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CYPRESS EXPLORATION CORP. LTD.
510 West Hastings St.,
Vancouver, B.C.
Report on
CARIBOO-BELL COPPER MINES LTD.
Cariboo Mining Division
July 22, 1968 C.J. Coveney, P.Eng.

LOOK FOR PART 2 SUPPLEMENT

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REPORT

ON

CARIBOO-BELL COPPER MINES LTD.
(BOOTJACK LAKE PROPERTY)
CARIBOO MINING DIVISION

FOR

CYPRESS EXPLORATION CORP. LTD.
510 WEST HASTINGS ST.
VANCOUVER, B.C.

BY

C. J. COVENEY, P. ENG.

VANCOUVER, B.C.

JULY 22, 1968.

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SUMMARY

The Cariboo-Bell Copper Mines Ltd., which was incorporated in December 1965, holds 58 contiguous mineral claims in the Cariboo Mining Division of British Columbia. The claims are located between latitude $52^{\circ} 30'$ and $52^{\circ} 35'$ and between longitude $121^{\circ} 35'$ and $121^{\circ} 42'$.

Exploration work on the property consists of a detailed geochemical survey, an induced polarization survey of nine line miles, about 38,000 lineal feet of trenching, approximately 50,000 feet of diamond drilling and 6300 feet of percussion drilling.

The claims cover a poorly exposed stock of granitic rocks including syenite, monzonite and diorite. The primary sulphides are chalcopyrite with minor bornite and pyrite. Secondary minerals include malachite and chrysocolla with small amounts of chalcocite, cuprite and native copper. The zone of secondary mineralization varies from 0 - 100 feet. Gold values are in the order of 0.01 oz. per ton. Silver values are low.

Metallurgical tests indicate recoveries ranging from 25% - 93% depending on the amount of "non-sulphides" present. Preliminary leaching tests indicate acid consumption in the order of 30# of acid per ton of ore.

The Cariboo-Bell staff have designed 4 pits (see Figures 1 and 2) with a combined tonnage of about 33,300,000 grading 0.50% Cu., 0.015 oz. Au. and 0.05 oz. Ag. Of the above tonnage, 23,400,000 grades 0.514% Cu. and 0.015 oz. Au. per ton. The remaining 9,900,000 tons averages 0.46% Cu. and contains varying amounts of "non-sulphides". The "non-sulphide" ore constitutes about 30% of the total ore and will not respond satisfactorily to conventional flotation.

From a study of plans, drill sections, etc., I feel that there is not enough detailed drilling to calculate reliable grade and tonnage figures. The mineral distribution is erratic and the Cariboo-Bell staff, in arriving at the above tonnage and grade, assumed both horizontal and vertical continuity that has not been proven.

From rough calculations, I estimate the total tonnage to be closer to 23,000,000 tons with a grade in the 0.4 - 0.45 range. Ten (10%) percent of this tonnage could be of the "non-sulphide" type. The mineralization is of uniformly lower grade and it is unlikely that many "plums" of high grade will be found. Sufficient drilling has been done to indicate that the chances of having missed a large low grade body is not likely.

After a study of the information made available to me, I feel that this property is not an attractive venture at this time.

INTRODUCTION

The Cariboo-Bell Copper Mines Ltd. which was incorporated in December 1965 holds 58 mineral claims in the area between Bootjack and Polley Lakes in the Cariboo Mining Division of British Columbia. Specifically, the claims are located between $52^{\circ} 30'$ and $52^{\circ} 35'$ north latitude and between $121^{\circ} 35'$ and $121^{\circ} 42'$ west longitude. Access to the property is by 54 miles of dirt road from the town of Williams Lake.

HISTORY

Attention was first drawn to the area from a study of airborne geophysical map #1533 G which shows a high magnetic anomaly just east of Bootjack Lake. In 1964, Mastodon - Highland Bell prospected the area and did a reconnaissance geochemical survey. The results were sufficiently encouraging that the area was staked and a more detailed geochemical survey undertaken. Early in 1965, Huntec Ltd. conducted an induced polarization survey involving nine (9) line miles and outlined 4 anomalous areas. The section of the property covered by the I.P. survey was selected on the basis of the geochemical anomalies. Between 1965 and 1967 approximately 38,000 lineal feet of trenching was done using two large tractors. Diamond drilling totalled about 50,000 feet and percussion drilling about 6300 feet.

A Japanese Company who were involved with the property withdrew in July 1967 owing to the large amount of oxide material present and the low recoveries on the preliminary metallurgical tests.

GEOLOGY

The claims cover a poorly exposed plug or stock of granitic rocks including syenite, monzonite and diorite. Within the stock and occurring as remnants or pendants are green to purplish volcanics reported to be of lower Jurassic age. (See Figure 1.) The granitic rocks are somewhat pinkish in color as a result of extensive potash metasomatism.

The primary sulphides are chalcopyrite, minor bornite and pyrite. Secondary mineralization consists of malachite and chrysocolla with minor amounts of chalcocite, cuprite and native copper. The vertical range of the secondary mineralization is reported to vary from 0 - 100 feet. Gold values are in the order of 0.01 ounces per ton with silver about 0.04 ounces.

METALLURGY

Metallurgical testing has been done on the ore by the Department of Energy and Resources, Ottawa; the Galigher Co. in Salt Lake City, Utah; and in Tokyo by a Japanese Company.

The Galigher Co. reports recoveries ranging from 25% - 93% and the Japanese Company from 39% - 85%. Recoveries for selected primary ore are in the 80 - 90% range. Material consisting of the "non-sulphide" ores is in the lower ranges.

The Department of Energy and Resources, Ottawa, indicates an 80% recovery by conventional flotation for material containing a ratio of 0.15 or less of non-sulphides to total copper.

Preliminary leaching tests by the Galigher Co. using sulphuric acid indicates consumption in the order of 30 lbs. of acid per ton of ore.

ORE RESERVES

The 4 pits shown on Figures 1 and 2 are the centres of the better grade of mineralization. The total tonnage calculated for the 4 pits by the Cariboo-Bell staff from surface trenching and vertical diamond drilling to a depth of 400 - 500 feet is 33,300,000 grading 0.5% Cu., 0.015 oz. Au. and 0.05 oz. Ag. Of this amount 23,400,000 is reported to grade 0.514% Cu. and 0.015 Au. per ton. The remaining 9,900,000 tons averages 0.46% Cu. and contains varying amounts of non-sulphides such as malachite and chrysocolla and will not respond satisfactorily to conventional flotation. That is - about 30% of the ore is of the non-sulphide type.

From a study of the plans and sections, I believe that any pit designs and tonnage figures are premature for the following reasons:

- (1) Continuity of the mineralization, both vertically and horizontally, has not been established.
- (2) Tonnage and grade figures are based on only a few drill holes.
- (3) The drill hole spacing is too wide-spread for reliable calculations since the mineral distribution is irregular.

PIT #3

The tonnage, grade and design of this pit appears to be based on 3 holes drilled along trench #14. The holes are S-23 drilled east at -54° , hole S-15 drilled vertically and S-29 drilled westerly at -40° . These holes have delimited a "plum" of ore about 200 feet wide and 300 feet deep grading 0.61% Cu. Unfortunately, from the drill logs it is not possible to determine how much of the copper mineralization is primary and how much is secondary.

Other holes drilled within the pit design or in the surrounding area showed only weak mineralization. For example, hole S-19 drilled vertically from the same "set-up" as S-23 returned 0.04% Cu. over 340 feet while S-16 drilled vertically from the collar of S-29 gave only 0.11% Cu. over 450 feet. Holes P-5 and P-6 located in #13 trench 400 feet south of S-15 and holes S-17, S-42 and S-18 in #15 trench 400 feet to the north of S-15 were all weakly mineralized. Hole S-18, which was taken as a representative hole, assayed only 0.13% Cu. from 0 - 600 feet.

It would appear that only a limited tonnage can be expected from this pit. I would estimate the possible tonnage to be less than 2,000,000 tons and probably not all sulphide ore.

NOTE: In calculating grade, the erratic high assays have been either arbitrarily cut back to 1% or combined with the assays on either side. The average of three assays was then substituted for the high assay before calculating the grade of the mineralized section.

PIT #2

Hole S-21 is the only hole in this pit that intersected copper mineralization of economic grade. The breakdown is as follows:

DIP	FROM (Ft)	TO (Ft)	INTERCEPT (Ft)	% CU.
Vertical	0.0	90.0	90.0	0.22
	90.0	510.0	420.0	0.62
	510.0	640.0	130.0	0.29

Hole S-112, near the southeast edge of the pit contains mineralization of the following grade:

Vertical	0.0	260.0	260.0	0.38
	260.0	618.0	358.0	0.32

Other drill holes, either within or in the vicinity of the pit, assayed as follows:

HOLE #	DIP	FROM (Ft)	TO (Ft)	INTERCEPT (Ft)	% CU.
S-20	Vertical	0.0	517.0	517.0	0.11
S-22	Vertical	0.0	580.0	580.0	0.12
S-24	Vertical	0.0	503.0	503.0	0.22
S-44	Vertical	0.0	501.0	501.0	0.11
S-113	Vertical	0.0	580.0	580.0	0.14

Although more detailed drilling is required to outline the ore zone I suspect that this pit also will have a limited tonnage.

