

4130

G E O L O G I C A L   R E P O R T

MINERAL CLAIMS

BUCK 1 - 4 INCL.

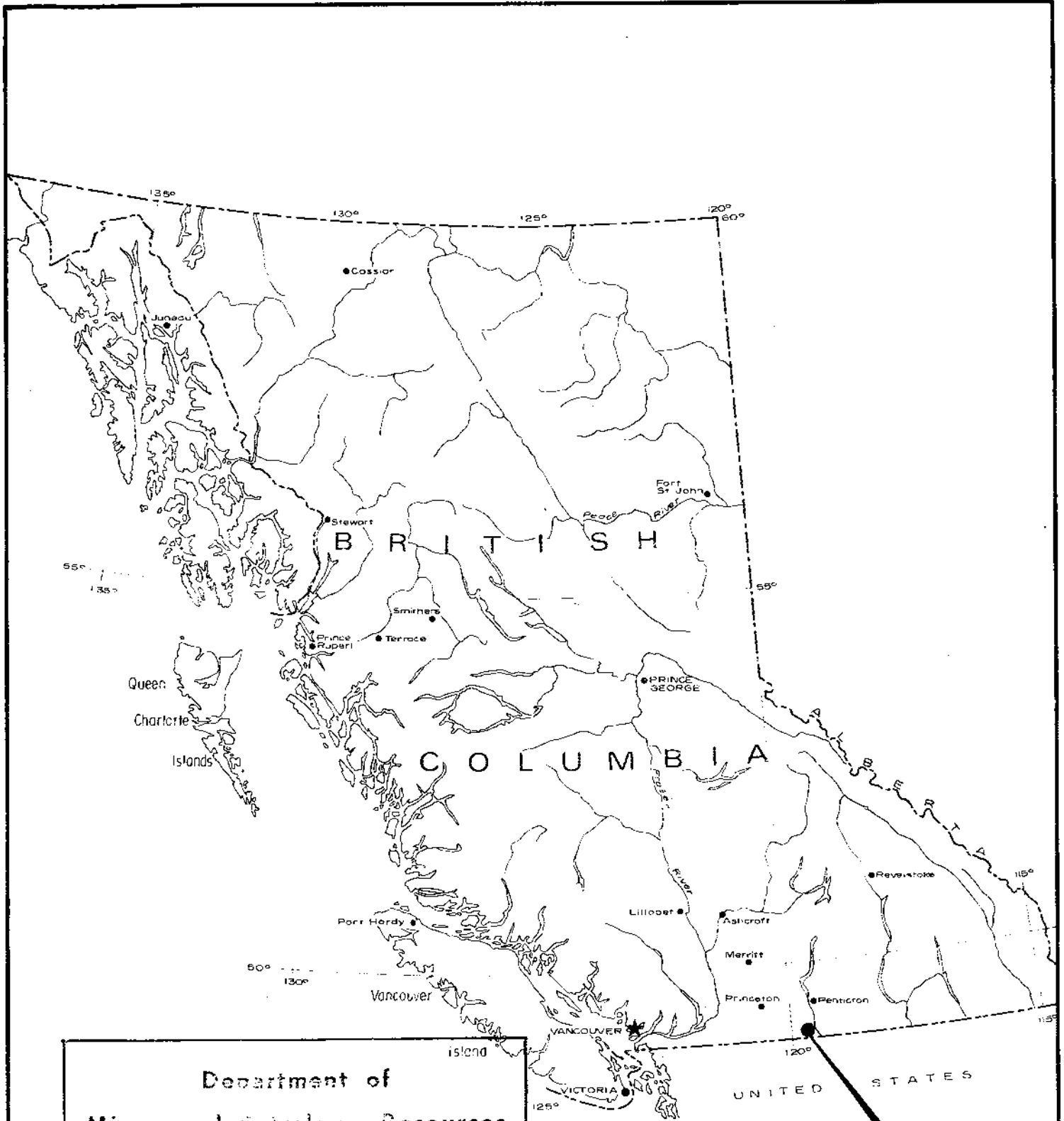
BY

J. R. BELLAMY

January, 1973

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT

NO. 4130 MAP



Department of  
 Mines and Petroleum Resources  
 ASSESSMENT REPORT  
 NO. **4130** M.S. # **3**

