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REPORT ON THE
GEOCHEMICAL SURVEY
of the
ALPHA-SCOTTY GROUP
THE CARDIFF MINING CO. LTD.
HIGHLAND VALLEY, B. C.

November 15, 1956.

F.J. Hemsworth.

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REPORT ON THE
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of the
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INTRODUCTION

A geochemical survey was carried out on the Alpha and Scotty group of mineral claims in the Highland Valley for The Cardiff Mining Company Limited during the 1956 field season. Pedogeochemistry or soil testing was done in conjunction with magnetometer work as part of an exploration programme aimed at finding bodies of copper mineralization. Soil samples were tested for copper by the rubeanic acid method. Information was provided and assistance given by Dr. R.E. Delavault of the Geology Department of the University of British Columbia.

This report on the soil testing survey and the accompanying map are submitted in compliance with the Mineral Act claiming geochemical work for assessment purposes on the group of claims outlined in the text of the report.

LOCATION AND PROPERTY

The Alpha-Scotty group of claims is located in the Highland Valley, Kamloops Mining Division, some 35 miles south of Ashcroft, or 40 miles north of Merritt. The geographical position is latitude N 50° 28', longitude E 120° 58'. The original claims, Alpha Nos. 1 to 8, and Scotty Nos. 1 to 8 were staked in January,

1956. This summer a survey of the claims indicated that the Alpha No. 8 and Scotty Nos. 5 to 8 inclusive were staked in error on Beaverlodge property. Consequently these claims are being allowed to lapse. The survey also showed the presence of fractions adjacent to some of the other claims of the company and also some open ground. These fractions and the open ground were staked for the company this summer.

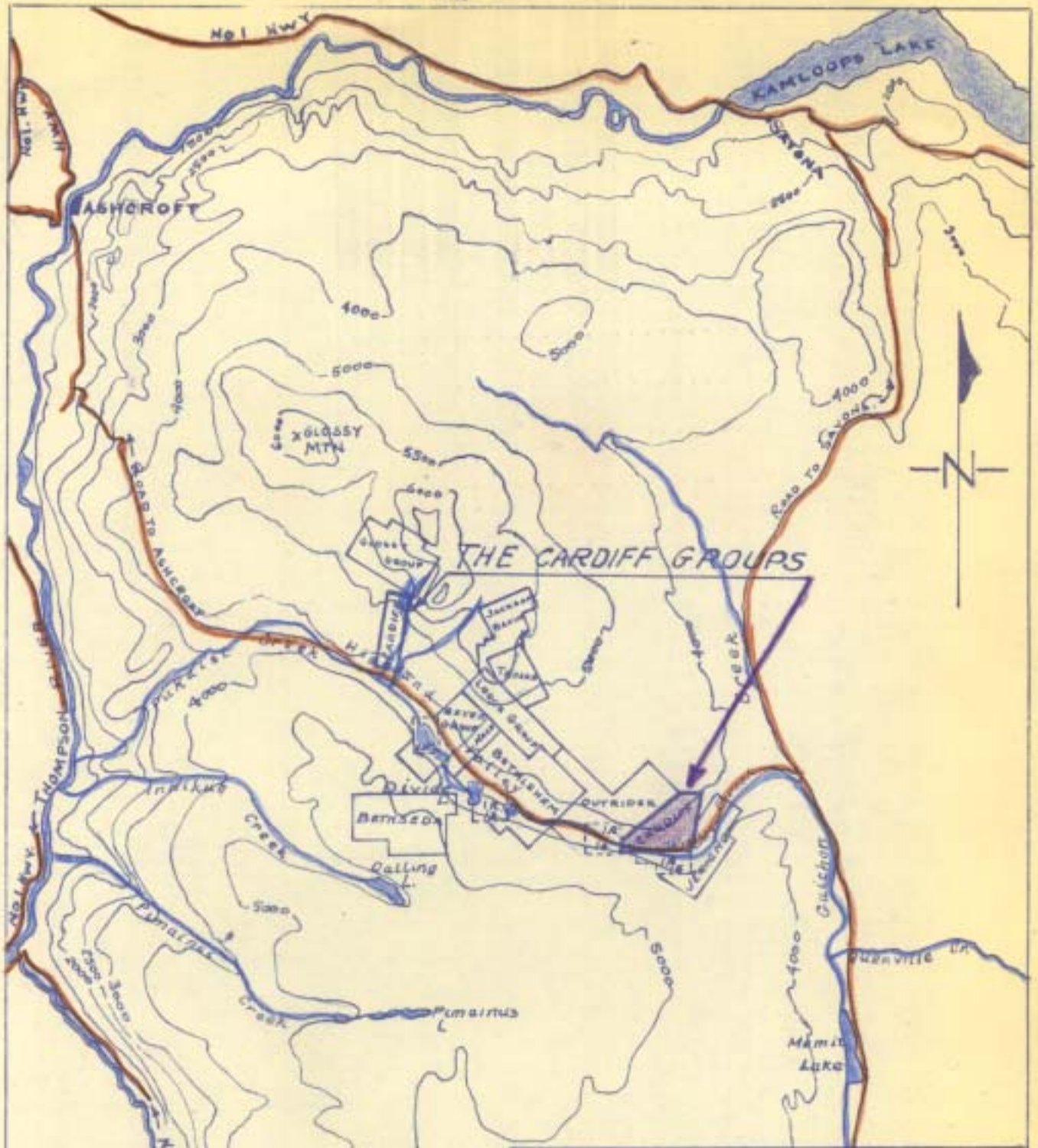
A list of the claims and fractions which this survey covers is given below:

<u>Name</u>	<u>Date Recorded</u>	<u>Record No.</u>
Alpha No. 1	23 January, 1956	18097
Alpha No. 2	23 January, 1956	18098
Alpha No. 3	23 January, 1956	18099
Alpha No. 4	23 January, 1956	18100
Alpha No. 5	23 January, 1956	18101
Alpha No. 6	23 January, 1956	18102
Alpha No. 7	23 January, 1956	18103
Scotty No. 1	23 January, 1956	18105
Scotty No. 2	23 January, 1956	18106
Scotty No. 3	23 January, 1956	18107
Scotty No. 4	23 January, 1956	18108
Scotty No. 9	14 August, 1956	24510
Scotty No. 10	14 August, 1956	24511
Scotty No. 11	14 August, 1956	24512
Scotty No. 12	14 August, 1956	24513
Alpha No. 1 Fr.	10 September, 1956	24546
Alpha No. 2 Fr.	17 August, 1956	24514
Alpha No. 3 Fr.	10 September, 1956	24547
Alpha No. 4 Fr.	17 August, 1956	24515
Scotty No. 1 Fr.	17 August, 1956	24516

GENERAL DESCRIPTION OF THE AREA

The Highland Valley is a generally southeast-trending valley having an average elevation of between four and five thousand feet (see included topographical map). It is drained by two creeks; the southeast half by Witches Brook which joins Guichon Creek, the northwest by Pukaist Creek which flows from Divide Lake northwest to the Thompson River.

The entire valley, except for some of the ridges that surround it, is covered by glacial drift. Near the creek bottom this drift achieves considerable depth. One diamond drill hole, drilled about one half mile southeast of



THE CARDIFF MINING CO. LTD.
 TOPOGRAPHICAL MAP OF
 HIGHLAND VALLEY AREA SHOWING
 APPROXIMATE LOCATION OF
 MAJOR CLAIM GROUPS.
 SCALE 1" = 4 MI.

F. J. Hemsworth

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT

ACCOMPANY REPORT BY F. J. HEMSWORTH

NO. 133 AND #1

the Cardiff property and next to the creek was reported to have cut over 250 feet of glacial overburden. All companies working in the Highland Valley agree that glacial overburden is the major hindrance to exploration.

DESCRIPTION OF CARDIFF PROPERTY

The Alpha-Scotty group is bounded on the west by Beaverlodge "Outrider Group", on the south by Indian Reserve No. 15, and on the south and east by the Jericho Mines group. The Ashcroft-Merritt road and Witches Brook traverse a portion of the southern end of the claims. The terrain rises gradually northward from the creek to the north edge of the group. The property is cut here and there by south-trending gulleys which might be the result of glaciation or old water courses, but for the most part the surface is very even. The area included by the claims is almost entirely covered with overburden. Only one area of outcrop was observed and this was a quartz diorite ridge at the north end of the property. Timber consists of jack pine and poplar at the south end of the claims and fir interspersed with pine at the north. One small creek traverses the property in a north south direction and joins Witches Brook.

GEOLOGY

The depth of overburden on the majority of properties in the Highland Valley area makes structural determination very difficult. The only outcrop on the Cardiff group appears to be quartz diorite with a little larger percentage of hornblende than is usual. A jointing system over a east-west distance of some 600 feet has a north-south trend and dips between 60° and 70° east. A mineralized shear on the south side of the valley on the Jericho property has a similar strike and could possibly line up with this jointing system. Witches Brook might represent a geological feature but there does not seem to be any proof for this.

GEOCHEMICAL SURVEY

Survey of Grid

The claim location lines were surveyed

with a transit and chain and tied in to the corner post of Indian Reserve No. 15. An east-west baseline was surveyed along the south boundaries and picket lines were run north at 300-foot intervals. Stations for the soil samples were marked at 200-foot intervals along the picket lines. Stations were designated 45/28, meaning 4,500 feet west along the baseline and 2,800 feet north.

