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GEOCHEMICAL REPORT

BETHSAIDA COPPER MINES LTD.,

19 Miles S.E. of Ashcroft, B.C.

50° 121° S.E.

BY

GEORGE E. APPS, B.A.Sc.,

FOR

W. M. SIROLA, P. ENG.

APRIL, 1956 to SEPTEMBER, 1956.

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MAPS IN POCKET

#1 500 Scale Preliminary Geochemical Map

#2 500 Scale Geochemical Map

BETHSAIDA COPPER MINES LIMITED
(N.P.L.)

Geochemical Survey

Introduction

The Bethsaida Copper Mines Limited property comprises the Tamarac-Shamrock group of Crown-granted claims and fifty-three claims held by location in the Highland Valley, south-east of Ashcroft, B.C. The located claims surround the Crown-grants, upon which known copper showings exist, and extend west to the OK property, which was at one time a producing copper mine.

Early in 1956, Bethsaida Copper Mines Limited started an exploration programme to search for copper ore bodies on this ground and to evaluate the known mineral showings. McPhar Geophysics Ltd. were hired to start a geochemical (soil sampling) survey on the property to develop targets for further exploration by trenching and drilling. This survey was continued and completed by the staff of Bethsaida Copper Mines Limited.

Survey Procedure

The survey procedure is :

1. Establish control of sample locations;
2. Collect soil samples
3. Test samples for copper content
4. Map results.

To establish survey control, the location lines of the claims were surveyed (by McWilliam, Whyte & Serle, B.C.L.S.)

and tied in to the Crown-granted claims. Two east-west base lines 2,000' apart were run with transit and chain and north-south lines were turned off these base lines at 600' intervals. These north-south lines were run as picket lines with marked stations being established at 200' intervals with chain and clinometer.

Soil samples were taken at each station on the picket lines and at points 200' east and west (by compass and pacing) of the stations to give coverage on a 200' grid pattern. The sample numbers were marked on pickets or blazed trees at all sample locations.

Samples were taken by boring a hole with an auger (approximately 1" diameter) to a standard depth of 1'. The samples were obtained from soil adhering to the auger. Approximately 1 to 2 teaspoons of soil are taken for the sample, which is collected and transported in a small waxed cardboard carton. The number of the picket line and the sample number are marked on the box. Any prominent slopes or drainage features are recorded in the field notes.

The sampling party consists of two men. One locates the sample locations by compass and pacing from the picket line, marks the sample number on a stake or tree at that location and takes notes on topography, etc. The other man collects the samples. The field party will collect an average of 50 to 55 samples in a shift.

The testing for copper content was done in the camp by a man trained on the job in geochemical techniques by a McPhar Geophysics Ltd. technician. McPhar Geophysics Ltd. had conducted surveys for the company on other Highland Valley properties and started the survey of the Bethsaida property.

The McPhar soil test kit for copper was used for the tests. A standard volume of soil (approximately 0.2 gm.) measured out with a plunger-type spatula or a small spoon is transferred to a glass mixing tube. 2 ml of 'Extractol' are added to the tube, which is capped and shaken vigorously for one minute. One ml of the solution from the mixing tube is then filtered through filter paper in a polyethylene funnel into a second mixing tube. One ml of 'Indicator' solution is added and the tube is capped and shaken for 30 seconds. Upon standing for a few seconds, the immiscible liquids break into two separate phases and a colorimetric comparison is made against a color chart or a set of standards. The standards allow for visual estimation between 0 and 50 parts per million copper (ppm).

The upper limit of the tests is extended by adding additional 1 ml portions of 'Indicator' solution, or by halving the original soil sample. In the Bethsaida the range was extended to 400 ppm where necessary.

The results in parts per million were plotted on a base map at 1" = 300', and a map was prepared at 1"= 500' with colored areas indicating the range of copper content in the soil.

