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1758 Western Parkway,
 Vancouver 8, B. C.
 25th. May 1954.

Chief Gold Commissioner,
 Department of Mines,
 Victoria, B. C.

Dear Sir:

With regard to my report on the Geophysical Survey of some claims of the Cowichan Copper Company dated 24 May 1954 please note that the costs on the four claims finally allowed for assessment purposes are calculated as follows:

Cost for total area of 170 acres May 1st - Oct.20th.	
Self as geophysical operator @ \$35 for 30 days	1,050
Helper @ \$10 for 30 days	300
Line cutting Surveyor @ \$15 for 70 days	1,050
" " 3 Helpers @ \$10 for 70 days	2,100
<hr style="width: 10%; margin-left: auto; margin-right: 0;"/>	
Total cost for whole area surveyed	\$ 4,500
Then 25% of total acreage in allowed claims	
cost	\$ 1,125
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Description	Unit	Value
Total		
CHECKED		

Yours sincerely,
A. C. Skerl,
 Dr. A. C. Skerl P. Eng.

REPORT ON A SELF-POTENTIAL SURVEY
OF THE PROPERTY OF
THE COWICHAN COPPER COMPANY,
COWICHAN LAKE, B. C.
BY DR. A. C. SKENL.

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PLANS:

#1 MAP SHOWING LOCATION

SELF-POTENTIAL SURVEY

RELATIONSHIP OF THE SURVEY

TO THE CLAIMS.

- #2 Key map showing location
- #3 Plans showing relationship
of Geophysical Survey to claims
- #4 Sheet 2 - North Area

I N T R O D U C T I O N .

In April 1953 Dr. C. G. Macdonald, the President of the Cowichan Copper Company requested the writer to examine the company's claims and assess the possibilities of conducting a geophysical survey that might discover further ore-bodies.

It was recommended that a self-potential survey be made starting in the area of the known ore-body and extending in the direction of the supposed belt of more intense mineralization.

A preliminary survey was therefore made by the writer over the known ore-body and a well-defined anomaly was obtained. The survey was then extended and this account is a report on the results achieved.

As indicated on the map the survey covers ground for which this work is not claimed for assessment purposes but the results are needed for the interpretation of the rest. The costs submitted by the management have been segregated so that only the work in the claims for which assessment is filed is included.

The line cutting and staking of stations continued for most of the time between May 1st. and October 20th. 1953 but the instrument work was confined to the periods 14th. June to 26th. June and 1st. to 20th October 1953 apart from the preliminary work.

