

# 4716

RECORD NO.  
Recorder  
1973  
GOLDEN, B.C.

GEOCHEMICAL REPORT

on the

BOB, LIZ, AND HL MINERAL CLAIMS

WARREN CREEK, GOLDEN, B.C.

for

JUNIPER MINES LTD (N.P.L.)

Department of  
Mines and Technical Surveys  
NO. 4716

Vancouver, B.C.  
November 16, 1973

F. Holcapek, P.Eng.,  
Geologist

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### MAPS

#1 LOCATION MAP 1" = 80 mi., 1" = 4 mi.  
 GEOCHEMICAL SURVEY 1" = 400 feet

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1-00

INTRODUCTION

From July 22, 1973 to August 3, 1973, a four man crew, under the supervision of the writer, conducted a line cutting and geochemical sampling programme on the claim group.

The purpose of this programme was to check and extend the geochemical survey completed in 1972 by Cochrane Consultants Ltd and make recommendations on the basis of the results obtained.

A total of 63,000 feet of cross lines and 4,800 feet of baseline were cut, and a total of 298 soil samples were taken.

2-00

PROPERTY

The property is located in the Golden Mining Division, and consists of the following contiguous mineral claims:

<u>Claim Name</u>	<u>Record Numbers</u>
HL 1-5	14020 - 14024
HL 6-8	14413 - 14415
HL 20-25	14416 - 14421
Bob 1-4	11528 - 11531
Liz 166-167	11594 - 11595

The property is held by Juniper Mines Ltd (NPL) under option from Carolin Mines Ltd (NPL).

3-00

LOCATION AND ACCESS

The property is located approximately 32 air miles south of Golden, British Columbia in the Golden Mining Division.

Access to the property from Vancouver is via paved highway to Golden and from there south to Parsen. From Golden via the Draton Logging road to the confluence of Warren Creek and Bobby<sup>Burris</sup> Creek, a distance of 18 miles. From hence along a four-wheel drive road along Warren Creek to the property, a distance of eight miles.

4-00

PHYSIOGRAPHY

The claim group lies within the Purcell Mountain physiographic province. The elevation of the valley floor and camp site is approximately 6,000 feet above mean sea level with the highest point on the property being at 7,500 feet.

The lower part of the property is timber covered. The upper slopes are talus covered or cliffs with sparse timber.

Exploration work on the property is limited to summer months only. Summers are warm and relatively dry with temperatures rising into the high eighties, winters are cold and snow covers the ground from late October to late June.

5-00

### HISTORY

The first work conducted on the property dates back to 1920. Two small tunnels, 35 and 20 feet long, and several hand trenches, were excavated along quartz veins bearing chalcopyrite and some gold values.

In 1956, H.H. Cohen, P.Eng., conducted a geological investigation on the property. The results of this work was recorded for assessment purposes, (Assessment Report No. 182 at the B.C. Department of Mines in Victoria).

The St. Andre's Mining Co. completed a program consisting of airborne and ground electromagnetic surveys and 3,450 feet of diamond drilling during 1960 and 1961. This program apparently proved the presence of three copper-bearing quartz veins with pods of pyrite and chalcopyrite along the vein walls.

A.C.A. Howe & Associates Ltd., have reported average assays of 0.5% Cu and 0.05 oz/ton Ag over 20 to 50 foot widths of vein material. The best intersection from the drill programme assayed 1.73% Cu, 0.005 oz/ton Au and 1.17 oz/ton Ag.

During the summer of 1968, Carolin Mines Ltd conducted an exploration programme consisting of an electromagnetic

survey, 2,600 feet of bulldozer trenching, and 2,180 feet of diamond drilling, as well as road construction. On the basis of the electromagnetic survey, further work was recommended.

Cochrane Consultants Ltd conducted a programme, on behalf of Juniper Mines Ltd during September, 1972 on the main mineralized zones. The programme consisted of geological, soil and self-potential surveys, on a 200 x 50 foot grid. The result of this survey indicated several anomalies in part coinciding with the known showing or north of the main showings. In general, copper and gold geochemical data appear to coincide well. A self potential anomaly has been located 500 feet north of the main showing.

6-00

### GEOLOGY

#### 6-10 Regional:

Regional mapping has been carried out by the Geological Survey of Canada and has been published at a scale of 1 inch = 4 miles as Map 12-1957.

The property lies along the eastern flank of the Purcell Mountains, west of the Rocky Mountain Trench, a major regional zone of thrusting and faulting.

The area is underlain by northwesterly trending, folded and slightly metamorphosed sediments of mainly Proterozoic Age. The Cretaceous Bugaboo stock intrudes the sedimentary sequence west of the property.

The claim group is underlain by the Horsethief Creek Series consisting of slates, argillites, quartz pebble conglomerates, quartzites, grit and minor limestone. Changes of composition of the individual units are gradational and do not allow subdivision into smaller characteristic units.

Structurally the area is folded into northwesterly trending, in places closely spaced folds. Faulting occurs on the property, but is of local significance only.

#### 6-20 Local Geology:

Rocks mapped on the property consist of phyllites, quartz pebble conglomerate, argillites, limey talc schist and quartzites, believed to belong to the Horsethief Creek series.

Three faults, containing chalcopyrite along silicified zones, have been mapped. The main one appears to strike northwesterly parallel to the indicated strike of the sediments. This structural zone lies along the baseline. A second fault forms the contact between pebble conglomerate and shale and outcrops along the south eastern limits of the mapped area.

#### 6-21 Mineralization

The main economic mineral of interest found is chalcopyrite containing low gold and silver values. The chalcopyrite mineralization occurs along fault zones associated with strong silicification or along quartz bound in age within the phyllites in vicinity of faults. Pyrite has been found associated with chalcopyrite in the latter type. A third occurrence is exposed within a bulldozer trench.

At this locality strong silicification within the talc schist, with associate chalcopyrite, forms extremely hard exposure.

Malachite and azurite have been found in shaley cleavages south of the copper-bearing quartz veins.

7-00

GEOCHEMICAL SURVEY

7-10 Field Procedure:

To obtain ground control, a 400 x 200 foot grid was established. Part of the grid made use of and coincided with lines established in 1972 and sampling was completed over the whole gridded area. A total of 298 samples were taken. Samples were taken with a grubhoe and care was taken to ensure penetration below humus and talus. The soils were placed into kraft paper envelopes and notes regarding slope, vegetation and soil characteristic were recorded. Samples were shipped to Core Laboratories Ltd in Vancouver to be analyzed for copper, lead and zinc.