PIT #4

This pit appears to be designed around S-48 and S-111 which are the two best holes. Assays from these holes together with those of surrounding holes are tabulated below:

HOLE #	DIP	FROM (Ft)	TO (Ft)	INTERCEPT (Ft)	% CU.
S-48	Vertical	0.0	270.0	270.0	0.07
		270.0	430.0	160.0	0.78
		430.0	560.0	130.0	0.21
S-111	Vertical	0.0	130.0	130.0	0.13
		130.0	510.0	380.0	0.49
		510.0	600.0	90.0	0.15
S-49	Vertical	0.0	410.0	410.0	0.14
		410.0	806.0	396.0	0.32
S-50	Vertical	0.0	507.0	507.0	0.15
S-201	Vertical	0.0	180.0	180.0	0.38
		180.0	444.0	264.0	0.27
S-202	Vertical	0.0	400.0	400.0	0.33
		400.0	730.0	330.0	0.36
P-11	Vertical	0.0	300.0	300.0	0.11

PIT #1

For this pit I made a rough estimate of the tonnage and grade using drill holes S-1, 2, 3, 4, 5, 6, 28, 105, 106 and 110. Where trench assays were available, they were combined with core assays. Continuity of mineralization was assumed and ore blocks were extended half-way between drill holes. Using 8 ore blocks, the tonnage was 6,600,000 tons grading 0.43% Cu. Three blocks assaying 0.31% Cu., 0.31% Cu. and 0.36% Cu., respectively, if deleted from the calculations, give a tonnage of 4,600,000 tons and a grade of 0.48% Cu.

EXPLORATION

A study of the geochemical map (Figure 2) shows that the mineralization is generally associated with geochemical anomalies. The map also shows that all geochemical anomalies are not underlain by copper mineralization as evidenced by the number of blank drill holes. It is unfortunate that more I.P. surveying was not done as this, in combination with the geochemical work, may have eliminated non-potential ground.

Figure 1 shows that the majority of the ore holes are in the hybrid complex near the contact of the diorite in the area of the 4 pits. From this, it would appear that the contact offers the best prospecting ground even though no mineralization was found near the northeasterly trending contact in the vicinity of line 16000 E.

The trends of both the geochemical and I.P. anomalies suggest that the mineralization may be related to northwest trending structures and where these structures occur near the diorite-hybrid contact they localize mineralization.

The I.P. "A" anomaly parallels the direction of "Bootjack Lake" and is the largest of the four I.P. anomalies. One hole, S-51, drilled southwesterly at -25° for a length of 821 feet to test the southern part of the anomaly, however, returned only 0.02% Cu. While other holes are required to fully test the anomaly, the results of S-51 are not encouraging.

Although a detailed I.P. survey would be helpful in pinpointing drill targets in the area, sufficient holes have been drilled to date to indicate that the chances of having missed a large hidden ore body are rather remote.

RECOMMENDATIONS AND CONCLUSIONS


A program of closely spaced drill holes will be required to delimit the ore zones in the four pit areas before reliable tonnage and

grade figures can be established. From a study of the available data, I am of the opinion that the tonnage of approximately 33,000,000 tons of 0.5% Cu. as calculated by Cariboo-Bell is on the optimistic side. Rough tonnage calculations would put the figure closer to 23,000,000 with the grade close to the 0.40% range after allowing for dilution. If 10% of the ore is of the "non-sulphide" type, it would further reduce the available tonnage that could be treated by conventional flotation methods. While no waste to ore ratios were calculated, the estimated ratio would be between 1.5 - 2 of waste to one of ore.