Results:

Three main anomalous areas were found on the Bethsaida property: on the Shamrock and IXL claims, on the Tamarac and

Shamrock claims and on the PR 2, PR 4, MD 3, MD 5 and FC Fractional claims. These areas were subsequently found to be three of the main mineralised areas on the property. Copper mineralisation has also been found under some of the smaller anomalies.

No copper mineralisation has been found in areas which are not anomalous.

Effect of Topography and Overburden

Overburden and topography must be considered in examining the results of a geochemical survey.

An excessive depth of overburden can prevent the transportation of copper ions from bedrock to surface. Prior work in the Highland Valley has indicated that the detection of copper in bedrock can be made through a depth of up to 20 to 25' of overburden.* A mineralised area under such overburden conditions would, of course, give a much weaker anomaly than if lightly covered.

Glacial or transported overburden containing mineralised float can give erratic anomalous samples.

In hilly areas, anomalies may be displaced down-hill from the mineralised zone due to ground water movement or soil creepage. Water seepage down-draws may carry the copper values for some distance below the mineralised zone. Swampy areas generally contain a dark soil with a high ion exchange capacity which absorbs an abormal amount of copper from ground waters and may show false anomalies.

* J. Shivas - McPhar Geophysics Ltd. March, 1956.

The overburden on the Bethsaida property is generally light (from 1 to 10'). It is heavier on the PR 2 and north-east part of the MD 3 claims, in the area to the north-east of this and locally on other parts of the property.

Displacement or extension of anomalies down-hill is demonstrated by the 'tail' of the Shamrock-IXL anomaly running north on to the PR 8 Mineral Claim and by the anomaly running north-east across the PR 2 Mineral Claim. Overburden, as shown by trenching in the south-west corner of the PR 2 is about 20' deep and on the eastern side of the claim is in excess of 25' deep.

There are very few swampy areas on the property.

Conclusions

The geochemical survey of the Bethsaida property has shown three large anomalous areas and numerous smaller ones. The large anomalies have been tested and found to be overlying large zones or areas in which there is copper mineralisation. If any ore bodies exist on the property in areas of light overburden, it is almost a certainty that they will be in geochemically anomalous areas.

In areas of heavy overburden, such as the north-eastern part of the property, the lack of anomalous values may mean only that the overburden prevents the copper ions travelling to the surface and the presence of anomalies may be from the transportation of copper values from mineralised areas uphill by surface waters. Therefore, results in such areas are inconclusive.

George E Apps

GEORGE E. APPS, B.A.Sc.
Engineer in Charge.

March 30, 1957.

BETHSAIDA COPPER MINES LTD.

Cost of Surveying and Line Cutting for Geochemical and Geophysical Surveys.

April 6th, 1956 to April 6th, 1957.

Location and Control Survey

McWilliam, Whyte & Serle, B.C.L.S.		$4,973.55	
Number of claims surveyed	53		
Cost per claim	$93.84		
Number of above claims in Geochemical and Geophysical surveys	42		
Portion of cost chargeable to surveys - 42 x $93.84	=		$3,941.00

Base Line Surveys and Picket Lines

Surveyor - 12 shifts	@	$15.00	$180.00	
Labour 121 shifts	@	14.00	1,695.00	
Engineering and Supervising 6 days	@	30.00	180.00	2,055.00
			TOTAL	$5,996.00