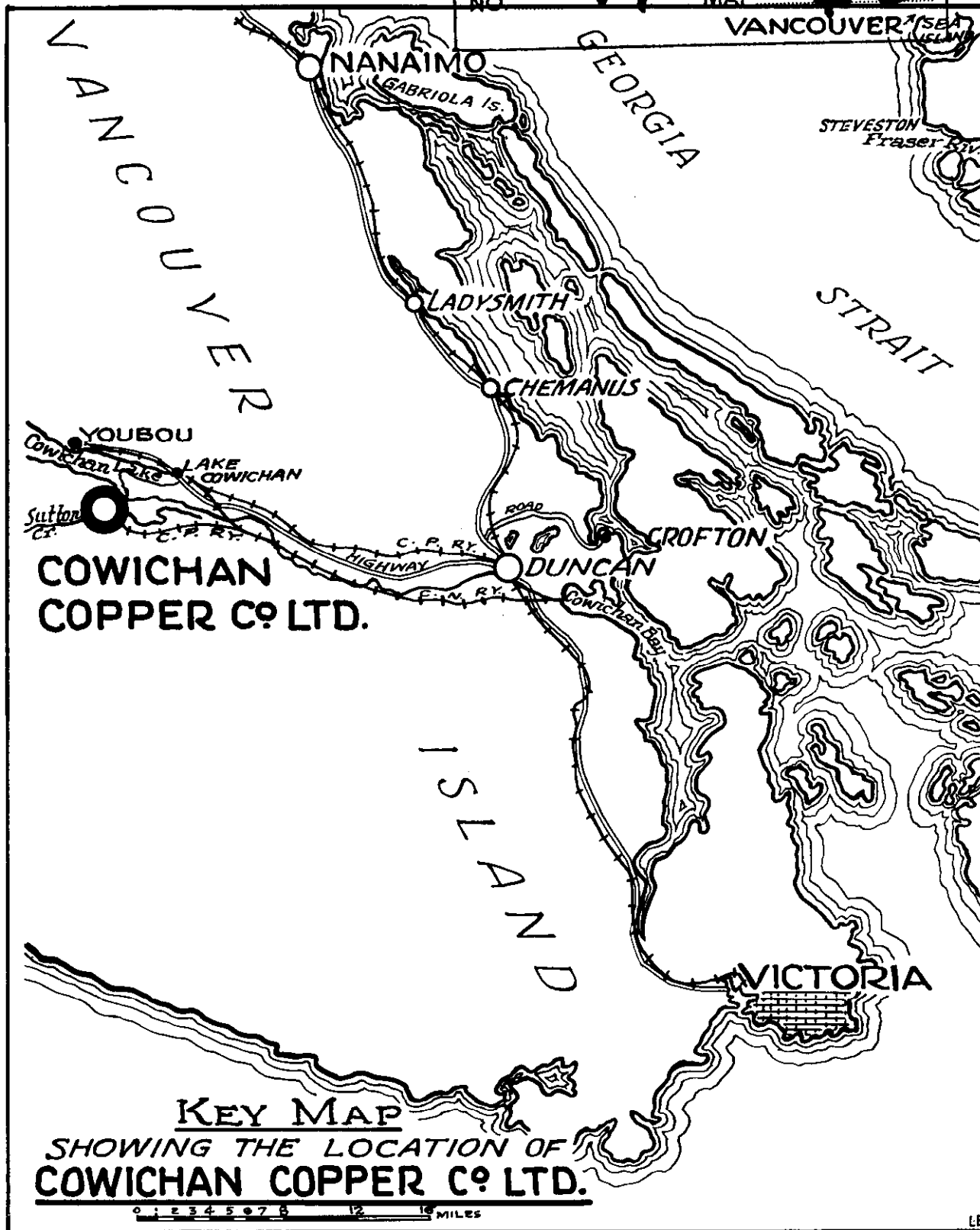
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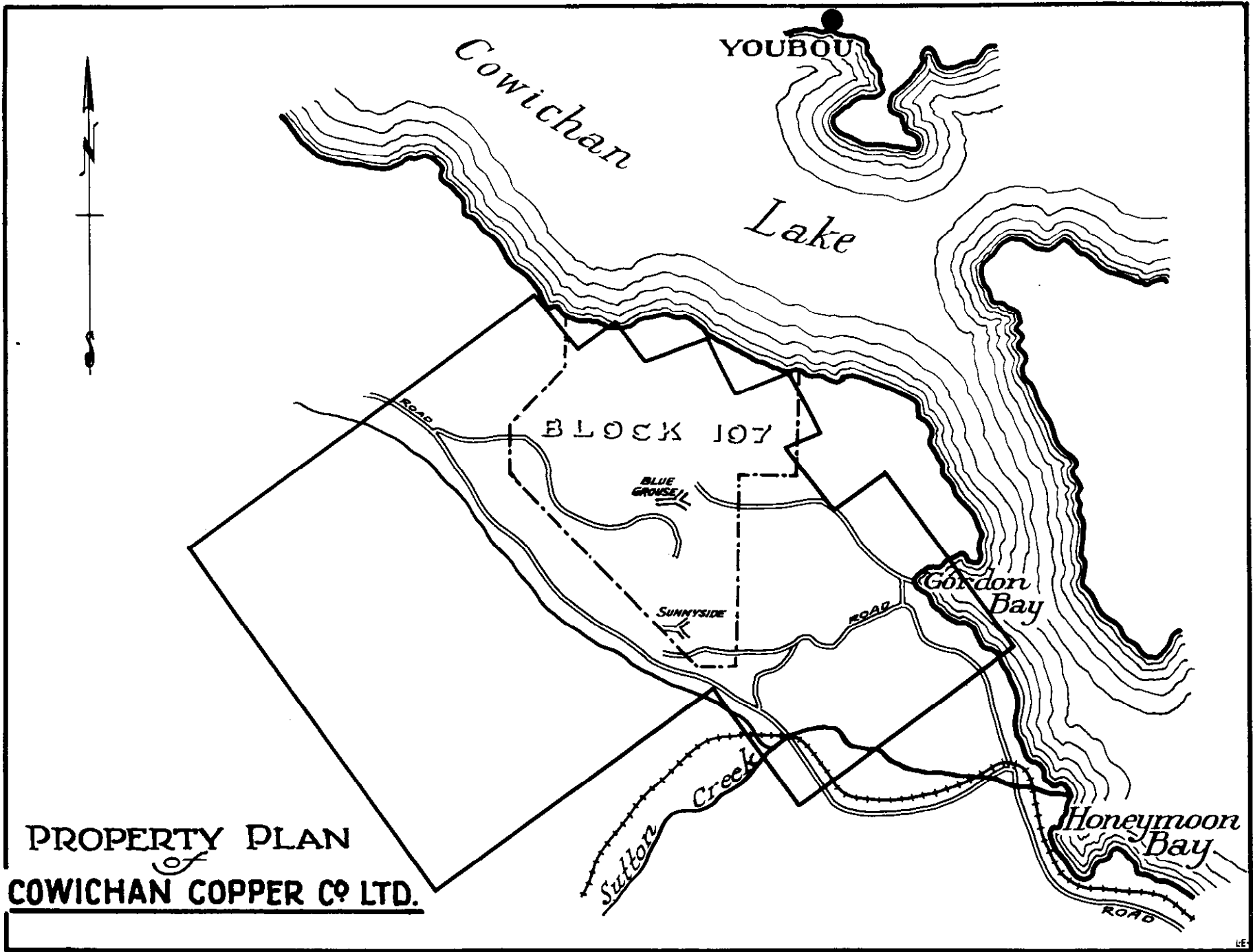
MAP

