

009971

92I SE GEN

FORFEITURE OF MINERAL CLAIMS

DETAILS OF EXPLORATION AND DEVELOPMENT WORK ON FORFEITED MINERAL CLAIMS

(to be submitted within 90 days of forfeiture pursuant to Subsection 2(b) of Section 52 of the B.C. Mineral Act)

TO: B.C. MINISTER OF MINES

NAMES OF CLAIMS FORFEITED (Rec. Nos.): M. L. 1-5
Record Nos. 48551 (o) to 48555 (o)

MINING DIVISION: Nicola

LOCATION OF CLAIMS: N.T.S. 92I/7W, 22.5 kilometers north of Merritt
and 6.5 kilometers SSE of Mamit Lake.

DATE CLAIMS EXPIRED: March 22, 1976; Recorded March 22, 1971

EXPLORATION WORK ON FORFEITED MINERAL CLAIMS FOR THE YEAR PRECEDING THE DATE OF EXPIRY	COST
Magnetometer Survey - Assessment report entitled	
"Geophysical Report on the Chataway-Bethlehem Option"	
by M. H. Sanguinetti, B.Sc. dated November 30, 1972 and	
filed under B.C. Mining Receipt No. 80327E.	
Total expenditure \$4,427.15	
Assume 2% of survey covered M.L. 4 and 5	\$ 88.54
TOTAL	\$ 88.54

Signature Erik Andersen

Name (print) Erik Andersen
Agent for Bethlehem Copper Corporation

DATE May 13, 1976

BETHLEHEM COPPER CORPORATION

Suite 2100 Guinness Tower, 1055 West Hastings Street, Vancouver, B.C. V6E 2H8

Telephone 682-5211

Telex 04-507589

June 2, 1976

Mr. R. Rutherford
Deputy Chief Gold Commissioner
Mineral Resources Branch
Department of Mines and Petroleum Resources
Parliament Buildings
Victoria, B.C.
V8V 1X4

Dear Sir:

Re: Forfeiture of Mineral Claims
- 1st Quarter 1976

We acknowledge receipt of your correspondence dated May 17, 1976 but wish to advise you that we have yet to receive the stamped duplicate copies of the four Notices of Forfeiture.

