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THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED

GEOCHEMICAL SOIL TESTING OF GEN 6, 7, 8, 9, 10 AND 11 MINERAL
CLAIMS - OMINECA N.D.

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Map
#1 Geochemical Soil Survey
Gen Group 1" = 300'

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED

MINES DIVISION

WESTERN EXPLORATION

GEOCHEMICAL SOIL TESTING
GEN 6, 7, 8, 9, 10 AND 11 MINERAL CLAIMS
OMINECA M.D.

INTRODUCTION

During the 1956 field season The Consolidated Mining and Smelting Company of Canada Limited engaged in a programme of surface exploration consisting of geological mapping, geophysical surveying, geochemical soil testing, trenching and tunnel rehabilitation on the Ingenika (Ferguson) property, the Swannell claims and recently staked Gen, Dell and Indian claims. Base for operations was the old Ingenika Mine camp which was renovated for occupancy by the 10 man staff.

This report deals with the geochemical soil testing performed on six of the Gen claims in conjunction with the geological mapping.

PROPERTY AND OWNERSHIP

	<u>Record No.</u>	<u>Tag No.</u>
Gen No. 6 M.C.	10092	212801
Gen No. 7 M.C.	10093	212802
Gen No. 8 M.C.	10094	212805
Gen No. 9 M.C.	10079	212809
Gen No. 10 M.C.	10080	212810
Gen No. 11 M.C.	10081	212811

The claims were staked by Cominco subject to the terms of their option with Ingenika Mines Ltd.

LOCATION AND ACCESS

The Gen mineral claims are located on the south side of Delklus Lake which is about 215 air miles north of Prince George, B.C. Approximate coordinates are latitude 56° 40' north, longitude 125° 10' west. Delklus Lake is about two miles south of the Ingenika River and about 20 miles westerly from the junction of this river with the Finlay River.

Access to the area is by float equipped aircraft which can land on Delklus Lake. A more arduous and time consuming route is by river boat from Parsnip Landing or Tudyah Lake on the Hart Highway about 93 to 98 miles north of Prince George. River route is down the Parsnip and/or Pack thence up the Finlay and Ingenika to Ingenika Landing about two miles by tractor road and trail north of the claims.

TOPOGRAPHY AND VEGETATION

The topography is gentle. The surface rises abruptly south from Delkius Lake to a gentle northerly incline over the majority of the claims area. The general northerly incline pattern is broken by an east-west trending glacial ridge which has had an effect upon the drainage pattern. Drainage is sluggish to the east.

Elevation at the lake is 2,560 feet and the highest point on the claims is at an elevation of 2,675 feet.

Timber growth consists of poplar and jackpine, the latter up to 10 inches at the butt. Due to the low relief, swampy areas are common.

GENERAL GEOLOGY

(a) Superficial Deposits

Fluvioglacial material overlies the claims and rock outcrops are few. Soil depth varies from a few inches to three or four feet where bedrock was encountered but no estimate could be made of the thickness in the other areas. Elsewhere in the general area there were indications that the overburden, while extensive, was not deep.

(b) Bedrock Geology

The claims are underlain by silvery-grey to grey sericite schist and thin bedded white and grey limestone of the Lower Cambrian Ingenika group of schists, phyllites, quartzites and limestone. The limestone is contorted, brecciated and, in part, replaced by quartz and siderite.

Discontinuous lenses of mineralization consisting of galena, sphalerite and pyrite occur within the siderite zones. The largest lens observed was flat lying, about three feet thick and occupied an area about 30 feet by 20 feet. Exploration on this occurrence consists of surface trenching and one adit (Onward) below the showing. A second occurrence about 1,500 feet south was tested by a 30-foot shaft and minor trenching. Elsewhere on the claims, overburden was extensive and rock outcrops few.

GEOCHEMICAL SOIL TESTING

(a) Purpose

The soil testing was done over the six claims to test for the extension of the known mineralization and to search for possible new occurrences. The tests were made to determine the presence of trace amounts of zinc, lead and copper ions in the soil.

(b) Method

The method employed was that used by E.O. Chisholm and described by him in the article "A Simple Method of Tracing Mineralization Through Light Non-Residual Overburden" (C.I.M. Bulletin February 1950). Slight modifications were employed based on Cominco experience and research by other investigators.

Briefly the method is as follows:

Principle

The method is essentially one of detecting colour changes produced by trace amounts of copper, lead and zinc mineralization in a solution of dithizone in carbon tetrachloride. As used by Comino the method is basically qualitative with minor quantitative information obtained through noting gradation of colour change.

