PROPERTY FILE

GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE

PAR GROUP OF MINERAL CLAIMS

HOUSTON AREA, B.C.

FOR

CANADIAN SUPERIOR EXPLORATION LIMITED

BY

RICHARD J. OVERSTALL, B. Sc.

WILLIAM RAINBOTH, P. Eng.

Property Name : Par Group

Location : Goosly Lake Area

Omineca Mining Division, B. C.

54°N, 126° W, S.E.

Date started : July 26th, 1971

Date completed : August 7th, 1971

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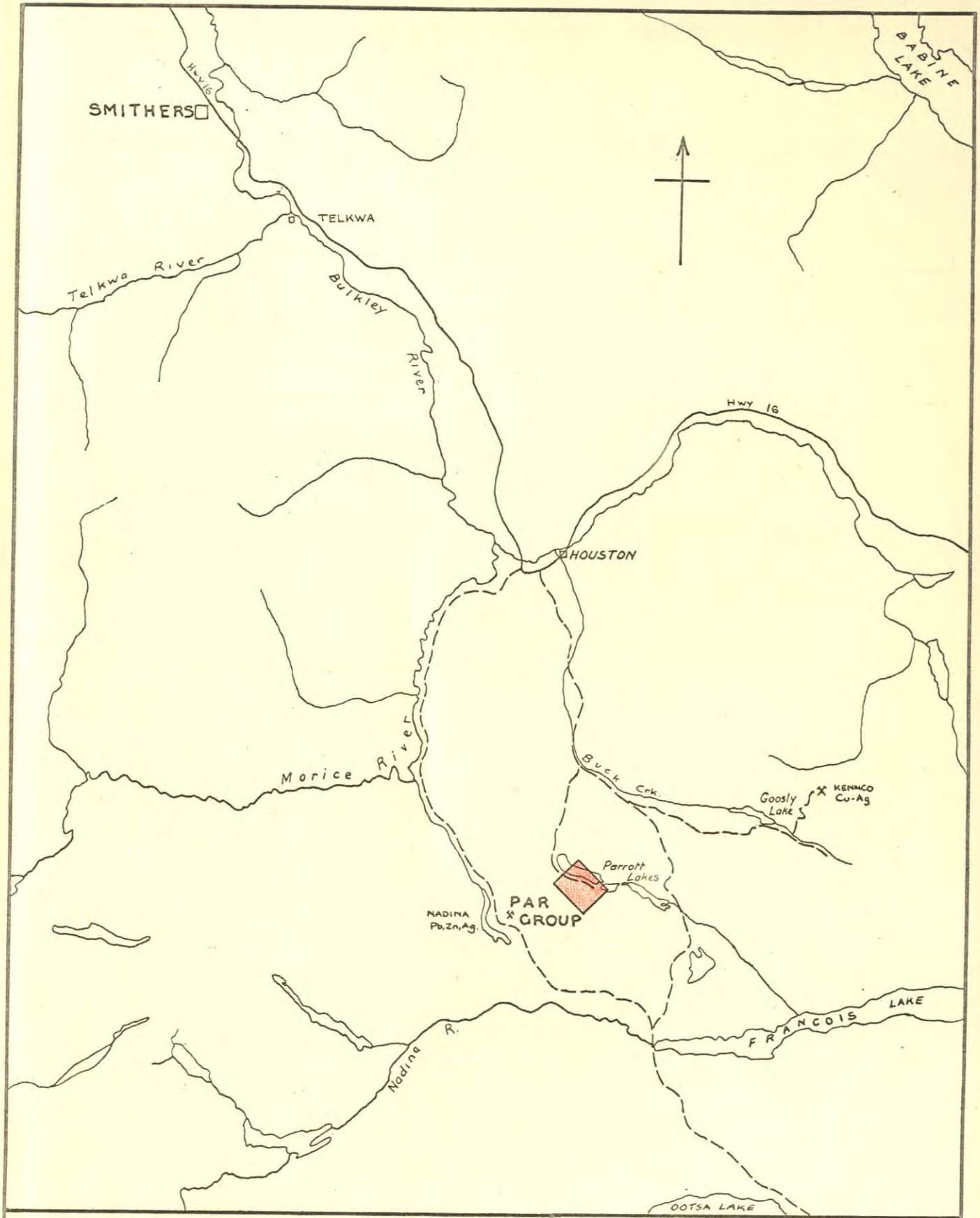