PROPERTY

BETHLEHEM COPPER CORPORATION LTD.  
 BUTLER PROPERTY  
 LOCATION PLAN

T A B L E O F C O N T E N T S

	<u>Page</u>
SUMMARY	1
INTRODUCTION	2
LOCATION AND ACCESS	2
TOPOGRAPHY AND PHYSICAL ENVIRONMENT	2
HISTORY	2 - 3
MINERAL CLAIMS	3
REGIONAL GEOLOGY	3 - 4
LOCAL GEOLOGY	4
DISCUSSION OF RESULTS	5

APPENDIX

- (1) Affidavit of Expenditures
- (2) Statement of Qualifications
- (3) Assay Results

ENCLOSURES

- #1 Fig. 1 Geological Plan 1" = 200'  
#2 Fig. 2 Assay Plan 1" = 200'  
#3 Location Plan

GEOLOGICAL REPORT  
GEOLOGICAL MAPPING AND SAMPLING SURVEY  
MINERAL CLAIMS BUCK 1 - 4 INCLUSIVE  
OSOYOOS MINING DISTRICT, B. C.

SUMMARY

The Buck claims were acquired from Mr. Ken Butler by Bethlehem Copper Corporation Ltd. under the terms of a "Letter of Intent" dated February 5, 1971. The property is underlain by felsic nepheline syenite, a phase of the Kruger Alkaline stock. The nepheline in the property is under investigation to determine its suitability for commercial use in the glass and glass fibre industry.

During the period January 15 through January 18, 1973 geological mapping and bedrock sampling were carried out by J. R. Bellamy and R. J. Nethery, under the direction of R. E. Anderson, P. Eng.

A statement of the writer's qualifications is included in the appendix of this report.

## INTRODUCTION

The Buck claims 1 - 3 were optioned from Mr. Ken Butler of Osoyoos in 1971. The claims lapsed September 10, 1971 and were restaked by Bethlehem as Buck 1 - 4 inclusive. To date little or no development work has been done on the property with most emphasis being directed towards the refining techniques necessary to remove unwanted non-magnetic  $\text{Fe}_2\text{O}_3$  from the nepheline syenite. The first geological mapping of the Buck claims commenced on January 15, 1973.

## LOCATION AND ACCESS

The Butler property is located some five miles to the west of Osoyoos in the Osoyoos Mining Division of southern British Columbia. Access by vehicle is possible onto the claim group by travelling on dirt roads some 6.3 miles from a point on the Richter Pass Highway. An abandoned logging road reaches to within a few feet of the final post for Buck claims 1 and 2.

## TOPOGRAPHY AND PHYSICAL ENVIRONMENT

Lying at an elevation between 3500 feet and 4000 feet the Buck claims rise from semi-arid sage covered highland valleys to impressive mountain top cliffs composed of massive nepheline syenites. Forest growth at higher elevations is generally light with the larger conifers being removed by past logging. Although overburden covers the areas peripheral to the syenitic cliffs outcrops are plentiful along resistant ridges.

## HISTORY

The Buck claims 1 - 3 were staked by Mr. Ken Butler on August 29, 1963 to cover an outcropping of porphyritic nepheline syenite. Portions of the nepheline rich stock were sampled and were sent to the B. C. Research Council and the International Minerals and Chemical Corp. for assaying. The Mineral Resources Branch of the Department of Energy, Mines and Resources was also involved in testing various refining methods needed to remove the unwanted non-magnetic  $\text{Fe}_2\text{O}_3$  from the nepheline syenite.

HISTORY, cont'd.

The claims lapsed September 10, 1971 and were restaked by Bethlehem on March 29, 1972. Major development and exploration work such as trenching and drilling has not been necessary due to adequate bedrock exposure on the property.

