C O M I N C O LTD.

EXPLORATION WESTERN DISTRICT

GEOCHEMICAL SOIL SAMPLING SURVEY

LAY MINERAL CLAIM GROUP

SWIM LAKES AREA

WHITEHORSE MINING DIVISION

YUKON TERRITORY

NTS: 105 K-2

LAT: 62°12' NORTH
LONG: 132°58' WEST

BY

G. PARSONS

COMINCO LTD.

G. PARSONS

UNDER SUPERVISION OF

J. RICHARDSON, P.ENG.

This report has been examined by the Geological Evaluation Unit. Approved as to technical worth by:

RESIDENT GEOLOGIST

Approved as to cost in the amount of: $ 1577.00

RESIDENT MINING ENGINEER

Accepted as representation work under Section 53(4) Yukon Quartz Mining Act.

COMMISSIONER OF YUKON

C O M I N C O L T D.

EXPLORATION — WESTERN DISTRICT

GEOCHEMICAL SOIL SAMPLING SURVEY
LAY MINERAL CLAIM GROUP
SWIM LAKES AREA
WHITEHORSE MINING DIVISION
YUKON TERRITORY
NTS: 105 K-2

TABLE OF CONTENTS

GP:mk
May 9, 1968
Vancouver, B.C.

C O M I N C O L T D.

EXPLORATION — WESTERN DISTRICT

LIST OF CLAIMS

CLAIM NAME	GRANT NO.	ANNIVERSARY DATE
Lay 1	Y 12971	April 28
2	Y 12972	"
3	Y 12973	"
4	Y 12974	"
5	Y 12975	"
6	Y 12976	"
7	Y 12977	"
8	Y 12978	"
12	Y 12979	"
13	Y 12980	"
14	Y 12981	"
15	Y 12987	"
16	Y 12988	"
17	Y 12989	"
18	Y 12990	"
19	Y 12991	"
20	Y 12992	"
21	Y 12993	"
22	Y 12994	"
23	Y 18001	"
24	Y 18002	"
25	Y 18003	"
26	Y 18004	"
27	Y 18005	"
28	Y 18006	"
29	Y 18007	"
30	Y 18008	"
31	Y 12982	"
32	Y 12983	"
33	Y 12984	"
34	Y 12985	"
35	Y 12986	"

CLAIM NAME	GRANT NO.	ANNIVERSARY DATE
Lay 36	Y 18031	April 28
37	Y 18009	"
38	Y 18010	"
39	Y 18011	"
40	Y 18012	"
41	Y 18013	"
42	Y 18014	"
43	Y 18015	"
44	Y 18016	"
45	Y 18017	"
46	Y 18018	"
47	Y 18019	"
48	Y 18020	"
49	Y 18021	"
50	Y 18022	"
51	Y 18023	"
52	Y 18024	"
53	Y 18025	"
54	Y 18026	"
55	Y 18027	"
56	Y 18028	"
57	Y 18029	"
58	Y 18030	"
59	Y 18032	"
60	Y 18033	"
61	Y 18034	"
62	Y 18035	"
63	Y 18036	"
64	Y 18037	"
65	Y 18038	"
66	Y 18039	"
67	Y 18040	"
68	Y 18041	"
69	Y 18042	"
70	Y 18043	"

C O M I N C O L T D.

EXPLORATION WESTERN DISTRICT

GEOCHEMICAL SOIL SAMPLING SURVEY

LAY MINERAL CLAIM GROUP
SWIM LAKES AREA
WHITEHORSE MINING DIVISION
YUKON TERRITORY
NTS: 105 K-2

INTRODUCTION

Under an option agreement with W. J. Abraham, Cominco acquired the Lay 1-8 and 12-70 mineral claims in the Swim Lakes area of the Vangorda District. These claims were acquired for the purpose of carrying out exploration to determine if any massive sulphide deposits similar to those known at Faro, Vangorda Creek and Swim Lake occur.

During the period June 1 to September 1, 1967, a crew comprised of a contract geophysical operator, geologist, soil samplers and linecutters worked on the property at several different times.

