

691

GEOCHEMICAL SURVEY
THE METHOD

for

COPPER RIDGE MINES LTD.
VANCOUVER, B. C.

by

GEO CAL LIMITED
WEST VANCOUVER, B. C.

Survey Commenced - September 6, 1965
Survey Completed - September 27, 1965

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GEOCHEMICAL SURVEY

Bingo & Rac Groups, Endako, B. C.

SUMMARY

This survey was carried out as an initial test of the properties held by Copper Ridge Mines near the Endako Molybdenum Mine. The TMM cold reaction geochemical test was used on samples collected systematically over the Bingo and Rac groups, which lie in the near proximity to the open pit at Endako Mine.

A total of 617 samples were run for any occurrence of metallic ions in the subsoil. Samples taken have been saved for future reference or further testing by spectrographic method. Locations in the field for the various samples taken have been flagged so that any anomalous location can be re-occupied for further physical examination.

The locations of the samples and the final results of the test have been mapped to show the various levels of mineralization in the subsoil. It is believed that since little evidence of redistribution of the overburden has been observed, that the tests should be conclusive as to mineral occurrence in the bedrock. Overburden thickness also appears to be small in this locality. The map then at high levels of mineralization of the overburden should portray evidence of mineralization in the bedrock.

The results as shown on the map have also been interpreted by the author for structural lineaments and extensions of mineralization. This has been complicated by the super-imposed drainage patterns which influence the mineralization of the overburden.

CERTIFICATE OF QUALIFICATIONS

The formal education of Mr. Colbert B. Selmsier, P. Eng. consists of undergraduate studies at Union College, Schenectady, N. Y., in engineering and science leading to a B. Sc. degree; Graduate studies at McGill University, Montreal, P. Q., in mining geology were carried out leading to a M. Sc. degree. Also included in graduate study was a year spent at the University of Toronto in the Physics Department doing graduate study in Mining Geophysics.

The author has had extensive experience in exploration work in the Provinces of Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia in Canada. He has also worked as a Field Engineer and Geophysicist for International Nickel Company in the Transvaal region of South Africa.

The author has been a member of the Association of Professional Engineers of Ontario and Alberta for a period of 15 years. He is at present an active member of the Association of Professional Engineers of British Columbia, and is a resident engineer operating in this Province.

My knowledge of the property outlined in this report has been gained by a visit to the property and examination of the samples. Samples were examined as taken from these showings and assays made of their metallic percentages. Government and private reports were read by the author and used as a background of fundamental knowledge.

The author has no financial interest in the property examined. He is acting wholly as a consultant to the interested principal. The only commercial gain derived by this report by the author is for his specific professional services.