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CANADIAN SUPERIOR EXPLORATION LIMITED
SMITHERS REGIONAL OFFICE

PAR GROUP

Location Map

DRAUGHTSMAN: R.I.O. | SCALE: 1 in. = 8 miles | DATE: Dec. 1971

Plate 58-71-1

INTRODUCTION

The Par Group of 77 mineral claims and fractions is located 18 miles south of Houston in the Omineca Mining Division. They are exclusively owned by Canadian Superior Exploration Limited, and geological and geochemical surveys in 1971 by personnel of that company are the basis of this report

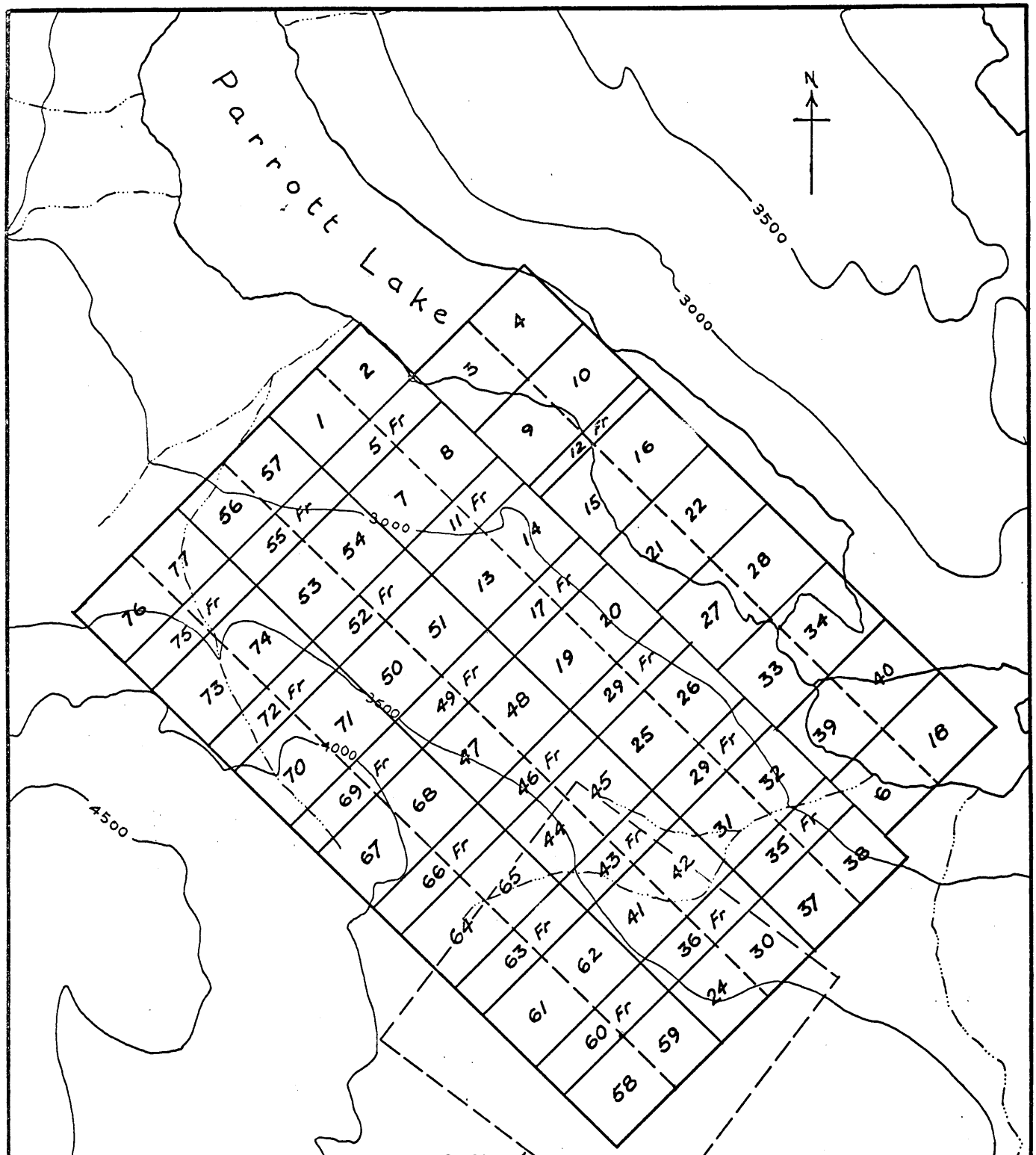
The claims form a contiguous block between the north-west end of Tekaiziyis Ridge and the largest of the Parrott Lakes. The northeastern boundary of the group lies within the lake itself. From the lake elevation of 2,760 feet the ground within the claim group rises to just over 4,000 feet, that is about 700 feet below the ridge summit.