Yours very truly,

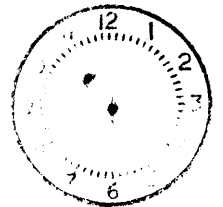
BETHLEHEM COPPER CORPORATION

JUN - 4 '76 AM

5838



Per: E. Andersen
Property Agent

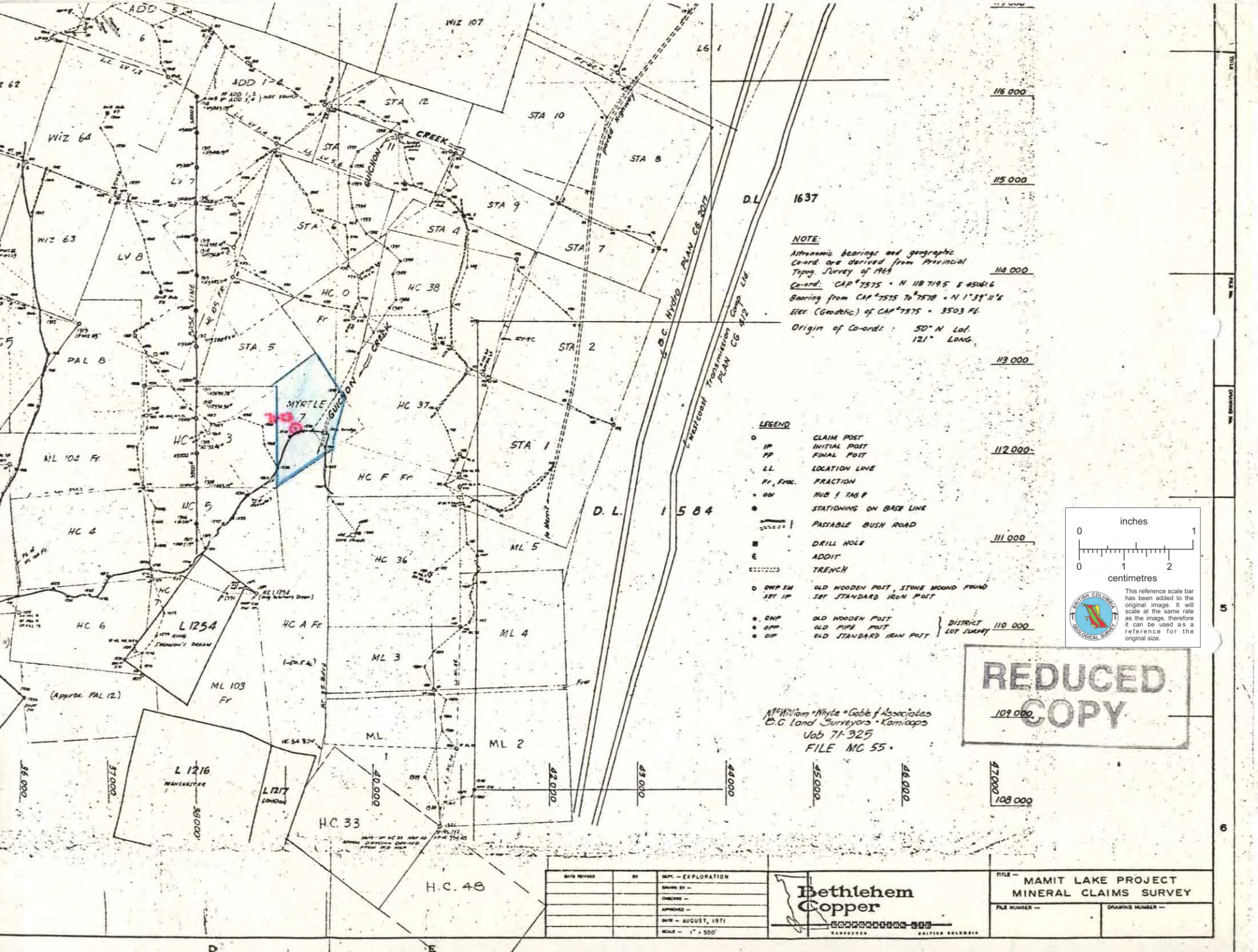


MINERAL RESOURCES

EA:dab

FILE NO.	FILING CLERK	REFERRED TO	DATE	INITIAL
		D.M.		
		ADM (M)		
		ADM (P)		
		C.G.C.		
		C.P.R.		
		DCGC		
		ACPR		
		G.C.		
		ACCTS.		
		GEOL.		
		INSP.		
		M. REV.		
		EC & P.		

Mine Office - P. O. Box 520, Ashcroft, B.C. V0K 1A0 Telephone 575-2424

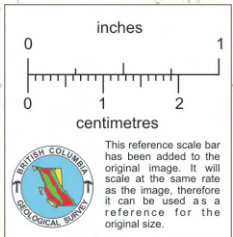


NOTE:

Astronomic bearings and geographic
Co-ord are derived from Provincial
Topog. Survey of 1964
Co-ord: CAP 7575 = N 118 71'9.5" E 4561.6
Bearing from CAP 7575 to 7578 = N 1° 31' 11" E
Elev. (Geodetic) of CAP 7575 = 3503 FE.
Origin of Co-ord: 50° N Lat.
121° LONG.

LEGEND

- CLAIM POST
- IP INITIAL POST
- FP FINAL POST
- LL LOCATION LINE
- Fr, FRA. FRACTION
- HUB & TAG
- STATIONING ON BASE LINE
- PASTABLE BUSH ROAD
- DRILL HOLE
- ADDIT
- TRENCH
- OWP SM OLD WOODEN POST, STONE MOUND FOUND
- SET IP SET STANDARD IRON POST
- OWP OLD WOODEN POST
- OWP OLD PIPE POST
- OWP OLD STANDARD IRON POST



REDUCED COPY

McWilliam White & Gable Associates
B.C. Land Surveyors - Kamloops
Job 71-325
FILE MC 55.

DATE REVISED	BY	DEPT. - EXPLORATION		TITLE - MAMIT LAKE PROJECT MINERAL CLAIMS SURVEY	
		DRAWN BY -		FILE NUMBER -	DRAWING NUMBER -
		CHECKED -			
		APPROVED -			
		DATE - AUGUST, 1971			
			SCALE - 1" = 500'		

DRILL HOLE LOG

BETHLEHEM COPPER CORPORATION LTD.

SHEET No. 1 of 2

Property	Chataway	Hole No.	PCC-71-23	Bearing	-	Elevation	2990'	Logged by	I. Oliver
District	Nicola	Length	280'	Dip	-90°	Overburden	145'	Date	August 6, 1971
Commenced	August, 1971	Latitude	112,250	Hor. Comp.	0	Recovery	-		
Completed	August, 1971	Departure	39,100	Vert. Comp.	280	Purpose	Explore southeast of Vimy area		

DESCRIPTION	SULPHIDES	OXIDES	OTHERS	FROM	TO	SAMPLE No.	PPM Cu.	% Mo.	Oz. Au.	Oz. Ag.	% RECOV
(145'-180') Quartz Monzonite/Granodiorite pink and white feldspar, quartz, minor biotite, yellow muscovite and epidote, minor magnetite, no visible copper mineralization.				145	150						
				150	160		140				
				160	170		115				
				170	180		105				
(180'-280') Biotite Granodiorite Grey, 10 to 15% biotite, 5% ± magnetite, traces of epidote and muscovite, trace of native copper.				180	190		117				
				190	200		145				
				200	210		148				
				210	220		158				
				220	230		130				
				230	240		300				
				240	250		196				
				250	260		142				

BETHLEHEM COPPER CORPORATION LTD.

ASHCROFT, B. C.

August 20, 19 71.

Percussion

SAMPLE No.	DESCRIPTION	OZS. PER TON		PPM	PPM	PER CENT				
		GOLD	SILVER	COPPER	MO.	SULPHUR				
PC-71-23	150 - 160			140						
	160 - 170			115						
	170 - 180			105						
	180 - 190			117						
	190 - 200			145						
	200 - 210			148						
	210 - 220			158						
	220 - 230			130						
	230 - 240			300						
	240 - 250			196						
	250 - 260			142						
	260 - 270			141						
	270 - 280			152						
	150 - 280			155	6					
	No tag			165						

G. L. ... ASSAYER

X

THE HOLDINGS OF RICHROCK MINES LTD. (N.P.L.)

IN THE MERRITT AREA, B.C.

INTRODUCTION

In early January of this year a meeting was held in Merritt, and later a second one in Vancouver, regarding the ST 1-40 mineral claims located on the east side of Helmer Lake, 16 miles northeast of Merritt. The writer had the opportunity of discussing the property with Mr. Gordon Brand for whom the claims had been staked, and although time and weather did not permit an examination, the data supplied, along with the writer's experience over the years in the Merritt Area, was adequate for him to draw conclusions and recommend that should additional ground be taken up, a sizeable exploration programme would be warranted during the 1970 season.

