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3208

GEOLOGY, GEOCHEMISTRY AND MINERALOGY

BARB 1-8 CLAIMS

January 1 - August 20, 1971

MORESBY MINES LTD.

1.5 mile north of King Salmon Lake
58°45'N
132°55'W
N.T.S. Sheet 104-K-10

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3208 MAP

R.J. Cathro, P.Eng.

Archer, Cathro & Assoc. Ltd.

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Illustrations

INTRODUCTION

The copper occurrence described in this report was visited by the writer on August 5, 1970. The mineralization is unusual in several respects and several specimens collected during that visit were studied by geologist C.A. Main, B.Sc., during February and March, 1971 at the University of B.C.(1). On August 6 - 7, 1971 geologist Grant Abbott, B.A.Sc., and prospector T. Macleod mapped the geology of eight claims surrounding the showing, and collected about 25 geochemical samples in a few small areas of overburden.

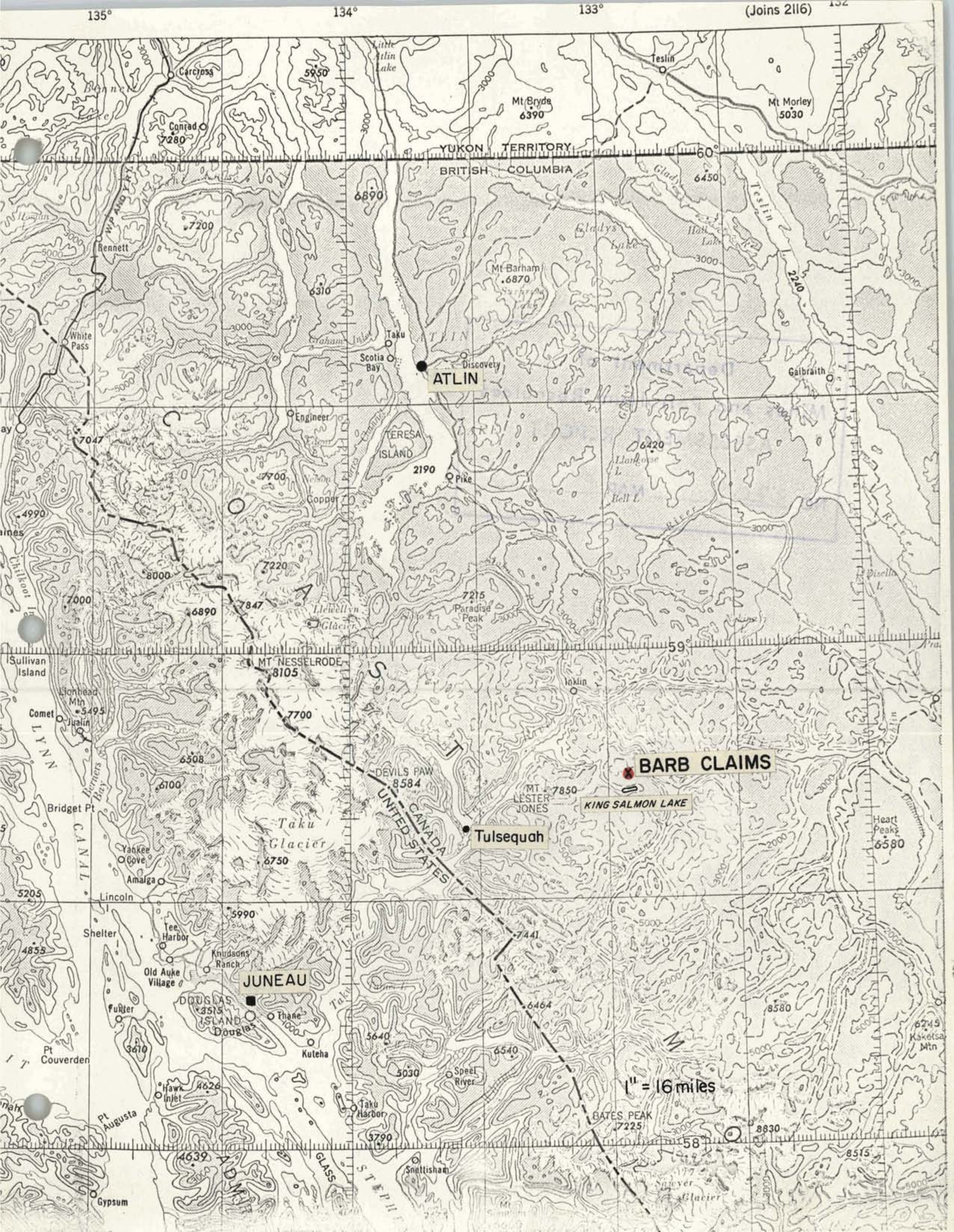
LOCATION AND ACCESS

The Barb claims are situated at 58°45'N, 132°55'W, 1.5 miles north of King Salmon Lake. They lie near the summit of a gentle 4500 foot mountain and are about 2000 feet in elevation above the lake. The nearest communities are Atlin and Juneau, 60 air miles north and west respectively. An index map is shown on the following page.

HISTORY

This showing, which is called the "B.W.M." in the literature, was discovered by prospector George Bacon in the early 1930's and was first staked by him and Ralph Wolverton for Cominco in 1947. Only limited trenching and sampling was done and the claims lapsed. Bacon and Wolverton restaked the

(1) Main, C.A. - Mineralogy of the King Salmon Breccia Pipe, Taku River Area, B.C., unpublished Geology 409 Report, U.B.C. 1971.