Large scale mapping of the Kettle River area including the Kruger - Richter Mountain area was carried out by Dr. H. S. Bostock for the Geological Survey of Canada in 1929-1930. The map prepared is Keremeos Map 341A done on the scale of 1 inch to 1 mile. The Kruger Alkaline stock was mapped by N. C. Lenard, P. Geology, P. Eng. of Calgary. Detailed mapping of the Buck claims was carried out by the writers in January 1973.

CLAIMS

A total of four claims comprise the property. A list of claims follows:

<u>Name of Claim</u>	<u>Record Number</u>	<u>Expiry Date</u>
Buck 1 - 4	28834(0)-28837(0) Incl.	Mar. 29, 1973

GEOLOGY

I REGIONAL GEOLOGY

In the Osoyoos Mining District south of the Richter Pass Highway the oldest rocks are a series of altered siliceous sediments and volcanics considered to be of Carboniferous age. They are intruded by the Kruger Alkaline stock which forms part of the Jurassic aged Okanagan Intrusives. The Kruger stock strikes in a northwesterly direction some seven miles from the U. S. boundary to the Similkameen River and has a variable width of from one to three miles.

The stock is syenitic with a low quartz content and a high alumina-alkali composition. The alkaline composition is due in part to the high content (37%) of nepheline ( $\text{Na}_6 \text{K}_2 \text{Al}_8 \text{Si}_9 \text{O}_{34}$ ) in the syenite.

Several varieties of the Kruger syenite can be delineated by subdividing the stock on the basis of ferromagnesian content. Three-quarters

## I REGIONAL GEOLOGY, cont'd.

of the Kruger stock has varieties of syenite whose mafic composition exceeds the felsic component. Sharp contacts between varieties have not been observed by the writers yet the contacts are defined close enough to postulate a series of successive intrusions of syenite during a short interval of emplacement. The stock appears to have had only weak metamorphic affects on the Carboniferous sediments through which it intruded.

## II LOCAL GEOLOGY

The Buck claims are centered on the mountain top formed out of the inner porphyritic nepheline syenitic plug of the Kruger stock. Because of its competency and composition the syenite has formed a prominent massif resistant to erosion and past glaciation. This core has the least ferromagnesian minerals and is of commercial interest because of its high alkali-alumina, 38% content which is 15.6% and 22% respectively. Nepheline, which makes up to 37% of the syenite, occurs as medium and coarse grained phenocrysts up to 3 cm in length.

Surrounding this salic core is a variety of nepheline syenite that has a mafic content greater than 50%. It is dark gray, generally fine to medium grained and appears foliated in places. In the northern part of the claim group this syenite has a gradational contact with the porphyritic nepheline syenite. The ferromagnesium minerals (Femic) are dominantly biotite and hornblende with some accessory minerals such as sphene, magnetite, zircon and apatite.

The central salic plug and the fine grained femic syenite are bounded on the west, south and southeast by a coarse grained mafic rich (greater than 45%) nepheline syenite. Hornblende, some of which are chloritized, is the dominant mafic mineral. Orthoclase and nepheline occur in about equal percentages. Fractures throughout the stock are occasionally healed with epidote.

Argillaceous sediments outcrop the east of the nepheline syenite and are badly fractured, solution banded and silicified.

DISCUSSION OF RESULTS

A total of 17 rock samples, each weighing from 3 to 4 pounds were obtained from exposures located within the salic phase of the porphyritic nepheline syenite (Fig. 2). These were forwarded to General Testing Laboratories in Vancouver and assayed for  $Fe_2O_3$  content. Values ranged from a minimum of 3.76% to a maximum of 7.42% and averaged 5.60%  $Fe_2O_3$ .

Based on results obtained from earlier metallurgical test work it appears probable the iron content could be reduced to approximately .5%  $Fe_2O_3$  by magnetic separation. An iron content in this range would be unsuitable for glass manufacture but may possibly be acceptable for the manufacture of fibre glass. The limited tonnage requirements and high transportation costs to available markets precludes the possibility of developing the reserve for this purpose.