Subsequently, on March 14th, Mr. E. Hayes, locator of the ST 1-40 and adjoining XH 1-80 claims, conducted the writer over the properties on a snowmobile. During this examination, although snow covered the ground, sufficient outcrops could be observed to check the geology, so far as same is shown on the Nicola Sheet of the Geological Survey of Canada. Also, sufficient claim lines and posts could be checked to ascertain if the properties had been properly staked.

The purpose of this report is to describe the geology of the area and outline an exploration programme for the ST 1-40 and XH 1-80 claims, with a view to ascertaining the potential of the properties regarding the occurrence of mineral deposits thereon.

LOCATION AND ACCESSIBILITY

The properties are located in southwestern British Columbia, 16 miles northeast of Merritt on the east side of Helmer Lake, which is a part of the Clapperton Creek drainage system.

The claims are one mile northeast of Swakum Mountain. Geographic location is west longitude $120^{\circ}-38'$ and north latitude $50^{\circ}-20'$.

This is on an upland plateau area at about 4,500 feet elevation above sea level.

Access from Merritt is via the Mamit Lake road about 22 miles to Rey Creek and southeasterly up the Rey Creek road for ten miles to Helmer and Bob Lakes. This old secondary road may be followed south down Clapperton Creek for 15 miles to Nicola, which is seven miles east of Merritt.

TOPOGRAPHY, TIMBER AND CLIMATE

The properties are located on the upland plateau region between Nicola and Mamit Lakes. Elevations range between 4,000 and 4,500 feet. Swakum Mountain, about one mile to the southwest, rises to 5,653 feet, and Mount Guichon, which is one mile to the northwest is 5,675 feet above sea level.

Clapperton Creek and tributary streams flow southerly into the Nicola River at the west end of Nicola Lake. The area is largely covered with glacial till, but there are numerous but scattered outcrop areas.

Small areas of grass-covered meadow land and swamp are separated by wooded rolling hillocks and narrow tree-covered eskers. There are many narrow but small and irregular valleys in the main

drainage areas.

Large areas are covered with stands of small to medium jack pine.

The climate is excellent for all-year mining operations. Annual rainfall is about 12 inches per year. Snow accumulates to depths of 3 to 5 feet in mid-winter.

PROPERTY

Original property: ST 1-40 Record No.'s: 43963-44002 Recorded December 8th, 1969, Tag No.'s 98817M-98856M Recent additional claims: XH 1-80 Tag No.'s 99201-99280

Some, but not all of the claim posts and lines were examined and in the writer's opinion, the claims are staked in accordance with the B.C. Mineral Act.

GEOLOGY

The regional geology of the area, north of Merritt in particular, is dominated by two large Jurassic intrusive bodies known as the Guichon Creek and the Nicola batholiths. These plutonic masses outcrop over large areas, the former being 45 miles long and up to 20 miles wide and the latter 28 miles long and 8 miles wide. Both displaced the older Permian Cache Creek Group and Upper Triassic Nicola Group of sedimentary and volcanic rocks. Lastly, both as well as the older formations, are overlain by Miocene sediments and volcanics.

The batholiths are complex assemblages of igneous intrusives of several ages, and particularly in the Nicola there are sizeable zones of metamorphic remnants of the older roof rocks. The large copper-molybdenum mines and deposits under development in the Highland Valley and Merritt areas are in or associated with the Guichon Creek batholith, and there are numerous copper, copper-molybdenum, iron and silver-lead-zinc prospects in and close to the Nicola batholith.

The local geology of the Helmer-Bob-Harold-Mab-Conant Lakes area is complex and believed favourable for the occurrence of mineral deposits because it is on the west contact of the Nicola batholith with the Nicola group, thereby including sedimentary, volcanic and igneous rocks, but as well it includes a sizeable zone of metamorphic rocks.

To the west and southwest there are known deposits of gold, silver, copper, lead, zinc and tungsten, and to the south copper and molybdenum.

The Nicola outcrops noted in the area are largely andesitic to basaltic, with agglomerates and porphyries common. The metamorphic rocks, to the east, are largely amphibolites, schists and dykes of granitic porphyry and aplitic material. The eastern boundary of the XH claims extends out of the metamorphics and into the batholith, which is a hornblende-biotite granodiorite.

Although there are areas of scattered outcrops, most of the property is masked by overburden. There are two or more copper and molybdenum prospects near the property boundaries, but to the writer's knowledge no deposits of this type have been exposed to date within the claims area.

SUMMARY AND CONCLUSIONS

The ST 1-40 and XH 1-80 mineral claims are well located in an area of favourable geology 16 miles northeast of Merritt, B.C. In the general area there are known copper, molybdenum and gold, silver, lead, zinc and tungsten deposits.

The properties extend 6 miles in an east-west direction, spanning the Nicola rocks at Helmer Lake, the metamorphics lying along the contact with the Nicola batholith and extending into the plutonic rocks of the batholith.

This is an upland plateau area, largely covered by glacial till, but there are sufficient outcrops to acquire a general knowledge of the geology which is favourable for the occurrence of mineral

deposits. By the employment of geophysical techniques it should be possible to detect the presence of same.

It is herewith recommended, therefore, that the properties be thoroughly investigated.

RECOMMENDATIONS

It is herewith recommended that the following programme be carried out on the holdings on Richrock Mines, Helmer Lake area, 16 miles north of Merritt, B.C.

	<u>Estimated Costs</u>
1. Establish a tent camp on the property,	\$ 1,000.00
2. Prospect the area, and make a preliminary sketch map showing the outcrops, claims, lakes, swamps and streams,	4,000.00
3. Conduct magnetometer surveys over selected areas of the property,	15,000.00
4. Conduct a geochemical survey over selected areas of the property,	25,000.00
5. Conduct an induced polarization over selected areas of the property,	45,000.00
6. Office, overhead, engineering and supervision,	20,000.00
7. Contingencies	<u>15,000.00</u>
Total estimated costs	\$125,000.00

Respectfully submitted,
ALLEN GEOLOGICAL ENGINEERING LTD.

