

# 4858

4858

92H/5W

REPORT  
ON  
GEOCHEMICAL SURVEY

SF 1-16 MINERAL CLAIMS

92H/5W

Harrison Lake Area  
New Westminster M.D.

49°25'N, 121°53'W  
NTS 92H/5W

FOR

THORNTON J. DONALDSON

November 22-December 3, 1973

M. J. Fitzgerald, P.Eng.  
Min-Ex Services Ltd.,  
North Vancouver, B. C.

December 21, 1973

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT

NO. 4858 MAP.....

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## INTRODUCTION

The following describes the results of work conducted on the SF 1-16 mineral claims located approximately 10 miles north-northwest of Harrison Hot Springs, B. C., in the New Westminster Mining Division. The work, which consisted of line cutting and a geochemical survey, was done at the request of Thornton J. Donaldson, owner of the claims.

The SF 1-14 claims were staked during November, 1972 and preliminary geochemical sampling at that time indicated the presence of anomalous zinc content on the SF 11 and 12 claims. The anomaly extended to the southeastern border of the SF 12 claim and appeared to extend onto the then-valid JOK claim group. Claims of the JOK group expired during mid-1973 and the SF 15 and 16 claims were staked by the writer on November 30, 1973. The geochemical survey was conducted on November 22 and November 30-December 3, 1973.

The work was supervised and conducted in part by the writer and the line cutting and the bulk of the geochemical sampling were executed by personnel of Nielsen Geophysics Ltd.

## CLAIMS

The SF 1-14 claims were staked by W. M. Sharp, P.Eng., on November 29, 1972 and were transferred by him via Bill-of-Sale to Terence A. Thompson on December 12, 1972. The claims were subsequently transferred by Mr. Thompson to Barker Resources Ltd. (N.P.L.) and from Barker Resources to Thornton J. Donaldson. The latter Bill of Sale was recorded on September 18, 1973 at Vancouver.

Pertinent data on the claims are as follows:

<u>Claim</u>	<u>Record Number</u>	<u>Recording Date</u>	<u>Mining Division</u>
SF 1-14	28219-28232, inc.	Dec. 4, 1972	New Westminster
SF 15, 16	Tag Nos. 150485M, 150486M	Dec. 3, 1973	" "

The claims form a contiguous block; layout of the claims and location of the grid are shown on Fig. 2.

## LOCATION AND ACCESS

The SF claim group is located approximately 10 miles north-northwest of Harrison Hot Springs and 2 miles west of Harrison Lake. Access is by

**INDEX MAP**

**BRITISH  
COLUMBIA**

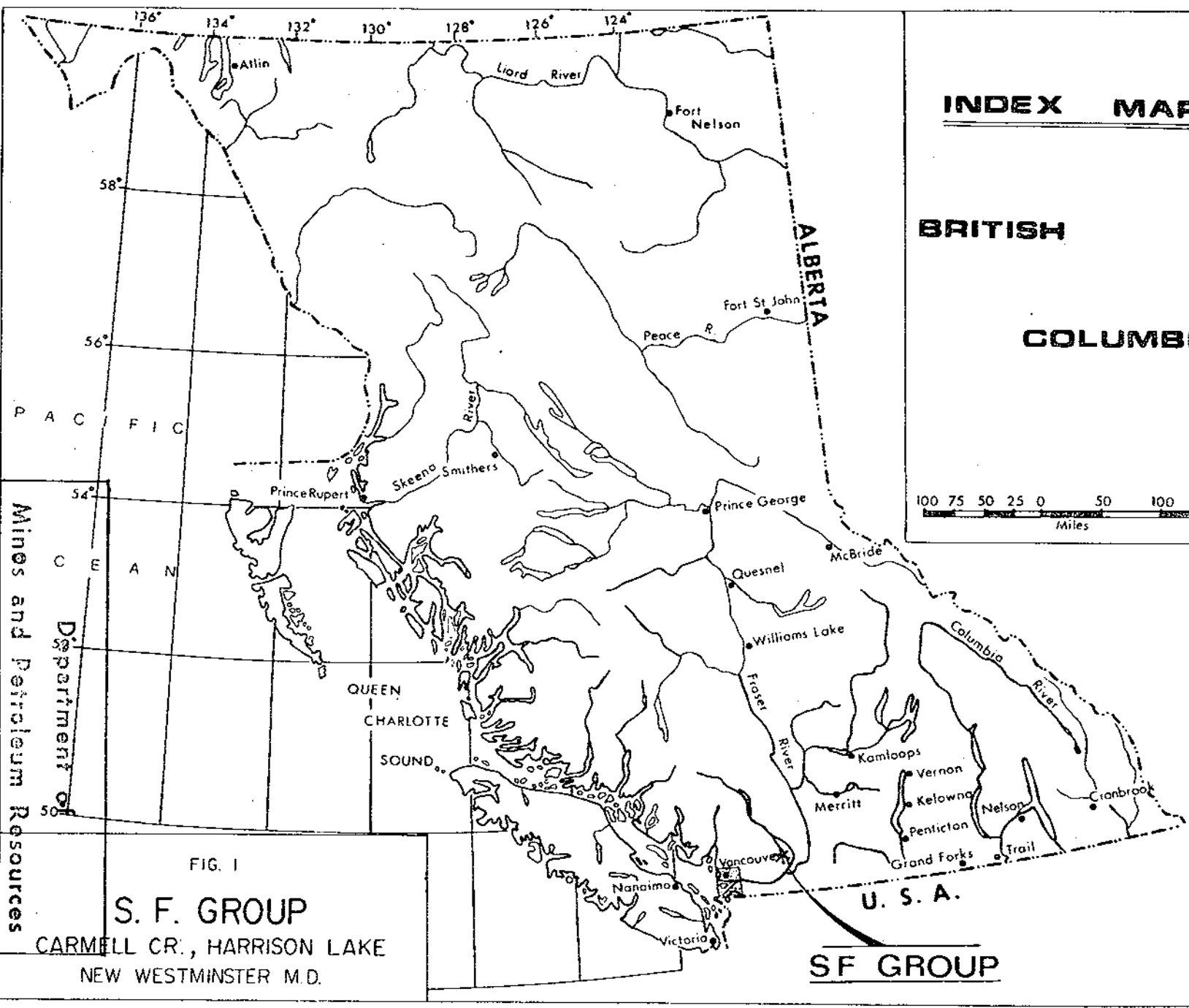


FIG. 1

**S. F. GROUP**  
CARMELL CR., HARRISON LAKE  
NEW WESTMINSTER M.D.

**SF GROUP**

NO. **4858** MAP # **1**

**ASSESSMENT REPORT**

Mines and Petroleum Resources  
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22 miles of fair to good gravel road from B. C. Highway 7. The access road leaves Highway 7 near Harrison Mills and extends northward beyond Cartmell Creek to join the Weldwood south haul road. The latter road is followed 2-1/2 miles westerly to the property. During dry weather, all roads are passable by most 2 wheel-drive vehicles. Numerous branch logging roads provide convenient access to most parts of the claim group.

