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**A GEOPHYSICAL SURVEY OF
THE CHEHALIS RIVER PROPERTY
OF
NOLAND MINES LTD.
NEAR HARRISON MILLS, B.C.**

CONTENTS

	<u>Page</u>
GENERAL	1
THE PROPERTY	1
ACCESSIBILITY	1
PURPOSE OF THE SURVEY	1
THE SURVEY GRIDS	1
THE SPONTANEOUS POLARIZATION SURVEY	2
INTERPRETATION	2
SURVEY RESULTS	3
RECOMMENDATIONS	3
ACKNOWLEDGMENTS	5

MAPS AND DRAWINGS

LOCATION MAP

GEOPHYSICAL CONTOUR PLAN, GRIDS 1, 2, 3	Sheet 1
GEOPHYSICAL CONTOUR PLAN, GRID 4	Sheet 2
PLAN OF GROUND POTENTIALS, GRIDS 1, 2, 3	Sheet 3
PLAN OF GROUND POTENTIALS, GRID 4	Sheet 4

GENERAL STATEMENT:

During May, 1965, Mr. Harold Derraugh, President of Noland Mines Ltd., of Vancouver, B.C. and Dr. H. A. Quinn, the Company's geological consultant, requested that the writer carry out a geophysical survey and geochemical sampling of anomalous areas of a portion of the Company's Chehalis River Property near Harrison Mills, B.C.

Previous reconnaissance work there by the writer in 1964 indicated an anomalous zone west of the main access road in the vicinity of the camp and some lesser anomalies to the north and south. This, together with favourable geology and the mineralization found earlier in the main pit containing copper, zinc, silver and gold, indicated the need for further exploratory work.

The Company cut a number of base lines and survey grids in preparation for the survey and for geological mapping. Surveying of the lines with the Spontaneous Polarization Method began May 18th and field work was completed June 5th. During this period soil sampling was carried out on No. 1 and No. 2 grids and on the southern part of No. 4 grid.

THE PROPERTY:

Noland Mines has under option from Mr. Isaac Miller, of Whiterock, B.C. a group of 71 mineral claims straddling the access road which parallels the Chehalis River on the east side.

ACCESSIBILITY:

The property is reached from Vancouver by driving east along the Lougheed Highway to the Sasquatch Inn, Harrison Mills. From that point a gravel road leads northeastward crossing the Chehalis River. Approximately one-quarter mile east of the crossing the intersection with the access road is reached. The latter road leads northward to the property with a branch turning eastward to the camp about 1.4 miles north of the highway.

PURPOSE OF THE SURVEY:

The purpose of the survey was to locate new mineral deposits and to complete the survey of areas partly explored in November of 1964.

THE SURVEY GRIDS:

Five survey grids were prepared by the Company. Each consists of a single base line with an approximate N-45°-W bearing. Cross-lines were cut, perpendicular to the base lines at 200-foot intervals. Stations were established every 50 feet along the cross-lines by chaining. Base lines 1, 2 and 3 are connected by line 38+00 N.W. and line 42+00 was cut from base line No. 2 to 2400 feet southwest.

THE SPONTANEOUS POLARIZATION SURVEY:

The method consists of measuring potential differences on the ground surface usually at 50-foot intervals by means of two electrodes connected by a cable to a millivoltmeter with a high input impedance. Non-polarizable electrodes are used to eliminate voltages which would otherwise be developed by contact of metal electrodes with the ground. Sulphides, in a moist environment, give rise to small spontaneous potentials which are measurable at the ground surface, permitting location and mapping of their approximate pattern. From this pattern the position and some characteristics of buried source may be deduced.

Control readings were first taken along the base lines to establish a common datum for the cross-lines. The "zero" or datum for base lines 1, 2 and 3 is at the intersection of line 38+00 N.W. with base line No. 3. Base line No. 4 has a datum independent of the other grids and no surveying was carried out on grid No. 5 owing to shortage of time. Readings were taken at 50-foot intervals on the cross-lines using the single electrode or long-line method with telephone communication between the base station and moving electrode. Corrections were made for electrode difference. A Sharpe VP-6 millivoltmeter served as a potential measuring instrument. A plan of each grid was prepared showing the corrected readings and from that a contour map was drawn.