Per: "ALFRED R. ALLEN" P.Eng.
Alfred R. Allen

Vancouver, B.C.
March 20th, 1970.

November 20th, 1970

CERTIFICATE

I, Alfred R. Allen, certify that:

I am a graduate of the University of British Columbia and hold the following degrees therefrom:

BASc Geological Engineering 1939
MASc Geological Engineering 1941

I am a member of the Association of Professional Engineers of the Province of British Columbia.

I have practised my profession for the past twenty-eight years.

I hold no interest in the properties or securities of Richrock Mines Ltd. (N.P.L.), or affiliates thereof, nor do I expect to receive any directly or indirectly.

My report of March 20th, 1970, entitled The Holdings of Richrock Mines Ltd. (N.P.L.) in the Merritt Area, is based upon field examination by the writer March 14th, 1970.

I consent to this report being filed with the British Columbia Securities Commission.

"ALFRED R. ALLEN" P.Eng.
Alfred R. Allen

REFERENCES

Cockfield, W.E., Geological Survey of Canada Memoir 249.

Duffel, S., and McTaggart, K.C., Geological Survey of Canada Memoir 262.

B.C. Minister of Mines Reports.

X

92T/7E

Claim Names: DES 1-36

Record Numbers: 127909-28, 128076-91

Mining Division: Kamloops

Date of Forfeiture: June 26, 27, 1975

EXPLORATION AND DEVELOPMENT DONE:

	<u>YES</u>	<u>NO</u>	<u>REPORT ATTACHED</u>	<u>MAP ATTACHED</u>	<u>ASSESSMENT REPORT FILED</u>	<u>COST</u>
PROSPECTING	—	—	—	—	—	—
GEOLOGICAL	<u>x</u>	—	—	<u>x</u>	—	—
GEOPHYSICAL	<u>x</u>	—	—	<u>x</u>	—	—
GEOCHEMICAL	<u>x</u>	—	—	<u>x</u>	—	—
SURFACE	—	—	—	—	—	—
AIRBORNE	—	—	—	—	—	—
LINE PREPARATION	—	—	—	—	—	—
DIAMOND DRILLING	—	—	—	—	—	—
ROAD WORK	—	—	—	—	—	—
RECLAMATION	—	—	—	—	—	—

WORK WAS DONE AS PART OF A GENERAL FOLLOW-UP PROGRAMME AND NO SEPARATE COST RECORDS WERE KEPT

TOTAL

P.F.U. - N4 - Desmond Lake

The area is approximately 6 miles southwest of Lac Le Jeune and is covered by 36 claims in the name of Noranda Exploration Company, Limited (refer to attached Location Map). The P.F.U. was carried out by J. Stockwell and I. Saunders, from October 15-16, 1974.

The N4 (Desmond Lake) grid is underlain entirely* by (Up. Triass.) Nicola andesite (95%) and augite porphyry (5%). Two isolated aplite dikes represent the only variation in the grid area. Previous work includes line cutting, soil sampling, an I.P. survey, a partial airborne VLF-EM survey and partial mapping/prospecting by M. Lewis (August 1974). The geophysical work indicated two areas of immediate interest in the southern half of the grid, - Areas 1 and 2, which are located on the accompanying map.

Mapping done on 15/10-16/10, indicates that the two anomalous areas, including both resistivity 'lows' and PFE 'highs', are directly related to distribution and concentration of both pyrite and pyrrhotite in the volcanics. It was noted that where these sulphides do not occur in visible amounts, the I.P. response was weak.

No chalcopyrite, or related copper minerals, were identified on the grid. Rock geochem samples were taken as a check, particularly where soil analyses exceeded 100 ppm copper.

Although not identified, fine-grained magnetite is assumed responsible for the magnetic character of much outcrop having no visible pyrrhotite. The effect of magnetite, an oxide, on an I.P. survey is

* See Map 886A. Applicable portions of this map photocopied for attached location map and legend.

assumed to be negligible, leaving the sulphide minerals to explain the geophysical response.

Area 1

The VLF-EM crossover located on lines (100-108-116N) coincides perfectly with a streamlet in an area of no outcrop and strongly magnetic float with no visible pyrrhotite. It is unknown whether the crossover is related to a water filled shear/fault, or to magnetite distribution in the andesite.