The hill is fairly heavily wooded with mature spruce, jackpine and poplar. However deadfalls are not too frequent and the undergrowth is light except for alders and Devil's Club near water-courses and swamps.

Access is by a logging road which branches off the Buck Flats Road some 13 miles south of Houston. This road terminates at a small logged off area on the southeast boundary of the property but requires a four-wheel drive vehicle to traverse the final five miles. The total road distance from Highway 16 at Houston is 22 miles. (Plate 58-71-1).

HISTORY

The claims were staked to cover a small igneous intrusion mapped by British Columbia government geologist N. Church as being of



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PAR GROUP
Claim Location

DRAUGHTSMAN: R.J.O. | SCALE: 1 inch = ½ mile | DATE: Sept. 1971

Plate 58-71-2

inches
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centimetres

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BRITISH COLUMBIA GEOLOGICAL SURVEY

similar petrology to the one on Kennco's copper-silver Goosly Lake property (B.C. Dept. of Mines and Petroleum Resources, Preliminary Map No. 6, 1971). The staking was carried out between January 2nd and January 11th, 1971 and the claims recorded on January 21st by J.D. Murphy for Canadian Superior Exploration Limited (Plate 58-71-2).

The 'Gary' group of 16 claims, indicated on claim map 93 L/2E(M) as covering the western edge of the intrusive, was subsequently found to lie on the southern corner of the Par Group. A geochemical survey was filed for assessment by Summit Oils Limited in September 1970 but no work was recorded in 1971. Therefore the ground is now open and all the Par claims are in good standing.

There was no evidence on the ground of any other claims being held on the property, although marked flagging indicates that creeks in the area had been silt sampled on at least three different occasions.

CONCLUSIONS

Any copper-silver mineralization of the Goosly type on the property is likely to be under an unknown thickness of Tertiary cover. The geochemical surveys presently reported show no indications that such a situation exists but it is possible that there would be no surface geochemical expression of the mineralization in any case.

RECOMMENDATIONS

1. A magnetometer and V.L.F. electromagnetic (EM-16) survey should be carried out over all except that part of the property above 3,500 feet in elevation. That would be about three quarters of the claim group and involve about 25 line miles.

2. Further, more detailed and systematic, rock sampling with analysis for mercury, arsenic and fluorine as well as copper and

silver should be undertaken in conjunction with the above.

GENERAL GEOLOGY

The Parrott Lakes - Goosly Lake area is located at the northwest end of the Interior Plateau of British Columbia, an area of only moderate relief lying between the Coast Range intrusions and the Quesnel Trough. The plateau is largely underlain by Upper Cretaceous and Tertiary continental extrusives resting on folded Jurassic island-arc volcanics which are exposed as windows through the younger rocks. Immediately to the north of the Par Group a major northeasterly-trending structure, the Skeena Arch, has uplifted the Jurassic rocks to form the mountainous Bulkley and Babine Ranges.