INTERPRETATION:

1. The large anomalies west of the access road are considered, for the following reasons, to be due to potential sources in the overburden:
 - (a) They are of a magnitude of 300 to 498 millivolts which coincides with carbonaceous material or manganese oxides.
 - (b) Their polarities are positive relative to background (sulphides normally show negative polarity).
 - (c) They appear to be flat-lying sheets in a flood plane or possibly a former glacial lake underlain by unconsolidated, water-sorted sediments.
 - (d) The anomalies observed on the top of the plane are not observable in the valleys cut by streams. This also indicates that anomalous layers are at least partly in the upper strata of the sediments. Others may, of course, be present at various elevations.
 - (e) The anomalies do not over-reach outcrops at any point. This suggests that where erosion has exposed the outcrop erosion has also removed the anomaly.
 - (f) Beds of partly consolidated gravel containing an unidentified black material resembling tar sand were observed in the west bank of the creek near line 30 N.W.
 - (g) Near line 12 N.W. beds of decaying organic matter were observed in the side of a road cut.

- (h) S.P. tests at the above locations indicated that spontaneous voltages were associated with both, +64 m.v. at (f) and +120 m.v. at (g).
- (i) The anomalies are strong, even where the overburden appears to be heavy.

SURVEY RESULTS:

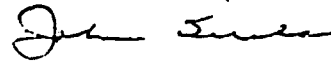
1. The large anomalies west of the access road on grids 1 and 2 are of positive polarity and probably result from causes within the overburden.
2. A number of negative anomalies were located but these are of low magnitude and limited extent. They could result from mineralization or other causes.
3. The mineralization of the main pit produces an anomaly of approximately -70 millivolts. Readings of -51 and -53 appear on lines 38 and 40 respectively. Whether they represent a continuation northwestward of the pit mineralization, or something else, is not known. The possibility of a northwestward extension of the pit zone does not appear to have been adequately investigated. As mapping and geophysical work progressed it became apparent, but not until the last few days before departure, that further information, both geological and geophysical, was desirable. With this in view a geological reconnaissance was made of the area between the pit and the creek at 650 n.e. on line 54 and two additional traverses, the extensions of lines 40 and 44 were surveyed. Weak negative response was observed on line 40 and none on line 44. While the results of geological and geophysical work there were inconclusive, there remains the possibility of northwestward extensions of the pit mineralization or the occurrence of similar lenses and the possibility of mineralization at depth along the zone. From a technical point of view, the appearance of what might be called "pit-type" mineralization and alteration at three points over a strike length of 2200 feet is encouraging and would appear to justify further investigation.
4. Two positively polarized anomalies were found in the No. 4 grid area at lines 0 to 200 S.E. and at line 4 N.W. These coincide with deposits of sand and gravel and it is quite likely that they contain beds which produce the positive anomalies. A specimen of what has been called quartz diorite porphyry containing disseminated chalcopyrite and sphalerite was obtained by Mr. H. Derraugh from a location near one of the anomalies at 1+00 N.W., 150 N.E. This disclosure is interesting in that it appears to indicate the presence of an intrusive as well as another occurrence of sulphide minerals.

RECOMMENDATIONS:

1. Carefully geologize and prospect the ground lying between the main pit and the copper-zinc-pyrite showing in the creek at 5430 N.W. - 600 N.E. observing all possible evidence from outcrop and float.
2. Carry out I.P. tests on the same zone.

3. Strip with bulldozer the exposure in the creek at 5430 N.W. - 600 N.E. and further expose the rock in a stripping made by bulldozer earlier this year at 4500 N.W. and 75 N.E. to determine the nature of this showing. Stripping should also be carried out at other locations between the pit and 5430 N.W. - 600 N.E. where rock exposures indicate light overburden in an effort to locate further mineralization.
4. Bulldozer stripping should also be carried out at and in the vicinity of the outcrop northwest of 2400 N.W. - B.L. No. 1, where zinc, copper and pyrite mineralization occur in siliceous material.
5. If the results of soil sampling are encouraging, further work in other areas may be in order, especially if these coincide with geophysical anomalies.
6. A careful examination of the sulphide-bearing exposure at 100 N.W., 150 N.E. on No. 4 grid should be carried out to determine whether some type of further action is warranted.

Respectfully submitted,



John Sirola.

West Vancouver, B.C.
June 14, 1965.