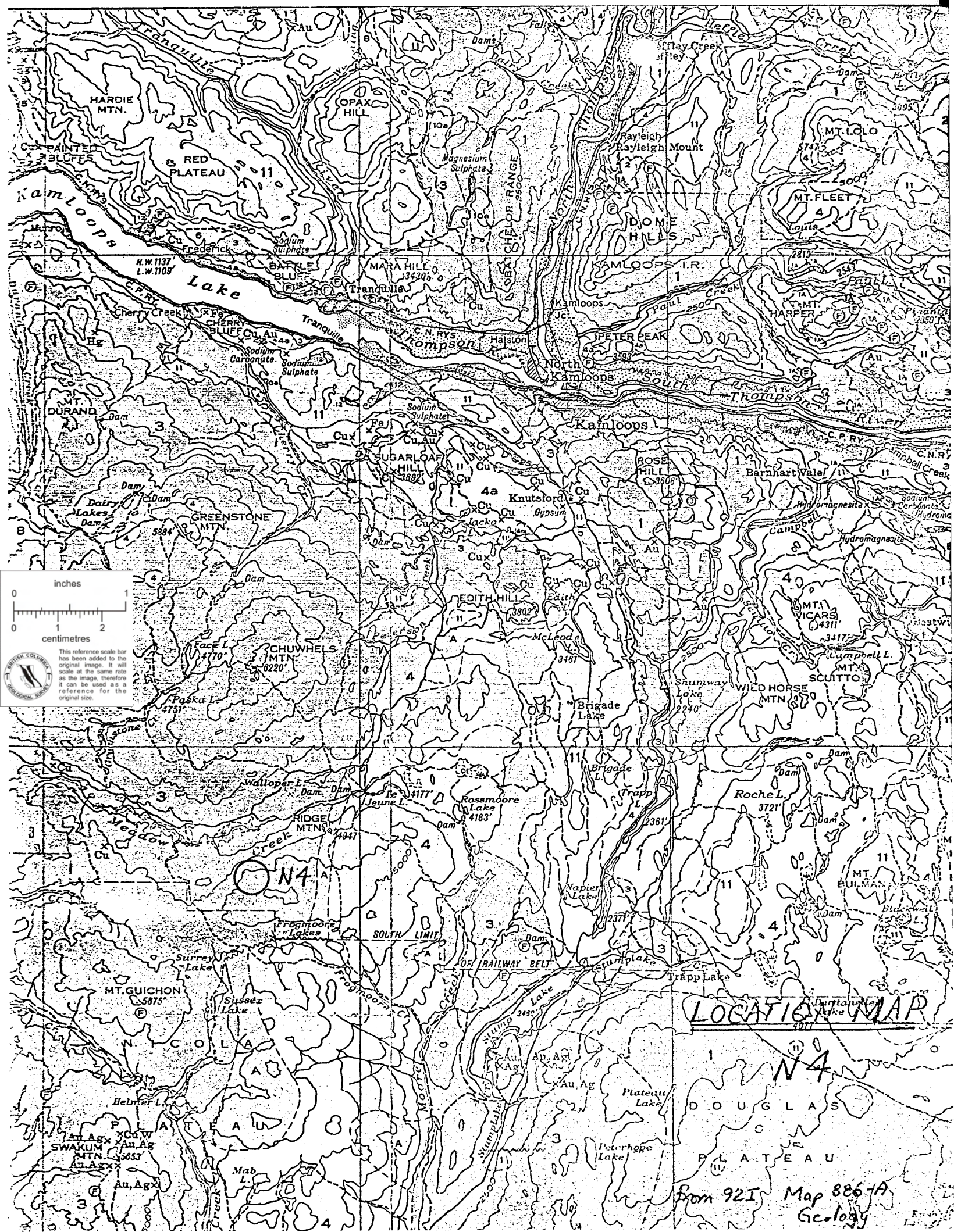
Area 2

This coincidence of resistivity 'lows' and PFE 'highs' has been related, above, to sulphide distribution. It is further noted that a strongly sheared zone crosscutting the area is unrelated to the apparent geophysical trends because of its non-parallel orientation.

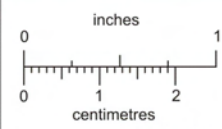
Recommendations

No further work, unless indicated by rock geochem results.


J. Stockwell



N.W. 1137
L.W. 1109



This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

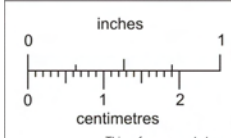
LOCATION MAP

From 92I Map 886-1A
Geology

LEGEND

f. 92 I Map 886-A Geology

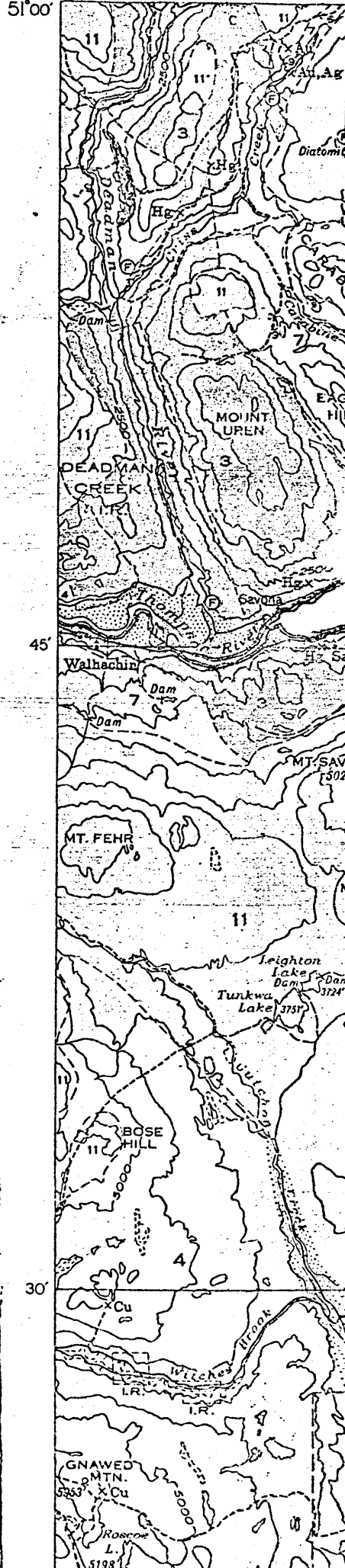
- | | | |
|----------------------|---|--|
| CENOZOIC | 13 | TERTIARY
MIOCENE OR LATER
<i>Valley basalt: mainly vesicular basalt</i> |
| | 11 12 | MIOCENE OR EARLIER
KAMLOOPS GROUP
11. <i>Rhyolite, andesite, and basalt; associated tuffs, breccias and agglomerates. May include some younger basalts</i>
12. TRANQUILLE BEDS: <i>conglomerate, sandstone, shale, tuff; thin coal seams</i> |
| | 10 | COLDWATER BEDS: <i>conglomerate, sandstone, shale, and coal; 10a, similar to 10, but may include younger beds</i> |
| MESOZOIC OR CENOZOIC | 9 | CRETACEOUS OR TERTIARY
COPPER CREEK INTRUSIONS: <i>granite, granodiorite, granite porphyry</i> |
| | 8 | <i>Andesite, basalt; picrite, agglomerate, breccia, and tuff; minor conglomerate and sandstone</i> |
| | 7 | <i>Conglomerate, sandstone, and shale</i> |
| MESOZOIC | 6 | CRETACEOUS
LOWER CRETACEOUS
KINGSDALE GROUP
<i>Rhyolite, andesite, and basalt; associated tuffs, breccias, and agglomerates; arkose, conglomerate</i> |
| | 5 | SPENCE BRIDGE GROUP
<i>Hard, reddish lava</i> |
| | 4 | JURASSIC AND(?) LATER
COAST INTRUSIONS: <i>granite, granodiorite, gabbro; 4a, Iron Mask batholith; syenite, monzonite, diorite, gabbro; 4b, pyroxenite and peridotite. Probably not all of the same age, and may be in part post-Lower Cretaceous</i> |
| PALAEOZOIC | 3 | TRIASSIC
UPPER TRIASSIC
NICOLA GROUP
<i>Greenstone; andesite, basalt; agglomerate, breccia, tuff; minor arcaillite, limestone, and conglomerate</i> |
| | 2 | CARBONIFEROUS AND PERMIAN
CACHE CREEK GROUP (?)
<i>Greenstone, generally slightly sheared. May include some Triassic rocks (3)</i> |
| | 1 1A | <i>Argillite, quartzite, hornstone, limestone, sheared conglomerate, breccia, greenstone, and serpentine; 1A, limestone</i> |
| A | <i>Chlorite schist, quartz-mica schist, amphibolite, and granitic intrusions; commonly gneissic and largely of Palaeozoic age</i> | |



This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

- Heavily drift-covered area*
- Fault*
- Synclinal axis*

121°00' GEOLOGICAL SURVEY



Report on the
HOLDINGS
of

JLT EAST GEN

NICOLA COPPER MINES LTD. (N.P.L.)
HIGHLAND VALLEY
BRITISH COLUMBIA *Feb. 24, 1972*

For:
NICOLA COPPER MINES LTD. (N.P.L.)
9897 - 138A Street
Surrey, B.C.

By:
ALLEN GEOLOGICAL ENGINEERING LTD.
601 - 325 Howe Street
Vancouver, B.C.

INTRODUCTION

Three properties of Nicola Copper Mines Ltd. (N.P.L.) were examined by the writer November 6th and 7th, 1971.

The purpose of the examination was to acquire, on the ground, information pertaining to claims, topography, geology and access roads, in order that the most practicable programme may be planned for investigation of the properties, with particular attention directed towards possible occurrences of copper or copper-molybdenum mineral deposits.

The object of this report is to outline the geology of the Highland Valley area and relate, so far as possible, the local geology of the Nicola Copper holdings to this environment, and thus to detail a works programme thereon.

LOCATION

The Nicola Copper holdings comprise three groups of located mineral claims in the Highland Valley area of south central British Columbia.

The westerly property is at the Logan Lake townsite of Lornex Mines, on the east side of Guichon Creek, at the junction of the Mammit Lake and the Le Jeune Lake roads.

The central property is located 6 miles to the east, via the Le Jeune Lake road, at the head of Greenstone Creek.

The easterly property is 8 miles east of the central property via the Le Jeune Lake road between Walloper and Le Jeune Lakes.

The westerly property is herein referred to as the Logan Lake Group, the central property the Greenstone Creek Group, and the easterly property as the Walloper Lake Group.

The approximate geographical location of the properties is 50°-30' north latitude and 120°-40' west longitude.

Access is via secondary but excellent roads from Ashcroft, Merritt, Savona and Kamloops.

TOPOGRAPHY

The holdings of Nicola Copper Mines are located on the Meadow Creek drainage area, on the rolling uplands known as the Nicola Plateau. Meadow Creek heads in Le Jeune Lake, elevation 4,177 feet above sea level, and flows westerly into Guichon Creek 2 miles south of Logan Lake. Guichon Creek, the main drainage control for the area flows south, through Mammit Lake into the Nicola River 4 miles west of Merritt.

CLAIMS AND OWNERSHIP

The following mineral claims are held by Nicola Copper Mines Ltd. (N.P.L.)

Logan Lake Group

<u>Claim</u>	<u>Record Number</u>	<u>Expiry Date</u>
KR&K 1	68629	March 29, 1973
KR&K 2	68630	March 29, 1973
KR&K 9 - 16	68826 - 68833	May 2, 1973
KR&K 17 - 21	74692 - 74696	November 18, 1974
KR&K 23 - 30	74698 - 74705	November 18, 1973
KR&K 31 - 38	82877 - 82884	August 13, 1973

Greenstone Creek Group

JG 1 - 29	101068 - 101096	November 23, 1973
KR&K 58 - 59	84694 - 84695	November 7, 1973
KR&K 60 - 65	85278 - 85283	November 7, 1973
KR&K 67	85285	November 7, 1973
KR&K 69	85287	November 7, 1973
KR&K 71	85289	November 7, 1973
KR&K 73	85291	November 7, 1973
KR&K 200 - 211	97255 - 97266	June 2, 1973
KR&K 149 - 162	87663 - 87676	March 19, 1976

Wallop Lake Group

KR&K 101 - 122	85684 - 85705	November 21, 1973
KR&K 123	85706	November 24, 1973
KR&K 124 - 134	87638 - 87648	March 19, 1974
KR&K 135 - 148	87649 - 87662	March 19, 1973
KR&K 163 - 168	87940 - 87945	March 25, 1973

HISTORY

Prior to 1900 the Highland Valley was actively prospected and many showings of copper mineralization had been discovered. Some production was attained before 1920 from the OK and Glossy deposits. In the mid-1950's there was a surge in prospecting and this resulted in the development of the Bethlehem operation. In the 1960's the Lornex, Valley Copper, Highmont, and Alwin deposits were actively developed. In the 1969-71 period Bethlehem has reported the discovery of two additional important orebodies, and the Trojan is reportedly going to be mined and the ore milled at the Alwin.