*check!*

JRB/rb

*John Bellamy*  
J. R. Bellamy

*R. E. Anderson*  
R. E. Anderson, P. Eng.



DOMINION OF CANADA:  
PROVINCE OF BRITISH COLUMBIA:

To Wit:

**In the Matter of** Expenditures incurred by Bethlehem  
Copper Corporation Ltd., in completing geological  
mapping over Buck 1 - 4 inclusive mineral claims,  
Osoyoos Mining Division.

I, R. E. Anderson, P. Eng.

Bethlehem Copper Corporation Ltd.  
of 2100 - 1055 West Hastings Street  
Vancouver 1, B. C.

in the Province of British Columbia, do solemnly declare that

Personnel - Wages and Salaries

R. J. Nethery - Senior Geologist	January - 4 days	\$ 231.80
J. R. Bellamy - Geologist	January - 4 days	168.20
R. E. Anderson - Geologist	January - 1 day	60.00
		<u>\$ 460.00</u>

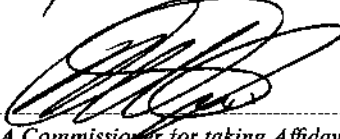
Supplies, Equipment and Services

Vehicle - 5 days @ \$15.00/day		\$ 75.00
Room and Board - 8 days @ \$20.00/day		160.00
Assaying (General Testing)		70.00
Drafting Services	January - 2 days	80.00
Power Saw Rental	January - 4 days	20.00
		<u>\$ 865.00</u>

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the *City*  
of *Vancouver*, in the  
Province of British Columbia, this *5<sup>th</sup>*  
day of *February* *1973*, A.D.

*R. E. Anderson, P. Eng.*

  
A Commissioner for taking Affidavits within British Columbia or  
A Notary Public in and for the Province of British Columbia.

In the Matter of

-----  
-----  
-----  
-----



**Statutory Declaration**  
(CANADA EVIDENCE ACT)

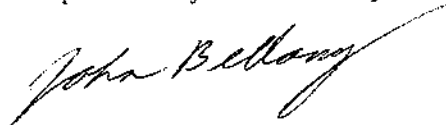


C E R T I F I C A T E

I, J. R. Bellamy, do hereby certify:

- 1) I am a graduate of the University of Alberta,  
B. Sc., Majors Geology, 1970.
- 2) I have practiced my profession continuously since 1970.
- 3) This report is based on my personal examinations of the property in January, 1973. During that period, and at present, I have been in the employment of Bethlehem Copper Corporation Ltd., 2100 - 1055 West Hastings Street, Vancouver 1, B. C. as an exploration geologist.

Respectfully submitted,



J. R. Bellamy  
Geologist



# GENERAL TESTING LABORATORIES

DIVISION: SUPERINTENDENCE COMPANY (CANADA) LTD

1001 EAST PENDER STREET, VANCOUVER 6, B.C., CANADA  
 PHONE (604) 254-1647 TELEX 04-507514 CABLE SUPERVISE

TO:  
**BETHLEHEM COPPER CORPORATION LTD.**  
**#2100 - 1055 West Hastings Street,**  
**Vancouver 1, B.C.**  
**Attention: Mr. E. Anderson**

## CERTIFICATE OF ASSAY

No.: **7301-2350**      DATE: **25-1-73**

We hereby certify that the following are the results of assays on: **Ore Samples**

MARKED	IRON	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
	(Fe <sub>2</sub> O <sub>3</sub> )%							
1.	3.76							
2.	5.20							
3.	5.28							
4.	5.02							
5.	5.24							
15.	6.68							
16.	6.27							
17.	7.42							
18.	6.16							
19.	5.65							
20.	5.79							
21.	5.63							
22.	5.83							
25.	3.62							
26.	5.79							
12.	4.78							
13.	7.02							

LW/ak

NOTE: REJECTS RETAINED ONE MONTH. PULPS RETAINED THREE MONTHS. ON REQUEST PULPS AND REJECTS WILL BE STORED FOR A MAXIMUM OF ONE YEAR.