It was proposed that the crew would cut lines, then do a geochemical survey, magnetometer and electromagnetic surveys, and a geologic survey. It was hoped that these various indirect methods would provide Cominco with a drill target and ultimately an orebody.

A grid with a base line running east and cross lines running both north and south were cut by bulldozer. The cross lines are spaced 400 feet apart.

LOCATION AND ACCESS

The Lay claim group is located approximately 22 miles northwest of Ross River on the northeast side of the Tintina Trench. The claims are on map sheet 105 K-2 at 62°12' north latitude, and 132°58' west longitude.

Access to the property is most conveniently made by float or ski equipped aircraft to any one of the Swim Lakes or by road to the west end of Swim Lake and by foot for the remainder of the distance.

A total of two camps were established for work on the claim group at points indicated on map L68-2. Each camp was set up as close as possible to the work area to keep crew travel time to a minimum.

Constant communication with Ross River, Whitehorse and Vancouver was available by single side band radio.

PREVIOUS WORK

The previous work on the area covered by the present claims is limited to the airborne survey carried out by Dynasty Explorations Ltd. and Kerr Addison Ltd. during the early part of the exploration in the district.

TOPOGRAPHY AND GROUND CONDITIONS

The Lay mineral claims lie in a shallow poorly drained valley occupied by the Swim Lakes. Elevations are between 3000 and 3500 feet. Local relief is not great—seldom exceeding 100 feet. Local accumulations of glacial material form gravel ridges which are the only topographic irregularities. These ridges are the only well drained areas on the claim group, the rest of the ground being swampy or lake.

Some development of soil horizons is apparent even though a major part of the overburden is not residual. A typical soil profile is given below:-

(a) Black organic material comprised of roots, moss, and decomposed vegetation. Thickness variable from three inches to four feet.

(b) Volcanic ash—the character, age and extent of it are described by Bostock (1952). The thickness of the ash bed on the Lay group varies from nil on ridge tops where it is eroded to 1½ feet in the depressions where it was probably deposited by water.

TOPOGRAPHY AND GROUND
CONDITIONS continued....

(c) Red to yellow iron rich clay horizon four to eight inches thick. This horizon is interpreted as a paleo A horizon. This was the horizon which was sampled where possible.

(d) Glacial gravel sand and clay which presumably extends to bedrock. The thickness is unknown but is inferred to be extensive.

Climatic conditions are sub-Arctic and the soil profile is immature with zones of leaching and oxidation usually extending less than two feet beneath the surface.

Vegetation in the area is of two types. On the well drained ridges, dwarf birch, alder, poplar, and willow predominate, while the poorly drained areas of muskeg is generally covered with patches of thick spruce.

SURVEY TECHNIQUES

Line Cutting

The soil sampling survey was conducted over the same lines used for the geophysical survey on the east grid and on lines cut for the purpose of the geochemical survey on the west grid. All line cutting has been applied as assessment work in prior affidavits.

Soil Sampling

Soil sampling was carried out after the geophysical surveys, using the same personnel as samplers with the exception of the geophysical operator.

The samples were obtained by using a shovel, which was found necessary to cut the roots and moss, and dip into the permafrost when necessary. The samples were taken at 200 foot stations on the cross lines. All samples, except where impossible because of a thick organic horizon or permafrost, were taken directly beneath the layer of volcanic ash. Data noted at each sample site were station, direction and degree of slope and drainage, soil type, residual or glacial soil, and description of the sample in terms of its constituents. All samples were shipped to the Cominco field laboratory at Williams Lake, B.C.

Method of Analysis

All samples were analyzed by Cominco laboratories in Williams Lake, B.C. and later with the same instrument in Trail, B.C. When the samples were received, each was dried in its Kraft bag, then screened to minus 100 mesh, and 0.5 gram portions were digested in hot 1 normal hydrochloric acid for one hour. The solution was then allowed to stand for 24 hours for clarification. These solutions were then diluted to a constant volume and analyzed on an atomic absorption spectrophotometer. The instrument used was a Unicam model SP90. The accuracy of the instrument is 5% of the amount of metal present and the results were reproducible within 5%. All samples were analyzed for copper, lead and zinc.