(Joins 2116)
135°
134°
133°
YUKON TERRITORY
BRITISH COLUMBIA
60°
59°
58°
Carcross
Conrad
7280
5950
Little Atlin Lake
Mt Bryde
6390
Teslin
Mt Morley
5030
6890
6450
7200
Rennett
Gladys Lake
Mt Barham
6870
6310
White Pass
Taku
Scotia Bay
Discovery
ATLIN
Galbraith
Engineer
7047
TERESA ISLAND
2190
Pike
6420
7700
Copper
4990
Chilkoot
7220
8000
7000
6890
7847
7215
Paradise Peak
Llewellyn Glacier
Sullivan Island
MT NESSELRODE
8105
Inklin
Lionhead Mtn
5495
Comet
Jualin
7700
LYNN CANAL
6508
DEVILS PAW
8584
BARB CLAIMS
6100
MT LESTER JONES
7850
KING SALMON LAKE
Bridget Pt
Berners Bay
CANADA
UNITED STATES
Tulsequah
Heart Peaks
6580
Taku Glacier
Yankee Cove
6750
Amalga
5205
Lincoln
5990
Shelter
Tee Harbor
7441
4855
Knudsons Ranch
Old Auke Village
JUNEAU
DOUGLAS ISLAND
3515
6464
Funter
Douglas
Thane
8580
5640
Kuteha
6245
Kakétsa Mtn
3610
6540
Pt Couverden
5030
Speel River
Hawk Inlet
4626
1" = 16 miles
Taku Harbor
Pt Augusta
BATES PEAK
7225
3790
8830
4639
Snettisham
8515
Gypsum
Sawyer Glacier

showing in 1949 and optioned it to Hudson Bay Mining and Smelting, who trenched further and drilled two EX-size core holes, totalling 943 feet, in 1950. This early work is described in the 1950 Annual Report of the B.C. Minister of Mines, pp A75-A76, in which the showing is described as a shear zone. According to this report, the drilling was interrupted by a forest fire which destroyed the camp and the Hudson Bay option was terminated after the fire. The showing was staked several times in the following years, but the only work prior to 1970 appears to be a small airborne and ground magnetometer survey in 1964, which was made available to the writer by Newmont Mining Co. Ltd.

