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A
REPORT
ON THE

JOE - BEE CLAIMS
(LATITUDE 50° 28' N)
(LONGITUDE 120° 56' W)

in the
HIGHLAND VALLEY AREA
in the
KALLOOPS MINING DIVISION
of
BRITISH COLUMBIA

for
HIGHLAND VALLEY MINES LTD. N.P.L.

by
C. J. COVENEY, P. ENG.

March 8, 1972

Vancouver, B.C.

(4.)

<u>CLAIM</u>	<u>RECORD NO.</u>	<u>TAG NO.</u>	<u>EXPIRY DATE</u>
Joe 1	70925	898681	29 Aug. 1979
" 2	26	82	"
" 3	27	83	"
" 4	28	84	"
" 5	29	85	"
" 6	30	86	"
" 7 Fr.	31	87	"
Joe 8 Fr.	70932	898688	29 Aug. 1979
Jean 1 Fr.	87978	126516 M	9 April 1978

GEOLOGY (Figure 3.)

The Highland Valley area, which lies within the Cordillera province, is underlain by the Guichon Batholith of Mesozoic Age. (Figure 3.) The batholith which trends slightly west of north is about 35 miles in length and approximately 16 miles in width. Recent detailed mapping of the Guichon Batholith by K. Northcote shows the batholith to consist of a series of differentiated granitic rocks arranged in an elongated somewhat concentric pattern around a central core of Bethsaida quartz-monzonite. To the west, the batholith is overlain by Nicola and Cache Creek sediments and volcanics into which the batholith has intruded. To the north, the batholith is capped by Tertiary volcanics of the Kamloops group.

There are two classes of deposits associated with the intrusives. The first class is of the vein type which contains high grade bornite-chalcopyrite mineralization but relatively small tonnage such as at Alwin Mines. The second and most important are the large tonnage porphyry-type deposits with low grade chalcopyrite, bornite and molybdenum. In the latter class the rocks are badly faulted, sheared,

shattered and altered resulting in structural conditions favourable for mineral deposition. In this environment the metals are localized along shears, in fractures, siliceous zones, and on joints as veinlets, blebs and fine grains disseminated throughout the rock mass. From a prospecting point of view, it should be noted that copper mineralization may occur anywhere in the batholith and in any of the various phases providing the structural conditions are favourable. Important structural features within the area are the Lornex, Highland Valley, Jersey Lake and Snowstorm faults. These features are readily discernible from air-photo study and offer attractive targets along their entire length.

JOE - BEN CLAIMS (Figures 2 and 4.)

This group of 15 claims is located in the vicinity of Indian Reserves #14 and #15 and within 2000 feet of Bethlehem's J-A zone. All the claims are covered by a thick mantle of glacial drift and in some areas, particularly in the neighborhood of Witches Brook, extensive swamps. When the claims were mapped in 1969 the only outcrops observed were about 5000 feet north of Joe #1 claim. Here, the rock was a pinkish colored quartz-diorite that appeared to be barren of mineralization although in places highly jointed and/or fractured. Weak copper mineralization, however, was seen in a few boulders in two trenches on Joe #7 Fr. What may be significant was the observance of some bornite mineralization in a small pile of cuttings from an old rotary hole in the Joe #6 claim.

In addition to the geological mapping program a geophysical survey, covering 18 line miles, was also done in 1969 by Seigel and Associates, Geophysical Consultants. The survey employed Seigel MK VI time domain (pulse-type) induced polarization equipment. The survey outlined two anomalous zones. (Figure 4.) One zone occurs on the Joe #4

and #5 claims --- the anomaly is irregular in shape with a length in a northwesterly direction of 2000 feet with the south end open. The width is variable but probably averages around 350 feet. This anomaly could reflect a relatively narrow, steeply dipping zone of copper mineralization such as is presently being developed at Alwin Mines. The second and largest anomaly is mainly on the Jean #1 Fr. with the northern limit extending on to the Bet #4 and Bet #5 claims. (Figure 4.) The anomaly, which is open to the south, has a width of approximately 1200 feet in an east-west direction.