Charge to Geochemical Survey	$1,696.00
Charge to Magnetometer Survey	$4,300.00

George E. Ogden

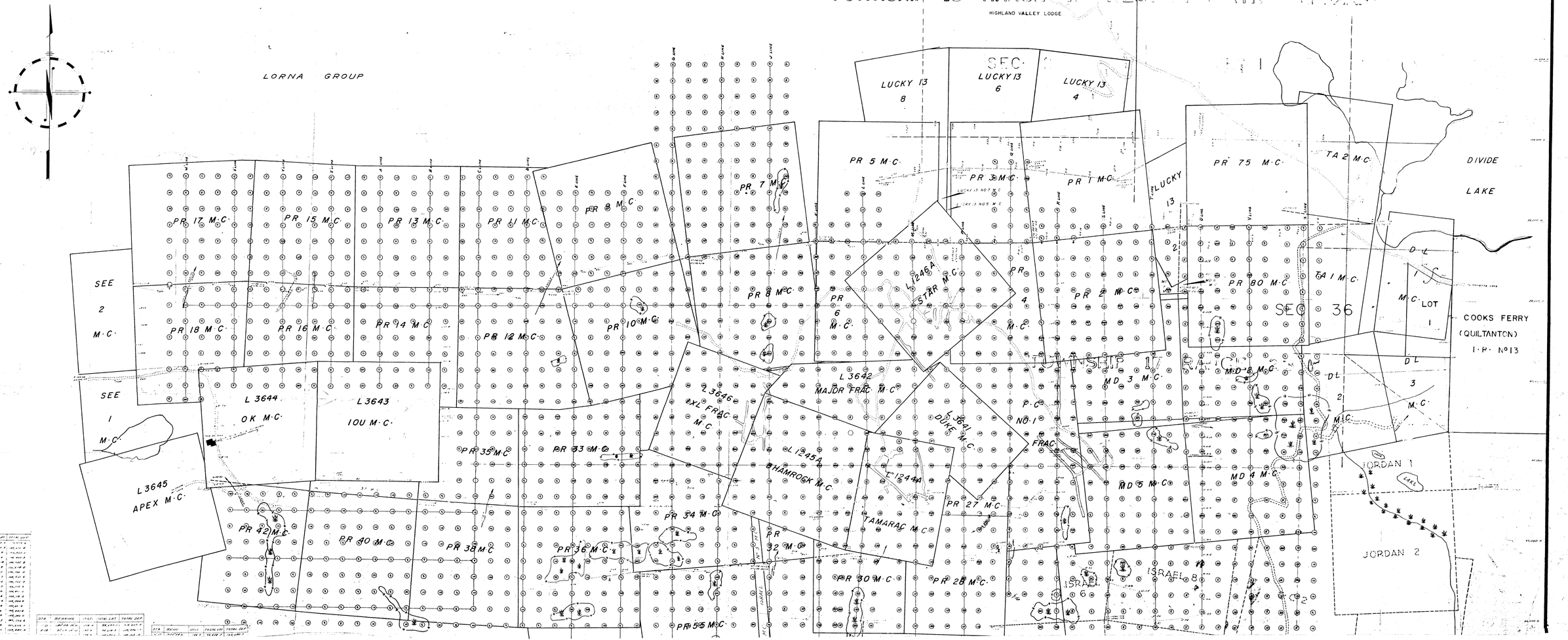
BETHSAIDA COPPER MINES LTD.