GEOLOGY

The regional geology was published in 1970 as G.S.C. Map 1262A which shows that in the vicinity of King Salmon Lake, an intrusive complex cuts a late Paleozoic and early Mesozoic sedimentary basin which lies on the east side of the Coast Range Complex. The complex consists of basic volcanic flows, pyroclastics and small batholiths of Triassic age, small Jurassic stocks, and major batholiths, dike swarms and related acid volcanics of Cretaceous and Tertiary age.

A northeast dipping thrust, the King Salmon Fault, which lies 2000 feet northeast of the showing, is the major structure in the vicinity of the Barb claims. A branch of this fault passes one mile to the southwest of the showing. The main rock

types between these faults in the King Salmon Lake area are coarse clastic sediments and basic volcanic flows of the upper Triassic King Salmon Lake Formation.

Outcrop and felsenmeer is abundant on the claims. Rocks of the King Salmon Formation are the oldest and most abundant and consist of aphanitic green and grey andesite and tuff beds which strike north and dip moderately east. In a narrow band along the eastern boundary of the claims and along several fracture zones these beds are heavily fractured and contain abundant pyrite as disseminations and veinlets. The King Salmon Thrust cuts the northeast corner of the claim group and is marked by a massive fine grained white limestone of the younger Sinwa Formation. Small stocks of medium grained biotite hornblende quartz diorite, feldspar porphyry dikes and a breccia zone intrude the King Salmon units. G.S.C. mapping indicates that the stocks are mid Jurassic to early Cretaceous in age. No age relationship could be seen between the quartz diorite and feldspar porphyry but the breccia appears to cut the feldspar porphyry and contains predominantly feldspar porphyry fragments. A thin section of the porphyry showed that it is close to quartz monzonite in composition. The surface geolgoy is shown on Figure 2.

The main breccia pipe is extremely irregular in outline and is 1300 feet long and up to 300 feet wide. It has weathered to talus and is moderately limonitic. Weathering releases the

fragments from the breccia matrix and this tends to mask the true nature of the texture. Breccia fragments are angular and average 3 - 6 inches in length, occasionally reaching 12 inches. They are composed of porphyritic felsic material which has a composition similar to the nearby porphyritic stock, although with a finer-grained texture. The fragments are altered to low argillic facies. The matrix is mainly quartz and calcite with sulfides. Most of the mineralization occurs as massive sulfide fragments from 1/2 inch to 4 inches long although it occasionally forms irregular replacements within fragments, probably controlled by fractures. An odd feature of the mineralization is the compositional homogeneity of individual fragments - some are almost entirely pyrite whereas others are predominantly chalcopyrite or pyrrhotite. No mineralization was seen in the smaller breccia areas north of the main pipe.

Assays reported in the Hudson Bay trenching were 0.9% copper and 0.4 oz/ton silver for a length of 90 feet, 0.4% copper and 0.4 oz/ton silver for a length of 40 feet, and 0.6% copper and 0.1 oz/ton silver for 30 feet. The two drill holes were drilled through the breccia pipe from the east, about 500 feet apart. The southern hole, No. 1, was 425 feet long, inclined at 50° from vertical and cut the pipe between 51 feet and 257 feet. Scattered streaks of chalcopyrite, pyrite and minor pyrrhotite were reported for this interval

and the overall assay was 0.11% copper. The hole bottomed in "argillaceous sediments". Hole 2 was visually lower in grade and was not assayed. It was 518 feet long, drilled at an angle of 45° and bottomed in quartz diorite. The unassayed portions of the drill core were seen at the property by the writer, although all footage markers have been obliterated. A specimen of "argillite" examined by Main was found to be fine grained, crystalline tuff.