The oldest rocks in the area are therefore the Lower Jurassic andesite volcanic flows and pyroclastics with some sedimentary horizons. Generally lying above this sequence are sediments comprising greywackes, siltstones, mudstones, tuffs and minor conglomerate of Middle Jurassic age. The Mesozoic rocks are generally steeply folded in open north-easterly trending structures that locally may change as a result of intrusive doming.

Unconformably overlying the Mesozoic rocks are at least four ages of Tertiary volcanic flows and pyroclastics. In composition they range from dacites to basalts becoming more basic up the sequence.

Intrusive rocks ranging in composition from granites to gabbros invade all formations except the Miocene and Pliocene plateau basalts. The two Tertiary stocks on the Kennco property have been dated by K-Ar methods at 49 million years for a monzonitic feldspar-porphyry and at 56 million years for a biotite granite.

GEOLOGY OF GOOSLY LAKE DEPOSIT

Since the target being sought on the Par Group is an orebody with similar characteristics to those of Kennco's copper-silver deposit, a brief review of these characteristics is in order. Most of the information is from B.N. Church, B.C. Department of Mines geologist, either in published or verbally communicated form.

The copper-silver sulphides replace a 'crackle dacite' horizon in the Mesozoic volcanic sequence. This zone is about 200 feet wide and trends north-south dipping steeply to the west. Within the zone occur lenses of massive pyrite, pyrrhotite and chalcopyrite surrounded by a halo of disseminated pyrite, tetrahedrite and chalcopyrite which extends out into a chert pebble conglomerate. The mineralization lies immediately west of and adjacent to the feldspar-porphyry stock and may have some genetic relationship to it. The older granitic stock further west is weakly mineralized with chalcopyrite and molybdenite.

The deposit is known to have been detected by copper, silver and fluorine silt geochemistry and by mercury and arsenic rock geochemistry. Geophysical methods that have worked are S.P. and V.L.F. electromagnetic surveys. From the nature of the deposit E.M. and I.P. methods could also delimit mineralized zones under certain environments.

PROPERTY GEOLOGY

The basic geology of the Par Group was mapped by R.J. Overstall between July 27th and August 7th, 1971 after a preliminary helicopter reconnaissance on April 22nd, 1971 to locate rock outcrops and scout camp sites.

Outcrop information was recorded on transparent plastic

sheets overlying copies of a B. C. government air-photograph enlarged to a scale of 1 inch = 800 feet. The same photograph forms the basis of the resulting geological map (Plate 58-71-3).

Rock exposure on the Par Group is very poor, generally being confined to the ridge on the southwest side, a small hill in the centre of the property and to two of the larger creeks on the southeast side. Consequently the relationships between the rock types observed can only be postulated except in one case where a contact was seen in a stream cut. The identification of rock type is from hand specimen only and is based on such crude parameters as colour, texture and those minerals identifiable under the hand lens.

Rock Types

1. BASALT - This unit is exposed along the more southern of the large creeks flowing through the property, and also in a small outcrop near the shore of Parrott Lake. The rock is a dark grey, fine grained micro-crystaline extrusive with a rough conchoidal fracture and no discernable structure. At one location the basalt is overlain by a crystal tuff and agglomerate. Whether this is a part of a seperate, younger unit is not known. The basalt is assumed to be the oldest unit because of its low elevation and the fact that it is intruded by at least one of the other units: it cannot be correlated with any of Church's divisions but could be Palaeocene or even Mesozoic.

2. BLADED FELDSPAR PORPHYRY - Typically this is a pale grey, fine grained igneous rock with large bladed plagioclase and smaller biotite phenocrysts. In some outcrops the feldspar shows some alteration to sericite. That at least part of the rock is probably intrusive is demonstrated in the creek where a near vertical north-south trending contact with the dark basalt is exposed. This could be a fault although no slickensiding was seen and the size of

the phenocrysts decreases somewhat at the contact.

This unit is probably equivalent to the minor intrusives of Church's Goosly Lake volcanics.