The three claims groups of Nicola Copper Mines were acquired in 1968, 1969, 1970 and 1971.

Seven of the Logan Lake group of claims were sold to Lornex and exploratory work has been carried out on the remainder as follows.

One diamond drill hole on the Logan Lake group, two on the Greenstone Creek claims and two on the Walloper Lake property have been completed for a total footage of 990 feet. An induced polarization survey over a narrow section of the Logan Lake claims has been completed by Siegel and Associates of Vancouver. The holdings have been thoroughly prospected and are known to extend from the east contact of the Guichon Creek batholith to the west contact of the Nicola batholith and much of the intervening Nicola series of volcanic and sedimentary rocks.

GENERAL GEOLOGY

Introduction

The general geology of the Highland Valley, Merritt, Kamloops area has been mapped and described in government and private reports, some of which are included in the list of references with this report.

A resume of the geological environment is herewith included, along with more detailed descriptions of those features with which the copper-molybdenum ore deposits of the region are associated.

The dominant features, geologically, are the Guichon Creek and Nicola batholiths. The former extends from the Nicola River 40 miles north to the Thompson drainage, and the latter extends from Nicola Lake 30 miles northerly. The former is up to 18 miles wide and the latter up to 6 miles wide. The batholiths are separated by a 12-mile band of Nicola volcanic and sedimentary rocks. On the west boundary of the Guichon Creek batholith, Cache Creek sediments are exposed underlying the Nicola Group. Formations younger than the batholiths include the Middle and Upper Jurassic sediments on the west boundary, Lower Cretaceous Spences Bridge Volcanics, Kingsvale volcanics of Upper Cretaceous age and Middle Eocene extrusive and sedimentary rocks of the Kamloops Group.

Very large copper-molybdenum mineral deposits have been developed within the Guichon Creek batholith. Near the south contact of this igneous complex in folded, fractured and altered calcareous sediments of the Nicola group, copper-iron deposits are being mined.

The three properties of Nicola Copper Mines Ltd. (N.P.L.) are located on the east border of the Guichon Creek batholith, in the Nicola volcanics and on the west boundary of the Nicola batholith. Accordingly, brief descriptions of these units are herewith included.

The Nicola Group

The Nicola Group is, in the Guichon Creek - Walloper Lake area, believed to be composed almost wholly of andesite, andesite porphyry and agglomerate. The altered rock is commonly referred to as greenstone. Elsewhere, particularly where more exposures occur on the west side of the Guichon Creek batholith, there are also tuff, siltstone, greywacke, limestone, chert, breccia and conglomerate. South of Meadow Creek, the Nicola andesite is foliated and altered, it strikes northerly and dips to the east.

The Guichon Creek Batholith

The Guichon Creek batholith is a 400-square mile exposure of igneous intrusive rocks. It has received considerable detailed study by K.E. Northcote and others, and it has been divided into ten concentric to irregular phases. These igneous rocks range from hornblendite to quartz monzonite, but the most predominant rock types are biotite-hornblende granodiorite, quartz diorite, diorite porphyry and diorite.

The Nicola Batholith

Twelve miles to the east, the Nicola batholith parallels the Guichon Creek body and is composed largely of granodiorite and quartz diorite. Contact phases included gneissic rock, dark gneissic rock laced with numerous granitic dykes. Little or no detailed study has been applied to this igneous mass.

Structure

Within the Guichon Creek batholith there is foliation parallelling the northerly trend of the igneous mass. There is strong faulting and this is most evident in and near the large copper-molybdenum deposits. There are zones of explosive breccia which are commonly at and near large zones of mineralization.

Contacts with older rocks are clearly defined and the general dip of the older strata is steeply away from the intrusive body.

Within the Guichon Creek batholith there are concentric zones with characteristic distinguishable features and there is a suggestion of a general doming effect as indicated by shear attitudes.

Alteration

The discernable alteration products in and around the mineralized zones within the Guichon Creek batholith are as follows:

1. Sericitic alteration includes disseminations, bunches and fracture fillings of fine white sericitic mica, commonly associated with koalinated feldspars
2. Light cream to grey bleached rock with vuggy effects caused by leaching of the calcic feldspars and peripheral kaolinization of the plagioclases. Generally termed argillic alteration.
3. The development of pink potassic feldspar, pyrite and biotite, without kaolinization, referred to as potassic alteration.

Some indications of strong alteration has been noted in the Nicola batholith, but detailed descriptions are lacking. The contact zones are in places characterized by wide bands of chlorite and quartz-mica schist along with bands of hornblendite and numerous dykes of granitic rock.

Mineral Deposits

In the Witches Brook area of the Highland Valley large, low-grade copper and copper-molybdenum deposits are being mined or developed. These are the Bethlehem, Lornex, Highmont and Valley Copper along with the smaller Alwin, Trojan and Krain. At Merritt the Craigmont is in production and at Cache Creek the Maggie is to be developed by Bethlehem. In the Meadow Creek area, the Ford Group and Dupont are small copper prospects. To the south there are the mineral prospects on Swakum Mountain and the Guichon on Clapperton Creek.