#2



KEY MAP
SHOWING THE LOCATION OF
COWICHAN COPPER CO. LTD.

0 1 2 3 4 5 6 7 8 9 10 MILES



PROPERTY PLAN
of
COWICHAN COPPER CO. LTD.

S I T U A T I O N.

The accompanying map, taken from the company's prospectus of July 1954, shows the location of the property on the south side of Cowichan Lake, Vancouver Island, B. C.

The area is one of considerable relief ranging from 500 to 1800 feet above sea level. Some of the slopes are very steep making the progress of the survey difficult and slow.

H I S T O R Y.

The original properties were known as the Blue Grouse and Sunnyside for which the first recorded work was in 1915 and by 1919 about 2,500 tons averaging 7% copper are reported to have been shipped.

In 1920 the Consolidated Mining and Smelting Company did about 3,000 feet of diamond drilling in eight holes most of which were under the main working in the Blue Grouse claim. Several intersections of good grade and width were obtained but the company relinquished its option.

In 1928 the Pacific Tidewater Company started a projected 500 feet cross-cut adit into the hillside but abandoned it at 60 feet.

In 1953 the present company extended this tunnel and by means of a raise encountered the ore that had been indicated by the diamond drilling. Two shipments of development rock in February and April respectively of 1954 totalled 1,258 tons averaging 6.3% copper.

C L A I M S.

There are sixty claims altogether of which three are crown granted.

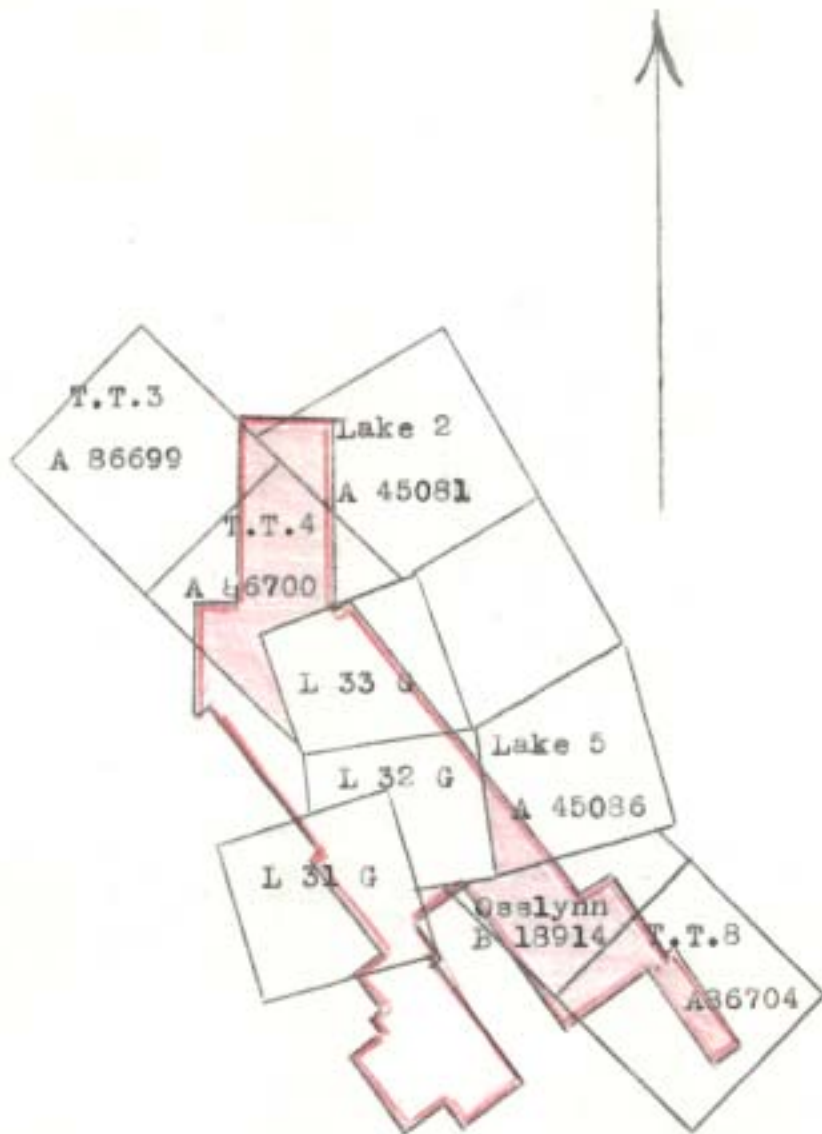
They include the Timber Block 107 totalling 600 acres for which the company has the licence to mine the base metals.