ALL REPORTS ARE THE CONFIDENTIAL PROPERTY OF CLIENTS. PUBLICATION OF STATEMENTS, CONCLUSION OR EXTRACTS FROM OR REGARDING OUR REPORTS IS NOT PERMITTED WITHOUT OUR WRITTEN APPROVAL. ANY LIABILITY ATTACHED THERETO IS LIMITED TO THE FEE CHARGED.

*L. Wong*  
 L. Wong

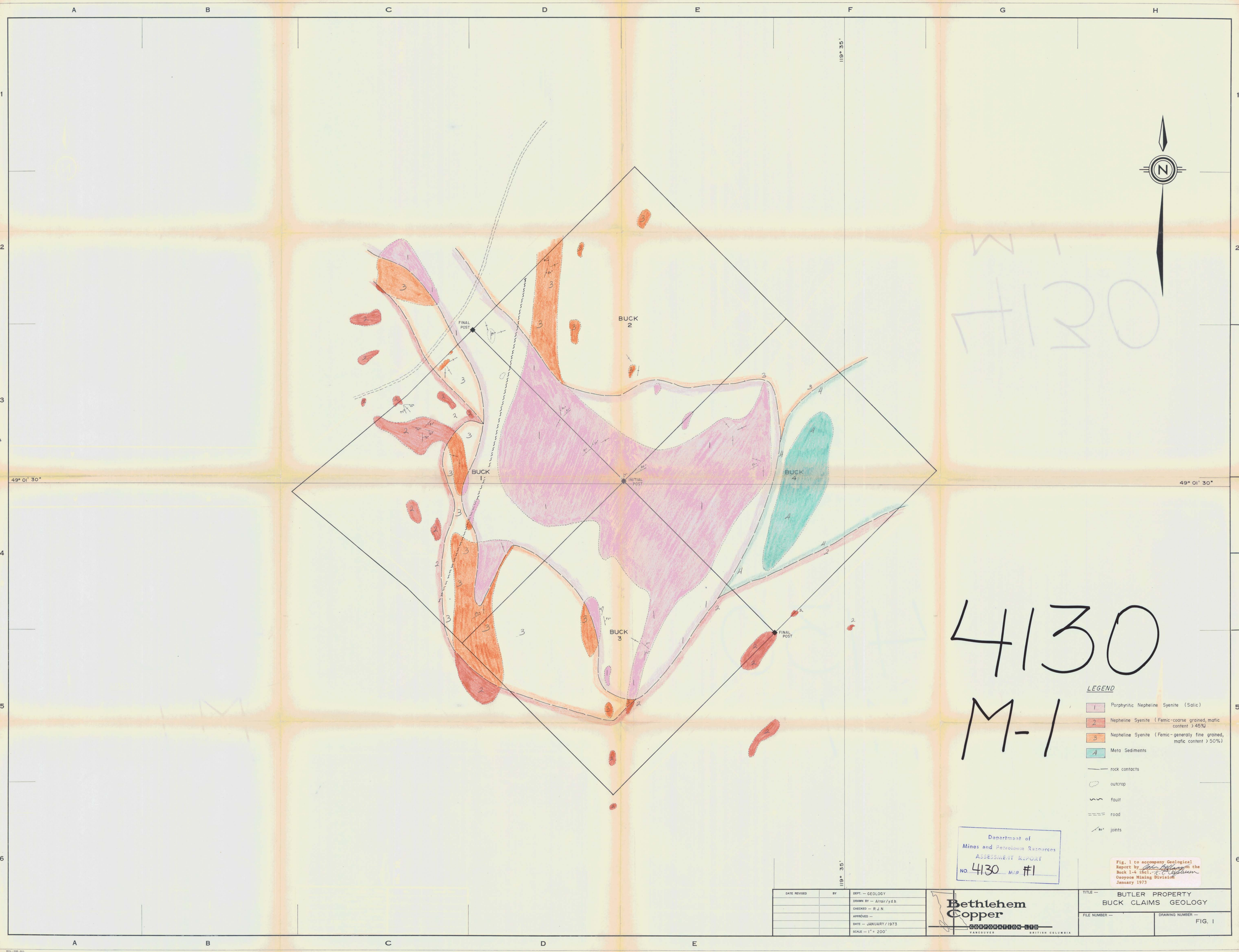
PROVINCIAL ASSAYER

COPY

Analytical and Consulting Chemists, Bulk Cargo Specialists, Surveyors, Inspectors, Samplers, Weighers