Two diamond drill holes were drilled in late 1969 and early 1970 to test the two anomalies. Hole #1 was collared on Joe #4 claim and drilled south at -45° for 383 feet without encountering bedrock. Hole #2 was collared on Jean #1 Fr. and also drilled south at -45° for a length of 251 feet. Bedrock (Bethlehem quartz-diorite) was penetrated at 83 feet. Although only minor sulphides were encountered in the core, the rock showed fair to strong chloritic alteration throughout most of the last 140 feet of core.

The projected southeasterly trend of the Highland Valley fault (?) should pass through or close to the location of the large anomaly and therefore this area warrants further attention.

RECOMMENDATIONS

The Joe - Bet group of claims held by Highland Valley Mines Ltd. is well located geologically being in the centre of the productive Guichon batholith and less than 2000 feet from Bethlehem's new J-A zone.

Overburden is extensive but limited geophysical work in 1969 outlined two anomalous targets. The overburden problem, however, should not be discouraging. The enormous Copper Valley lies beneath

several hundred feet of drift and there was no surface evidence to indicate that this hidden ore body existed. The same is also true for the East Jersey and Huestis ore bodies at Bethlehem Copper as well as their newly discovered J-A zone.

The southeast projection of the Highland Valley fault (?) should pass through or close to the western claims of the Joe - Bet group. This fault forms part of the structural control of the huge Valley Copper ore body and in addition could very well exert influence on Bethlehem's J-A zone. It seems possible that this zone could be localized where the Jersey and Snowstorm faults (or as yet unknown structures) intersect with the Highland Valley fault. As of November 24, 1971, Bethlehem had completed 19 diamond drill holes with the average depth of the completed holes being 1461 feet. The average length of the mineralized core was 907 feet and average depth of overburden 553 feet. Grade was reported to have a copper equivalent of 0.657%. Continuous drilling since November has added substantially to the geological reserves which at that time were reported as 200,000,000 tons.

Not only is Bethlehem's drilling to the south approaching the Highland Valley Mine's property but they also plan a scout drilling program on Indian Reserve #14 which immediately adjoins the western claims of the Joe - Bet group to the north. As the Joe - Bet claims are strategically located in relation to Bethlehem's present and future drilling plans it is recommended that Highland Valley Mines Ltd. undertake a more extensive exploration program than was done in 1969 - 70 to more fully assess the potential of their claims.

Experience in the J-A zone has shown the overburden to be deep and that the average length of mineralized core is 907 feet. Any drilling on the Joe - Bet claims may, therefore, necessitate a vertical depth of 1000 feet for each hole.

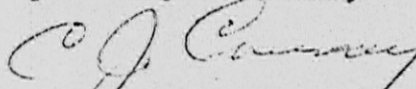
Experience has also shown that most of the ore bodies in the Highland Valley are irregular in shape with variations in grade and that mineralisation of ore grade can easily be missed by one or even several drill holes. To lessen the chances of missed holes, it is recommended that prior to drilling, a more detailed geophysical survey employing the variable frequency method be done in the areas of already known I.P. anomalies. The geophysical survey would cover approximately 8 - 10 line miles followed by a preliminary program of 4,000 feet using NQ core size. The estimated cost to carry out the recommended program is \$52,000.

PROPOSED COSTS

(1) Recutting, restaking and flagging 8 line miles @ \$75/mi.	\$ 600.00
(2) Geophysical survey	
Induced Polarization using variable frequency method	
8 line miles at \$425/mile	3400.00
(3) Diamond drilling - NQ size - 4000 ft. @ \$10/ft.	40000.00
(4) Core boxes	500.00
(5) Sampling	500.00
(6) Assaying	1000.00
(7) Engineering and supervision	1000.00
(8) Miscellaneous supplies	<u>200.00</u>
	\$ 47200.00
Contingencies 10%	<u>4700.00</u>
	<u>\$ 51900.00</u>

In round figures \$ 52,000.

Respectfully submitted,



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