MINERALOGY

The study by Main has shown that the composition of the sulfides is unusual. Assays conducted by Chemex Labs Ltd. on selected sulfide specimens and country rock gave the following results (certificates 13850, 13873):

	Cu ppm	Mo ppm	W ppm	Pb ppm	Zn ppm	Ag ppm	Au ppB	Sb %	SO_4 %
Porphyry	38	5	<5	16	62	0.5	<30		
Volcanic	500	0	60	16	133	0.8	<30		
Tuff	562	0	<5	18	82	2.5	<30		
Breccia frag 1	19.7%	0	<5	26	2300	265.0	<30	<0.01	
Breccia frag 2	3.16%	0	<5	39	430	49.0	<30		
Breccia frag 3	1.22%	0	<5	30	349	38.0	<30		
Limonite from Breccia frag 3	1.10%	0	<5	200	1200	127.0	40		0.98

Chalcopyrite is by far the most abundant sulfide seen. It usually forms massive, irregular fragments but is also found as small (less than 0.1 mm) spots disseminated in calcite or filling pore spaces between quartz crystals. The large fragments are sometimes twinned. Sphalerite, pyrrhotite,

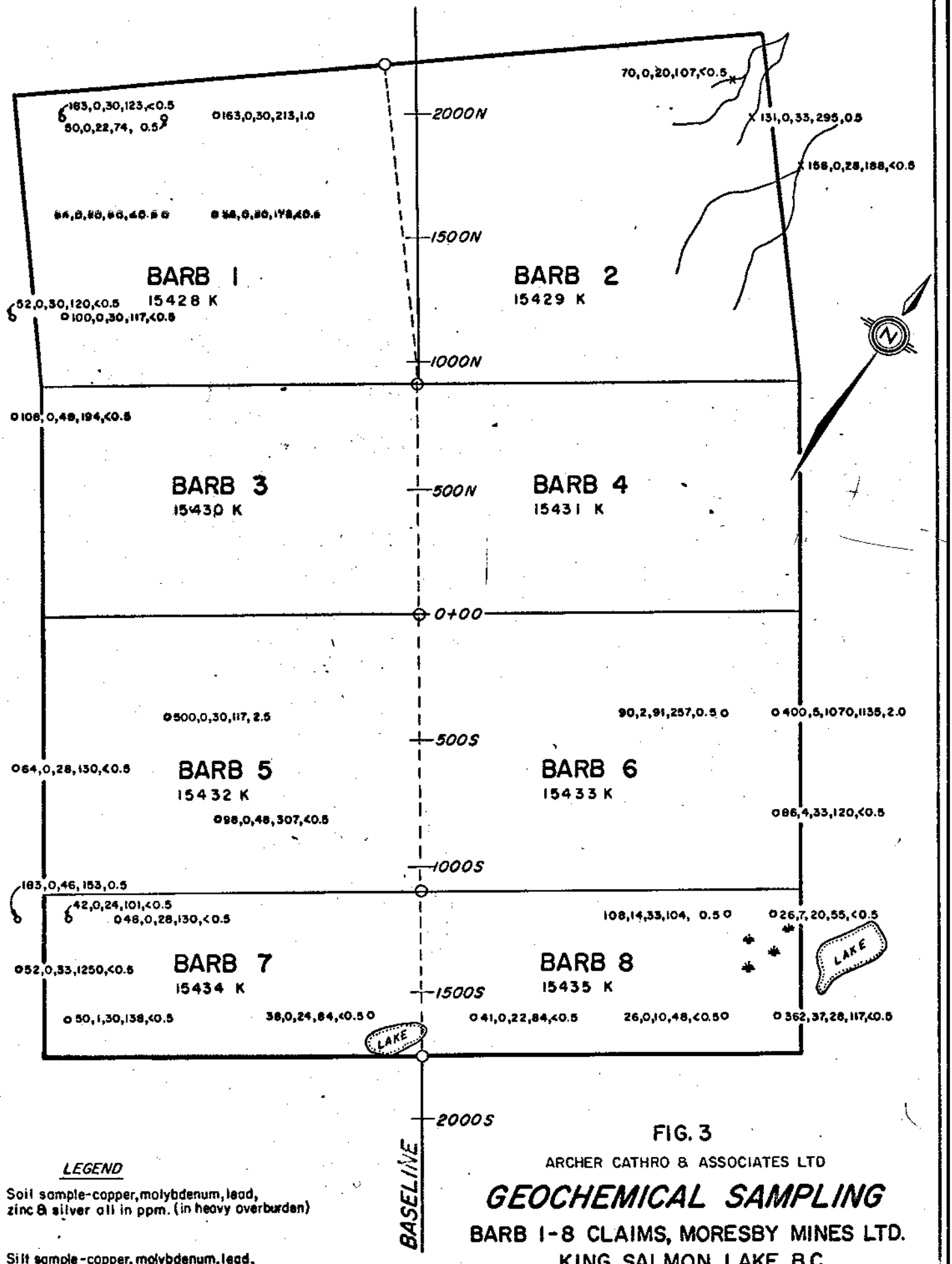
and stibnite occur in chalcopyrite in minor amounts and show exsolution textures. Stibnite occurs occasionally with calcite in late veins. A few flecks of another unidentified mineral were also seen. It is likely cubanite, enargite or berthierite.