They also include the old workings known as the Blue Grouse and Sunnyside that are about 4000 feet apart.

The accompanying plan (scale 1" - 1500') shows the relationship of the area surveyed to some of the claims.

Of the total area covered by the geophysical survey 40% was in the following six claims for which this report is therefore submitted as assessment work:

NAME	TAG
Osslyn	E 18914
T T 3	A 86699
4	A 86700
8	A 86704
Lake?	A 45031
5	A 45036



Plan Showing Relationship of the
Geophysical Survey to the Claims.

Scale 1 in. to 1500 ft.

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G E O L O G Y.

There is no published account of the geology of the general area but one is expected shortly from the B. G. Department of Mines.

A limited amount of detailed geological mapping has been done by L. Gatenby and the writer. This work is now being extended.

Most of the claim area was originally underlain by volcanic rocks, largely of basaltic composition, that had one or more lenticular layers of limestone.

Strong overfolding along both northerly and westerly aligned axes was followed by the intrusion of numerous dykes of felspar porphyry both steep and flat in attitude. This intrusive period was accompanied by intense but variable metamorphism probably due to an underlying granite mass at an unknown depth.

In places the basalts were converted to epidote rock whilst the limestone in some cases was completely changed to garnetite rock often containing economic amounts of chalcopyrite associated with minor quantities of pyrrhotite and magnetite.

Chalcopyrite mineralization also occurs as veinlet and disseminations in the epidotised basalts.

Underground a number of faults have been encountered that may be significant in the location of the ore-bodies.

The area was glaciated in comparatively recent times so that fresh sulphides are found at or very near the surface.

G E O P H Y S I C A L S U R V E Y .

The mineralization, the fresh sulphides at the surface and the shallow overburden in most parts of the claims determined the choice of the self-potential method for a geophysical survey of the property.

The instrument employed was constructed by Professor Clarke of the Geophysical Department of U. B. C. and it is designed to be unusually sensitive.

FIELD PROCEDURE.

Copper electrodes immersed in a saturated solution of copper sulphate in porous pots were used to make contact with the ground by placing them in shallow holes containing a little water.

The instrument was set up at one station of a 50 ft. grid and readings recorded of the potential difference for successive stations up to 500 feet away before moving to a new set-up. In this way the potential differences were determined in millivolts for nearly 3,000 stations covering an irregular area of some 176 acres.

The instrument has been calibrated so that the signs of the potentials have been reversed. Normally a strong anomaly with a negative sign is the indication of a good generator at the surface but with this instrument it is recorded as positive.

Station C.0 was considered to be some distance from any mineralization and arbitrarily assigned a value of 100

millivolts. The values for all other stations were then calculated with reference to it. In this way the values for all stations are positive and plotting is simplified.

Numerous checks were made with previously determined stations and minor adjustments made so that usually individual readings can be considered as correct to 5 units.

Owing to an extensive fire two years previous to the survey a large proportion of the top-soil has been eroded away. This condition made it difficult at times to get a satisfactory contact.

The values obtained were plotted on the accompanying map, scale 1 inch to 100 feet, on which equipotential lines have been constructed and areas of similar value coloured to show the anomalies to better advantage.

R E S U L T S.

It can be seen on the map that the self-potential survey outlines a belt from 600 to 1000 feet wide and trending north for 6000 feet that contains over twenty significant 'positive' anomalies.

A number of these anomalies are already known to have associated copper mineralization which strengthens the possibilities of the rest.

In several cases the dip of the body responsible for the anomaly is clearly indicated by a corresponding 'negative' anomaly.

In the following descriptions of the various anomalies each one is identified by means of the letter and number of the station nearest to its centre or by the stations at each end if it is a large anomaly.