Equipment

(1) Dithizone Solution

A 0.0016% weight/volume solution of dithizone in chemically pure carbon tetrachloride is used. To obtain fresh solutions it is prepared by diluting a 0.05% weight/volume solution of dithizone in carbon tetrachloride which was used as a stock solution. Because of the inaccessibility of the property, the 0.05% weight/volume solution was prepared by mixing 50 mgs. of dithizone (previously weighed and stored in powder form in glass vials) with 100 ml. of carbon tetrachloride. Fresh stock solution was prepared as required.

In experimenting with the tests a 0.005% weight/volume solution of dithizone in carbon tetrachloride was prepared by diluting the stock solution with carbon tetrachloride and used to check results.

(2) Pure Water

A good supply of pure water free from copper, lead and zinc ions was obtained at a distance of 25 to 30 feet from the shoreline of Delkhus Lake.

(3) Buffer Solution

A 2.0 N solution of reagent grade ammonium hydroxide was used as a buffer solution to regulate pH.

(4) Glassware

- 6 - Erlenmeyer flasks were used to mix the samples with water.
- 6 - Graduated 25 cc cylinders, stoppered with a cork covered with wax paper, were used to mix the sample liquor, dithizone solution and buffer solution.
- 1 - 10 cc crucible was used to measure the soil sample.

(5) Miscellaneous Equipment

- A sling of canvas was made to centrifuge the contents of the graduated cylinders.
- Manila pulp envelopes were used to store the soil samples.
- pH indicators ranging from 0 - 10 were used to check pH.
- A three-foot auger was used to collect the soil samples.

Procedure

(1) Sample Grid and Sample Collection

Samples were at first collected at intervals of 150 feet along east-west grid lines spaced at intervals of 300 feet over the six-claim area. More detailed samples were taken at 50-foot intervals along east-west grid lines spaced 100 feet apart over the Gen 7 and Gen 10 mineral claims which contained the known mineralized zones.

Soil samples were taken from just below the top humus layer of the soil. This distance is at variance with that outlined by E.O. Chisholm since Cominco experimentation and experiments by others show that the heavy metal content is greater at or just below the humus layer. In practice, this depth averaged about eight inches to ten inches. Cuttings from the augur were collected, placed in the manila pulp envelope, and labelled with the sample number. The spot from which the sample was taken was also marked with the sample number so that its location could be found again.

(2) Lab Procedure

Samples were all tested at the one testing place at Delkhus Lake.

- (a) 10 cc of soil sample and 40 cc of water were placed in the Erlenmeyer flask, shaken vigorously for one minute and allowed to settle for 30 seconds.
- (b) 10 cc of the muddy water was poured into the 25 cc graduated cylinder, 3 cc of 0.0016% weight/volume solution of dithizene was added and the alkalinity was adjusted by adding two to three drops of ammonium hydroxide buffer. The alkalinity was found not to vary much so, in general, two to three drops of buffer were all that was needed to produce the desired alkalinity of a pH value of about 5.
- (c) The cylinder was stoppered with a cork, covered with wax paper, and shaken vigorously for one minute.
- (d) To separate the organic phase, the cylinder was placed in the canvas sling and centrifuged for one minute. The organic phase, containing any heavy metal dithizonates now appears at the bottom of the cylinder. If heavy metal dithizonates are present, the organic phase assumes a pink to reddish colour, its intensity varying with the quantity of heavy metals present in the soil sample. Three colour ranges were selected for use:

- 0 - colourless
- 3 - light to medium pink
- 5 - deep pink

The colour of the organic phase was observed immediately with the cylinder held against a piece of white paper and a value was assigned according to the colour range values selected. This value was then entered on the sample envelope.

Precautions -

Due to the sensitivity of the test, extreme caution was exercised to prevent contamination. Multiple washings of all glassware was necessary between each test. Hands were kept clean at all times. Check tests were run on all positive samples. Standard procedures were adopted and followed closely, since standardisation of method was important when results are relative.

SURVEY RESULTS AND OBSERVATIONS

In all, a total of 943 samples were tested. Of this total, five gave positive tests for heavy metals and were located as follows:

- (1) One positive sample was obtained downslope from and about 200 feet east of the known mineralization in the Onward adit and trenching area. This was undoubtedly related to the Onward showing.
- (2) Three positive samples were obtained from the trenched area on Gen 10 mineral claim about 1,500 feet south of the Onward showing. These samples are related to the Gen 10 mineral claim showing but no extensions were indicated.
- (3) One positive sample was obtained about 900 feet south of the Gen 10 mineral claim showing at the head of local drainage from the Gen 10 mineral claim showing. In view of the absence of positive readings in the intervening distance, it is concluded that this positive reaction is not related to the Gen 10 mineral claim showing but may reflect a new occurrence.