C. B. Selmsier
C. B. Selmsier, P. Eng.

Department of
Mineral and Petroleum Resources
ASSESSMENT REPORT

NO. **691** MAP **#2**

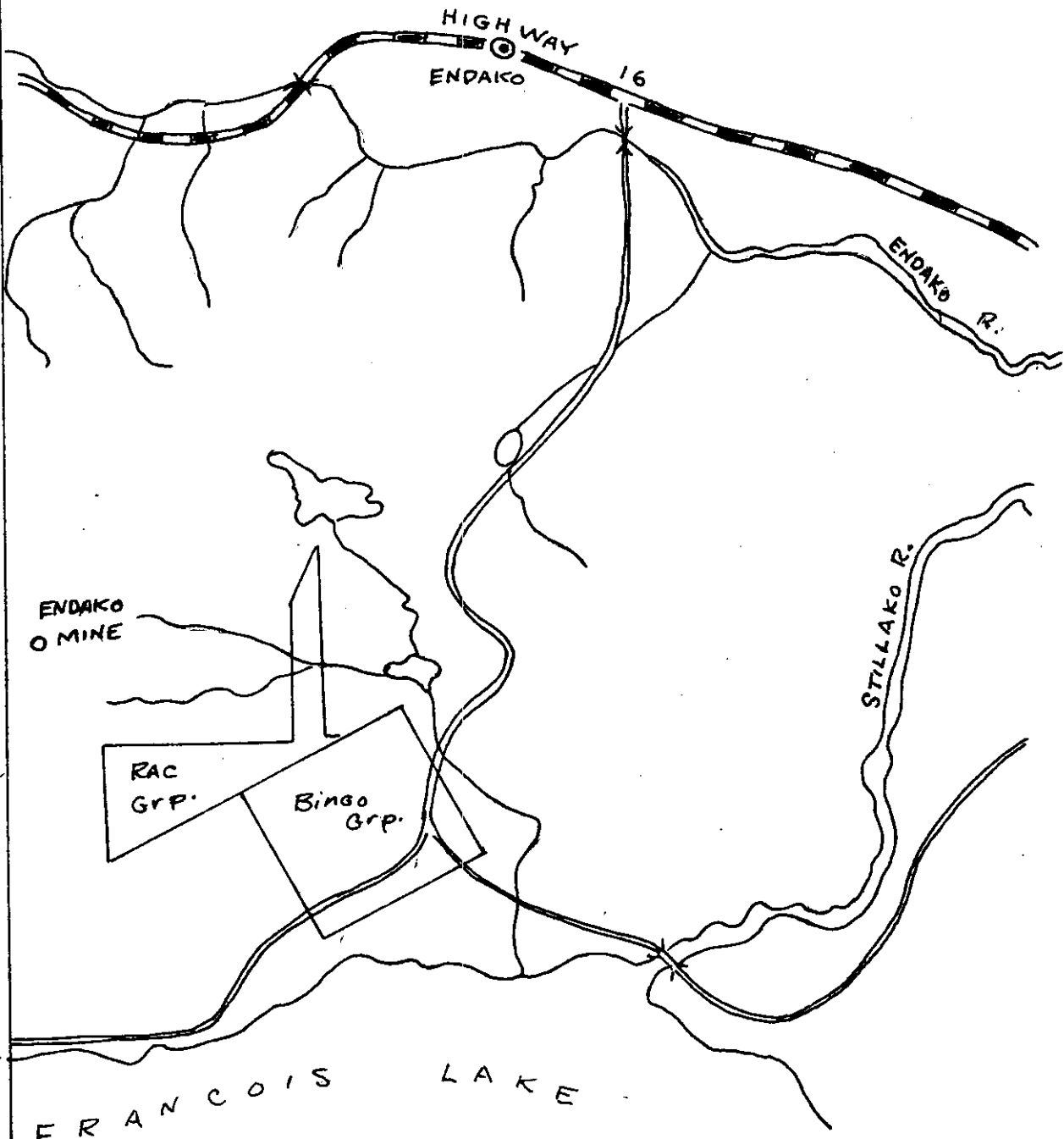


LOCATION MAP

BINGO & RAC GROUPS

ENDAKO, B.C.

Scale: 1 in. = 1 mi.



INTRODUCTION:

The property, which was surveyed, is located seven miles south of the unincorporated village of Endako (see location map). Access is made from Highway 16 by a gravel road just east of Endako, which goes to the northeast shore of Francois Lake. This road traverses part of the Bingo group and is joined by a sawmill road, which trends north-westward through both the Bingo and Rac groups. A service road extends northward off the lake road and skirts the west boundary of the Bingo group. Also a bulldozed Canex base line extends to the Endako road and east and west through the Bingo and Rac groups.

This survey was completed for the purpose of finding locations of possible mineralization of anomalous value in the overburden. These are indirectly interpreted as centers of molybdenum occurrence in the bedrock over which these centers exist. Further testing may prove whether this high metal ion concentration is in fact over molybdenum mineralization.

WORK PROGRAM:

The survey work and sampling in the field was carried out using the services of the author and one assistant. The assistant, whose name is, Ernest Szigety is a trained prospector and is familiar with the geochemical investigation of the type used in this survey. The samples were taken and analyzed by the author, while the assistant helped chain and flag the stations at which the samples were taken.

The work entailed 18 days of field work plus 5 days of laboratory analysis. This then makes a total of 23 days work for a professional engineer and one assistant to accomplish the work for this survey. This work was done during the period from September 6 to September 27, 1965.

GEOCHEMICAL SURVEY:

The primary geochemical trace is found directly in the rock of the deposit; and in glacial soils and boulders, carried some distance by glaciers in the ice age. Because the primary trace is usually finely dispersed in mineral form in the rock, it is not easily tested with the normal cold test. The use of laboratory facilities with expensive equipment is needed for the detection of those minerals.