1. F.7 This suggests an important ore-body extending for 150 feet N.W. from the open-cut at F.8 from which ore was removed in the past. The geological mapping strongly suggests that the main body is completely cut off from the surface by a porphyry dyke. There is a strong corresponding negative anomaly 150 feet to the S.W. suggesting a normal dip of 45° in that direction.
2. F.10 to H.13 This anomaly that is 250 feet long corresponds to the main old workings beneath which a large ore-body is now being developed over a width of 50 feet and a length of 130 feet to date (May 20 1954). The geology indicates that it could be part of No. 1 anomaly with a large dyke between.
3. N.0 to Z.8 This, the largest known anomaly, is at least 750 feet long with two extra high sections at K.3 and V.0. It is known to follow a contact between limestone and carbonaceous shale at least in part. A strong 'negative' anomaly at X.0 suggests a flat dip to the west. The overburden is fairly heavy and no mineralization has actually been seen. It is a likely place for ore to occur but it is just possible that enough of the carbonaceous shale has been

converted to graphite which is known to give high anomalies. It should certainly be tested by several diamond drill holes.

4. M.16 to S.10 This is another large and pronounced anomaly with an easterly strike of 400 feet.

Copper ore can still be seen in the old open pit at its eastern extremity with mineralization over a width of at least ten feet. It dips here at 45° to the south and a seam of graphite associated with a little recrystallised limestone was found in the immediate hangingwall. An old diamond drill hole at -45° is reported to have intersected the ore at 130 feet below the outcrop where it assayed 3.54% copper over 3.1 feet. The average dip between the open cut and the intersection is 48° .

A steeper drill at -70° failed to find ore but a small rake to the west would account for this failure. Further diamond drilling to the east is needed.

There is a small negative anomaly at V.20 about 400 feet to the south that could correspond to this ore-body.

5. M.7 This is a distinct but minor anomaly centrally located with regard to the four previously described anomalies

6. P.20 to R.21 This is a well-defined anomaly 100 feet long and will require testing.

7. U.25 A small but definite anomaly here corresponds to an old open cut with copper ore exposed for a width of 3 ft. A length of 75 ft is indicated. It is linked by a weak anomaly with No 6 so that an overall length of 500 feet of

a structure is possible. This in turn strikes north toward the main old open pit another 500 feet north and also across the western extremity of No 4. The possibility of a fault structure linking together all these anomalies should be born in mind.

8. K.30 Here some sheared volcanic rock with good chalcopyrite mineralization is exposed in an outcrop and gives an anomaly that is 50 feet long.

9. M.29 This is a small but sharp anomaly 75 feet long in a boulder strewn depression at the head of a gully and 75 feet west of No 8.

10. P.33 to Q.35 Here a distinct anomaly was found to represent two zones of epidotised lava with disseminated chalcopyrite about 50 feet apart and each 100 feet long.

11. W.34 Here there are three mild anomalies just west of the logging road where some epidotised basalt with chalcopyrite is exposed in the road cut. It is possible that there is a flat area of such material 250 feet by 100 feet in extent.

12. Z.37 This is similar to No 11 and chalcopyrite was found at the west end of the anomaly that is 100 feet long.

13. Cw.41 to Ew.42 This is a strong anomaly 200 feet long where a piece of float well mineralized with chalcopyrite was found.

14. X.45 This is a small anomaly 100 feet long.
15. X.52 This is very small and of doubtful value.
16. Pw.64 This is a definite anomaly 125 feet long and 400 feet east of the Sunnyside workings.
17. Lw.63 , Pw.63 , Qw.64 These are three small anomalies in the Sunnyside area but not directly associated with any of the old workings. Detailed mapping here may reveal their relationship.
18. Qn.38 to Nn.39 This in the north area and consists of three small anomalies over a distance of 350 feet that may possibly be related to each other.

R E C O M M E N D A T I O N S.

Drill a series of vertical diamond drill holes at 100 feet intervals along the strike of the large anomalies that are numbered 3 and 4 above and approximately 125 ft down the dip of the supposed ore-bodies so as to cut them between 100 and 150 feet below the surface.

There will be 8 such holes for No 3 and 4 for No 4 anomaly. Two holes are also suggested for No 1 anomaly.