Pyrite is the only other abundant mineral, although it occurs in much lower quantity than chalcopyrite. It is present as small grains in quartz gangue or with quartz inclusions in chalcopyrite fragments. Pyrite weathers at surface to form limonite, hematite and jarosite. A few euhedral grains of magnetite were seen in calcite.

GEOCHEMISTRY

Twenty-eight samples were collected at random locations in the course of geological mapping. Three were stream sediments from a creek draining to the northeast, while the rest were mixed B and C horizon sails. The latter were collected in local areas of thin overburden to give an indication of background metal contents over each rock type.

The reconnaissance sampling has shown that considerable variation occurs in the soil in the vicinity of the showing (see Figure 3). Since the lower slopes of the mountain to the southwest and southeast of the area mapped are largely covered by overburden and vegetation, a more extensive sampling program appears well justified. It is interesting that some samples are anomalous in copper and molybdenum whereas



LEGEND

- o Soil sample-copper, molybdenum, lead, zinc & silver all in ppm. (in heavy overburden)
- x Silt sample-copper, molybdenum, lead, zinc & silver all in ppm.

FIG. 3

ARCHER CATHRO & ASSOCIATES LTD

GEOCHEMICAL SAMPLING

BARB 1-8 CLAIMS, MORESBY MINES LTD.

KING SALMON LAKE, B.C.

SCALE 1" = 500'

500 0 500 1000

To accompany report dated Aug. 20, 1971

others are anomalous in copper, lead, zinc and silver. Thus, both origins for the copper mineralization could be supported.

SUMMARY AND CONCLUSIONS

The Barb claims cover a copper showing which occurs in a breccia pipe within a geological environment which is quite typical of porphyry copper deposits. The mineralogical evidence, and metal ratios determined from analysis of sulfide fragments in the breccia pipe, suggests a different origin for mineralization. Porphyry copper mineralization is normally associated with molybdenite and tungsten minerals. The total absence of molybdenite from this deposit together with the relatively high content of zinc and silver in the copper minerals suggests a different geological origin. The mineralogy and regional geology indicates the definite possibility of a massive sulfide deposit, such as Granduc or Brittania, occurring within a sheared or foliated section of the volcanic sequence or near the contact between volcanic and sedimentary units. If this theory is correct, the sulfides must have been carried vertically upwards in the pipe at the time of past-mineral intrusion, and a massive sulfide deposit might be found by deep drilling beside the pipe.

Alternatively, small lenses of massive sulfides similar in mineralogy to the fragments in the Barb pipe could conceivably occur near the fringes of a true porphyry copper deposit,

so that this second exploration possibility must be investigated as well.