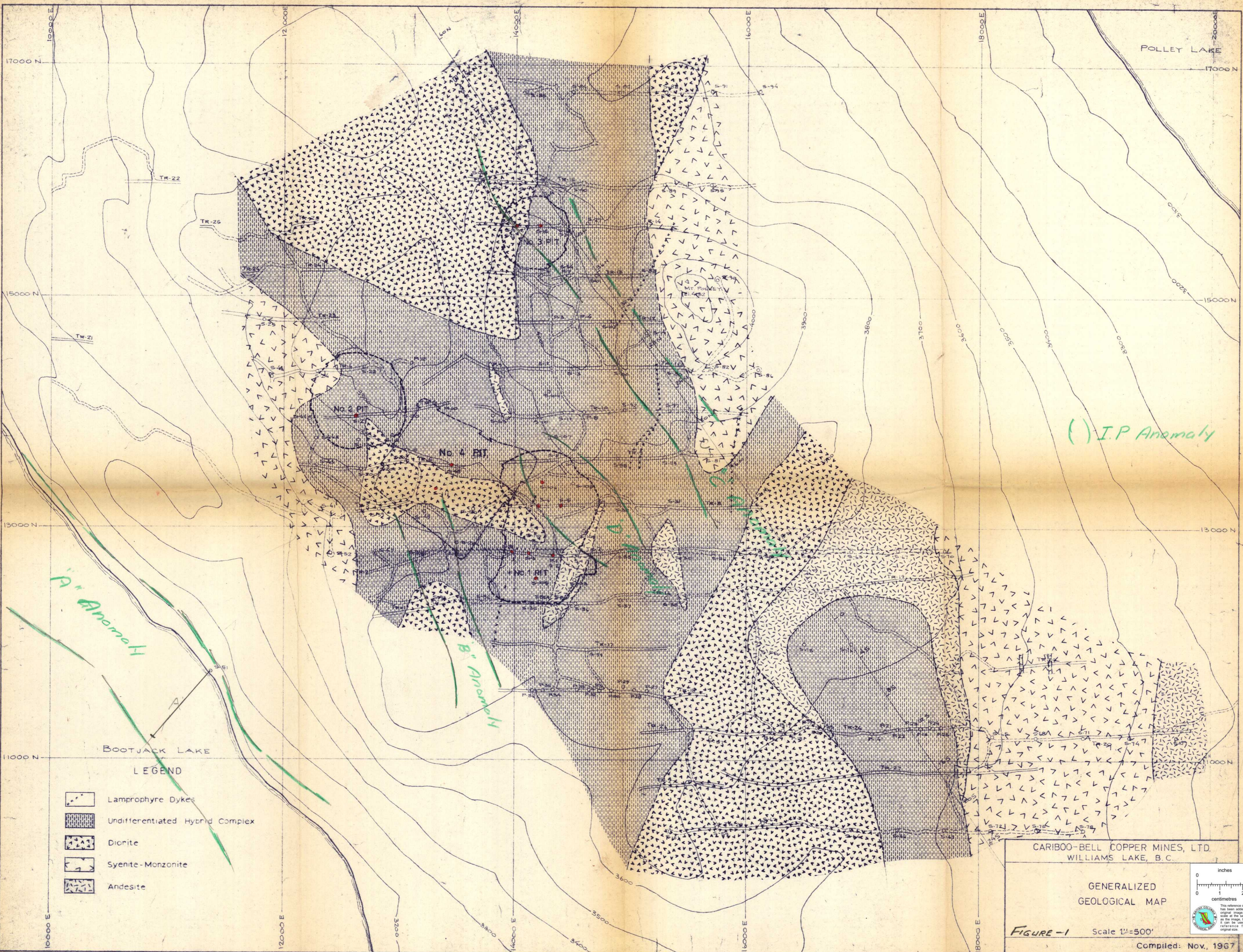
While further exploration work would be helpful, particularly and I.P. survey, I seriously doubt that it would affect the overall picture. The mineralization, in general, is of uniformly low grade and high grade "sweeteners" are unlikely. Drill sections suggest the ore zones have a steep dip, probably to the east and within the zones the mineralization appears to be irregular. Also, I am of the opinion that sufficient drilling has been done in the area to eliminate the possibility of having missed a large hidden body of low grade mineralization.

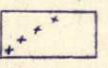

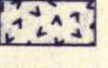
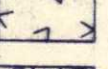
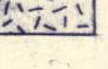
In conclusion, I feel that from a study of the information that was made available to me, that this property, at this time, is not an attractive venture.

Respectfully submitted,



C.J. Coveney, P. Eng.