7-20 Laboratory Procedure:

The samples were dried in the laboratory and sieved to minus 80 mesh. The minus 80 mesh fraction was split into three parts and analysed for Cu, Zn and Pb.

The fraction for copper was digested for two hours in hot nitric-perchloric acid, the lead and zinc fractions were digested in hot nitric acid for a period of four hours. All samples were quantitatively analyzed using a Jarrel-Ash 800 atomic absorption unit. The results were recorded in parts per million (ppm).



7-30 Interpretation of Results:

A frequency distribution plot was made, using all samples taken, for each metal analysed to determine background and anomalous ranges. For this the accumulated frequency percent was plotted against the range of values in ppm on arithmetic probability paper.

<u>No. Samples</u>	<u>Background</u>	<u>% of Samples</u>	<u>Anomalous</u>	<u>% of Samples</u>
Cu - 296	40	58.39	73	5.04
Zn - 298	Inconclusive	-	-	-
Pb - 298	38	61.079	53	15.37

Calculations:

## LEAD

<u>Range in ppm</u>	<u>Number of Samples</u>	<u>% of Samples</u>	<u>Accumulated %</u>
0 - 10	4	1.34	1.34
11 - 20	16	5.36	6.71
21 - 30	62	20.81	27.52
31 - 40	92	30.87	58.39
41 - 50	68	22.82	81.21
51 - 60	30	10.06	91.27
61 - 70	11	3.69	94.96
71 - 80	6	2.01	96.97
81 - 90	7	2.35	99.32
91 +	2	.67	99.99

## ZINC

<u>Range in ppm</u>	<u>Number of Samples</u>	<u>% of Samples</u>	<u>Accumulated %</u>
0 - 10	2	.67	.67
11 - 20	11	3.69	4.36
21 - 30	15	5.03	9.36
31 - 40	6	2.01	11.40
41 - 50	21	7.05	18.45
51 - 60	24	8.05	26.50
61 - 70	30	10.07	36.57
71 - 80	62	20.80	57.37
81 - 90	51	17.11	74.48
91 - 100	52	17.45	91.93
101 - 110	20	6.71	98.64
111 - 120	2	.67	99.31
120 +	2	.67	99.98

## COPPER

<u>Range in ppm</u>	<u>Number of Samples</u>	<u>% of Samples</u>	<u>Accumulated %</u>
0 - 10	10	3.35	3.36
11 - 20	50	16.78	20.13
21 - 30	54	18.12	38.55
31 - 40	68	22.82	61.07
41 - 50	39	13.09	74.16
51 - 60	31	10.47	84.63
61 - 70	12	4.02	88.65
71 - 80	12	4.02	92.68
81 - 90	4	1.34	94.02
91 - 100	4	1.34	95.36
101 - 110	4	1.34	96.70
110 +	8	2.68	99.38

### COPPER

The survey outlined three anomalies with peak values of 126 to 452 ppm Cu. The main anomalous zone outlined (three times background) coincides well with the known copper exposures along line 0+00 from 2+00E to 16+00E. The width of the zone is thus far only defined by one reading along the line.

The second anomaly, of the same intensity but smaller, is located between 00+00N, 28+00E and 6N 28+00E.

The third anomaly lies along the south eastern limits of the grid and is open to the south.

Several weakly anomalous areas are indicated, twice background value, but these areas are not considered to be significant.

### ZINC:

The statistical analysis of the samples is inconclusive. An arithmetic probability plot does not show good cut-offs for background or anomalous values, but is rather erratic in distribution. Contouring of the data shows a broad, diffused distribution. This distribution can be caused by the high mobility of zinc ions and possibly higher primary concentration of zinc within the argillaceous and shaley rocks outcropping on the property.

### LEAD:

The arithmetic probability plot of this metal shows a well defined cut-off at 53 ppm for anomalous, but a poorly defined cut-off for background at 38 ppm. An attempt to

contour the data failed because of very spotted distribution of values.

8-00

DISCUSSION AND CORRELATION OF RESULTS

The results of geochemical survey for copper show a good correlation where overlapping the area sampled by Cochrane Consultants Ltd in 1972.

The correlation for zinc is poor. This is most likely due to the use of different laboratories.

Diamond drilling and bulldozer trenching completed in the past was confined to the outcrop areas, hence to the main anomalous area. The results of this work confirmed the presence of chalcopyrite within shear and faults but failed to show continuity. The same lack of continuity is indicated by the geochemical survey.

The magnetic survey did not outline the areas of copper mineralization since it is non-magnetic, but the general trend of the isomagnetic contour show correlation with the strike of the rock types.

The general correlation between self potential and geochemical surveys is good. The main difference between the two surveys is that the peaks of the anomalies do not necessarily coincide; i.e. the main self potential anomaly lies north of the main geochemical anomaly.

9-00 CONCLUSION AND RECOMMENDATION

Work completed on the property to date confirmed the presence of chalcopyrite in silicified zones associated with faulting.

Diamond drilling and bulldozer trenching showed that the mineralization although in places high grade, is discontinuous and spotty. The geochemical survey completed indicates a similar distribution.

Geological mapping showed the mineralization to occur in fault zones cutting the Horsethief Creek series. Minor alteration of the sediments along faults and shears changing the sediments to phyllites and schist has been observed.

It is recommended that the option be allowed to lapse, since the possibility of locating a deposit of mineable grade and size at reasonable cost is remote. At present, the property has to be classified as a high cost, high risk exploration target.

Respectfully submitted,

  
F. Holcapek, P.Eng.,  
Geologist

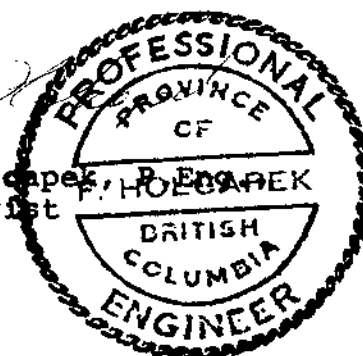
Vancouver, B.C.  
November 16, 1973

## CERTIFICATE

I, Ferdinand Holcapek, of 92-10842 152nd Street,  
Surrey, British Columbia, do hereby certify that:

1. I am a graduate of the University of British Columbia, Vancouver, British Columbia, with a Bachelor of Science degree in Geology, 1969.
2. Since 1961 I have been engaged in mining exploration in British Columbia, Yukon Territory, Northwest Territories, Quebec, Nevada, Arizona and Australia.
3. I am a registered member, in good standing, of the Association of Professional Engineers of British Columbia.
4. I am a consulting geologist.