3. GABBRO - This rock is largely exposed on a small hill in the centre of the property which probably marks the limit of the outcrop. Generally the rock is a fine to medium grained mesh of plagioclase crystals with interstitial crystalline ferromagnesian minerals. These include some pyroxene, hornblende and possibly biotite. Often the rock is deeply weathered and precise mineral species are obscured.

The shape of the intrusion and the attitude of the fracture planes suggest an oval stock, elongate in the northwesterly direction and plunging to the southeast. To the south and north it intrudes the porphyry and the similar mineralogy of the two rock types could reflect a common source.

From available evidence the stock on the Par Group is similar to that adjacent to the mineralized zone on the Kennco property.

4. ANDESITE LAVAS - These green/grey and purple/grey vesicular rocks are exposed in the southern creak between the porphyry intrusive and the younger basalts on the ridge. An occasional feldspar phenocryst makes the rock look like the extrusive equivalent of the porphyry. However this is not at all certain and in the absence of observed contacts the position of this unit is the sequence must remain obscure.

5. BASALT - On the ridge the darkgrey/green and purple massive rock forms prominent bluffs. The amygdales are usually filled with white zeolites or blue-green celadonite. Flow banding, dipping at 40° to the northeast was seen in one outcrop.

6. DACITE - There is one outcrop of this salmon pink finely porphyritic flow rock lying above the upper basalts. It is probably a more acidic phase of that unit which likely correlates with Church's Miocene Buck Creek volcanics.

Structure

With such poor exposure little can be deduced on the relative attitudes of the rocks.

The bedded units are generally flat lying in the area and are assumed to be no different on the property. The one contact observed, within the lower basalt, dipped at 5° to the east.

One contact of the porphyry is vertical and probably intrusive - whether this situation holds for the whole mass is not known.

An east-west fault is indicated along the southern edge of the gabbro intrusion. This is deduced from air photograph linears and outcrop distribution. The linear extends for some six miles to the east.

A magnetometer survey over the property would do much to help unravel the structural problems.

Mineralization

No economic minerals were observed either in outcrop or boulders. Some of the porphyry fragments exposed in road cuts were slightly altered and had pyrite films on fractures. A few rounded boulders of the same material were more strongly altered to kaoline and sericite and had up to 1% pyrite.

On geological evidence then any further exploration should be directed towards the porphyry rock unit.

SILT GEOCHEMISTRY

In the period July 27th to August 7th, 1971, 106 silt samples were taken at approximately 800 foot intervals along all creeks draining the property. Minor springs and seepages were also sampled. The samples were analyzed for copper, silver, arsenic and mercury.

(a) Geochemical Methods:

1. The silt samples were taken by hand from the creek bed, care being taken that organic and bank material were excluded.

2. The samples were packaged in soil sample envelopes supplied by Canada Envelope Company of Montreal and made of "High Wet Strength, Kraft" brown paper with a wet strength of 32 lbs., measuring 3-1/2" by 8-1/2" when the flap of the envelope is folded.

3. The samples were partially dried in the field by suspending them in the bags under the roof of a tent. The bags have holes pierced in them for this purpose. In the laboratory, the samples were dried in a warm oven while still in the bags. The samples were screened through an 80 mesh nylon screen, the fines being used for analysis.

4. The tests for total copper, silver, arsenic and mercury were all carried out in the laboratory of Falconbridge Nickel Mines in Vancouver. No field tests were carried out.

5. The tests were performed as follows:

(i) Copper

A sample of the fines from screening the dried sample was digested with fuming perchloric acid for four hours in a pyrex beaker. The siliceous sediment was allowed to settle and the solution diluted to a measured volume with distilled and de-metallised water. An aliquot of the test solution was then taken and analysed for copper using an atomic absorption spectrophotometer manufactured by Perkins-Elmer. Carefully prepared standards were used for control.

(ii) Silver

Silver is determined by a standard atomic absorption method. 1 g. of the sample is boiled gently with 10 ml. of a 1:1 mixture of concentrated nitric and hydrochloric acids for 90 minutes. The sample solution is allowed to cool and then diluted to 50 ml. with demineralized water. The silver content of the solution is determined using a Jarrel-Ash 800 atomic absorption spectrophotometer.