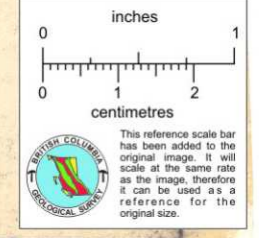
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-  Lamprophyre Dykes
 -  Undifferentiated Hybrid Complex
 -  Diorite
 -  Syenite-Monzonite
 -  Andesite

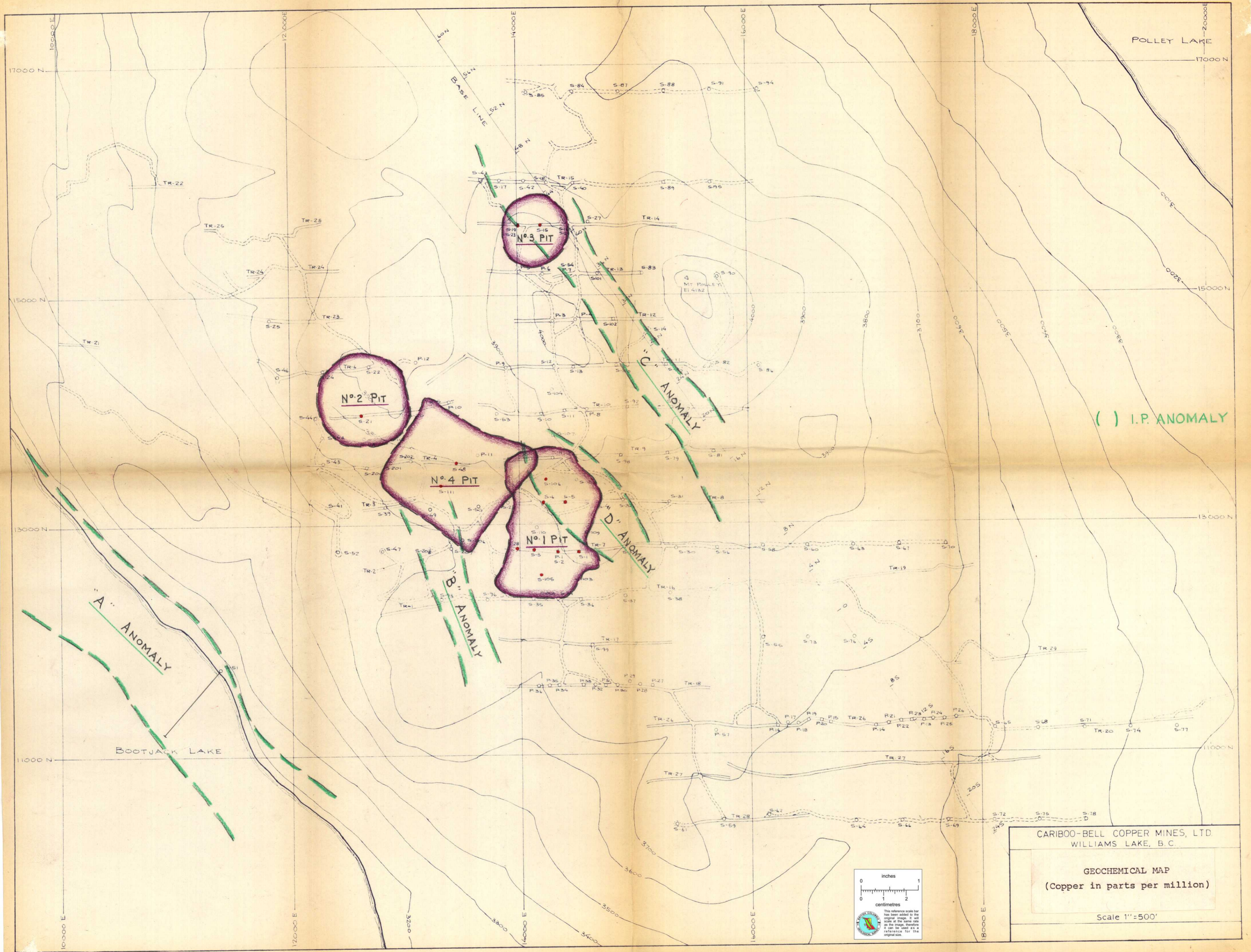
CARIBOO-BELL COPPER MINES, LTD.
WILLIAMS LAKE, B.C.

GENERALIZED
GEOLOGICAL MAP

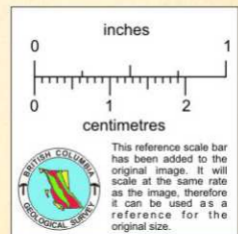
FIGURE -1 Scale 1"=500'

Compiled: Nov, 1967





() I.P. ANOMALY



CARIBOO-BELL COPPER MINES, LTD.
WILLIAMS LAKE, B.C.

GEOCHEMICAL MAP
(Copper in parts per million)

Scale 1" = 500'