COST OF GEOCHEMICAL SURVEY

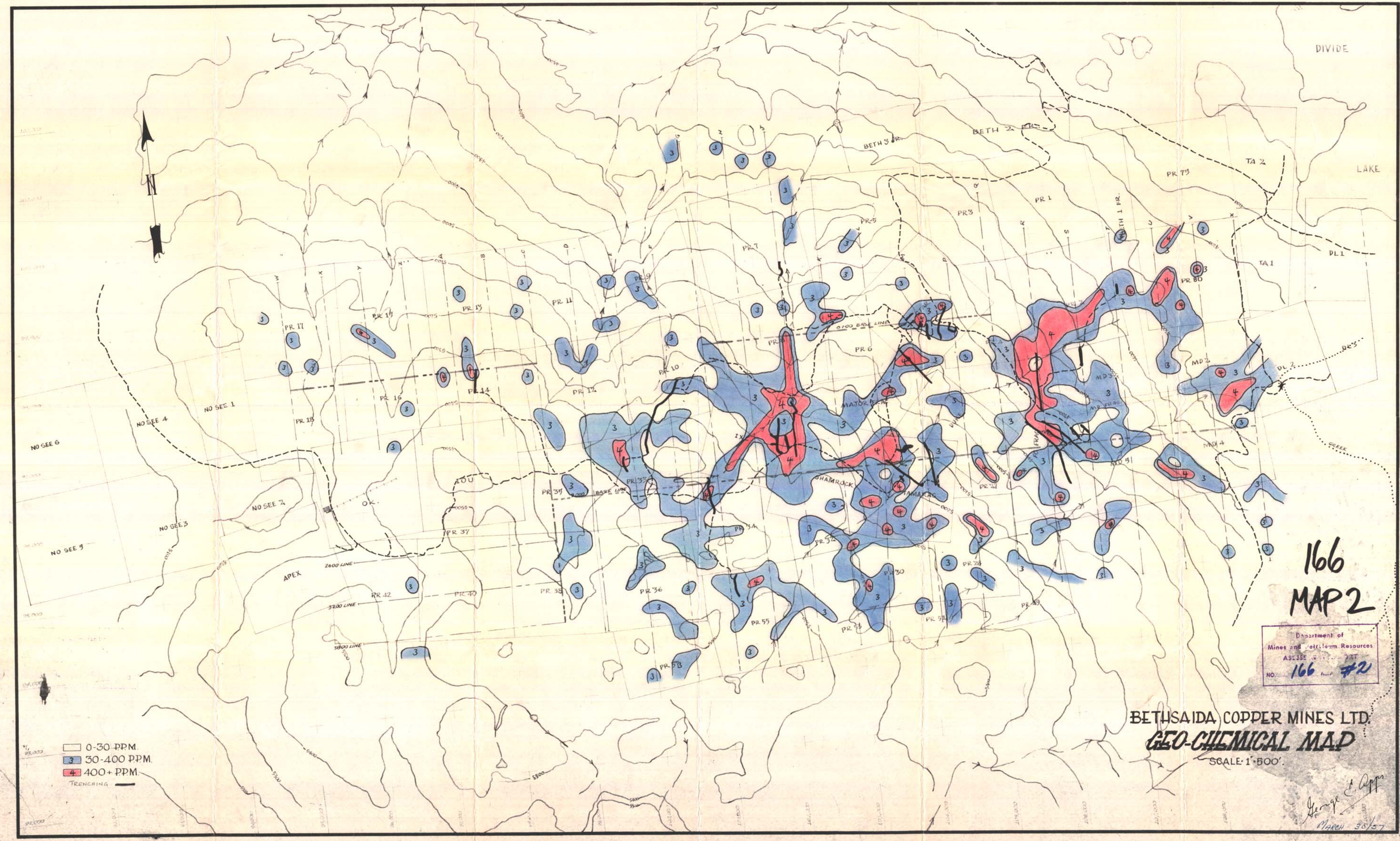
APRIL, 1956 - APRIL, 1957

Collecting soil samples:		
68 shifts @	$14.00	$ 952.00
Testing samples & plotting results:		
30 shifts @	14.00	420.00
Drafting:		
6 shifts @	15.00	90.00
Engineering & Supervision:		
10 days @	30.00	300.00
Portion (60%) of McPhar Geophysics Ltd. charges for starting survey and supplying reagents etc.		
60% of $1,880.00		1,130.00
(other portion chargeable to survey over crown granted claims)		
Portion of line cutting and control survey costs (see preceding page)		1,696.00
	TOTAL COST	$4,568.00
COST PER CLAIM COVERED (42)	$108.00	