(iii) Mercury

Mercury is determined by the standard flameless atomic absorption method, using a Varian Techtron AA-4 atomic absorption spectrophotometer. 0.5 g. of sample is digested with 10 ml. of cold, concentrated nitric acid for 30 minutes, after which the solution is diluted to 50 ml. with demineralized water. 10 ml. of a 3% sodium chloride/hydroxylamine chloride solution is then added, followed by 5 ml. of 10% stannous chloride solution. This reduces all the mercury present in the sample solution to its elemental form. Mercury vapour is collected by bubbling air through the solution and is then swept through an absoprtion cell by the air flow. The operator notes the peak absorption signal given by the sample at the 2537A mercury absorption line. The mercury content of the sample is then determined from a daily calibration curve prepared from standard solutions.

(iv) Arsenic

Arsenic is determined by a standard colorimetric technique. 0.25 g. of sample is fused with 1 g. of potassium bisulphate and the fused material leached with 5 ml. of 0.5 M hydrochloric acid. 2 ml. of this leach solution is added to 2 ml. of 2.5% potassium iodide solution and diluted to 10 ml. with 0.75% stannous chloride solution. Approximately 4 g. of zinc pellets are added and the test tube capped with a Gutzeit tube containing a slip of mercuric chloride impregnated filter paper. The apparatus is left for 30 minutes, during which time arsenic present in the sample is converted to arsine by nascent hydrogen, produced by the reaction of zinc on hydrochloric acid. This hydrogen also serves as a carrier, sweeping arsine from the reaction vessel and through the Gutzeit tube. Arsine reacts with the mercuric chloride paper to give a yellow or orange spot, the colour intensity being proportional to the amount of arsine generated. The arsenic content of the sample is determined by comparing the colour of this spot with previously prepared artificial standards.

(b) Discussion of Results

The values for all metals were low. The thresholds for copper and silver, calculated at mean plus 2-1/2 standard deviations are 23 ppm and 0.8 ppm respectively. For these metals there were only three or four samples above threshold and none greater than twice the threshold. In fact the highest value for copper was only 29 ppm so it is unlikely that the silts had geochemical contact with any copper-silver mineralization (Plate 58-71-4).

The Kennco deposit has a distinct mercury and arsenic halo in the unmineralized rock about it. If a blind deposit existed on the Par claims analysis for these elements could provide targets

for further exploration even if the economic metals being sought had no surface geochemical expression.

The results for arsenic were consistantly at less than 5 ppm and therefore of no diagnostic value. The threshold value for mercury was calculated at 160 ppb. Only six samples exceeded this value and none were greater than twice threshold. Both the few high mercury samples and the even fewer high copper and silver samples occur in the southern part of the claim group and probably reflect the greater amount of bedrock exposure there (Plate 58-71-5).

ROCK GEOCHEMISTRY

In the course of the geological mapping ten samples were taken of the two intrusive rock types. Random chips were taken over the whole outcrop so that a fairly representative sample was being considered.

After crushing a 50 g. sample was split off and ground to -80 mesh. The resultantpowder was then treated to the same analytical processes as the sieved silt samples described above. Analysis in this case was for copper and silver only.

There was a somewhat higher copper content in the rock than in the silts with values ranging up to 73 ppm. Silver was lower, in many cases below the detection level. None of the values were anomalously high although there appears to be an increase in copper content towards the east-west fault.

DISCUSSION OF GEOLOGY AND GEOCHEMISTRY

The petrology of the intrusive stock on the Par Group is very similar to that at Goosly Lake. The same intrusive level

is presently exposed in both cases as the stocks invade, at least in part, their own extrusive equivalents.

Noticably absent from the Par Group is any geochemical response and any exposure of the folded Mesozoic volcanics that host the Kennco ore horizon. Both these omissions could be explained if a mineralized Mesozoic horizon existed close to the stock under an inderterminate depth of Tertiary cover.

Assuming for the moment that mineralization under cover greater than 500 feet would not be economical the best test of the hypothesis would be a V.L.F. electromagnetic (EM-16) survey preceded by a detailed magnetometer survey to aid interpretation. Also a more complete and systematic rock sampling programme with analysis for mercury, fluorine and arsenic in addition to copper and silver.

Dated at Smithers

December 22nd, 1971

Richard J. Overstall B. Sc.

William Rainboth P. Eng.

APPENDIX I

ASSESSMENT DETAILS

PROPERTY NAME	:	PAR GROUP
OWNER	:	Canadian Superior Exploration Ltd., 2201-1177 West Hastings Street, Vancouver 1, B. C.
LOCATION	:	Goosly Lake Area, Omineca Mining Division, British Columbia.
NUMBER OF CLAIMS	:	77
NATURE OF SURVEYS	:	Geological Mapping Silt Geochemistry

APPENDIX II

LABOUR COST BREAKDOWN BY EMPLOYEE

Employee	Position	Days Worked	Rate/Day	Cost/Employee
Bristol, M.	Expediter	4	25.00	100.00
Major, R.	Foreman	4	30.00	120.00
Murphy, J.	Supervisor	2	45.00	90.00
Overstall, R.	Geologist	18	40.00	720.00
Pshyk, A.	Prospector	17	25.00	425.00
				$ 1,455.00

APPENDIX III

COST STATEMENT

In partial support of an affidavit on application for certificate of work on Par claims #1 to #77 inclusive.

Costs incurred carrying out geochemical and geological surveys from July 26th, to August 7th, 1971.

LABOUR	
Salaries as per appendix II	$ 1,455.00
EXPENDABLE MATERIAL	
Groceries	117.96
Operating Supplies	81.35
TRANSPORTATION	
Company vehicle	405.36
Rented vehicle (Tilden)	143.75
Helicopter (Alpine Helicopters)	237.50
BOARD AND LODGING	139.76
ASSAYS AND DRAFTING	183.20
	$ 2,763.88

APPENDIX IV

CERTIFICATE

I, Richard J. Overstall, of the village of Telkwa, Province of British Columbia, do hereby certify that:

1) I am a Geologist resident at West Highway 16, Telkwa, British Columbia.

2) I am a graduate of the University of London, England (1964) with a B. Sc. (Hons.) degree in Geology.

