



BARRINGER RESEARCH LIMITED

145 BELFIELD ROAD
REXDALE, TORONTO
ONTARIO, CANADA
PHONE: CH. 7-2193
CABLE: BARESEARCH

MEMORANDUM.

To: Dr. A.E. Aho.
From: D. Richard Clews.
Date: July 17th, 1963.
Subject: Geochemical analyses of soil samples
from the Silver Titan Property.

The writer visited the Silver Titan Property to assess the applicability of geochemical prospecting techniques in the area. In order to do this, it is necessary to collect orientation samples from known by uncontaminated mineralization, as well as other studies. Due to the extensive workings in the general area, it was not possible to collect sediment samples representative of mineralization in the catchment area of streams, or soil samples representative of mineralization overlain by muskeg. However, "B" horizon soil samples were collected from the weak showings of mineralization on the Shanghai prospect.

It must be stressed that the showings represent very weak zones of mineralization and that the analytical data merely indicates the feasibility of using geochemical prospecting techniques for similar types of deposits. If even weakly positive geochemical results can be obtained from such zones of poor mineralization, then it may reasonably be assumed that the geochemical methods will locate richer deposits.

As a rule of thumb, it may be stated that freely drained and essentially residual soils (such as occur on the higher ground in the Keno area) should be systematically sampled in the "B" horizon, and samples should be analysed for total metal. "G" horizon soil samples (in muskeg type areas) and stream sediment samples should be analysed for leachable metal.

The analytical results for total copper, lead and zinc are attached, as well as the concentrations of mercury as determined by the Lemaire Instrument method. It will be noted that batches of 5 to 6 closely spaced samples were collected

2/...

Dr. A.E. Aho:

July 17th, 1963:

from the two mineralized zones, as well as two barren areas. As the mineralization is very weak, it was decided to institute this form of sampling rather than a single continuous line which could easily miss the narrow widths of metallization. The chief object of this work was to establish the differences in concentration of metals between mineralized and barren areas. Due to the nature of the mineralization, the writer could not establish strike lengths and dispersion widths. Thus the optimum sample intervals and line spacings could not be determined.

Mercury:

Background fluctuations in mercury ranges from 40 to 180 ppb. It will be noted that both mineralized zones contain at least one value of 200 ppb or greater. This suggests that mercury can be used as a pathfinder element for geochemical prospecting and confirms the preliminary work of Mr. Seymour and the writer's that mercury occurs as a trace element in mineralization of the Mayo type.

Copper:

Background fluctuation in copper ranges from 12 to 28 ppm. 40 ppm Cu is the calculated threshold concentration. Anomalous copper values thus occur in both zones of mineralization.

Zinc:

60 to 150 ppm Zn is the range of background scatter. The mineralization on Line 17 is clearly indicated by four values greater than 150 ppm, whereas only one sample is above background on Line 15.

Lead:

Except for two anomalous samples on Line 17, all other samples contained less than 10 ppm Pb.

Summary:

The results would suggest that it would be unwise to rely on a single metal determination to locate mineralized zones of the above type. Also lead does not appear to be strongly associated with the Line 15 type mineralization. It is, therefore, suggested that soil samples representative of the above conditions be analysed for mercury and total copper and zinc by the fusion method.

Dr. A. E. Aho:

July 17th, 1963:

Suggestions:

It is suggested that any newly discovered zones of mineralization that can be used for establishing optimum drainage reconnaissance and muskeg type analytical techniques be sampled prior to the contamination effects which result from excavations.

The sediment and "C" horizon soil samples collected during the current sampling program should be analysed for cold extractable CxCu and Zn, cold acid leachable (CxHCl), Cu, and Zn, and hot acid leachable (HCl) Cu, and Zn. The soil samples should, in addition, also be analysed for mercury. Potentially favourable areas can then be delimited by contrast and the standard deviation statistical calculation.

In conclusion, the writer wishes to express his gratitude to Dr. Aho and Mr. Seymour for the arrangements and facilities provided, and also to the field personnel for their co-operation and refreshing interest.

Enc:

c.c. Mr. D. Seymour.

SILVER TITAN PROJECT, MAYO,
YUKON TERRITORY.

SOIL SAMPLES.

	<u>Sample No:</u>	<u>Hg ppb:</u>	<u>Cu ppm:</u>	<u>Zn ppm:</u>	<u>Pb ppm:</u>
Line 12 Barren Schist	100 - S	160	12	100	n.d. (not detected)
	105 - S	60	16	120	n.d.
	110 - S	40	16	80	n.d.
	115 - S	100	12	70	n.d.
	120 - S	150	28	100	n.d.
Line 15 mineralized quartzite	30 - N	120	24	130	n.d.
	35 - N	100	20	100	n.d.
	40 - N	150	20	90	n.d.
	45 - N	200	88	170	n.d.
	50 - N	120	52	100	n.d.
	55 - N	180	40	100	n.d.
Line 17 mineralized greenstone	50 - S	300	24	170	40
	55 - S	150	20	190	60
	60 - S	200	20	250	n.d.
	65 S	140	40	150	n.d.
	70 - S	180	24	230	n.d.
	75 - S	120	32	140	n.d.
Line 18 Barren greenstone	60 - S	180	24	100	n.d.
	65 - S	100	16	150	n.d.
	70 - S	120	28	110	n.d.
	75 - S	80	20	130	n.d.
	80 - S	150	20	60	n.d.