Treatment of Data

All results were returned to the field supervisor upon completion of the analyses. The results expressed as parts per million were then plotted on 400 scale maps (Plates L68-3,4,5). These maps were then studied in conjunction with the field data sheets to determine the presence of anomalous areas.

GEOCHEMICAL OBSERVATIONS

East Grid

There are no major anomalous geochemical coincidences between copper, lead and zinc values obtained over the east grid.

GEOCHEMICAL OBSERVATIONS

East Grid continued....

The copper geochemical survey gave rise to one anomalous sample and two possibly anomalous samples. These are tabulated below:

Grid Location	
112E	6S
112E	8S
140E	8N

These anomalous sample sites were not substantiated by either of the other two metals or by the geophysical surveys. All three sample sites were in poorly drained swampy areas with a high proportion of organic material in the sample.

The lead geochemical survey showed two anomalous areas. In both of these areas the anomalies are unsupported by the other two metals or by geophysics and consequently are interpreted as being not significant in terms of the target searched for.

The anomalous sample sites are tabulated below:

136E	0 S to 8 S
128E	16 S

The zinc geochemical survey showed four possibly anomalous areas:

136E	6 S to 12 S
128E	16 S to 18 S
124E	18 S
120E	0 S to 200S

The values associated with these possibly anomalous areas are not high enough to be considered really anomalous based on the geochemical results gathered in the past three years in the Vangorda District. These values are below "threshold value" which is considered to be 200 ppm Zn based on experience and statistics. It is significant that none of the areas which might be called anomalous geochemically respond to the geophysics.

West Grid

The copper geochemical survey found two sample sites to be anomalous:-

64E	12N
60E	12N

These sample sites are both in muskeg areas and are isolated. They are not substantiated by the other two surveys.

The zinc geochemical survey of the west grid found two isolated possibly anomalous sample sites.

72E	6N
48E	14S

These isolated spot high values are not considered significant.

The lead geochemical survey of the west grid is remarkably flat. There are no possibly anomalous areas.

CONCLUSIONS AND RECOMMENDATIONS

East and West Grid

The east grid was covered by geochemical and geophysical surveys and no coincident anomalous areas were located. No outcrop is known to occur on the ground, so consequently no further work can be recommended based on the results of the indirect exploration methods used. While it is not always

CONCLUSIONS AND RECOMMENDATIONS
East and West Grid continued....

possible to eliminate ground from consideration on the basis of indirect exploration methods, these areas do not warrent, nor do the results justify, further expenditures at this time. However as more geologic information becomes available in the district, the ground may warrent re-examination.

Report By _____
C. Parsons

Under the
Supervision of _____
J. Richardson

JP:mk
May 9, 1968
Distribution:
Mining Recorder, Whitehorse, Y.T. (3)
Vancouver Office (1)

APPENDIX I

SUMMARY OF COSTS
GEOCHEMICAL SURVEY - LAY CLAIMS

(1) Wages and Salaries August 21-28, 1967 (8 days at $20 per day)	$ 160.00	$	$
(2) Subsistance Room and board in field 9 per man day	72.00		
(3) Overall Supervision of sampling survey pro- rated at 10 per man day	80.00	312.00	
(4) Aircraft Support Charges included in report "Magnetic and Electromagnetic Geo- physical Surveys - Lay Mineral Claim Group"	----		
(5) Total Cost Analyses of Samples by Atomic Absorption Method			
West grid 147 samples @2.50	367.50		
East Grid 259 samples @2.50	647.50	1,015.00	$ 1,327.00
(6) Preparation of Report and Data Presentation			250.00
			$ 1,577.00

A P P E N D I X II

AFFIDAVIT SUPPORTING SUMMARY OF COSTS

I, GEOFFREY PARSONS, Geologist, Exploration, Cominco Ltd., of 300-890 West Pender Street, Vancouver, British Columbia, MAKE OATH AND SAY:

1. That I am a Geologist, Exploration, Cominco Ltd.

2. That to the best of my knowledge, information and belief, the statement of costs headed Appendix I as presented in the report "Geochemical Soil Sampling Survey - Lay Mineral Claim Group" is true and correct.

SWORN BEFORE ME at Vancouver, British Columbia, this 9th day of May, 1968.

A Commissioner for taking Affidavits within British Columbia.

APPENDIX III

PERSONNEL

Party Chief

BUTRENCHUK, S.B. - 300-890 W. Pender St., Vancouver, B.C.

Soil Samplers

CHOUMONT, R. - Teslin, B.C.

STEDMON, P. - c/o Parsons Construction, Faro Camp, Whitehorse, Y.T.

Field Supervision

PARSONS, G. - 300-890 W. Pender St., Vancouver, B.C.

SUPERVISION

RICHARDSON, J. - 300-890 W. Pender St., Vancouver, B. C.

APPENDIX IV

LIST OF REFERENCES

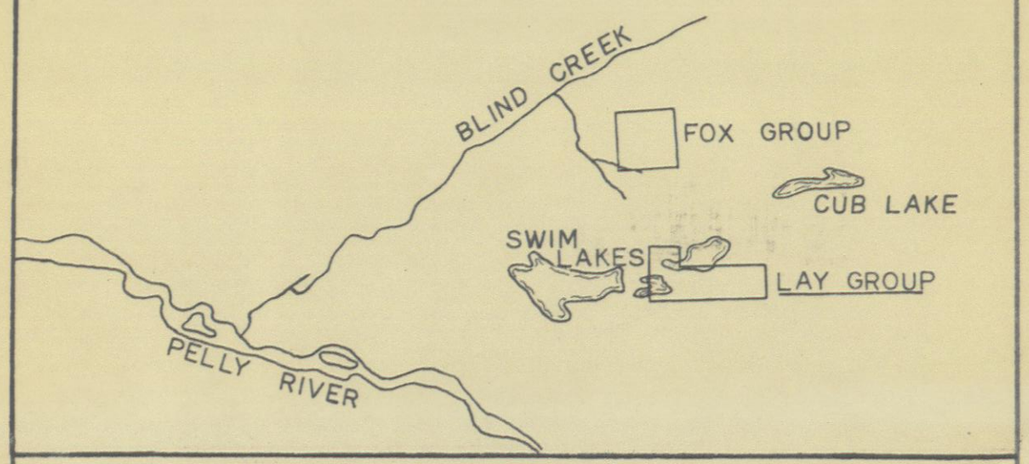
(1) Bostock, H.S. 1952 - Geology of Northwest Shakwak Valley, Yukon Territory, Geol. Surv. Can. Mem. 267, pp. 36-39

(2) Fernald, A.T. 1962 - Radio carbon Dates Relating to a Widespread Volcanic Ash Deposit U.S. Geol. Surv. Prof. Paper 450B, pp 29-30.

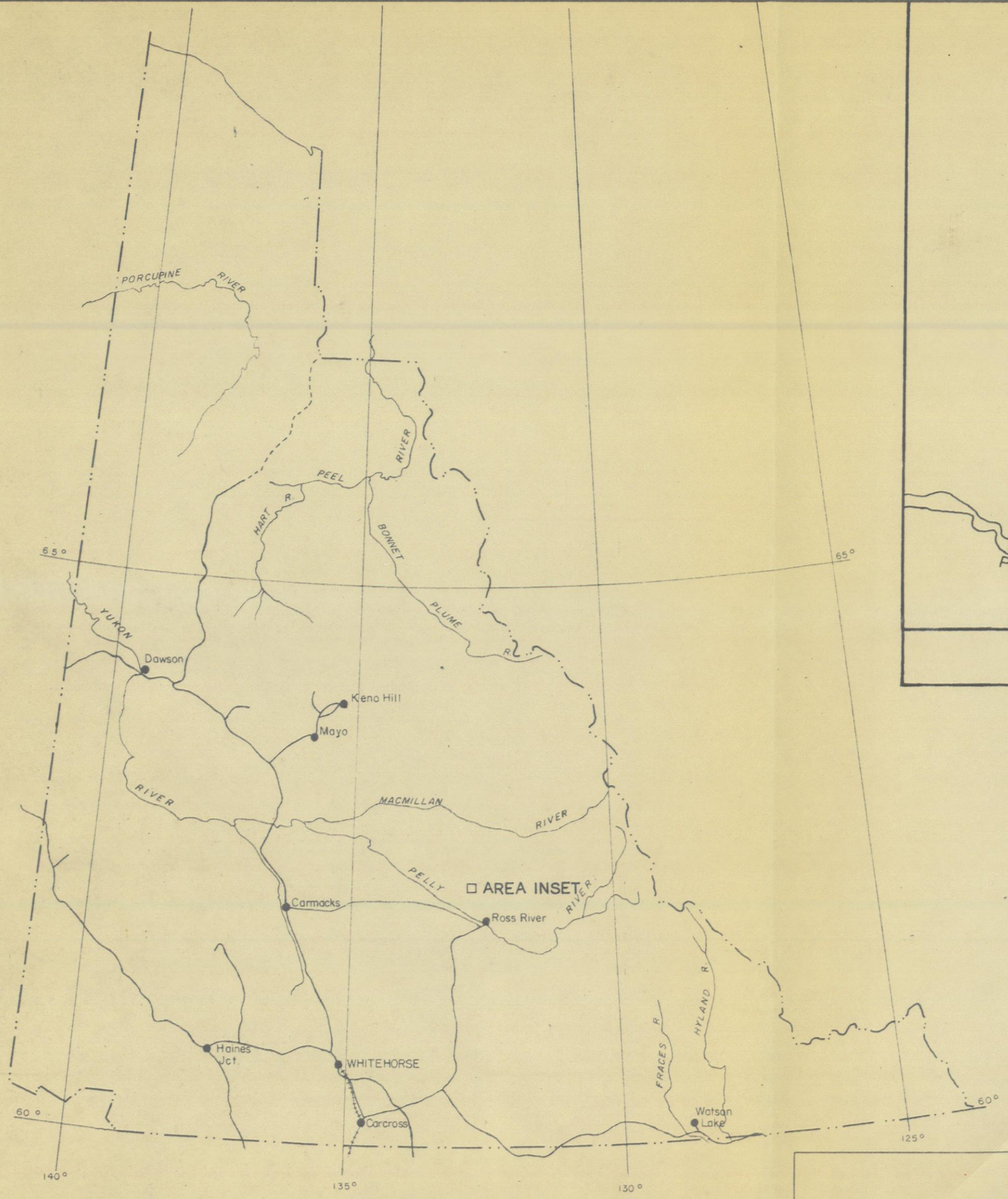
(3) Parsons, G. 1968 - Magnetic and Electromagnetic Geophysical Surveys - Lay Mineral Claim Group. Private report to Cominco Ltd.

(4) Roddick & Greene J.A. L. H. 1961 - Tay River, Yukon Territory Geol. Surv. Can Map 13-1961.

(5) Templeman-Kluitt, D.S. 1961 - Geologic Setting of the Faro, Vangorda and Swim Base Metal Deposits, Geol. Surv. Can. Paper 68-1, pp 43-52.