The secondary trace involves oxidized material that is continuously released from the original deposit, washed through the surrounding media, and partly retained in soil, silt and plants. This type of trace is much easier to detect by cold analysis.

At the original site of the deposit, oxidation takes place on the surface of the minerals. The oxides thus formed are very slightly soluble in the groundwater, and continuously carried away. Because they are only slightly soluble, the concentration is very low, and the metal ions are easily given up to media through which the water flows.

This filtering effect of the soil, namely a chromatographic effect, will result in concentration zones around the deposit. The shape of these zones will depend on the topography of the area, the waterflow, and the type of soil present.

Most elements, even those called rare elements, are found distributed as traces in all types of soils. This even distribution is upset when a large deposit of minerals keeps supplying the groundwater with a particular type of one or more metal ions.

The tests have been made using the THM method of extracting the metal ions from a solution containing 0.1 grams of the earth sample. This

test entails the use of 5 milliliters of a Buffer solution in the presence of 1 milliliter of Dithizone.

The ammonium citrate buffer solution is made by mixing 50 grams of ammonium citrate and 8 grams of hydroxylamine - hydrochloride with 1 liter of water. The ph of the buffer solution is then adjusted to a factor of 8.65.

The Dithizone - xylene solution is made by mixing 10 milligrams of Dithizone with 100 milliliters of xylene solution. This solution is a deep green color and the reaction with the earth sample will turn the solution to a lighter green, blue, purple or bright red according to the amount of metal ion present.

The number of micrograms reacting in the test are easily calculated. With this test and with the standard reagents used, it takes 1 microgram to turn 1 milliliter of Dithizone blue, when 5 milliliters of buffer is used. It takes 2 micrograms to turn it to purple, and 3 or more micrograms to turn it to red.

GENERAL GEOLOGY AND TERRAIN:

The location has been regionally intruded by a large amount of granodiorite. This has formed a large batholith extending north from Fraser and Francois Lakes for more than 20 miles. This body of granite shows differentiation into porphyry bodies and dykes which are accompanied by quartz carbonate mineralization and molybdenum near their contacts.

The general slope of the surface on the Bi ngo group is toward the south where the drainage is into Francois Lake. The Rac group on the west, however, is traversed east and west by a series of hogbacks, which have intermediate draws. The north extension of the Rac group is on a flat lying poorly drained surface.

GEOCHEMICAL MAP:

On the Bingo group two base lines were surveyed along the claim staking lines and samples were taken every 100 feet. Other lines traverse the property in a northwest to southwest direction with separations of 500 to 1000 feet. Samples were taken every 200 feet on these lines. Lines on the Rac west group are surveyed off the Canex base line with a separation of 500 feet and an interval of 200 feet. The north Rac group is surveyed by two lines 1000 feet apart which are turned off the Canex base line.

The results on the map have been colored the same as the reaction of the test. The limit of the zones are 100 P.P.M. for green, 150 P.P.M. for blue, 300 P.P.M. for purple and 450 P.P.M. for red in parts per million of the amount of metal ion present in the sample.

The anomalies occur in elliptical zones about centers which are deleted by the red reaction. These centers are located as follows:

Bingo Group

Claims - 29, 27, 21, 30, 26, 24, 14, 13, 18 and 15

Rac Group

Claims - 15 and 18

The centers have been connected with dashed lines, which depict the trend interpreted for the mineralized structures. These trend for the most part in a northwest to southeast direction.

RESULTS AND RECOMMENDATIONS:

The anomaly centers most apt to be representative of mineral occurrence are located in claims 29 NE corner, 27 SE corner and 13 NW corner for the Bingo group. These all give a transition zone from red to purple, which indicates that they may be true anomalies.