MEMBER: American Society For Testing Materials • The American Oil Chemists' Society • Canadian Testing Association  
 REFEREE AND/OR OFFICIAL CHEMISTS FOR Vancouver Merchants Exchange • National Institute Of Oilseed Products • The American Oil Chemists' Society  
 OFFICIAL WEIGHMASTERS FOR Vancouver Board Of Trade • Vancouver Merchants Exchange

A P P E N D I X



W  
T  
R  
O

4130  
M-1

- LEGEND**
- 1 Porphyritic Nepheline Syenite (Salic)
  - 2 Nepheline Syenite (Femic-coarse grained, mafic content > 45%)
  - 3 Nepheline Syenite (Femic-generally fine grained, mafic content > 50%)
  - 4 Meta Sediments
  - rock contacts
  - outcrop
  - ~ fault
  - == road
  - ✶ joints

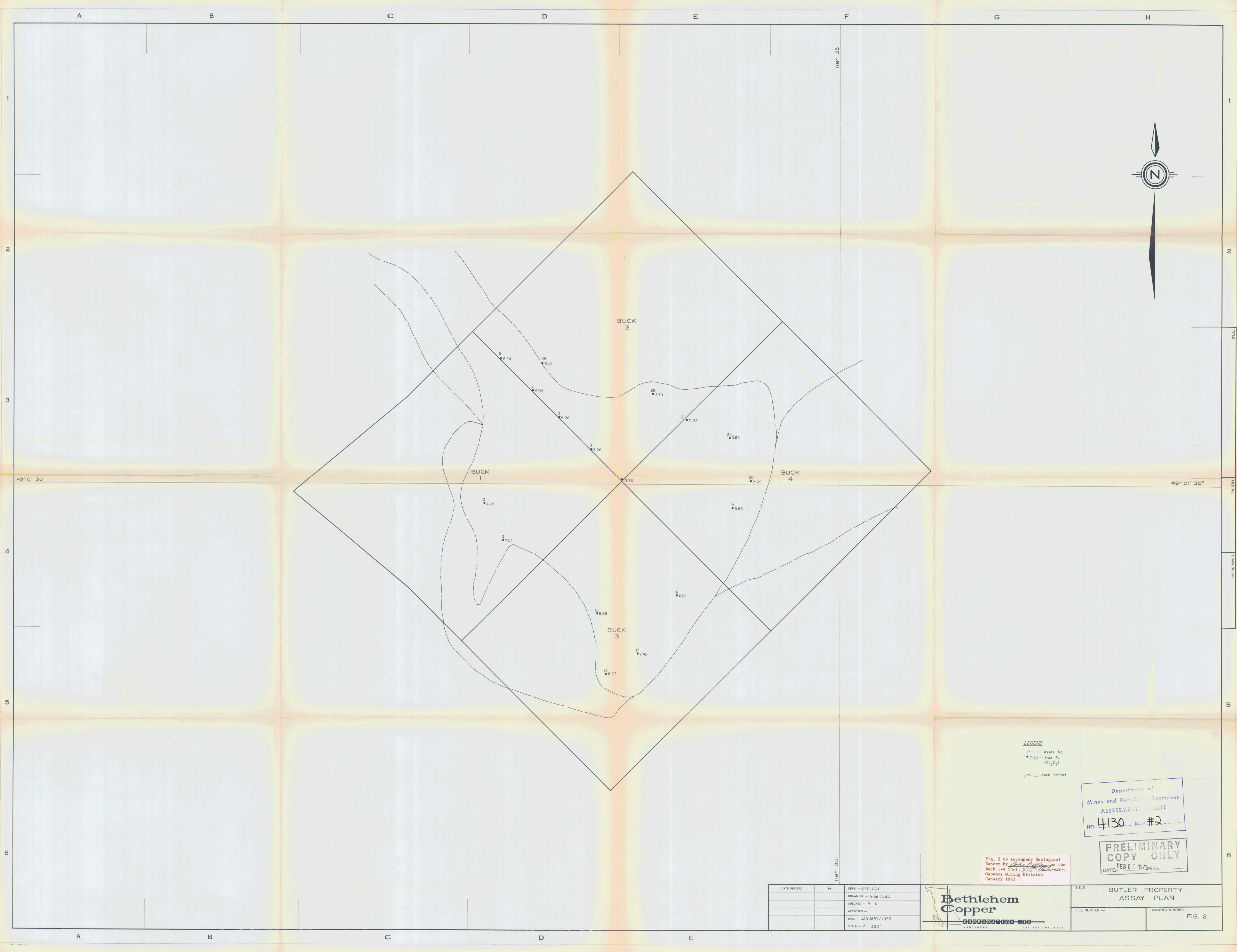
Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 4130 MAP #1