Soil Sampling Method

At the station intervals (200 feet) a shallow hole was dug with a garden trowel. The hole was deep enough to get below the surface humus. The soil samples were taken at a regular depth of 6 inches. Two tablespoons of soil were placed in a cellophane bag, sealed with scotch tape, labelled, rolled up and secured with an elastic band. Samples were carried back to camp in a small packsack.

Spot Tests for Copper - Testing Method

The tests were made on a crude table at the main tent camp. These tests could have been done in the field but this would lead to slower and less accurate work. The following is a description of the procedure used in making the tests.

A 1 inch strip of rubeanic acid paper was placed in the beaker so that the tip of the filter touched the centre of the rubeanic acid paper in the bottom. A $\frac{1}{4}$ teaspoon of soil was measured from the sample into a test tube; 1 teaspoon of extracting solution was added. The test tube was corked and the mixture shaken for 20 seconds. The mixture was then poured into the beaker filter and allowed to stand for a few minutes. The rubeanic acid paper showed a blue spot indicating the presence of copper, the intensity of the blue color being proportionate to the amount of copper present.

The extracting solution was made up by mixing together 1 part acetic acid, 1 part water, and 2 parts of a 25% solution of sodium acetate.

It was found that care was essential

in measuring out the exact quantities of soil and solution, as the same amounts of copper will be spread in quite a different fashion according to the concentration of solution. Plastic measuring spoons which are cheap and readily available were found ideal for the purpose.

Certain standard tests were made at the University Laboratory from field samples to determine the number of gammas of copper which filtered through. Quantities were delivered by microburette from a solution of the concentration indicated on the acid paper strip. About 5% of the liquid passes through the reagent paper if the test has been done properly, up to 7% if too much liquid is added. The amount and length of delivery of solution were made to simulate conditions in the field. Using $\frac{1}{4}$ teaspoonful of soil (about 1 gram) and 1 milliliter buffer, about 0.05 ml filters through. Analyses gave the amount of copper extractible by acetic reagents in gammas, or micrograms per gram. Parts per million were obtained approximately by multiplying the number of gammas by 20.

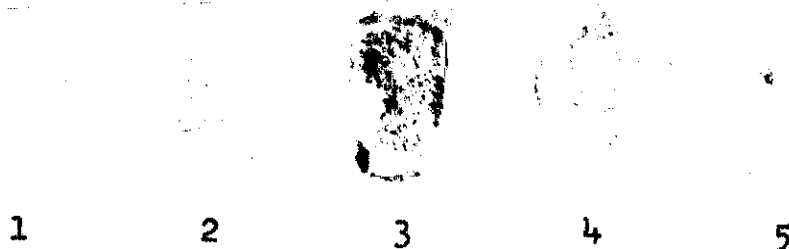
MAPPING

The strips of acid paper showing the varying degrees of blue spots were pasted on a map of the claims. This method was useful for visual checks but unwieldy for reporting the results. Consequently arbitrary numbers were chosen from 1 to 5 to designate the degree of blue color intensity, which in turn represented the amount of copper extracted. These are shown on page 6. The results vary from about 0.01 gammas or .2 parts per million up to .5 gammas or 10 p.p.m. Of course this is only a small part of the total copper or the copper extractible by stronger reagents.

Amounts below 0.02 gammas or 0.4 p.p.m., as represented by Nos. 1 and 2 on the map are practically negative and can not be expected to have any significance. Spot tests ranging from 0.4 to 10 p.p.m. and represented by numbers from 3 to 5 on the map, may have some significance but are difficult to interpret.

Spot tests for copper with rubeanic acid paper

Color standards for mapping



- 1 Blank: Filter paper always retains some copper; it would be very expensive to obtain perfect blanks.
- 2 Very low: Probably heavy mantle of glacial overburden.
- 3 Medium background: Stronger than usually found on glacial drift; probable vicinity of rock.
- 4 Stronger than usual: Possibly near weak copper mineralization.
- 5 Strong: Some copper mineralization in the vicinity, possibly low-grade or small amount or water containing copper.

CONCLUSION

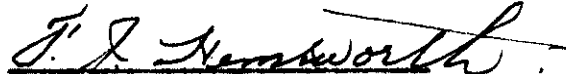
Isolated highs were found but no pattern of anomolous values which could be contoured rationally. The results were patchy with a few isolated highs showing up in the lower, southwest corner of the map area. Haloes or anomolous conditions which might reflect or suggest the presence of orebodies were not evident.

The glacial drift in the southern part of the map area was unusually thick. In addition this was a swampy area where water may have carried copper in solution and deposited varying amounts in the subsoil. It must be admitted that the results of the survey were more or less negative.

The absence of positive results on this survey does not however preclude the possibility of copper mineralization in the underlying subsurface rocks.

Respectfully submitted,

November 15, 1956.

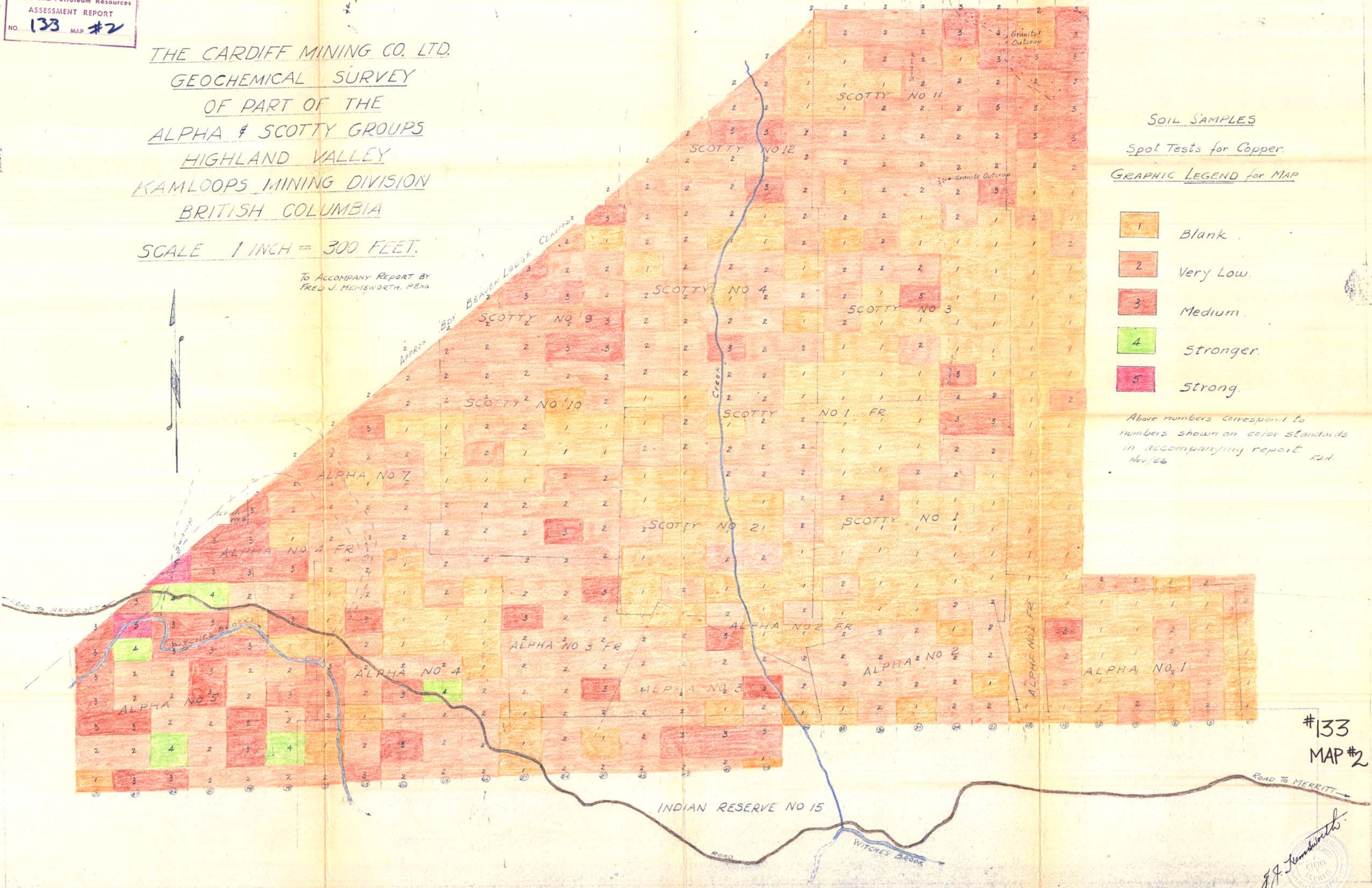

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THE CARDIFF MINING CO. LTD.
GEOCHEMICAL SURVEY
OF PART OF THE
ALPHA & SCOTTY GROUPS
HIGHLAND VALLEY
KAMLOOPS MINING DIVISION
BRITISH COLUMBIA

SCALE 1 INCH = 300 FEET.

TO ACCOMPANY REPORT BY
FRED J. HEMSWORTH, P.E.N.G.



SOIL SAMPLES
Spot Tests for Copper
GRAPHIC LEGEND for MAP

- 1 Blank
- 2 Very Low
- 3 Medium
- 4 Stronger
- 5 Strong

Above numbers correspond to
numbers shown on color standards
in accompanying report r.s.h.
Nov/56

#133
MAP #2

F. J. Hemsworth
Geological Engineer
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