The products from the operating mines are copper, molybdenum, and minor gold and silver.

GEOLOGY OF THE NICOLA COPPER HOLDINGS

The Nicola Copper holdings comprise the Logan Lake property at and near the contact between the Guichon Creek batholith and Nicola greenstone; the Greenstone Creek property underlain by the Nicola group; and the Walloper Lake property underlain by Nicola volcanics and sediments, gneissic and igneous rocks on the west contact of the Nicola batholith. Extensive overburden cover has prevented detailed geological mapping of these properties. The following is a brief outline of data so far acquired on each property.

Logan Lake Property

This is an "L" shaped property adjoining the Logan Lake townsite of Lornex Copper on the south and west.

The claims area extends from about a half mile north of Meadow Creek northerly up the Guichon and Chartrand creek valleys for about 3 miles. This area is believed to lie along the east contact of the Guichon creek batholith with Nicola greenstone. There is some possibility that the southwest portion of the property is underlain by the Gump Lake phase of the Guichon Creek batholith.

Exploratory work on the property has included, to date, a vertical diamond drill hole to 513 feet on the KR&K No. 2, and a reconnaissance induced polarization survey in the same area on the KR&K No. 2, No. 9 and No. 18 claims.

Little information regarding bedrock geology is known, but the diamond drill hole encountered greenstone under 350 feet of overburden. There appears to be a possibility that the Gump Lake phase of the Guichon Creek batholith extends easterly to underlie some of the southwest portion of this property.

A magnetometer survey over the KR&K 1, 17, 21 and 31 claims, adjoining the Logan Lake townsite on the west has recently been completed.

Greenstone Creek Property

This property is located on both sides of Greenstone Creek about 6 miles east of Guichon Creek. The Logan Lake-Kamloops road traverses the claims areas, as does Meadow Creek.

The property extends 5 miles west and 2 miles east of Greenstone Creek. It is believed to be underlain by rocks of the Nicola group.

Two miles west of Greenstone Creek, on the J.G. claims, there is a copper deposit known as the Ford upon which some exploratory work was done in the late 1920's. Thirty tons of sorted material were shipped from this showing to a smelter. It assayed 2.14% copper, 0.3 ounces of silver per ton and a trace of gold.

This zone of disseminated copper-silver mineralization warrants thorough investigation, and should be the focal point from which work is conducted on the Nicola Copper Mines properties.

On the KR&K 150, 3 miles to the southeast, 2 holes, 90 and 180 ft. vertical, were diamond drilled into Nicola volcanic rocks. No significant copper mineralization was encountered.

Wallop Lake Property

This group of claims is located on the Wallop Lake and Lake drainage area, extending easterly to Le Jeune Lake.

The property is underlain on the west by Nicola volcanic rocks and on the southeast by gneissic metamorphics and quartz diorite of the Nicola batholith.

Two holes were diamond drilled on the west side of the road on the KR&K 109 claim. These 50-foot vertical holes encountered light grey, fine-to-medium-grained quartz diorite. Biotite shows some alteration effects and considerable epidote is disseminated throughout the rock, along with minor fine pyrite. Weak foliation is nearly horizontal.

SUMMARY AND CONCLUSIONS

The holdings of Nicola Copper Mines Ltd. (N.P.L.) comprise three properties on the east of the Highland Valley area of south central British Columbia.

Large copper and copper-molybdenum mineral deposits are currently in production or being

developed in the Highland Valley.

The west group of claims is located at Logan Lake townsite east of Guichon Creek. This is at and near the east contact of the Guichon Creek batholith with older Nicola volcanics. Because of extensive overburden, the contact has not been clearly defined. There appears however, to be some possibility that the Gump Lake phase of the batholith extends onto the southwest portion of the property.

The central property, comprising three groups of claims on the Greenstone Creek-Meadow Creek drainages, includes the copper-silver occurrence known as the Ford, from which a 30-ton shipment, in 1928, assayed 2.14% copper, 0.3 ounces of silver and a trace of gold per ton.

The east group of claims is located on Walloper Lake and extends east of Le Jeune Lake. These claims are believed to overlie the west contact of the Nicola batholith with the Nicola group, and to include a band of gneiss associated with the contact phase of the granitic rocks.

A recently completed magnetometer survey, plus limited geological investigations, a reconnaissance induced polarization survey over a small area of the Logan Lake property, and five short diamond drill holes have shown the properties to be located on and between the east contact of the Guichon Creek batholith and west contact of the Nicola batholith.

It is concluded that the area is favourable for the occurrence of copper and copper-molybdenum mineralization, and extensive detailed investigations are warranted.

RECOMMENDATIONS

The following two phase exploration programme is recommended for the three properties.

Phase No. 1

Estimated Costs

- | | |
|---|-------------|
| 1. Establish surveyed grids over each property with lines at 400 feet and stations at 100 feet, tied to one base line. An estimated 160 line miles will be required, with all stations designated by wooden stakes marked with the grid number, | \$20,000.00 |
| 2. Acquire stereoscopic air photo coverage for each property. Have a photomosaic made for each property. Make photogrammic maps therefrom, | 1,500.00 |
| 3. Using the grid survey, map each property and include roads, lakes and swamps, creeks, the higher hilltops and rock outcrops, | 2,000.00 |
| 4. Conduct geochemical surveys over each gridded property, | 25,000.00 |
| 5. Conduct magnetometer surveys over selected areas, | 1,500.00 |
| 6. Conduct electro-magnetic surveys over selected areas, | 4,000.00 |
| 7. Diamond drill a series of holes to supply bedrock information. With EX equipment allow for 1,000 feet of hole, | 8,000.00 |