Fig. 1 to accompany Geological  
Report by *John Butler* on the  
BUCK 1-4 CLAIMS, *Butler Property*  
Ossoyos Mining Division  
January 1973

DATE REVISED	BY	DEPT. - GEOLOGY
		DRAWN BY - A102/ysd
		CHECKED - R.J.N.
		APPROVED -
		DATE - JANUARY / 1973
		SCALE - 1" = 200'

**Bethlehem  
Copper**  
CORPORATION LTD.  
VANCOUVER BRITISH COLUMBIA

TITLE - BUTLER PROPERTY  
BUCK CLAIMS GEOLOGY  
FILE NUMBER - DRAWING NUMBER -  
FIG. 1



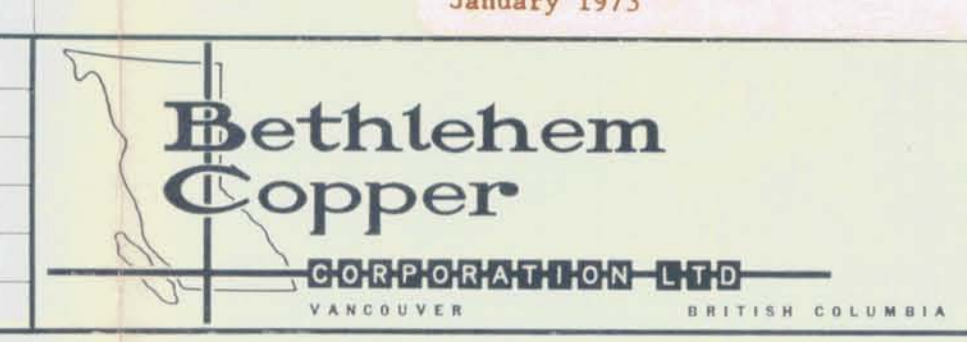
**LEGEND**  
 17 — Assay No  
 • 7.42 — Iron %  
 (Fe<sub>2</sub>O<sub>3</sub>)  
 — rock contact

Department of  
 Mines and Petroleum Resources  
 ASSESSMENT REPORT  
 NO. 4130 MAP #2

**PRELIMINARY  
 COPY ONLY**  
 DATE: FEB 01 1973 PER: \_\_\_\_\_

Fig. 2 to accompany Geological  
 Report by *John G. ...* on the  
 Buck 1-4 Incl. *...*  
 Osoyoos Mining Division  
 January 1973

DATE REVISED	BY	DEPT. — GEOLOGY
		DRAWN BY — Altir/ydb
		CHECKED — R.J.N.
		APPROVED —
		DATE — JANUARY / 1973
		SCALE — 1" = 200'



TITLE — BUTLER PROPERTY ASSAY PLAN	
FILE NUMBER —	DRAWING NUMBER —
	FIG. 2