In view of the large percentage of negative tests, experiments were made with the test procedure in an endeavour to increase its sensitivity. Strength of dithizone solution was increased to 0.005% weight/volume to compensate for probable loss of dithizone to interfering elements. Increased quantities of soil liquor were used, multiple extractions were used; and known zinc solutions were added to negative tests to determine whether there was any dithizone remaining. In each case field tests at the property, and again at trail substantiated the results obtained. Spectrographic analyses of the positive samples and adjoining negative samples confirmed the geochemical results in one case. In the other cases, accidental salting of the soil samples rendered the spectrographic analyses valueless.

The geochemical soil sampling confirmed the presence of the two known mineralized zones and indicated a possible third zone. Extension of the zones was not indicated and in view of the very few positive tests obtained, it is considered that further detailed geochemical testing about the positive tests is warranted. Sample depths should be varied to obtain a depth profile in order to guide future testing and an alternative method of geochemical testing should be investigated and used as a check.

SURVEY PERSONNEL

The survey was done under the direction of A. C. Taplin M.A. (Geology) and E. H. Caldwell B.Sc. (Mining). Sampling and testing were done by P. Pizio and L. Redivo, geology undergraduates employed for the season.

The survey was conducted from July 29 to August 23 during which period 22 full days were spent on the survey by Pizio and Redivo, and three days by each of Taplin and Caldwell.

FIELD EXPENDITURES - (For detail see attached Statement)

Salaries and Labour	\$ 464.00
Food and Lodging	322.00
Transportation	300.00
Personnel Services - including overhead	98.00
Material	34.33
TOTAL	\$ 1,218.33

APPENDIX

Attachments

- (1) Accounting Statement
- (2) Plan of Survey

References

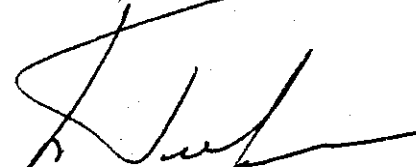
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Submitted by:



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Western District Exploration Office
February 7, 1957

Distributions: Mining Recorder, Gainesville M.D. (2)
Mines Division (2)
Western Exploration (2)

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THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED
GEOCHEMICAL SOIL TESTING OF GEN 6, 7, 8, 9, 10 AND 11 MINERAL CLAIMS

EXPENDITURE STATEMENT
(PERIOD - 22 DAYS)

Jan. 1 - Dec. 31, 1956

The Ingenika Camp was constructed and operated to accommodate general roll employees, geological staff employees and engineering staff employees for the purpose of geological mapping, geo-physical surveying, geochemical soil sampling, trenching and constructing trails on the Ingenika, Indian, Dell, Gen and Swannell claims. To arrive at a reasonable and accurate expenditure for each of the above types of work, the following expenditure categories were used and computed as a cost per man-day:

- | | | |
|--|---|---|
| (1) <u>Board</u> | } | Unit cost is obtained by dividing each total cost by the number of man-days spent on the property by all personnel. |
| (2) <u>Lodging or Camp Construction and Maintenance</u> | } | |
| (3) <u>Transportation for personnel, supplies and equipment to and from the nearest supply base at Prince George</u> | } | |
| (4) <u>Overhead</u> - includes purchasing, personnel and accounting services | } | Unit cost obtained by dividing total overhead by total man-days employed. |
| (5) <u>Payroll Loading</u> - includes charges for vacation, medical plans, pension plans, unemployment insurance, etc. | } | Unit cost obtained by dividing total geological payroll loading by total geological man-days employed. |

Unit Cost Calculations (Excluding Salaries)

	<u>Total Cost</u>	<u>Man-Days</u>	<u>Cost/man-day</u>
Board	\$ 4,306.31	872	\$ 4.94
Lodging	1,305.30	872	1.50
Transportation	5,229.90	872	6.00
Overhead	1,109.76	974	1.14
Payroll Loading	520.94	637	0.82
	\$ 12,472.21		\$ 14.40

Direct Cost of Geochemical Survey - (22 days)