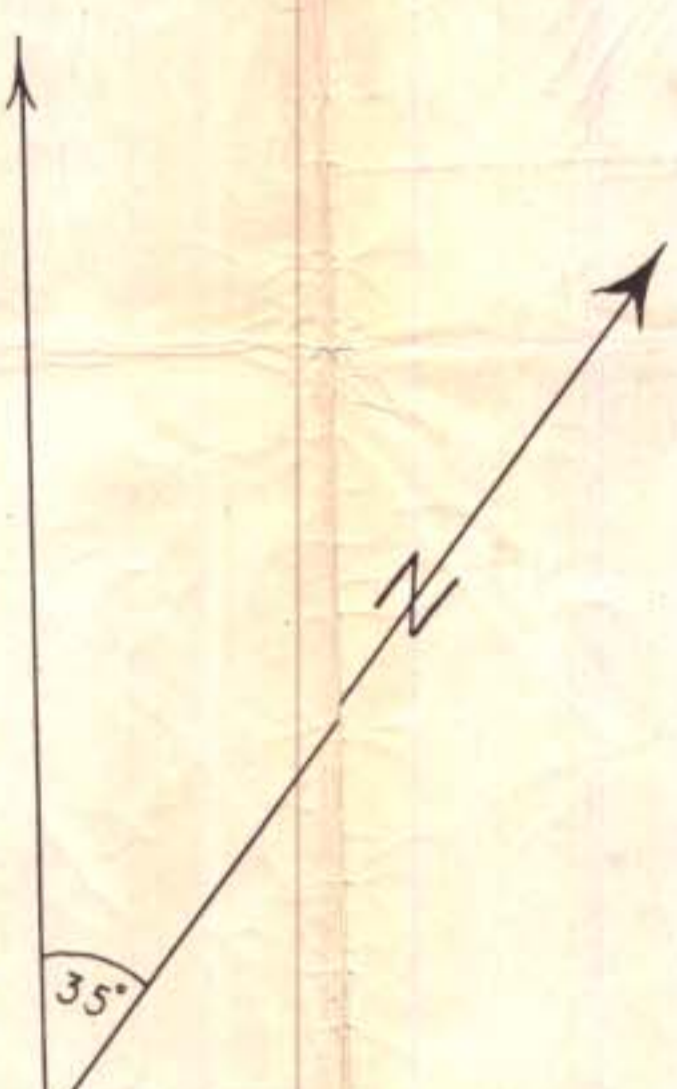
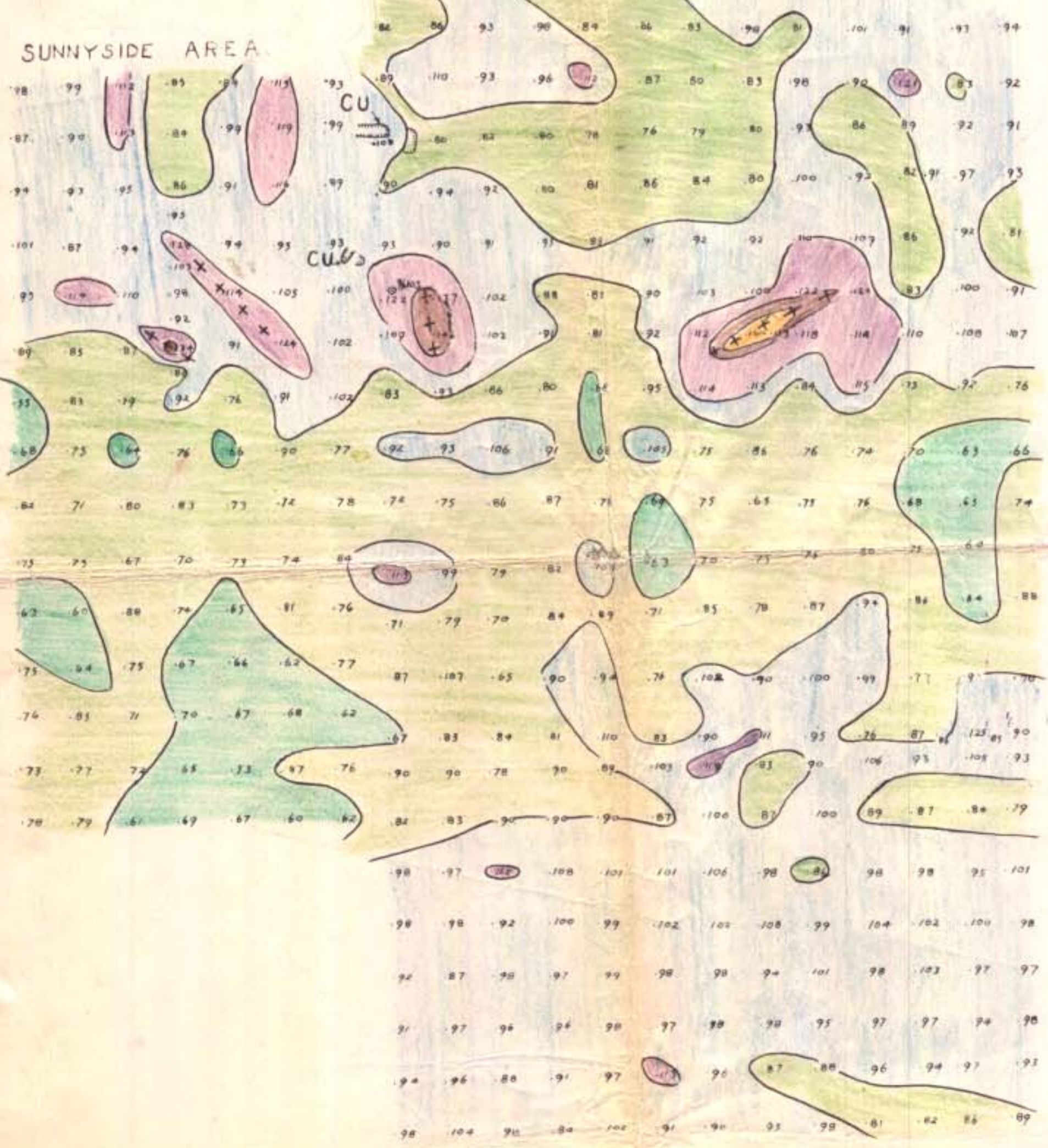
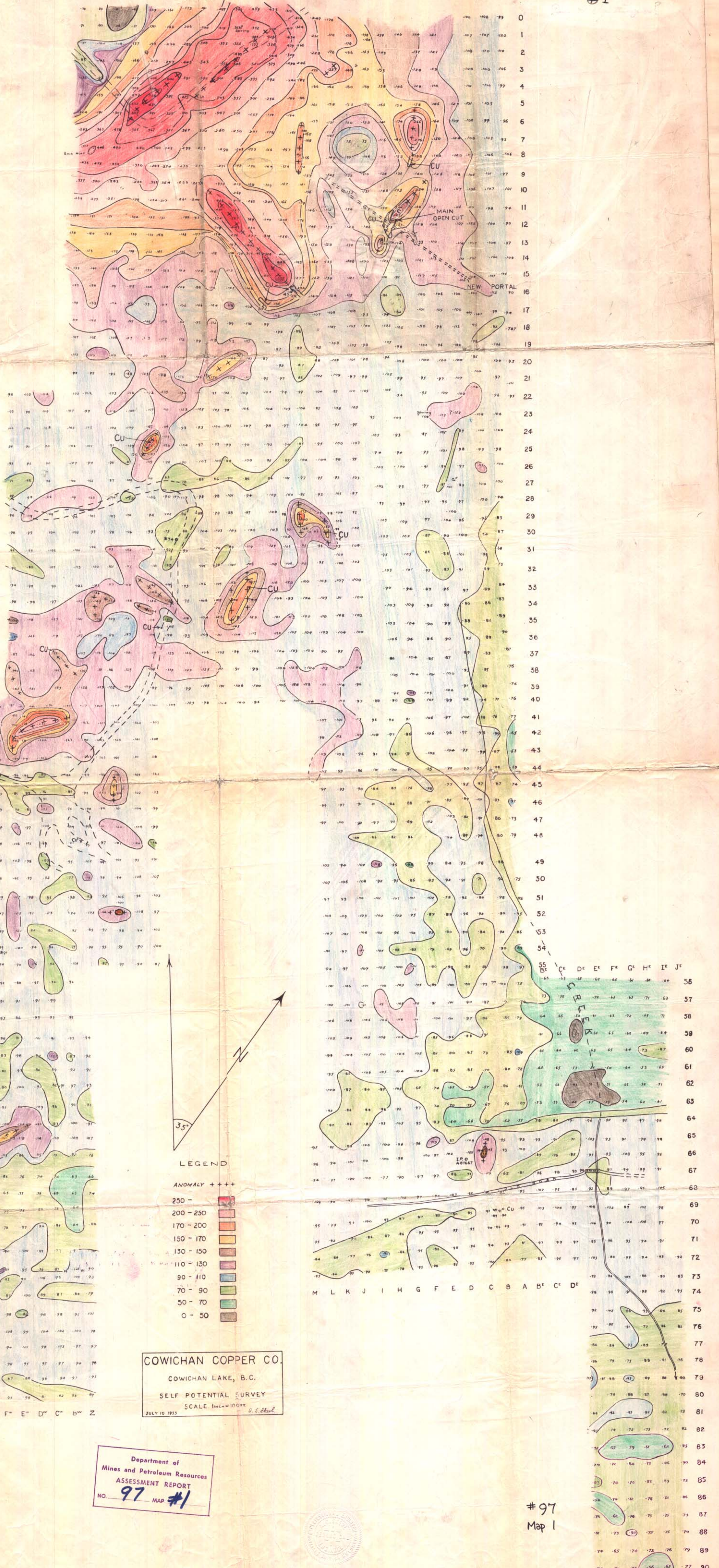
A total of 2,500 ft. costing \$10,000 is estimated for this work.