George E Apter


TOWNSHIP 18 RANGE 3 WEST OF NORTH THIRD MERIDIAN
HIGHLAND VALLEY LODGE
LORNA GROUP
LUCKY 13 8
LUCKY 13 6
LUCKY 13 4
SEC. LUCKY 13
PR 5 M.C.
PR 3 M.C.
PR 1 M.C.
PR 75 M.C.
TA 2 M.C.
DIVIDE LAKE
PR 17 M.C.
PR 15 M.C.
PR 13 M.C.
PR 11 M.C.
PR 9 M.C.
PR 7 M.C.
L 1246A STAR M.C.
PR 80 M.C.
TA 1 M.C.
SEC. 36
M.C. LOT 1
COOKS FERRY (QUILTANTON) I.R. No 13
SEE 2 M.C.
PR 18 M.C.
PR 16 M.C.
PR 14 M.C.
PR 12 M.C.
PR 10 M.C.
PR 8 M.C.
PR 6 M.C.
PR 4 M.C.
PR 2 M.C.
L 3642 MAJOR FRAC. M.C.
MD 3 M.C.
MD 8 M.C.
SEE 1 M.C.
L 3644 OK M.C.
L 3643 IOU M.C.
L 3646 EXL FRAC. M.C.
L 3641 DUKE M.C.
P.C. NO. 1 FRAC.
PR 35 M.C.
PR 33 M.C.
L 1245A SHAMROCK M.C.
L 1244A
MD 4 M.C.
MD 5 M.C.
L 3645 APEX M.C.
PR 42 M.C.
PR 40 M.C.
PR 38 M.C.
PR 36 M.C.
PR 34 M.C.
PR 32 M.C.
TAMARAC M.C.
PR 27 M.C.
PR 30 M.C.
PR 28 M.C.
PR 55 M.C.
ISRAEL 6
ISRAEL 8
JORDAN 1
LAKE
JORDAN 2


PR 17 M·C
PR 15 M·C
PR 13 M·C
PR 11 M·C
PR 9 M·C
PR 7 M·C
PR 3 M·C
PR 1 M·C
LUCKY 13
LAKE
SEE 2 M·C
PR 18 M·C
PR 16 M·C
PR 14 M·C
PR 12 M·C
PR 10 M·C
PR 8 M·C
L 1246A STAR M·C
PR 6 M·C
PR 4 M·C
PR 2 M·C
PR 80 M·C
TAIM·C
SEC 36
M·C LOT 1
COOKS FERRY (QUILTANTON) I·R· No 13
TOWNSHIP 17 RANGE
SEE 1 M·C
L 3644 OK M·C
L 3643 IOU M·C
L 3646 XL FRAC M·C
L 3642 MAJOR FRAC M·C
L 3641 DUKE M·C
P·C NO·1 FRAC
MD 3 M·C
MD 6 M·C
DL 2 M·C
DL 3 M·C
L 3645 APEX M·C
PR 35 M·C
PR 33 M·C
L 1245A SHAMROCK M·C
L 1244A TAMARAC M·C
MD 5 M·C
MD 4 M·C
JORDAN 1
LAKE
PR 42 M·C
PR 40 M·C
PR 38 M·C
PR 36 M·C
PR 34 M·C
PR 32 M·C
PR 27 M·C
JORDAN 2
PR 30 M·C
PR 28 M·C
ISRAEL 6
ISRAEL 8
C·C 2
PR 57 M·C
PR 55 M·C
PR 53 M·C
PR 51 M·C
PR 49 M·C
C·C 4
HOLY
GROUP
OF
LOCATION
ISRAEL 7
ISRAEL 5
ISRAEL 1
ISRAEL 2
STA
BEAR
DIST
TOTAL LAT
TOTAL DEP
PRELIMINARY PLAN OF
BETHSAIDA GROUP
BETHSAIDA COPPER SYNDICATE
#166
SCALE - 1 INCH = 300 FEET
MAP 1
BETHSAIDA COPPER MINES LTD
PRELIMINARY GEOCHEMICAL PLAN
SOIL SAMPLE LOCATION ⑩ P.P.M. Cu
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 166 MAP #1
George E Apps
Mar/30/57
McWILLIAM WHYTE & SERLE
B.C LAND SURVEYORS
219 VICTORIA ST KAMLOOPS



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MAP 2

BETHSAIDA COPPER MINES LTD.

GEO-CHEMICAL MAP

SCALE: 1"-500'.

George E. Cipp

MARCH 30/57