The local terrain is only moderately rugged and topographic relief on the claim group is less than 1000 feet. Most of the area has been logged within the past few years and only a portion is covered by mature timber. Due to local dense second growth, about one-half of the property is difficultly accessible and the remainder is easily accessible.

#### PAST WORK

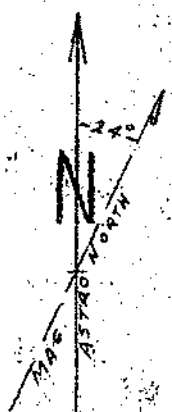
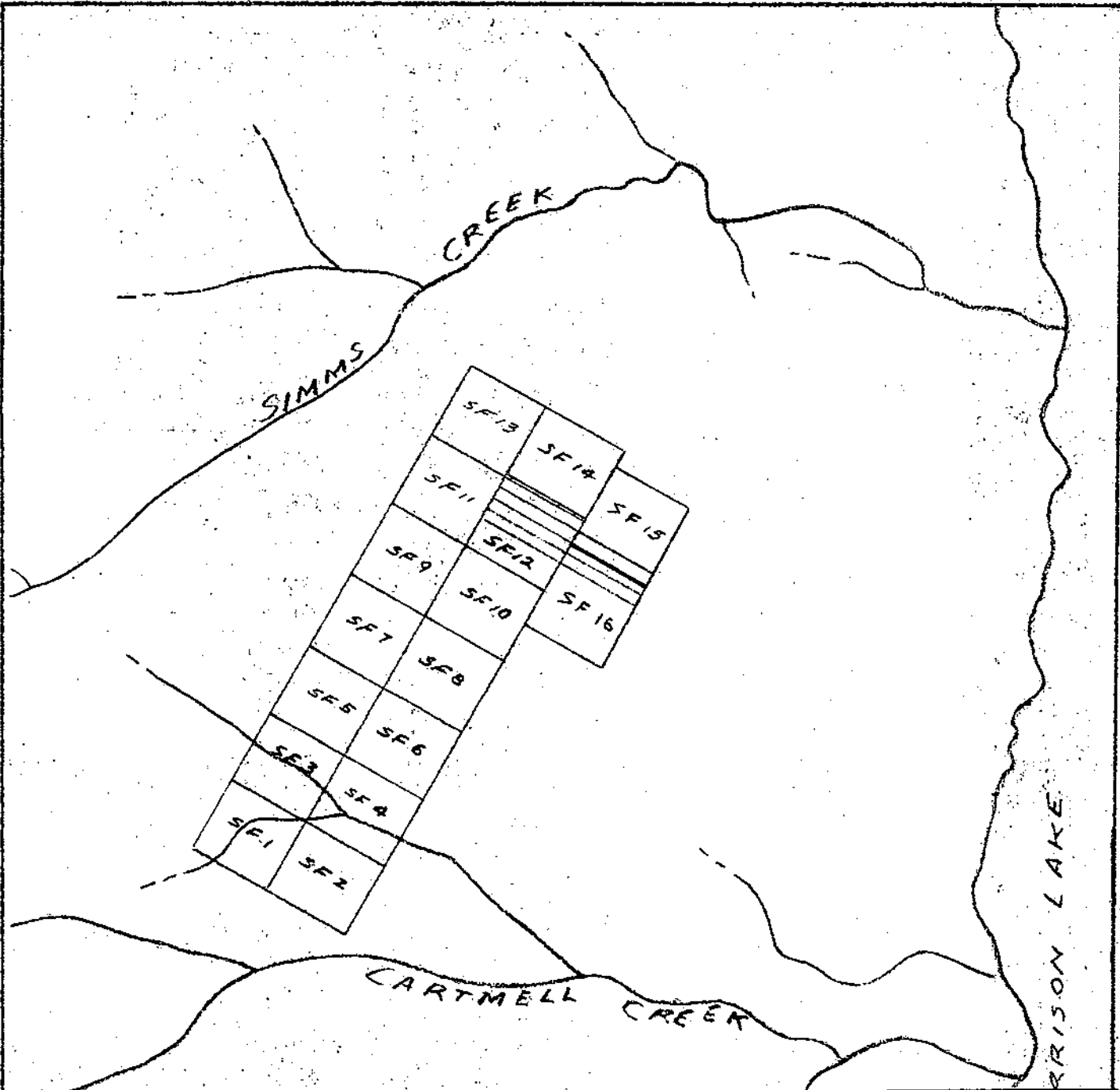
A minor amount of reconnaissance soil sampling and field testing was done by W. M. Sharp, P.Eng., during 1964-66 in the general area which contains the SF group but there is no record or evidence of other exploratory work in the immediate area of the claims prior to 1972. At the time of staking of the SF 1-14 claims, 32 soil samples were taken by Mr. Sharp and the writer during a traverse of the main logging road which crosses the claims and, in addition, a number of outcrops were mapped. Results of the sampling and mapping revealed the presence of anomalous zinc concentrations in soil associated with strongly altered and fractured volcanics in several portions of the claim group. Work in 1973 was concentrated in the northern portion of claims where the strongest anomalous results were obtained.

#### GRID

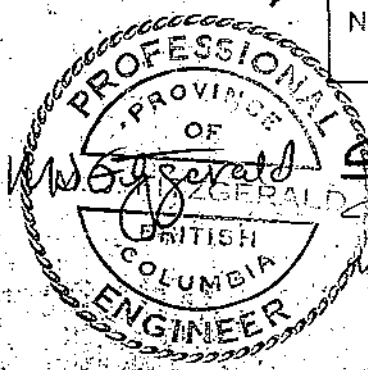
The grid was designed to expand outward from the strongest portion of the zinc anomaly found by the 1972 work. Two additional claims (SF 15, 16) were staked to cover apparent extension of the anomaly to the east and southeast and the initial post of the two claims was used as the focal point of the grid. In addition, the claim line between SF 15 and 16 was used as the eastern portion of line 0+00.

The grid baseline forms a portion of the western boundary of the SF 15 and 16 claims and trends N30°E-S30°W from the initial post. The baseline is 1700 feet long and stations along it were marked on 100-foot intervals. Cross-lines were established at 400-foot intervals normal to the baseline and extending S60°E-N60°W from it. Stations were also established at 100-foot intervals on the cross-lines and each was plainly marked.

A total of 13,100 feet of line was cut and marked.



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 Mines and Petroleum Resources  
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 NO. **4858** MAP **#2**



**CLAIM MAP-SF GROUP**  
 CARTMELL CR. - HARRISON L.  
 NEW WESTMINSTER MIN. DIV.  
 SCALE 1 IN. = 1/2 MI. DEC 1973  
 M.J. FITZGERALD, P. ENG.

## GEOLOGY

### Regional

The area west of the southern portion of Harrison Lake is underlain by an 11-mile wide, northwest trending belt of flows and pyroclastics mapped by the G.S.C. as the Harrison Lake Formation of lower Jurassic age (Monger, J.W.H., 1970, Hope Map-Area, West Half, G.S.C. Paper 69-47). Monger describes rocks of the Harrison Lake Formation as being dark green, locally red, rocks varying from poorly stratified volcanic breccias containing blocks up to 1 foot in diameter to well bedded tuffs. Flows within the formation are dark green to dark grey, massive, and locally contain columnar joints. Many of the flows are porphyritic in part. Rocks of pyroclastic origin appear to exceed flow rocks in abundance. The measured thickness of the formation near Harrison Lake is in excess of 9,240 feet.

Monger reports that the unit is folded in broad, open, roughly northeast trending folds. Dips range from horizontal up to 70° and faults are common. The base of the formation is exposed on the west side of Harrison Lake 3 to 4 miles southeast of the claim group.

Examination of air photos covering the general area of the SF claims reveals the presence of strong linear drainage trends which are interpreted as zones of faulting and fracturing. The most prominent linear feature is the striking northeast trend of Simms Creek one mile northwest of the northern portion of the SF group. This northeast trend is reflected in a drainage which crosses the SF 10 and 16 claims.

Northwest linear trends are also evident on the photos in the area between the Simms Creek and the last-mentioned drainage. These northwest trends are interpreted to be a reflection of northwest fracturing (or faulting) and, as described below, geochemically anomalous trends closely follow this northwest linear zone, lying parallel to and on the north side of the most prominent northwest linear.

### Property

Inferences concerning the geology of the claim group are based on mapping of a few, but fairly representative, exposures of bedrock along the main access road and on binocular microscope examination of 23 rock chip samples taken during the geochemical survey.

Rocks underlying the northern portion of the claim group consist of strongly altered tuffs and quartz porphyry. The latter is interpreted to be a flow unit.

The tuff often contains lithic fragments which locally display a linear alignment. This unit is light to dark grey in colour and is usually strongly altered to quartz and sericite. Locally these rocks are strongly silicified and elsewhere are altered to chlorite, epidote, sericite, and quartz. All exposures of the tuffaceous unit contain moderate to abundant amounts of fine grained pyrite. Darker metallic specks were noted in some specimens which are too fine grained to identify.

The quartz porphyry unit is generally light gray and medium fine grained. Most specimens exhibit strong alteration to sericite and clay although some fresh feldspar cleavage faces can be seen. The quartz phenocrysts are generally rounded and rocks of this unit usually contain abundant disseminated pyrite and limonite after pyrite.

Work to date is insufficient to establish the presence of alteration zoning but it is likely that a zoning pattern can be established with detailed geologic mapping.

No unequivocal showings of base metal mineralization were found within the area of the geochemical survey, due probably to the limited rock exposure (less than 5%) and the presence of snow. Small showings of pyrite-sphalerite-chalcopyrite mineralization, largely as fracture-fillings and veinlets, were observed elsewhere on the property during 1972.

## GEOCHEMICAL SURVEY

### HISTORY

Reconnaissance soil sampling along the main access road and along claim location lines during November, 1972 revealed the presence of three main areas with apparently anomalous zinc-in-soil in the area of the claim group. These areas are designated the North area on the SF 12 claim, the Central area on the SF 8 claim, and the South area on SF 1-4 claims. Copper values in soil seemed at that time to be uniformly low although the 1973 work revealed that copper background in the area is unusually low and that there is, in fact, anomalous copper content within the limits of the North area zinc anomaly.

During the 1973 programme, it was originally planned to combine geologic mapping with additional geochemical sampling but early, heavy snowfall in the area precluded the possibility of worthwhile mapping.



### Soil conditions and survey procedure

The area of the SF group has been glaciated and very little, if any, residual soil is present. The overburden cover consists largely of unsorted glacial till of variable thickness although an apparently persistent conglomerate horizon with a clayey matrix was noted in the southeastern portion of the survey area. The intercalated conglomerate horizon appears to be rather impermeable and anomalous geochemical results in the southernmost portion of the survey were quite surprising to the writer.

Snow cover ranging from 12 to 30 inches was present on the portion of the claim group covered by the survey. Temperatures were above freezing during the work period, however, and the ground was not frozen. Access was difficult due to the snow cover, but, although progress was slow, good soil samples were obtained.

A two-man crew supplied by Nielsen Geophysics Ltd. was used to simultaneously cut line and collect samples. Samples were taken at 100-foot intervals along the baseline and along cross-lines which were established at 400-foot intervals. Samples along access roads were taken by the writer and the crew was carefully instructed on the sampling technique desired. A total of 166 soil and 23 rock chip samples was collected.

The soil samples were collected in kraft paper bags and the grid location of each sample was marked on the exterior of the bag. Notes recording sample depth, horizon sampled, type of soil, and moisture were also kept on the exterior of the specially designed bags. In locations where sufficient fines could not be found or organic material was too thick to reach the "B" soil horizon, no samples were taken. Care was taken to sample the "B" soil horizon below the leached "A" zone.

The glacial drift in the area of the survey ranges from yellow-brown to grey-brown to red in colour. Throughout most of the grid area, the drift is limonite-stained. The "A" soil horizon is usually distinctly lighter in colour (leached) than the underlying "B" horizon. Sample depths on grid locations ranged from 6 to 12 inches and average approximately 9 inches. Samples from road cuts ranged from 4 inches to 4-1/2 feet below the previous surface. Plots of sample depth vs. metal value show no positive correlation.

The rock chip samples were also taken in kraft paper bags. The samples consisted of 5 to 10 small chips taken from a radius of 10 to 15 feet. Weight of the samples ranged from 1/4 to 3/4 lb. The grid location of each sample was marked on the exterior of the bag.

The soil samples were taken to Chemex Labs Ltd. and each was analysed for copper and zinc content. In addition, 43 of the samples were analysed for silver content, 28 were analysed for cadmium content, and 15 were analysed for lead content. Each sample was screened to

-80 mesh and a 0.5 gm portion was digested with a mixture of nitric and perchloric acids. After dilution to 25 ml., metal content was determined using a Tectron AA5 atomic absorption spectrophotometer.

The rock chip samples were pulverized to -100 mesh and were then treated in the same manner as the soil samples.

Results of the survey are shown on Plate I (Zinc) and Plate II (Copper). The partial silver and cadmium results are shown on Plate I.

### Discussion of Results

#### Zinc

No regional soil sampling has been conducted by the writer in the Harrison Lake area but samples from the northwest and central portions of the claim group suggest that regional zinc background is probably in the 40-55 ppm range. Histograms of zinc content in soil indicate that local background in the area surveyed is 75 ppm. Threshold anomalous values were selected at 125-165 ppm, anomalous at 166-265 ppm, and strongly anomalous at 266 ppm and above.

Plate I indicates that zinc values above threshold anomalous content are essentially continuous in a east-southeasterly trending zone 2600 feet long by approximately 700 feet wide. The anomalous zone is centred on the main access road west of the baseline and on lines 0+00 and 4S east of the baseline. The zone is broken by a north-trending, narrow, linear area at approximately 0+00/6W and a wider, north-trending zone at approximately 0+00/11E.

Six areas with strongly anomalous zinc content lie within the broad area of threshold anomalous content. The location, tentative size, and peak values of these areas are as follows:

<u>Anomaly</u>	<u>Grid Location</u>	<u>Size</u>	<u>Peak Values</u>	
			<u>ppm Zn</u>	<u>ppm Cd</u>
A	3N/9W	300x150 feet	1156	0.4
B	0+00/7W	400x100 feet	800	0.8
C	0+00/2E	400x200 feet	1280	0.8
D	3S/Baseline	100x100 feet	640	0.3
E	0+00/7E	1000x400 feet	850	0.7
F	4S/15E	500x300 feet	1760	0.6

Anomalies B and D above are based on single samples and the actual size of these and, to some extent, the other strongly anomalous zones is subject to collection of fill-in samples.

Due to the mobility of zinc in high sulfide areas, analyses were obtained for silver and cadmium on all samples which contained in excess of 200 ppm zinc. All strongly anomalous areas are at least partially

supported by anomalous cadmium and/or silver content and, in addition, four areas of anomalous cadmium and/or silver content were found within areas of anomalous zinc content.

#### Lead

The lead content of 15 samples with zinc content ranging from sub-anomalous to strongly anomalous was determined during the orientation survey of November 22. The lead content of the samples was low, ranging from 20 to 46 ppm, with little definite relation to zinc content. The lead values are not shown on either Plate I or II but are listed in the Appendix.

#### Silver

The silver content of the 15 samples taken during the orientation survey of November 22 were also determined. All contained less than 0.5 ppm silver except for one sample at 3N/9W which contained 2.5 ppm. Because of the one high sample, silver content was determined on all samples which contained in excess of 200 ppm zinc.

Ten samples of 43 analysed contained 0.5 ppm silver or more. Peak content was 2.5 ppm. All strongly anomalous zinc areas contain 0.5 ppm silver or greater at at least one grid station. Anomalous silver content was also found within the anomalous zinc area at 8S/9E and 10E. The silver contents are shown on Plate I and the anomalous silver and/or cadmium areas are shown by patterning.

#### Cadmium

Due to the relatively high mobility of zinc in sulfide environments, cadmium content of all samples containing in excess of 200 ppm zinc was determined in an attempt to more closely pinpoint the bedrock source of geochemical anomalies. Cadmium is closely associated with sulfide zinc (sphalerite) and due to its lesser mobility, tends to remain behind after the zinc has been mobilized by oxidation.

Although only 5 of 28 samples analysed contained less than 0.2 ppm cadmium, the southwestern portion of the province is known to be very low in general cadmium content and it is believed that background levels in soil are probably less than 0.2 ppm. Cadmium content as high as 0.8 ppm was noted in association with anomalous zinc content and all strongly anomalous zinc zones contained at least one sample with 0.3 ppm Cd or greater. It is believed that the cadmium analyses provide considerable support for the validity of the zinc anomaly and fill-in sampling within the areas of anomalous zinc content coupled with analysis for zinc and cadmium may provide the best guide to the presence of zinc concentrations in bedrock.

## Copper

Histograms of copper content in soil indicate copper content background is 17 ppm; threshold anomalous content was selected at 35-55 ppm, anomalous at 56-70 ppm, and strongly anomalous at 71 ppm and above. The copper background content in the area of the claims is unusually low and it was not apparent until all sample values had been received, that definitive anomalies could be outlined. Chalcopyrite associated with sphalerite and pyrite was noted in veinlets in altered tuffs in the central portion of the claims during 1972 and the low levels of copper content in nearby soils (28, 7, 47 ppm) confirm the selection of anomalous levels given above.

The results of the copper analyses are shown in digital and contoured form on Plate II. Anomalous copper content is present in east-southeasterly trending zone roughly coincident with but more restricted than the zinc anomaly described above. In the portion of the grid west of the baseline, the trend of the threshold anomalous and greater copper content corresponds closely with central, strongest portions of the zinc anomaly.

East of the baseline, two copper-anomalous zones are present between 2E and 9E which trend northerly across the east-southeasterly trending zinc anomaly; however, the copper anomalies coincide quite well with the strongest zinc content even though the anomalous trends are divergent. The most southeasterly copper anomaly is of low order (less than 55 ppm) and lies between two areas of strongly anomalous zinc content.

Oddly, the copper-anomalous areas are even more closely centred on the main access road than are the zinc-anomalous zones. A compilation of road cut samples as opposed to grid samples in the anomalous area does show some bias in favour of the road cut samples (18 to 11) but profiles of values vs. sample depth show no correlation of anomalous values with depth. The way in which several anomalous zones extend upslope above the road coupled with the results of the sample depth plots suggest to the writer that the rough coincidence of anomalous zones with the main road is fortuitous and not due to greater depth of exposure or contamination.

## General

Due to the high mobility of zinc in oxidizing, high sulfide areas, zinc anomalies in soil are often suspect when used as the only indicator of bedrock mineralization. The coincidence of anomalous copper, silver, and cadmium content with the central and strongest portions of zinc anomaly do strongly suggest, however, that the zinc anomaly probably represents sulfide zinc mineralization in the underlying bedrock. Rock exposures within the anomalous area all exhibit moderate to strong hydrothermal alteration and the rock types coupled with the metal anomalies suggest that a massive sulfide deposit of the volcanogenic type may be present on the claims.

CONCLUSIONS

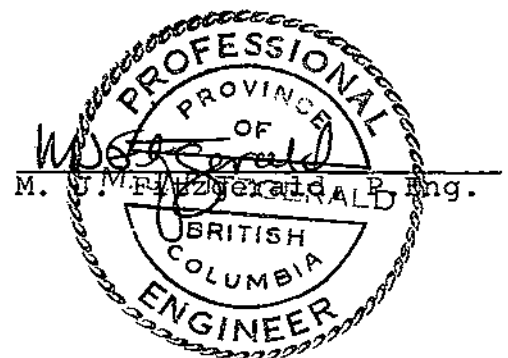
The general coincidence of anomalous zinc, copper, cadmium, and silver content in soil within the east-southeasterly trending zone roughly centred on the main access road, suggests that commercial concentrations of zinc and, possibly, copper may be present in bedrock below the general drift cover on the SF claim group. The presence of hydrothermally altered volcanic flows and pyroclastics in and surrounding the area of the geochemical anomalies suggests that a massive sulfide deposit of the volcanogenic type may be present on the claim group.

RECOMMENDATIONS

The following programme is recommended to follow-up the encouraging initial geochemical survey results:

1. Extend the present grid over the entire claim group (lines 400 feet apart with samples every 100 feet along the lines).
2. Establish intermediate cross-lines in the area of the presently known zinc anomaly (resulting in 200-foot line spacing) with sample stations every 100 feet along the lines. Analyse the samples for zinc and copper with anomalous samples also being analysed for cadmium and, possibly, silver.
3. Geologically map the entire claim group with emphasis being placed on the geochemically anomalous areas.

Further work should be based on the follow-up results.



REFERENCES

- Sharp, W. M., P.Eng.: Report on Preliminary Geological-Geochemical Exploration of the SF claim group near Cartmell Creek, Harrison Lake Area, B. C. for Barker Resources Ltd. (N.P.L.), December 1972.
- Monger, J.W.H. : Hope Map-Area, West Half, British Columbia, G.S.C. Paper 69-47, 1970.

STATEMENT OF EXPENDITURE

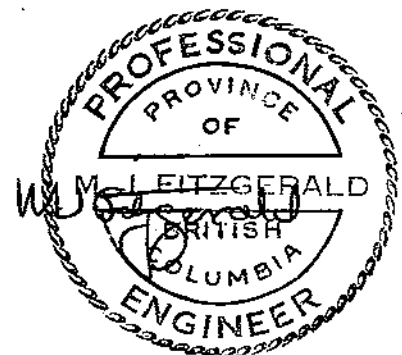
Chemex Labs Ltd.	
Invoices 10932, 10977,	
Geochemical Analyses 10988, 11002	\$ 371.35
Nielsen Geophysics Ltd.	
Invoice 112 - Line cutting and soil sampling	468.15
Min-Ex Services Ltd.	
Invoice 20A - Professional Services	652.50
Invoice 20B - Expenses	<u>256.07</u>
 TOTAL	 <u>\$1,748.07</u>

Personnel

M. J. Fitzgerald, P.Eng.  
Gary Baker  
John Wilson

Dates Worked

Nov. 22, Nov. 29, 1973  
Nov. 29-Dec. 3, 1973  
Nov. 29-Dec. 3, 1973





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 NORTH VANCOUVER, B.C.  
 CANADA  
 TELEPHONE: 985-0648  
 AREA CODE: 604

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## CERTIFICATE OF ANALYSIS

TO: Min-Ex Services  
 254 E 4th  
 North Vancouver, B. C.

ATTN: Mr. Fitzgerald

CERTIFICATE NO. 26718

INVOICE NO. 10932

RECEIVED Nov. 23/73

ANALYSED Nov. 27/73

SAMPLE NO. :	PPM
	Zinc
1+00	772
2+00	285
1+175N	131
1+325N	108
1+150 S	317
1+320 S	112
2 153 W	305
2 413 W	225
2 520 W	174
2 630 W	108
2 822 W	568
2 1064 W	206
2 1325 W	131
2 1599 W	108
2+1912 W	1156



MEMBER  
 CANADIAN TESTING  
 ASSOCIATION

CERTIFIED BY: *R. J. Jones*







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## CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 26727

TO: Min-Ex Services  
254 E 4th.  
North Vancouver, B. C.

INVOICE NO. 10988

RECEIVED Dec. 7/73

ATTN: Mr. Fitzgerald

ANALYSED Dec. 12/73

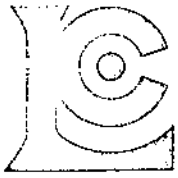
SAMPLE NO. :		PPM Copper	PPM Zinc	PPM Silver	PPM Cadmium
ON	OE	33	482	0.5	0.4
	1	No sample			
	2	24	317	< 0.5	0.8
	3	54	1280	0.5	0.7
	4	38	233	< 0.5	0.2
	5	16	285	< 0.5	0.4
	6	34	850	< 0.5	0.6
	7	31	640	0.5	0.5
	8	42	127		
	9	26	620	< 0.5	0.4
	10	36	248	0.5	0.2
	11	13	108		
	12	12	155		
	14	31	152		
ON	15E	12	92		
ON	1W	54	206	< 0.5	0.4
	2	No sample			
	3	21	92		
	4	26	89		
	5	41	184		
	6	20	92		
	7	38	800	0.5	0.8
	8	16	95		
	9	22	75		
	10	30	72		
	11	22	72		
	12	16	47		
	13	20	70		
	14	21	41		
ON	15W	28	43		
4N	1E	No sample			
	2	10	83		
	3	20	131		
	4	34	131		
	5	63	406	< 0.5	0.7
	6	18	140		
	7	22	102		
	8	24	98		
	9	48	135		
4N	10E	No Sample			
Std.		46	131		



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*R.J. Jones*



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## CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 26728

TO: Min-Ex Services  
 254 E 4th  
 North Vancouver, B. C.

INVOICE NO. 10988

RECEIVED Dec. 7/73

ATTN: Mr. Fitzgerald

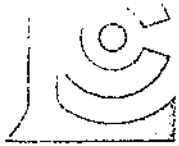
ANALYSED Dec. 12/73

SAMPLE NO. :	PPM Copper	PPM Zinc	PPM Silver	PPM Cadmium
4N 11E	No sample			
12	31	140		
13	18	75		
14	16	67		
4N 15E	16	102		
4N 1W	24	248	< 0.5	< 0.2
2	20	189		
3	No sample			
4	16	211	< 0.5	< 0.2
5	14	105		
6	18	233	< 0.5	< 0.2
7	26	95		
8	20	75		
9	21	98		
10	60	392	1.0	0.4
11	41	83		
12	22	72		
13	34	67		
14	42	50		
4N 15W	20	77		
4S 1E	38	102		
2	42	169		
3	30	152		
4	30	200	< 0.5	< 0.2
5	31	240	< 0.5	0.2
6	14	240	< 0.5	0.2
7	10	123		
8	13	375	< 0.5	0.2
9	44	295	< 0.5	0.3
10	24	72		
11	31	112		
12	22	115		
13	26	179		
14	24	950	1.0	0.6
4S 15E	21	1760	1.5	0.4
4S 1W	26	75		
2	13	60		
3	30	131		
4	7	41		
4S 5W	38	160		
Std.	46	131		



MEMBER  
 CANADIAN TESTING  
 ASSOCIATION

CERTIFIED BY: *R. J. Jones*



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## CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 26729  
INVOICE NO. 10988  
RECEIVED Dec. 7/73  
ANALYSED Dec. 12/73

TO: Min-Ex Services  
254 E 4th  
North Vancouver, B. C.

ATTN: Mr. Fitzgerald

SAMPLE NO. :		PPM Copper	PPM Zinc	PPM Silver	PPM Cadmium
4S	6W	22	152		
	7	13	70		
	8A	20	102		
	8B	18	155		
	9	16	86		
	10	21	92		
	11	10	52		
	12	8	30		
	13	22	80		
	14	22	43		
4S	15W	7	20		
8N	1W	31	115		
	2	12	120		
	3	18	140		
	4	12	72		
	5	10	36		
	6	12	22		
	7	13	32		
	8	No sample			
	9	26	83		
	10	22	72		
	11	10	36		
	12	10	39		
	13	26	65		
	14	No sample			
8N	15W	22	67		
8S	1E	22	140		
	2	16	144		
	3	13	65		
	4	20	83		
	5	20	70		
	6	22	43		
	7	34	108		
	8	28	112		
	9	26	218	1.0	0.2
8S	10E	36	240	0.5	0.4
8S	1W	31	92		
	2	18	67		
	3	13	55		
8S	4W	36	80		
Std.		46	135		



MEMBER  
CANADIAN TESTING  
ASSOCIATION

CERTIFIED BY: *R. J. Jones*



# CHEMEX LABS LTD.

212 BROOKSBANK AVE.  
NORTH VANCOUVER, B.C.  
CANADA  
TELEPHONE: 985-0648  
AREA CODE: 604

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

## CERTIFICATE OF ANALYSIS

TO: Min-Ex Services  
254 E 4th  
North Vancouver, B. C.

CERTIFICATE NO. 26730  
INVOICE NO. 10988  
RECEIVED Dec. 7/73  
ANALYSED Dec. 12/73

ATTN: Mr. Fitzgerald

SAMPLE NO. :		PPM Copper	PPM Zinc	PPM Silver	PPM Cadmium
8S	5W	13	57		
	6	13	67		
	7	30	83		
	8	21	57		
	9	16	83		
	10	12	80		
	11	20	92		
	12	13	70		
	13	21	80		
	14	13	39		
8S	15W	20	65		
BL	1N	No sample			
	2	36	169		
	3	26	135		
	4	12	92		
	5	22	275	< 0.5	0.3
	6	18	148		
	7	40	200	< 0.5	< 0.2
BL	8N	12	80		
BL	1S	14	75		
	2	12	83		
	3	24	640	0.5	0.3
	4	62	155		
	5	28	98		
	6	20	131		
	7	22	83		
BL	8S	24	95		
Δ1+500E		58	115		
	700	48	140		
	960	50	174		
	1100	36	148		
	1+2500	42	131		
RC	1+00	72	392	< 0.5	1.2
	2	13	28		
	2+413W	94	80		
	2+520	78	11		
	2+822	16	55		
	2+1160	58	30		
RC	2+912W	84	194		
	Std.	44	127		



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CERTIFIED BY:

*R. J. Jones*





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212 BROOKSBANK AVE.  
 NORTH VANCOUVER, B.C.  
 CANADA  
 TELEPHONE: 985-0648  
 AREA CODE: 604

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## CERTIFICATE OF ANALYSIS

CERTIFICATE NO. SP 86  
 INVOICE NO. 11002  
 RECEIVED  
 ANALYSED DEC. 17/73

TO: Min-Ex Services  
 254 E 4th  
 North Vancouver, B. C.

ATTN: Mr. Fitzgerald

SAMPLE NO. :	Detection Limit PPM	RC
		1+00
Antimony	50	bd1
arsenic	100	bd1
Barium	5	200
Beryllium	5	bd1
Bismuth	5	bd1
Boron	20	bd1
Cadmium	20	bd1
Chromium	10	100
Cobalt	10	bd1
Copper	0.5	50
Gallium	2	20
Germanium	20	bd1
Hafnium	200	bd1
Indium	10	bd1
Lead	5	10
Manganese	5	2000
Mercury	500	bd1
Molybdenum	10	bd1
Nickel	5	10
Niobium	50	bd1
Silver	0.5	bd1
Strontium	20	bd1
Tantalum	200	bd1
Tellurium	20	bd1
Thorium	100	bd1
Tin	20	bd1
Titanium	5	2000
Vanadium	10	50
Zinc	50	500
Zirconium	20	100

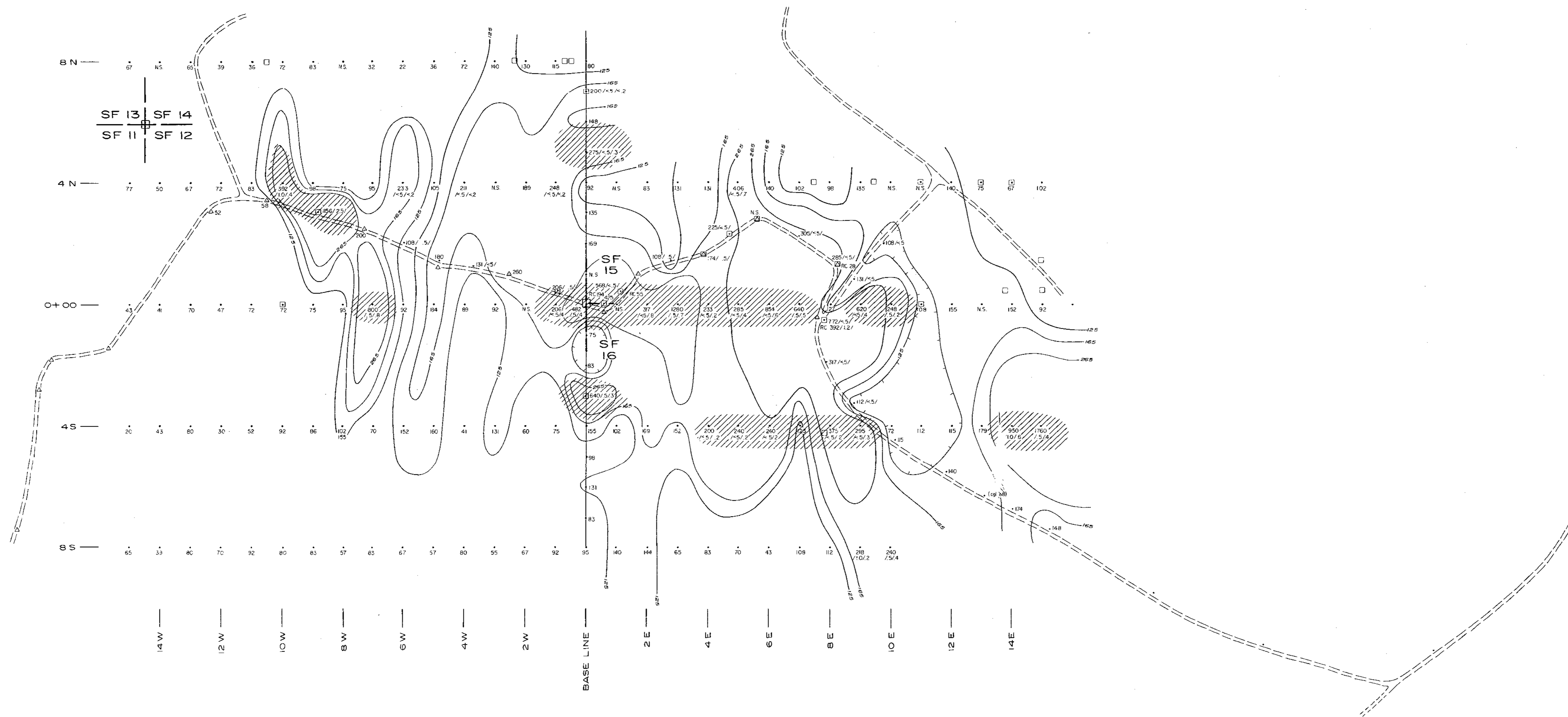
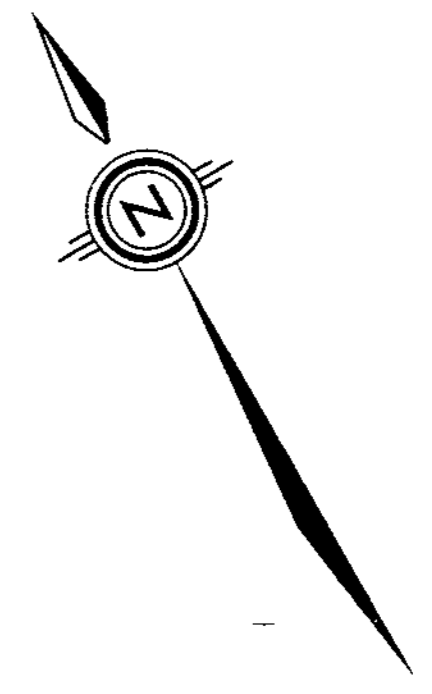
### CONCENTRATION RANGE LEGEND

>5000 PPM => 5000 PPM	50 PPM = 25-100 PPM
5000 PPM = 2500-10000 PPM	20 PPM = 10-40 PPM
2000 PPM = 1000-4000 PPM	10 PPM = 5-20 PPM
1000 PPM = 500-2000 PPM	5 PPM = 2.5-10 PPM
500 PPM = 250-1000 PPM	2 PPM = 1-4 PPM
200 PPM = 100-400 PPM	1 PPM = 0.5-2 PPM
100 PPM = 50-200 PPM	0.5 PPM = 0.2-1 PPM
	bd1 = below detection limit



MEMBER  
 CANADIAN TESTING  
 ASSOCIATION

CERTIFIED BY: *AP Shep*



**LEGEND**

- Soil Sample Site
- Rock Chip Sample Site
- △ Survey Traverse Station
- Concentration (ppm)
- 200 Zn / Silver / Cadmium (all values in ppm)
- Zn
- 40-55ppm Probable regional background
- 75 ppm Local background
- 85-95 ppm Threshold anomalous
- 166-265 ppm Anomalous
- >265 ppm Strongly anomalous
- SILVER - CADMIUM
- >0.5 ppm Ag and/or >0.2 ppm Cd
- Claim Post

# 4858 M3

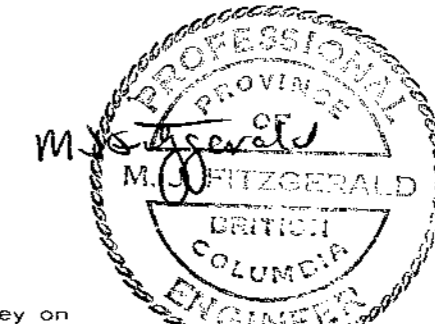
Department of  
 Mines and Technical Resources  
 ANNUAL REPORT  
 NO. 4858 M3 #3  
 PLATE 1

S. F. GROUP  
 HARRISON LAKE, NEW WESTMINSTER, M.D.  
**GEOCHEMICAL SURVEY**  
 ZINC

SCALE: 1" = 200'

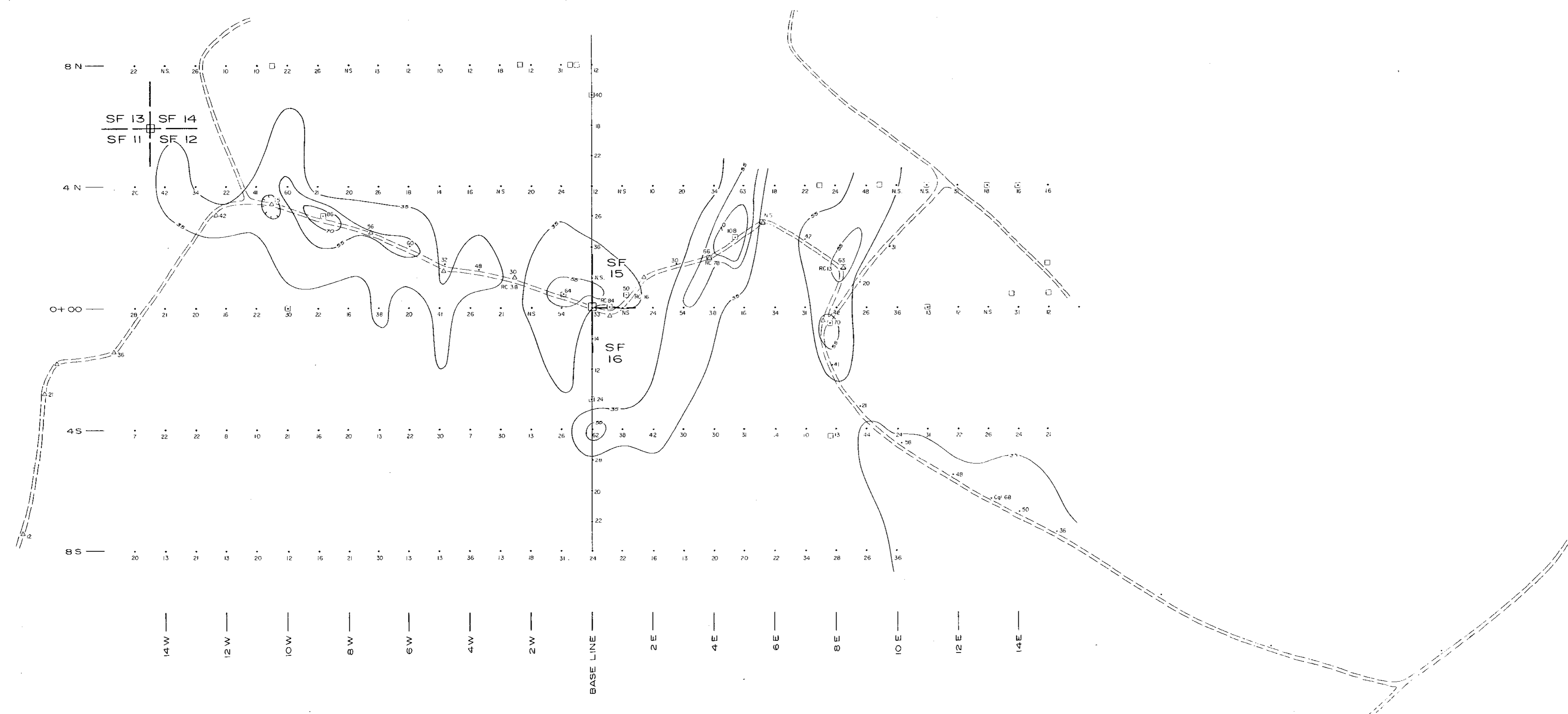
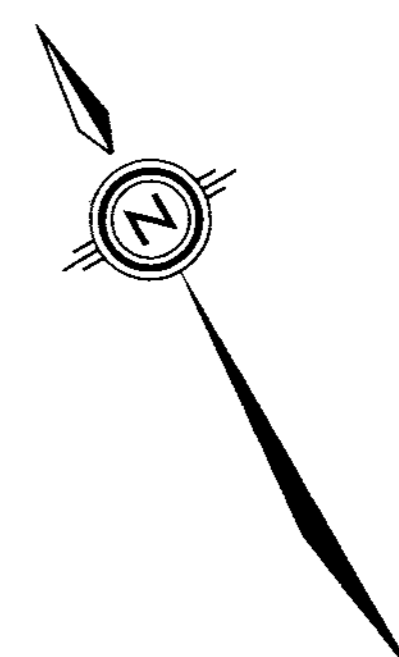
MIN-EX SERVICES LTD.  
 NORTH VANCOUVER, B.C.

M. J. FITZGERALD  
 DEC., 1973



To accompany a report on Geochemical Survey on the SF 1-16 claims by M.J. Fitzgerald, P. Eng., dated Dec. 11, 1973



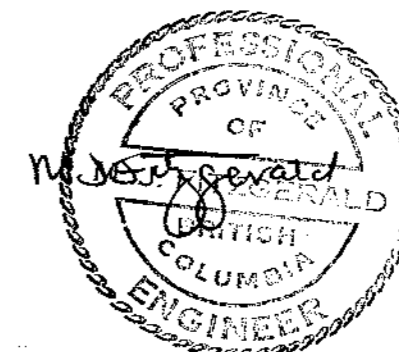


**LEGEND**

- Soil Sample Site
- Rock Chip Sample Site
- △ Survey Traverse Station
- 64 Copper content in p.p.m.
- 17 p.p.m. Background
- 35-50 p.p.m. Threshold anomalous
- 56-70 p.p.m. Anomalous
- > 70 p.p.m. Strongly anomalous

**4858 MA**

Department of  
 Mines and Technical Surveys  
 ANALYTICAL REPORT  
 NO. **4858** SER. **#4**  
 PLATE II



**S. F. GROUP**  
 HARRISON LAKE, NEW WESTMINSTER, B.C.  
**GEOCHEMICAL SURVEY**  
 COPPER  
 SCALE: 1" = 200'  
 200 100 0 200 400 600  
 MIN-EX SERVICES LTD. NORTH VANCOUVER, B.C. M. J. FITZGERALD DEC., 1973

To accompany a report on Geochemical Survey on the SF 1-16 claims by M. J. Fitzgerald, P. Eng., dated Dec 21, 1973

APPENDIX