The results obtained will guide the further drilling of these anomalies.

At a later date a number of other anomalies will require testing by shallow diamond drilling.

A. C. Skerl
Dr. A. C. Skerl, P. Eng.

24th May 1954



LEGEND

ANOMALY + + + +

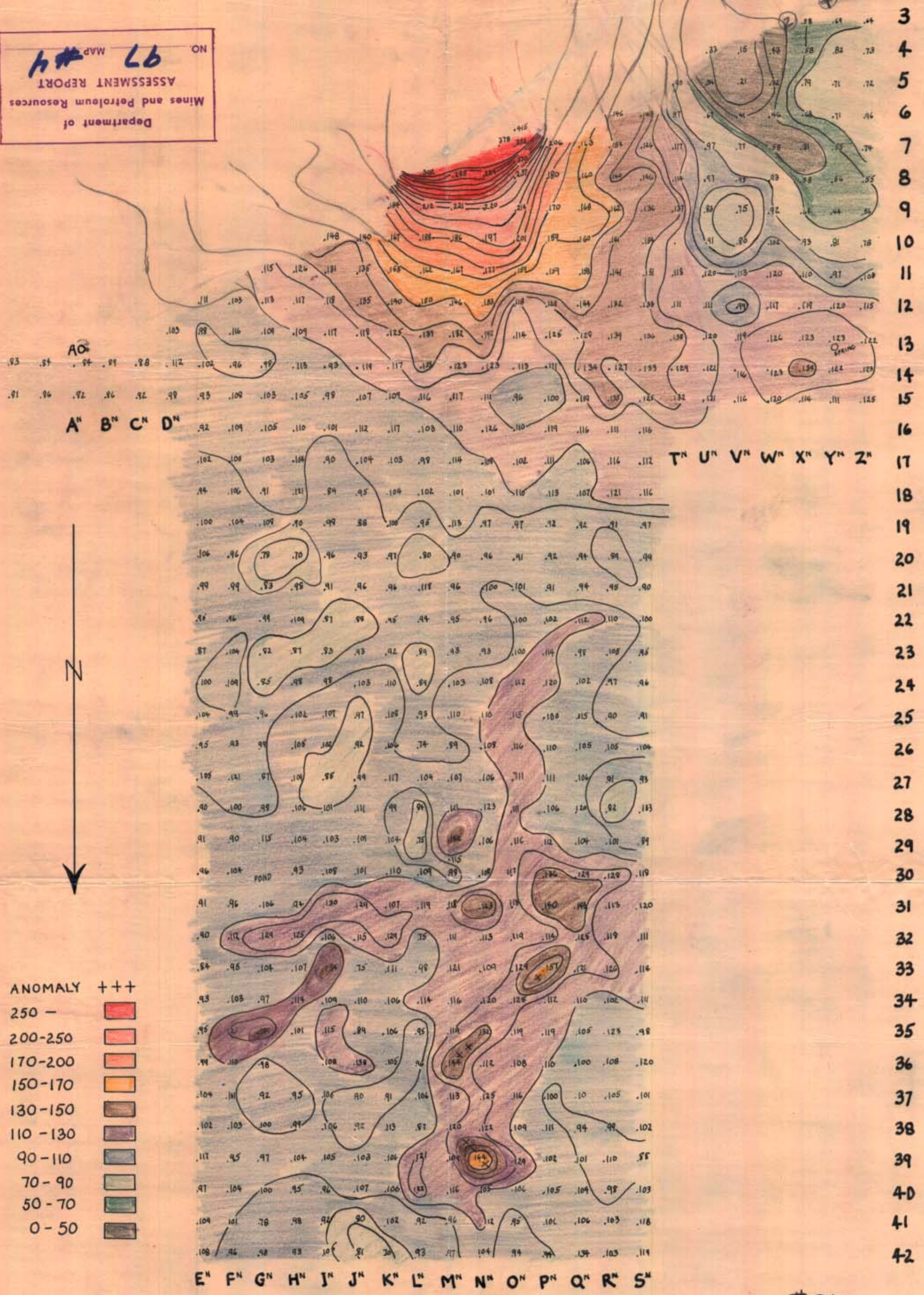
250 -	Red
200 - 250	Orange
170 - 200	Yellow
150 - 170	Light Green
130 - 150	Green
110 - 130	Light Blue
90 - 110	Blue
70 - 90	Dark Blue
50 - 70	Dark Green
0 - 50	Black

COWICHAN COPPER CO.
 COWICHAN LAKE, B.C.
 SELF POTENTIAL SURVEY
 SCALE 1 inch = 1000 ft.
 JULY 1953

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 Map 1

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Map #2