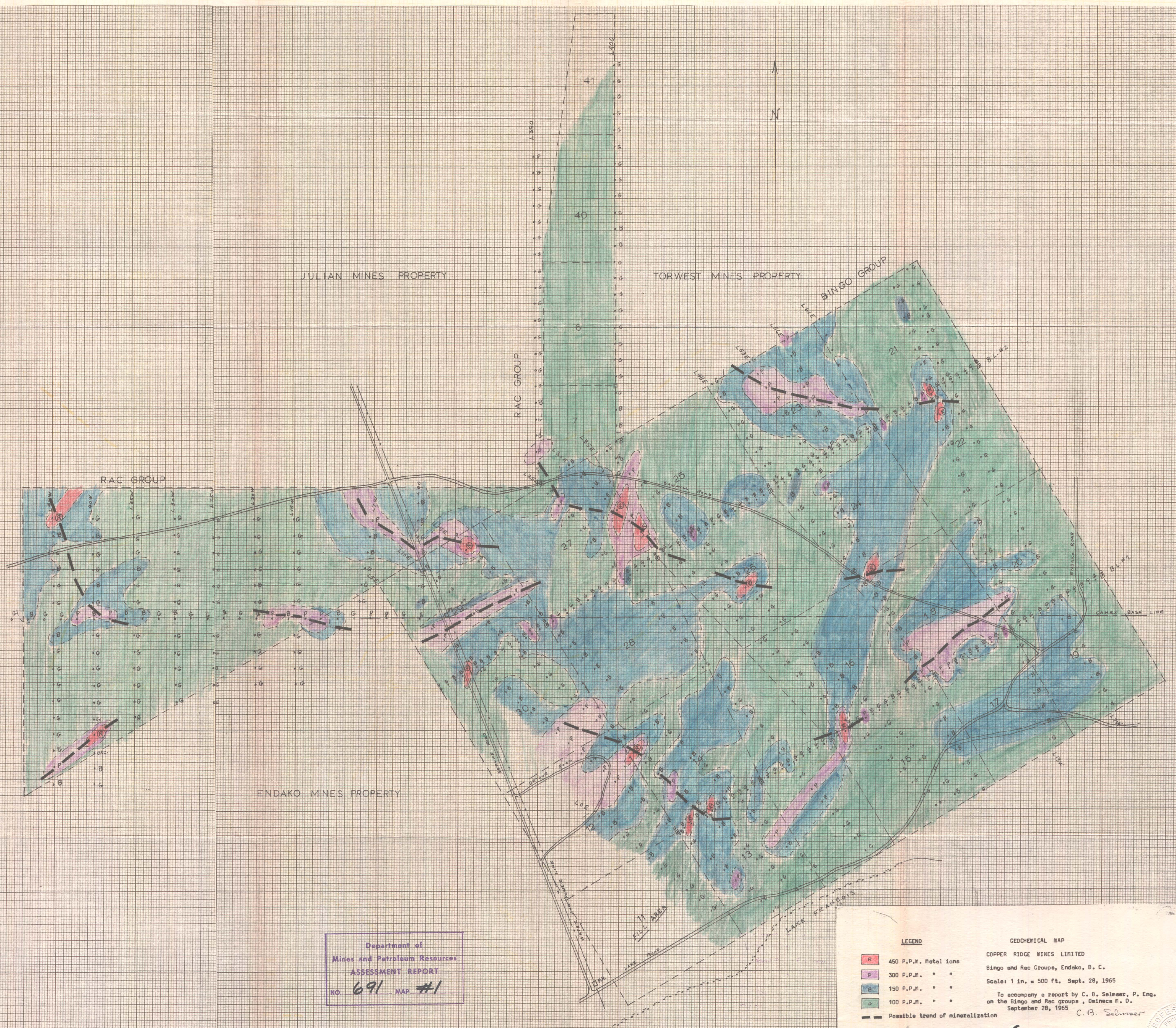
Further tests may be carried out to test for the metal ion causing the reactions. This may include a spectrographic test for molybdenum as well as zinc, copper and lead.

Respectfully submitted,

GEO CAL LIMITED

C. B. Selmszer

C. B. Selmszer, P. Eng.



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 691 MAP #1

LEGEND

R	450 P.P.M. Metal ions
P	300 P.P.M. " "
B	150 P.P.M. " "
G	100 P.P.M. " "
- - -	Possible trend of mineralization

GEOCHEMICAL MAP
COPPER RIDGE MINES LIMITED
Bingo and Rac Groups, Endako, B. C.
Scale: 1 in. = 500 ft. Sept. 28, 1965
To accompany a report by C. B. Selmsier, P. Eng.
on the Bingo and Rac groups, Dmeica B. D.
September 28, 1965 C. B. Selmsier

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