*F. Holcapek*  
F. Holcapek, P. Eng.  
Geologist



Vancouver, B.C.  
November 16, 1973

## REFERENCES

1. Assessment Report No. 182 B.C. Department of Mines, Victoria, British Columbia.
  
2. Geological, Geochemical and Geophysical Report on the Bob No. 1 to 4, Liz 166 and 167 and HL No. 1 to 8 and 20 to 25, for Juniper Mines Limited, D.R. Cochrane, P.Eng., A.Scott, B.Sc. Frank O'Grady, B.Sc., October 26, 1972.

**BRITISH  
COLUMBIA**

**JUNIPER MINES LTD  
(NPL)**

**WARREN CREEK PROPERTY**

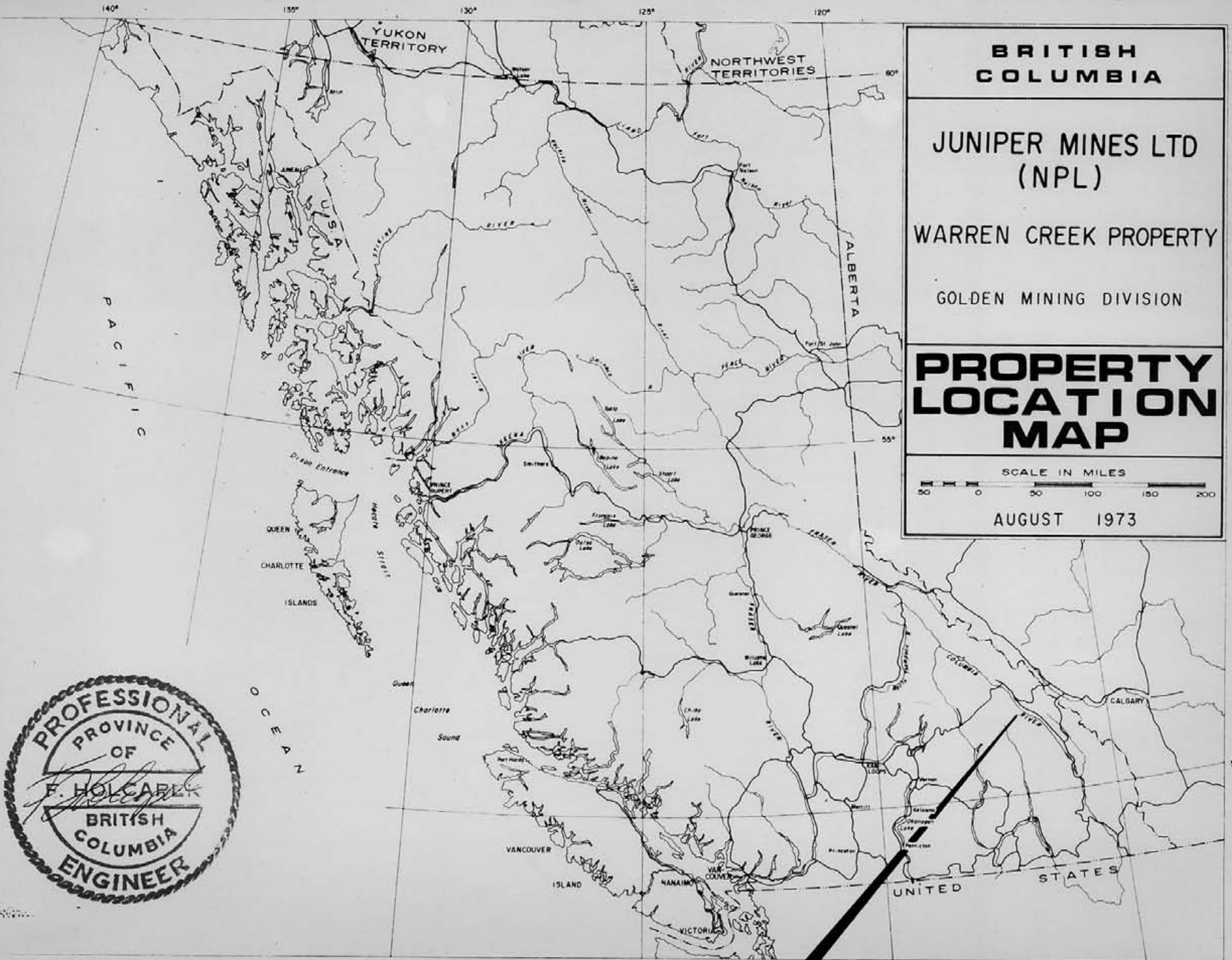
**GOLDEN MINING DIVISION**

**PROPERTY  
LOCATION  
MAP**

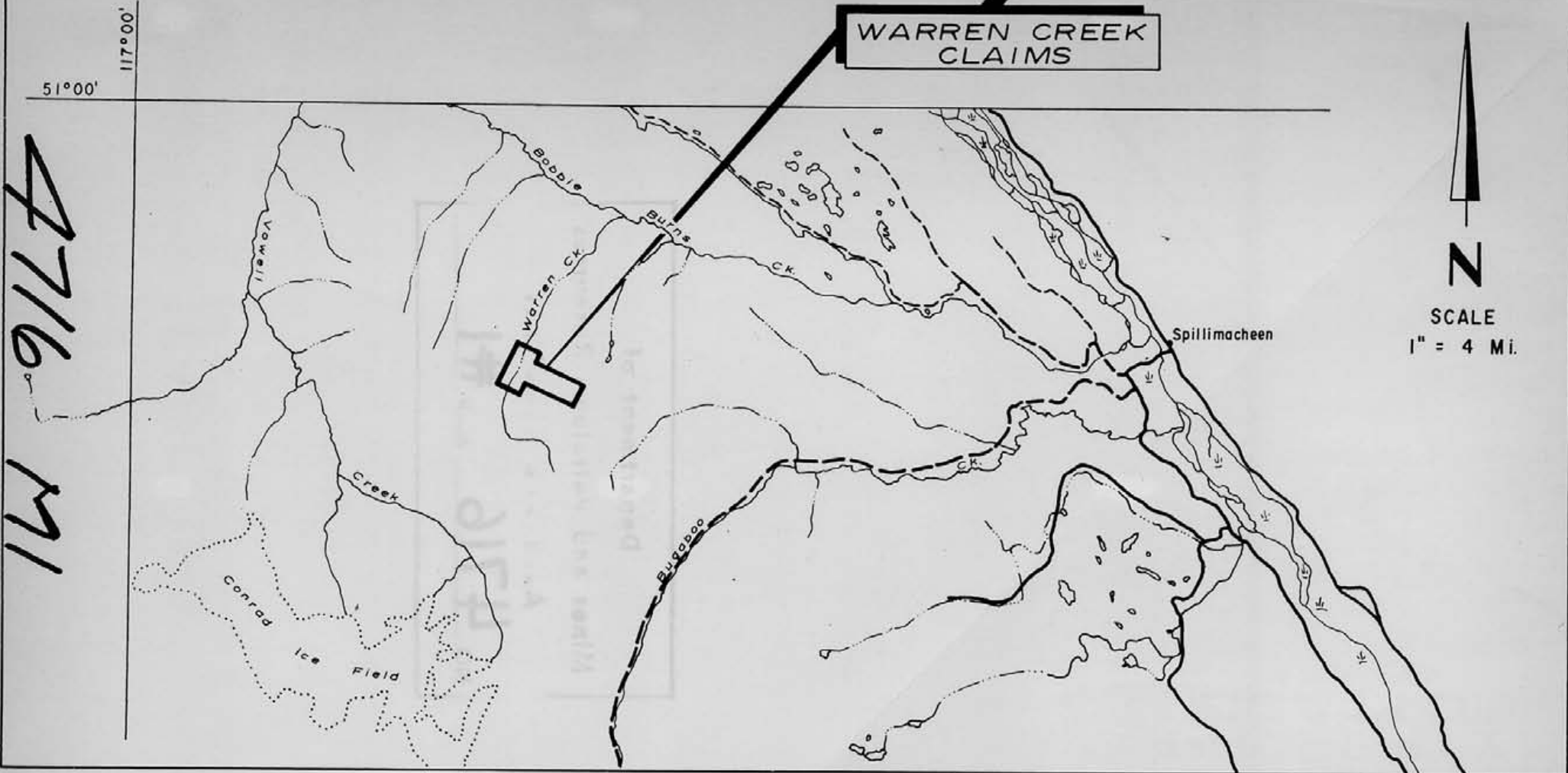
SCALE IN MILES



AUGUST 1973



**WARREN CREEK  
CLAIMS**



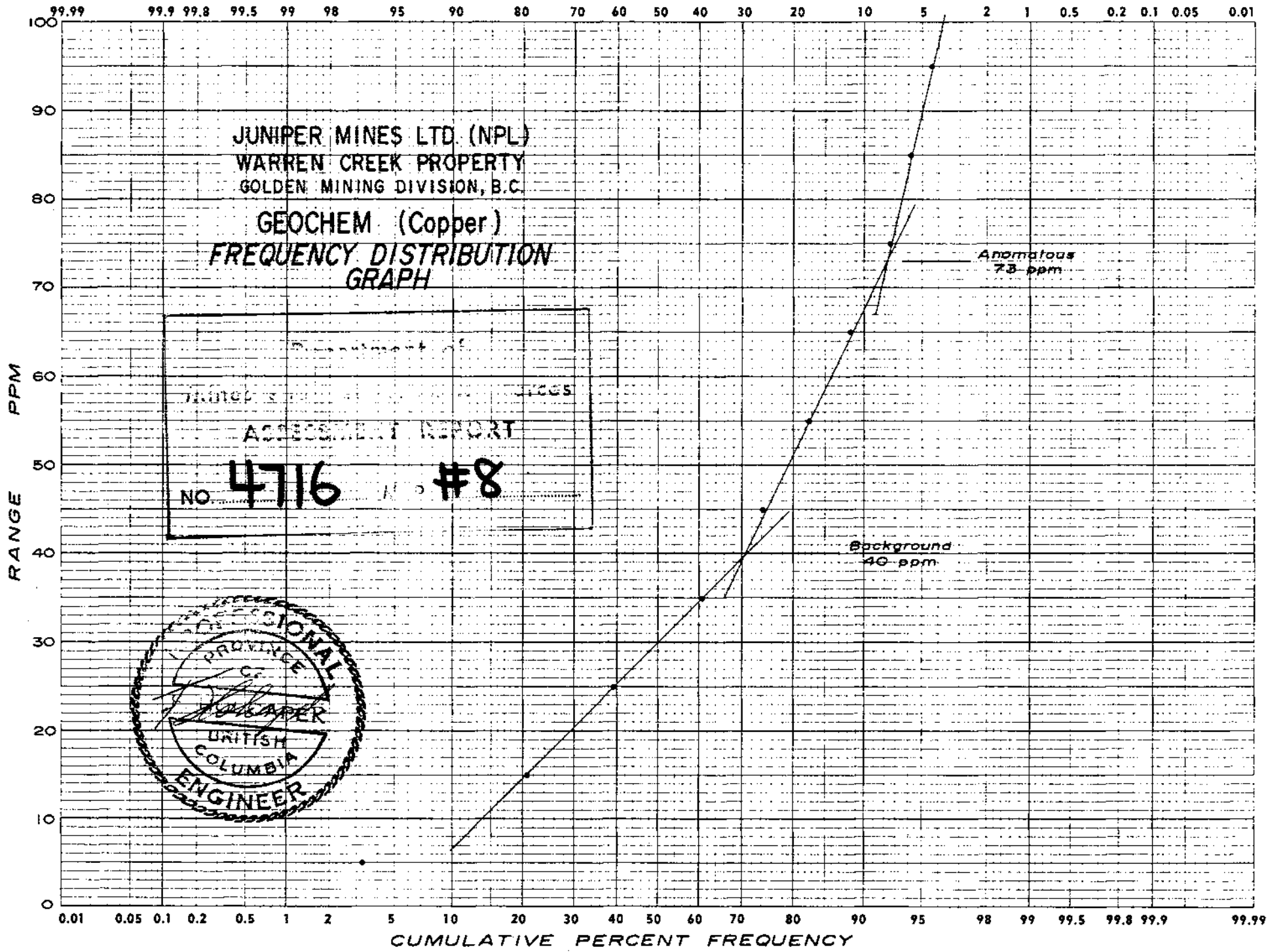
4716 M1

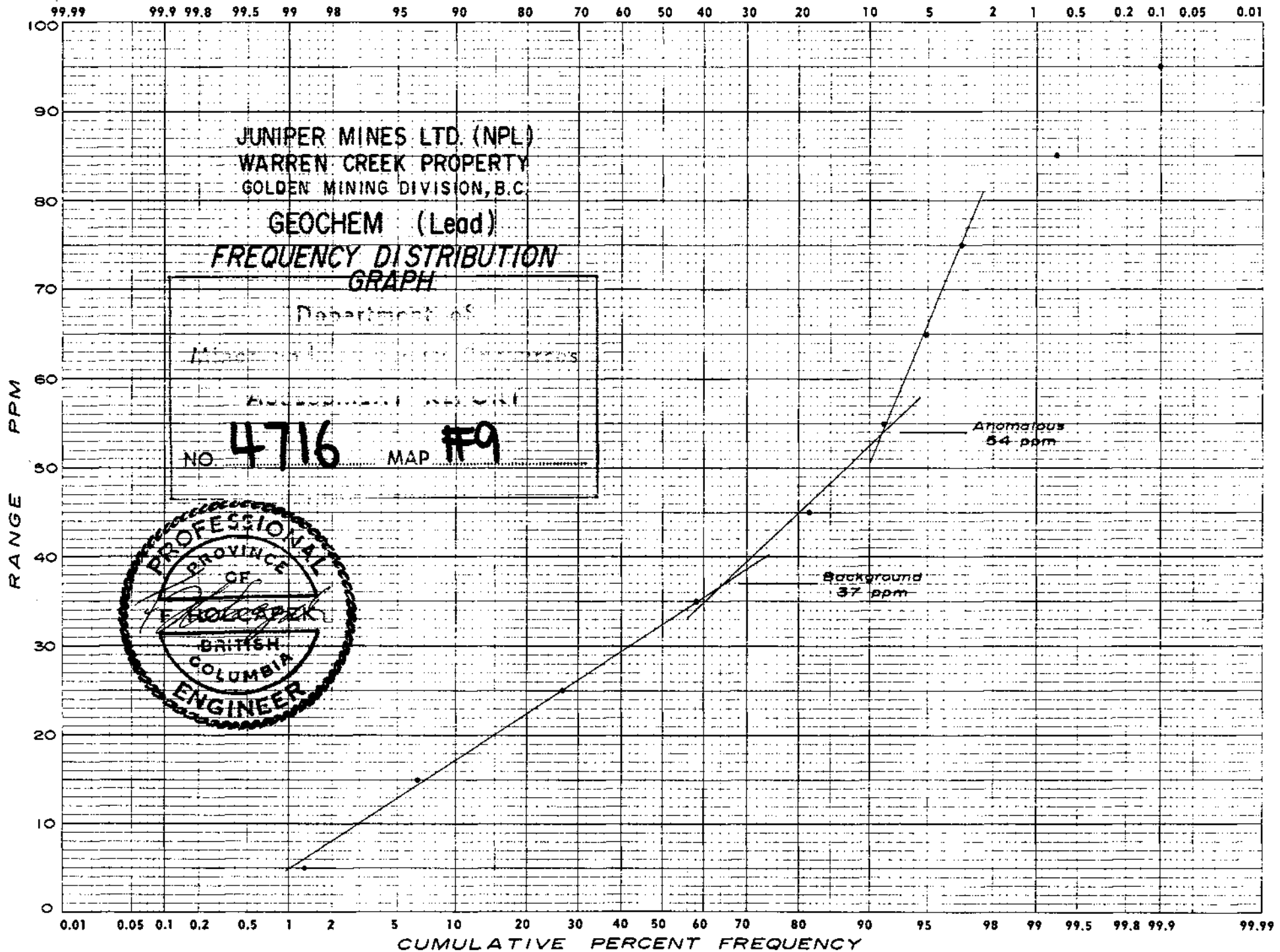


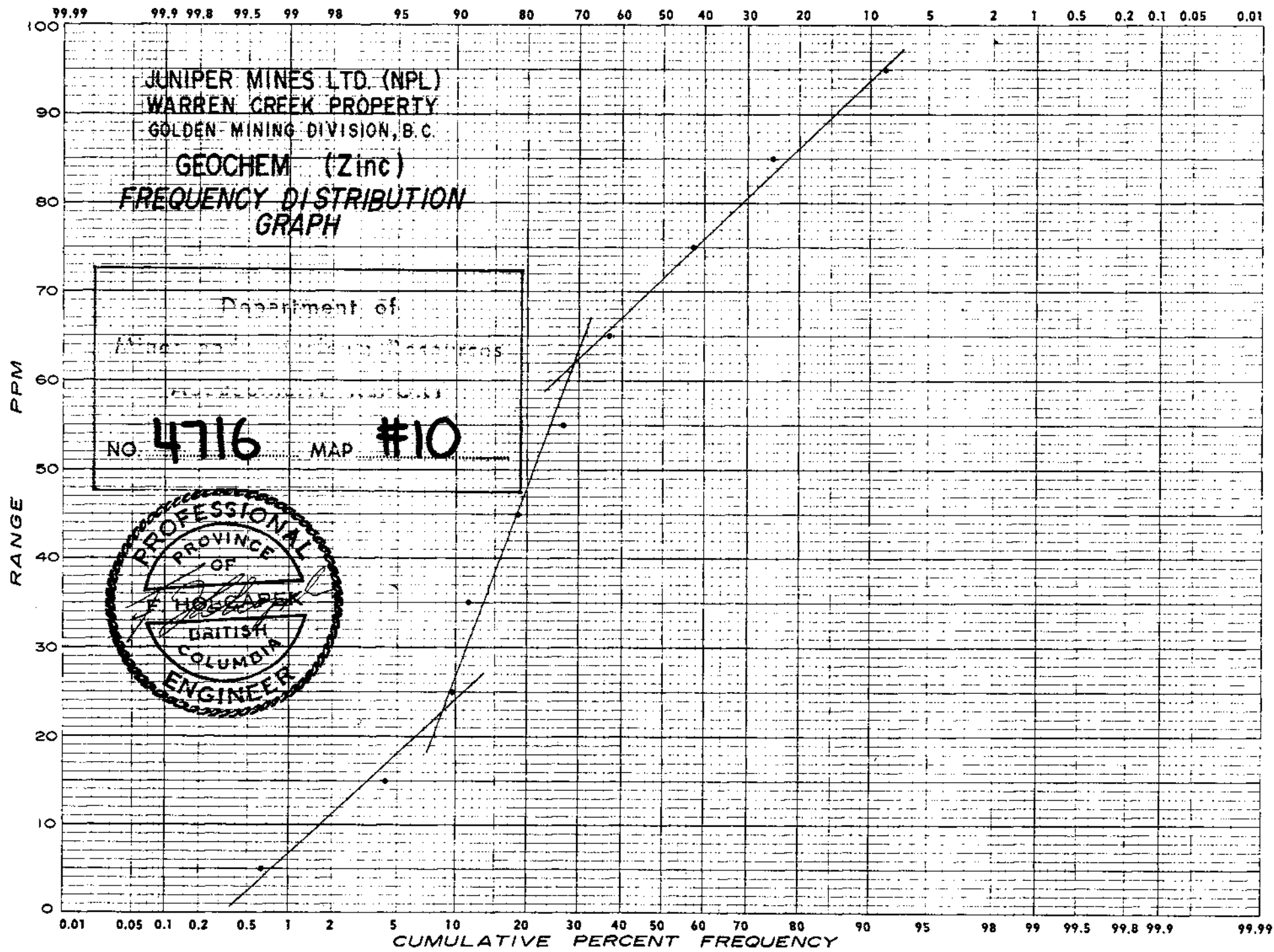
SCALE  
1" = 4 Mi.



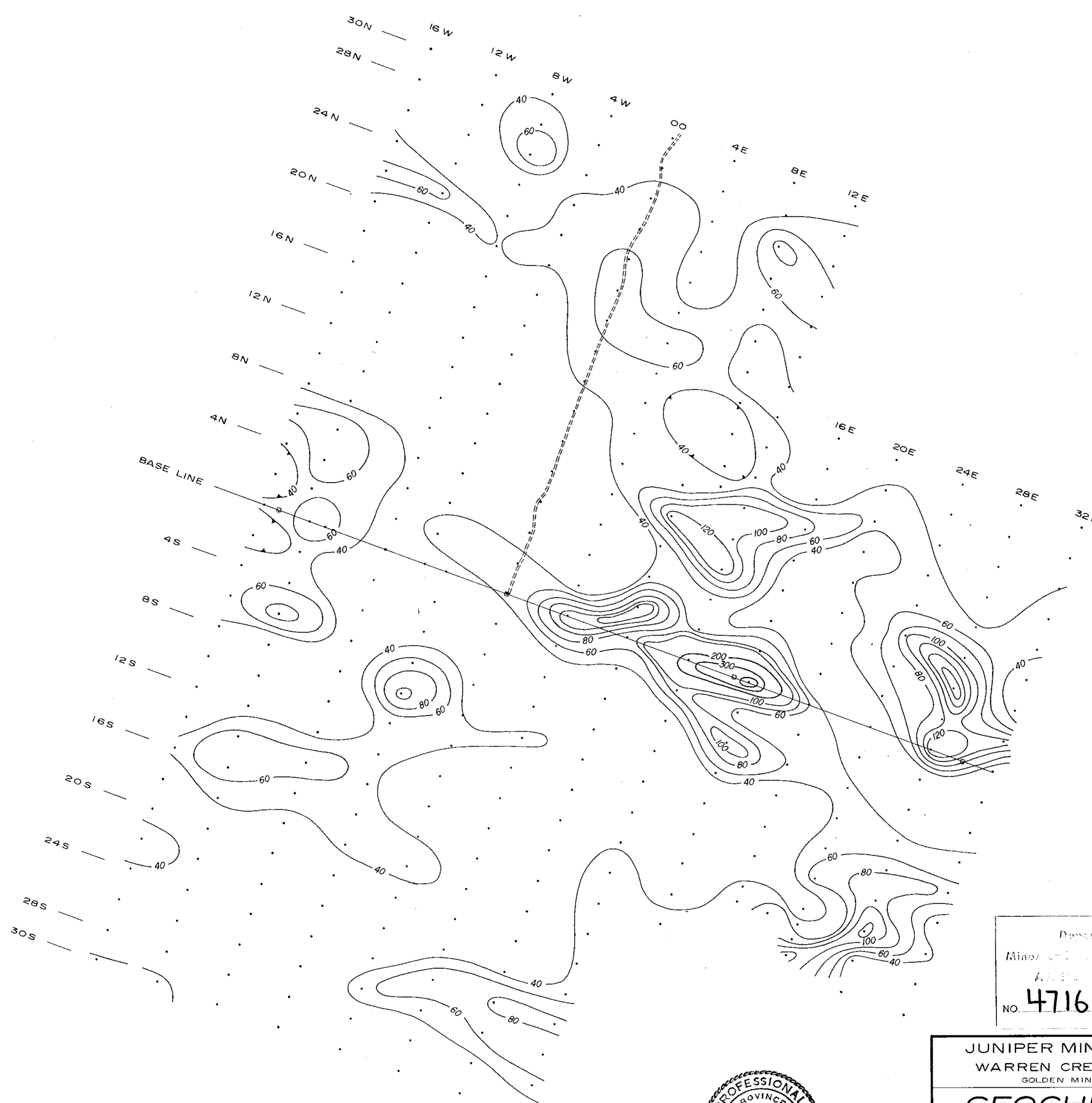
CLEARPRINT CHARTS











Department of  
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 Geological Survey of Canada  
 NO. **4716** #3

JUNIPER MINES LTD. (NPL)  
 WARREN CREEK PROPERTY  
 GOLDEN MINING DIVISION

**GEOCHEMICAL  
 SURVEY**  
 COPPER (PPM)

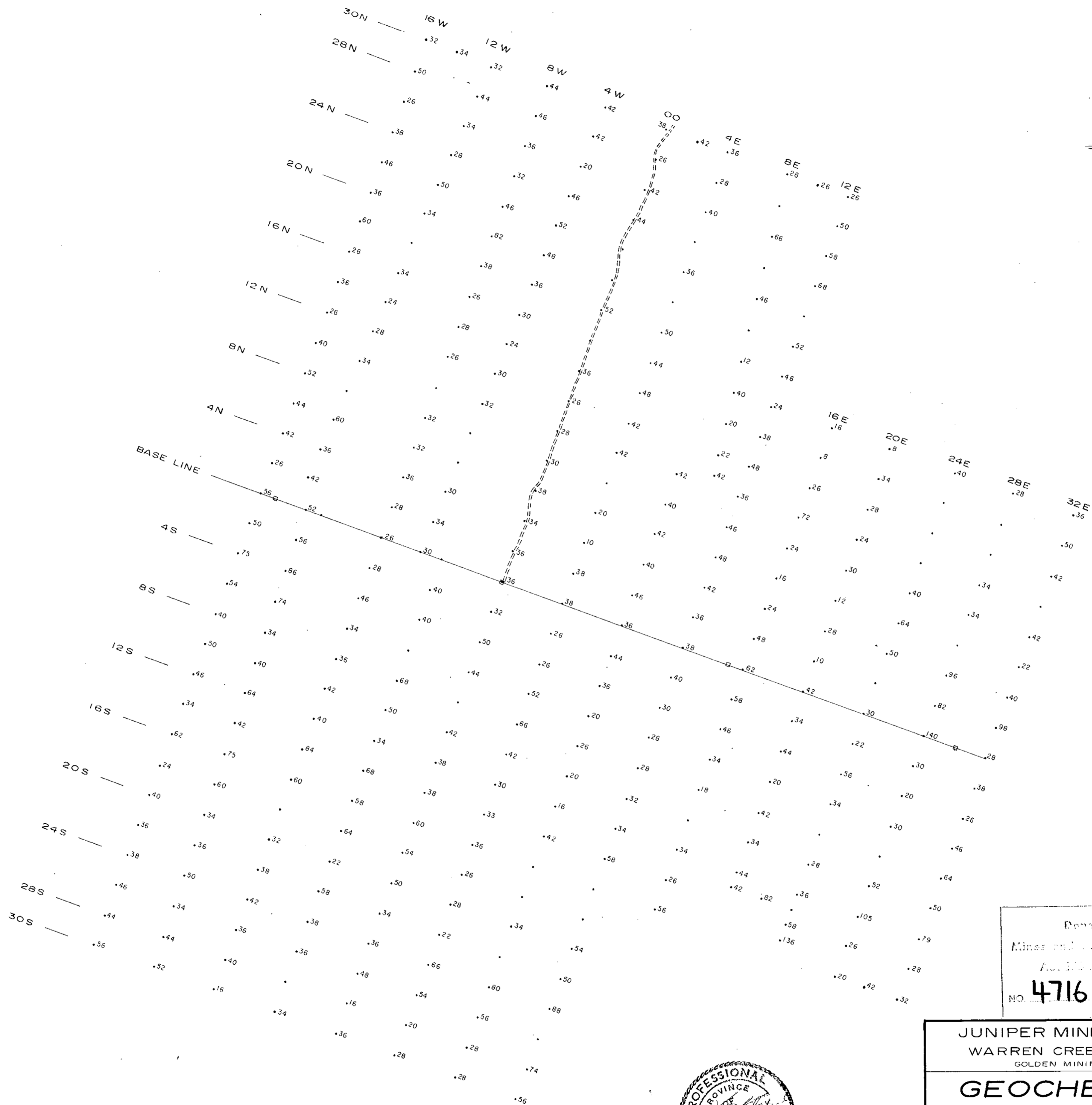
Contour Interval: 20 ppm



**4716-M3**

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NO. 4716 #4



4716-174

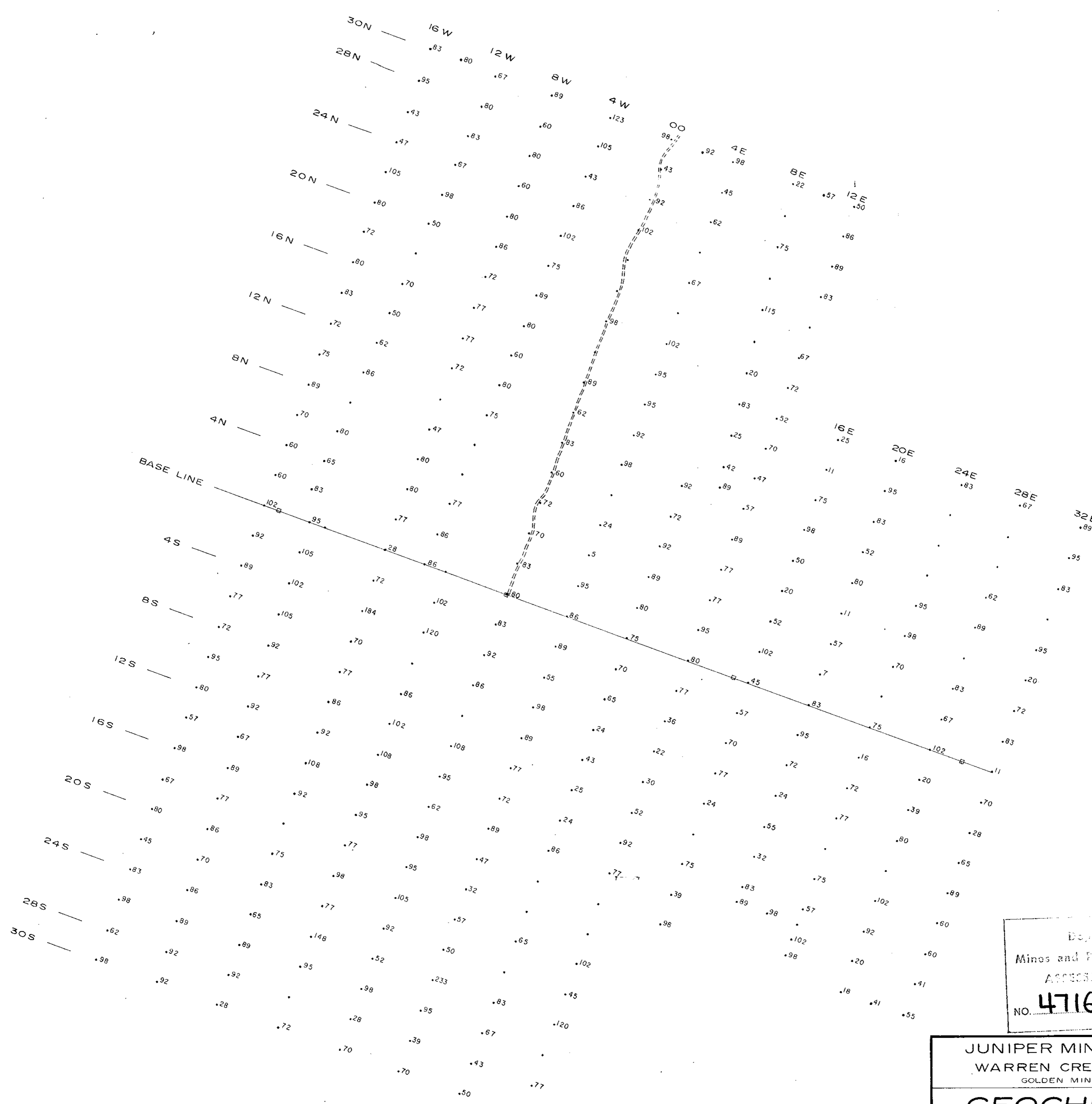
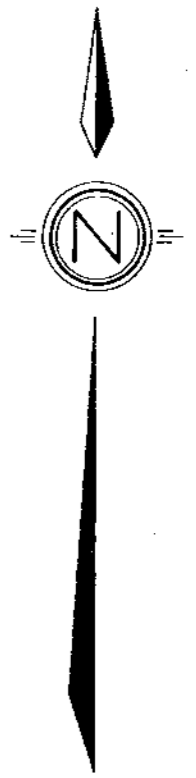
JUNIPER MINES LTD. (NPL)  
WARREN CREEK PROPERTY  
GOLDEN MINING DIVISION

**GEOCHEMICAL  
SURVEY**  
LEAD IN P.P.M.

SCALE IN FEET  
400 0 400 800 1200

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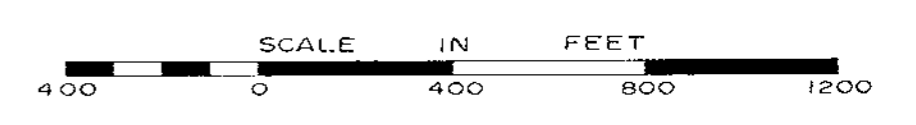




Department of  
Mines and Technical Resources  
ASSESSMENT REPORT  
NO. **4716** MAP #6

JUNIPER MINES LTD. (NPL)  
WARREN CREEK PROPERTY  
GOLDEN MINING DIVISION

**GEOCHEMICAL  
SURVEY**  
ZINC IN P.P.M.

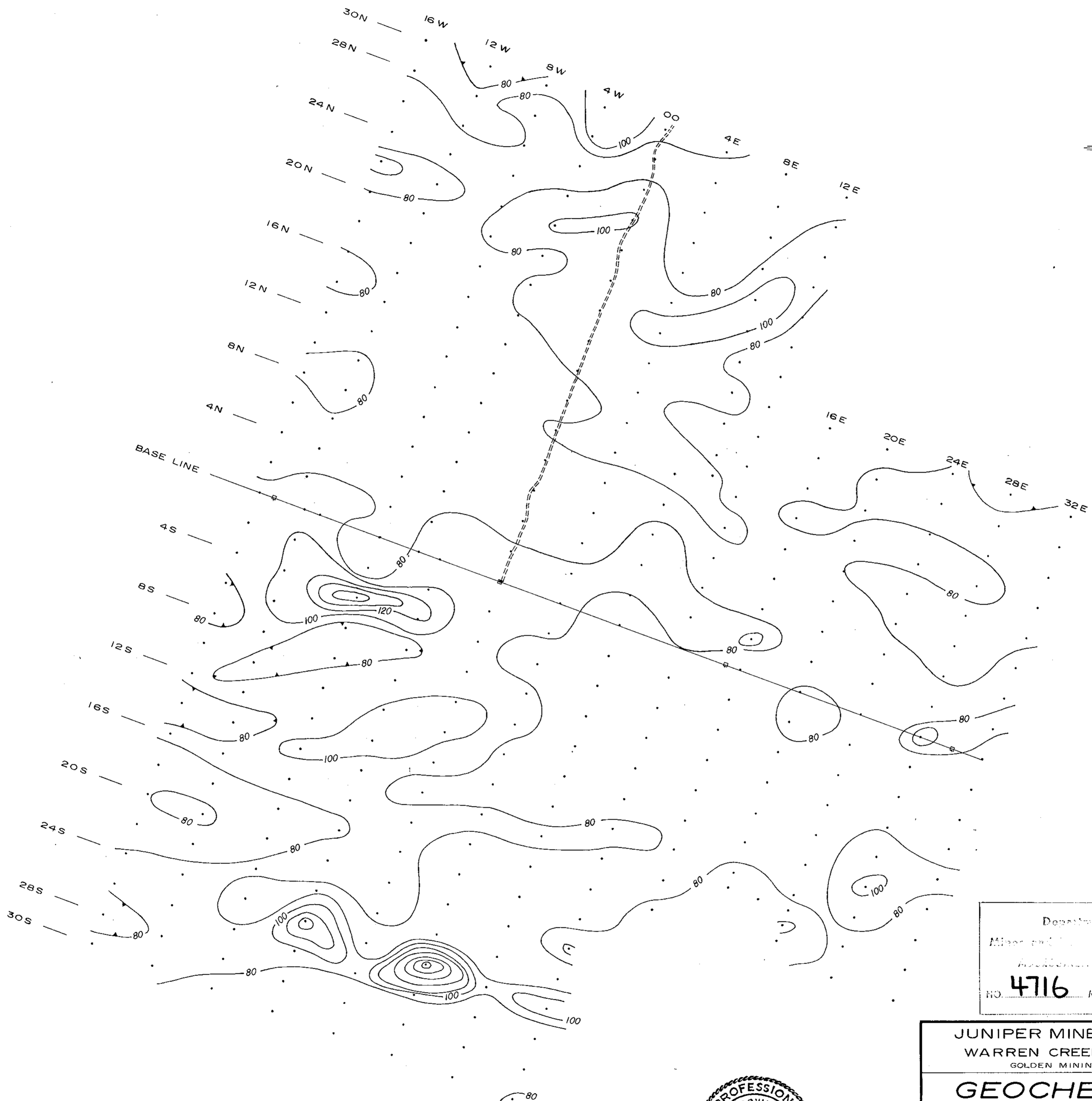


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**4716-176**





Department of  
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 Geological Survey of Canada  
 NO. **4716** MAP #7

JUNIPER MINES LTD. (NPL)  
 WARREN CREEK PROPERTY  
 GOLDEN MINING DIVISION

**GEOCHEMICAL  
 SURVEY**

ZINC (PPM)  
 Contour Interval: 20 ppm

SCALE IN FEET  
 400 0 400 800 1200

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**4716-M7**