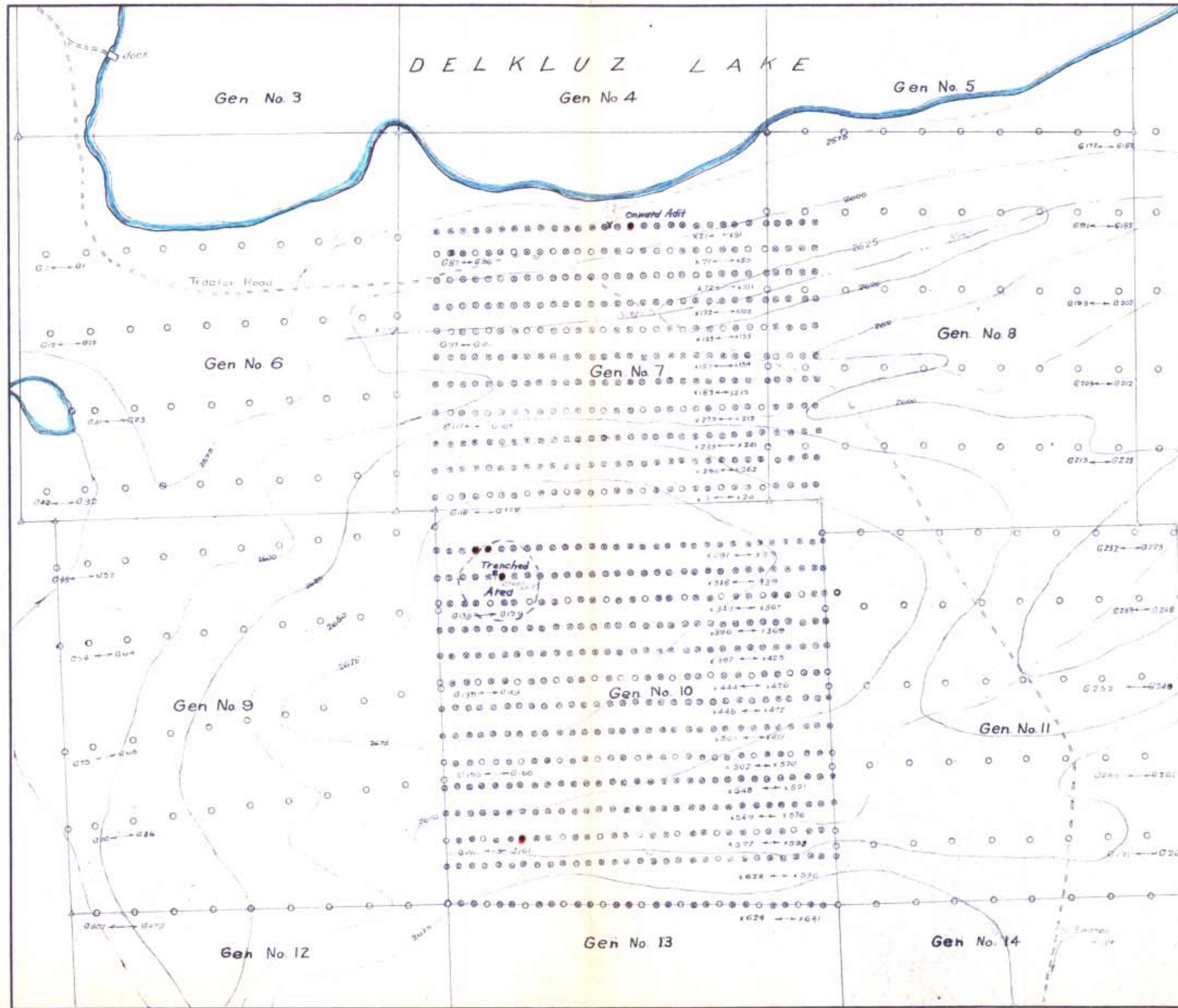
Salaries


P. Pisco	- 22 days at \$8.50/day -	\$ 187.00	
L. S. Redive	- 22 " " 8.50/day -	187.00	
A. C. Taplin	- 4 " " 15.00/day -	60.00	
E. H. Caldwell	- 2 " " 15.00/day -	30.00	464.00
Board	- 50 man-days at \$4.94/man-day		247.00
Lodging	- 50 " " 1.50/man-day		75.00
Transportation	- 50 " " 6.00/man-day		300.00
Overhead	- 50 " " 1.14/man-day		57.00
Payroll Loading	- 50 " " 0.82/man-day		41.00
Material			34.35
Total Direct Field Expenditures			\$ 1,218.35

CERTIFIED BY:

W. S. Lumsden
Branch Accountant

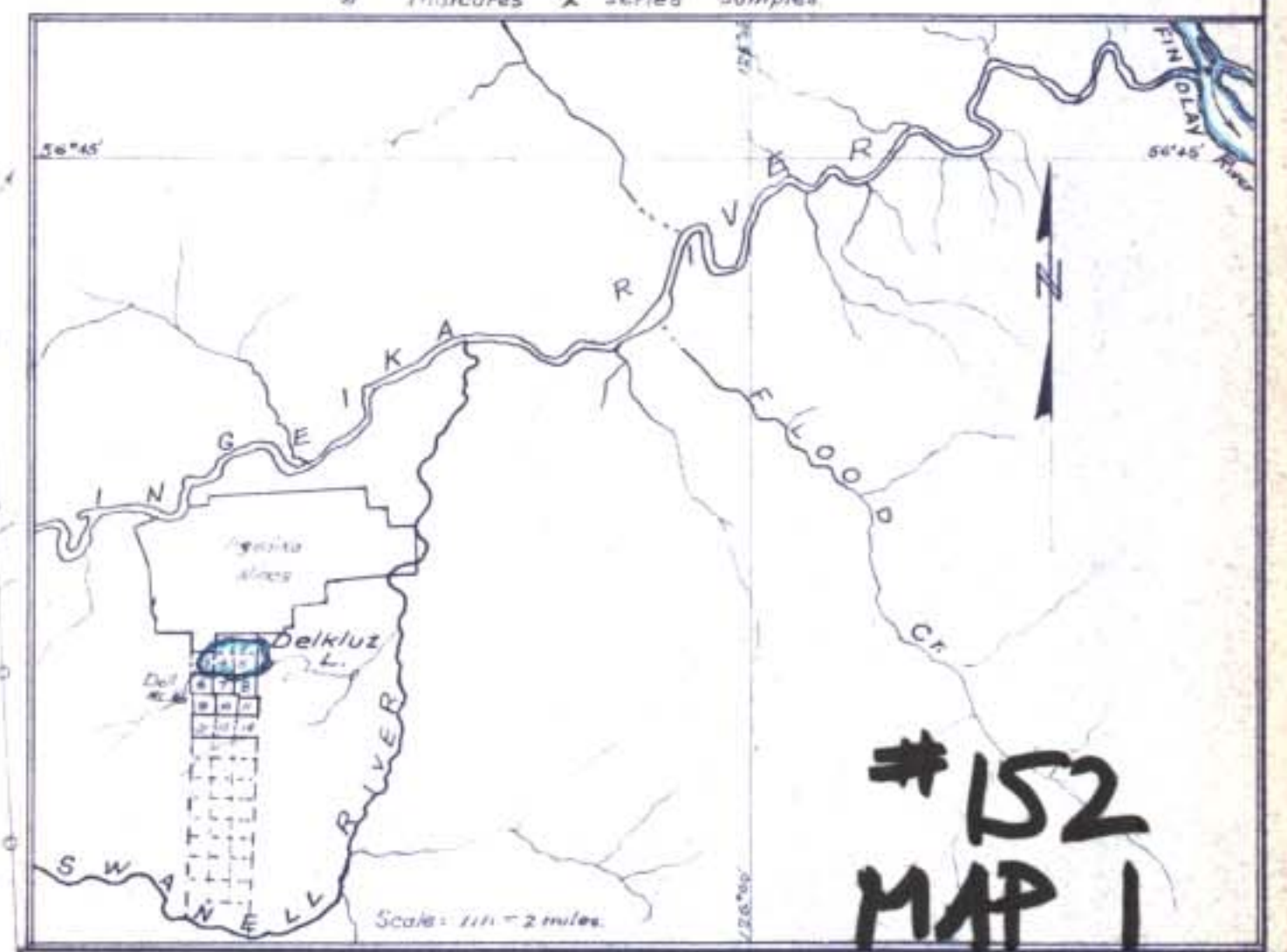
E. H. Caldwell
E. H. Caldwell
Western Exploration Supt.




 Department of
 Mines and Petroleum Resources
ASSESSMENT REPORT
 NO. **152** MAP #1

LEGEND

- Strong Positive reaction.
- Weak Positive reaction.
- Negative reaction.
- Indicates G Series samples
- Indicates X Series samples



**#152
MAP 1**

The Consolidated Mining and Smelting Company of Canada Limited

Drawn by: ABM		Traced by: ABM	
Revised by:	Date:	Revised by:	Date:

GEOCHEMICAL SOIL SURVEY
GEN-GROUP

INGENIKA
OMENICA M.D.

Scale: 1 in = 300 ft.
Date: Jan. 31, 1957
Plate: