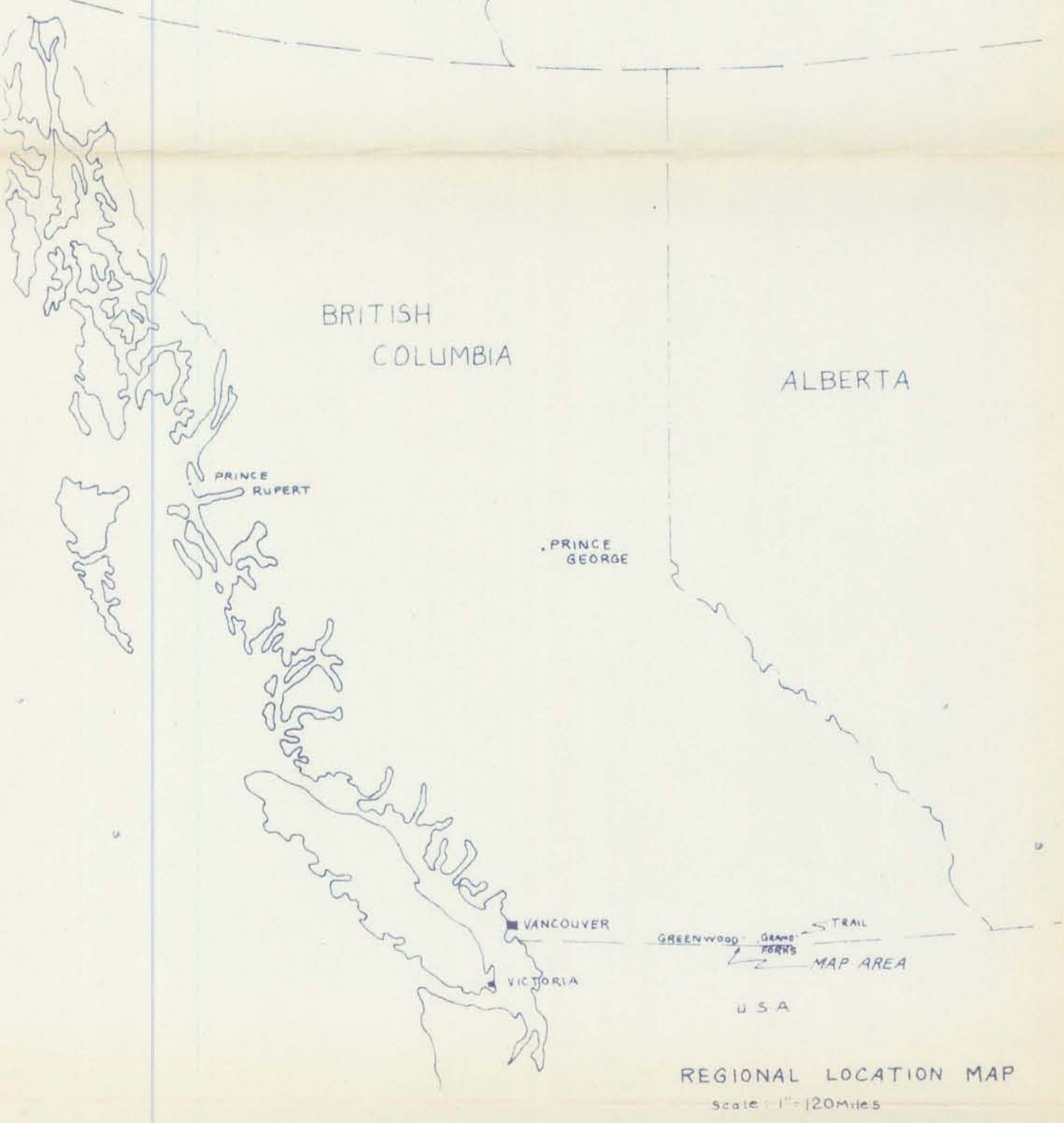
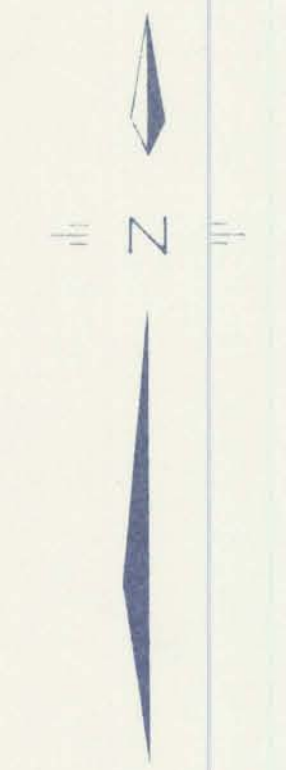
Chaining, blagging, flagging and sampling by D.R. McArthur & R. Carmichael. Distances corrected for slope.

Analysis by Bondar-Clegg & Company Ltd on the -80 mesh soil or silt using hot aqua regia digestion and atomic absorption.

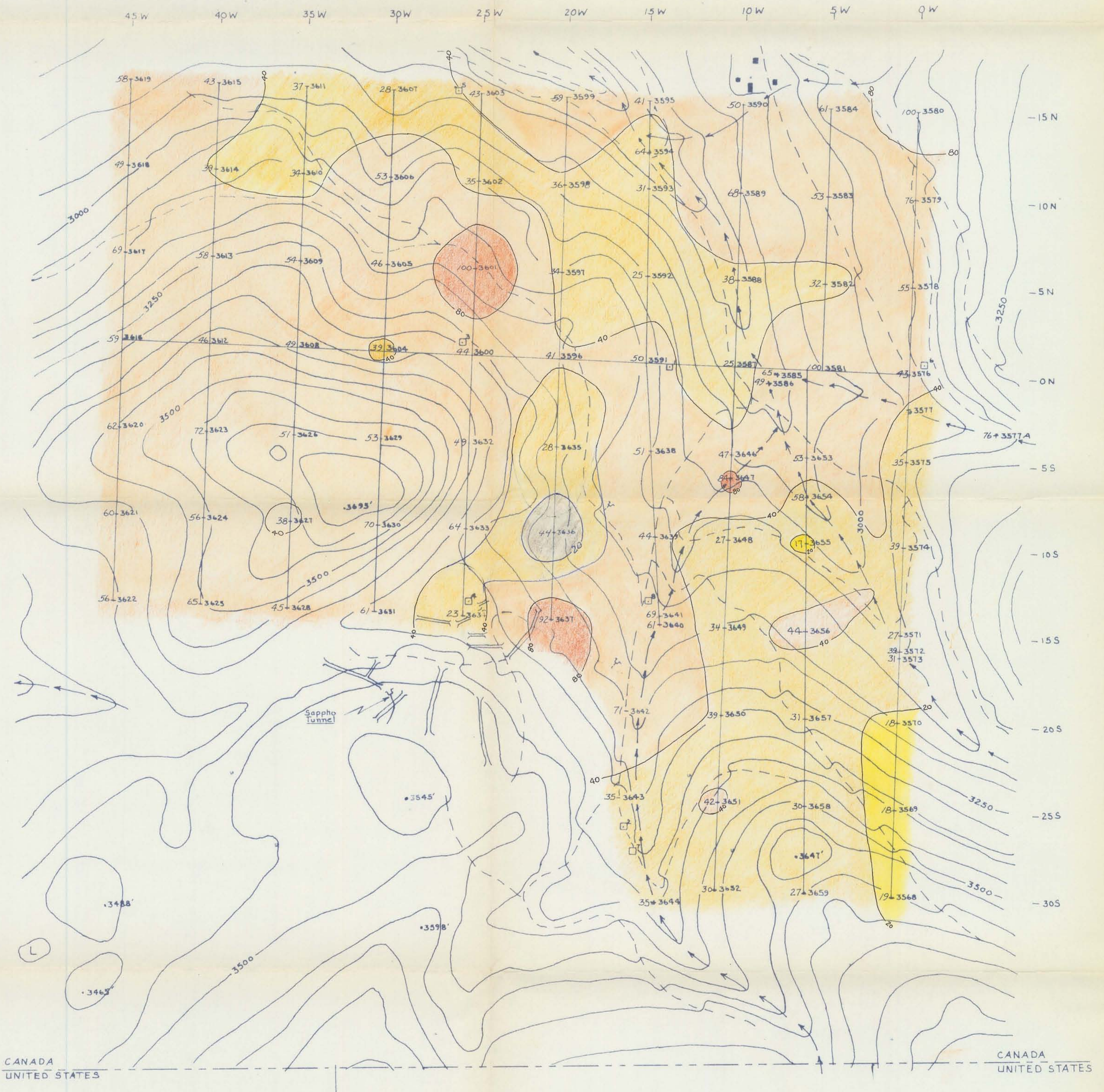
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3335 MAP 11



KIS GROUP LOCATION MAP
Scale 1" = 1000'



REGIONAL LOCATION MAP
Scale 1" = 120 miles



- CLAIM POST LEGEND
1. I.P. KIS 1-7
 2. F.P. U.M. 20
 3. F.P. KIS 1-2; I.P. KIS 3-4
 4. I.P. KIS 1-2; F.P. (7) CABIN 1-2
 5. F.P. KIS 3-4
 6. F.P. KIS 6-7
 7. F.P. KIS 5
 8. I.P. KIS 5

LEGEND

- Road
- Building
- Creek
- Contours
- Spot elevation
- Trench
- Claim post location
- Lake
- Tunnel
- Blaze and flagging - in soil sample site

- Soil Copper Ratio Results
ZINC
- 0-10 ppm
 - 11-20 ppm
 - 21-40 ppm
 - 41-80 ppm
 - 81-160 ppm
 - 161-320 ppm
 - 321-640 ppm



To Accompany Geochemical Report by James Paxton, B.Sc., on the KIS GROUP, on NORWEGIAN CREEK, Greenwood Mining Division, dated November 3, 1971.

compiled by E.A. Shannon

Longitude 118° 42'

Chaining, blazings, flagging and sampling by D.K. McArthur & R. Carmichael. Distances corrected for slope.

Analysis by Bondar-Clegg & Company Ltd. on the -80 mesh soil or silt using hot aqua regia digestion and atomic absorption.

**Department of
Mines and Petroleum Resources**

ASSESSMENT REPORT

NO. 3335 MAP #3