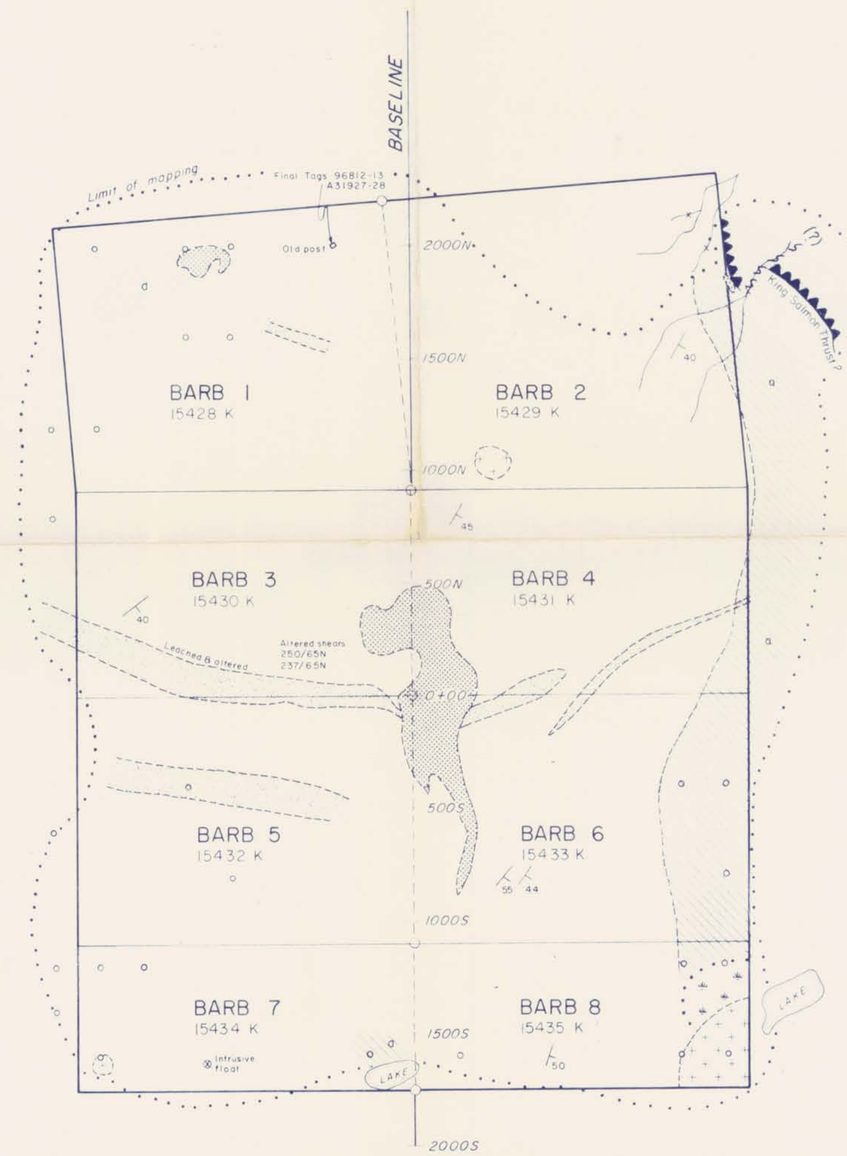
RECOMMENDATIONS

Further prospecting, supplemented by geochemical sampling in overburden areas, is warranted to show whether the mineralization in the breccia pipe is an indicator of either a porphyry or massive sulfide type occurrences nearby.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES LTD.

R.J. Cathro, B.A.Sc., P.Eng.



N

GSC UNIT

LEGEND

Breccia zone containing chalcopyrite

15 Grey feldspar porphyry

12B Medium-grained biotite-hornblende quartz diorite

SINWA FORMATION

9 Massive, fine grained white limestone

KING SALMON FORMATION

8 Dark green, grey, maroon microcrystalline andesite tuff
(a) Fractured tuff, abundant pyrite, pyrrhotite
Produces brown gossan

SYMBOLS

o Soil sample location, in heavy overburden

x Silt sample location

45 Orientation of bedding tuff

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ASSESSMENT REPORT
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G. Abbott, P.Eng
Aug 20/71.

M-2

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FIG. 2

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GEOLOGY MAP

BARB 1-8 CLAIMS, MORESBY MINES LTD.
KING SALMON LAKE, B.C.

SCALE 1"=500'

500 0 500 1000

Geology by G. Abbott & T. McLeod
under supervision of R.J. Cathro P.Eng.

To accompany report dated Aug. 20, 1971