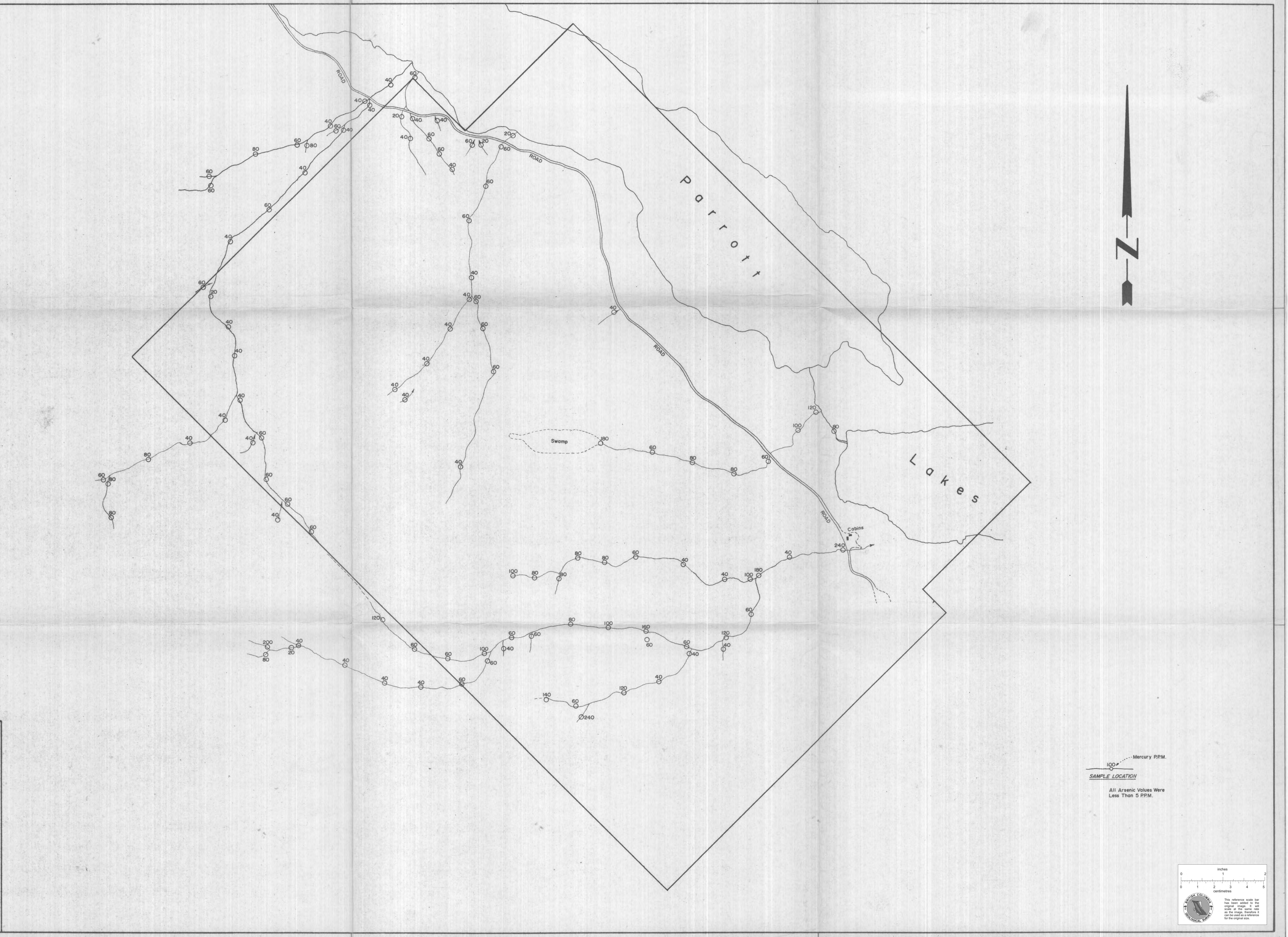
3) I have been practising my profession for six years.

4) I am a Fellow of the Geological Society of London and a member of the Institution of Mining and Metallurgy.

Dated at Smithers

This 22nd day of December, 1971

Richard J. Overstall, B.Sc.



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PAR GROUP

SILT GEOCHEMISTRY ARSENIC & MERCURY

DRAUGHTSMAN:	SCALE: 1in. = 800 ft.	DATE: OCT. 1971	58-71-5


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PAR GROUP
SILT GEOCHEMISTRY
COPPER & SILVER
DRAUGHTSMAN:
SCALE: 1in. = 800 ft.
DATE: OCT. 1971
58-71-4
Parrott Lakes
ROAD
Swamp
Cabins
N
SILVER PPM
COPPER PPM
10
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SAMPLE LOCATION
inches
centimetres
BRITISH COLUMBIA GEOLOGICAL SURVEY
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ROAD

ROAD

ROAD

ROAD

Parrott

Lakes

N

Swamp

Cabins

LEGEND

BEDDED ROCKS

DACITE: Pink, Flow? — 6

BASALT: Grey/Green Amygdaloidal — 5

ANDESITE: Green & Purple Vesicular — 4

BASALT: Black Massive Fine Grained — 1

INTRUSIVE ROCKS

3 — GABBRO: Fine To Med. Grained Bladed Plagioclase And Pyroxene

2 — BLADED FELDSPAR PORPHYRY

SYMBOLS

- BEDDING ATTITUDE
- FRACTURE ATTITUDE
- GEOLOGICAL CONTACT
- FAULT - INFERRED
- OUTCROP AREA
- GLACIAL STRIAE

ROCK GEOCHEMISTRY

49 COPPER PPM.
0.2 SILVER PPM.

N.D. - NOT DETECTED

inches
centimetres

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PAR GROUP

GEOLOGY

DRAUGHTSMAN:
SCALE 1in. = 800 ft.
DATE OCT. 1971
58-71-3