1" = 4 MILES



Cominco

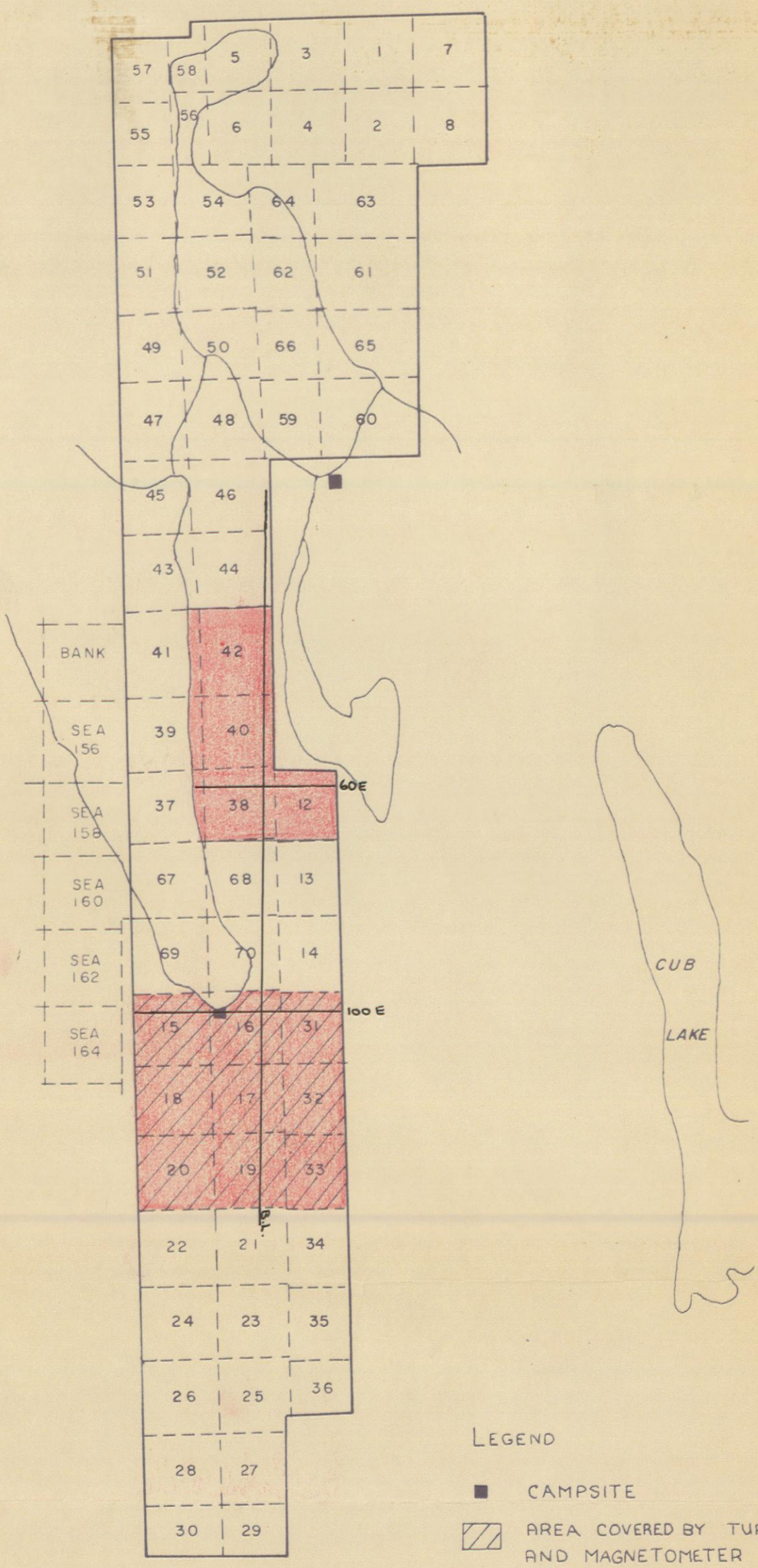
Drawn by:		Traced by: G. R. D	
Revised by	Date	Revised by	Date

LAY GROUP

LOCATION MAP

Scale: 1" = 63.13 Miles | Date: February, 1968 | Plate: F-2a-68

210-0620



LEGEND

- CAMPSITE
- AREA COVERED BY TURAM AND MAGNETOMETER
- AREA COVERED BY GEOCHEMICAL SURVEY

The Consolidated Mining and Smelting Company of Canada Limited

DRAWN BY:		TRACED BY: G.R.D.	
REVISED BY	DATE	REVISED BY	DATE

LAY CLAIM GROUP

YUKON TERRITORY — NTS 105 K-2

SCALE: 1" = 1/2 Mile | DATE: FEB., 1968 | PLATE: Lay 68-2

BCIL 1071-C.M.S.C.

COMINCO 210-0610

100	104	108	112	116	120	124	128	132	136	140	144	148
S <15	<15	<15	<15	<15	<15	<15	<15	<15	25	20	50	30
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S 20 <20	<20	15	25	<15	<20	<20	<20	<20	<20	<20	<20	<20
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S - Silt Sample
Cu in Parts per Million

EAST GROUP

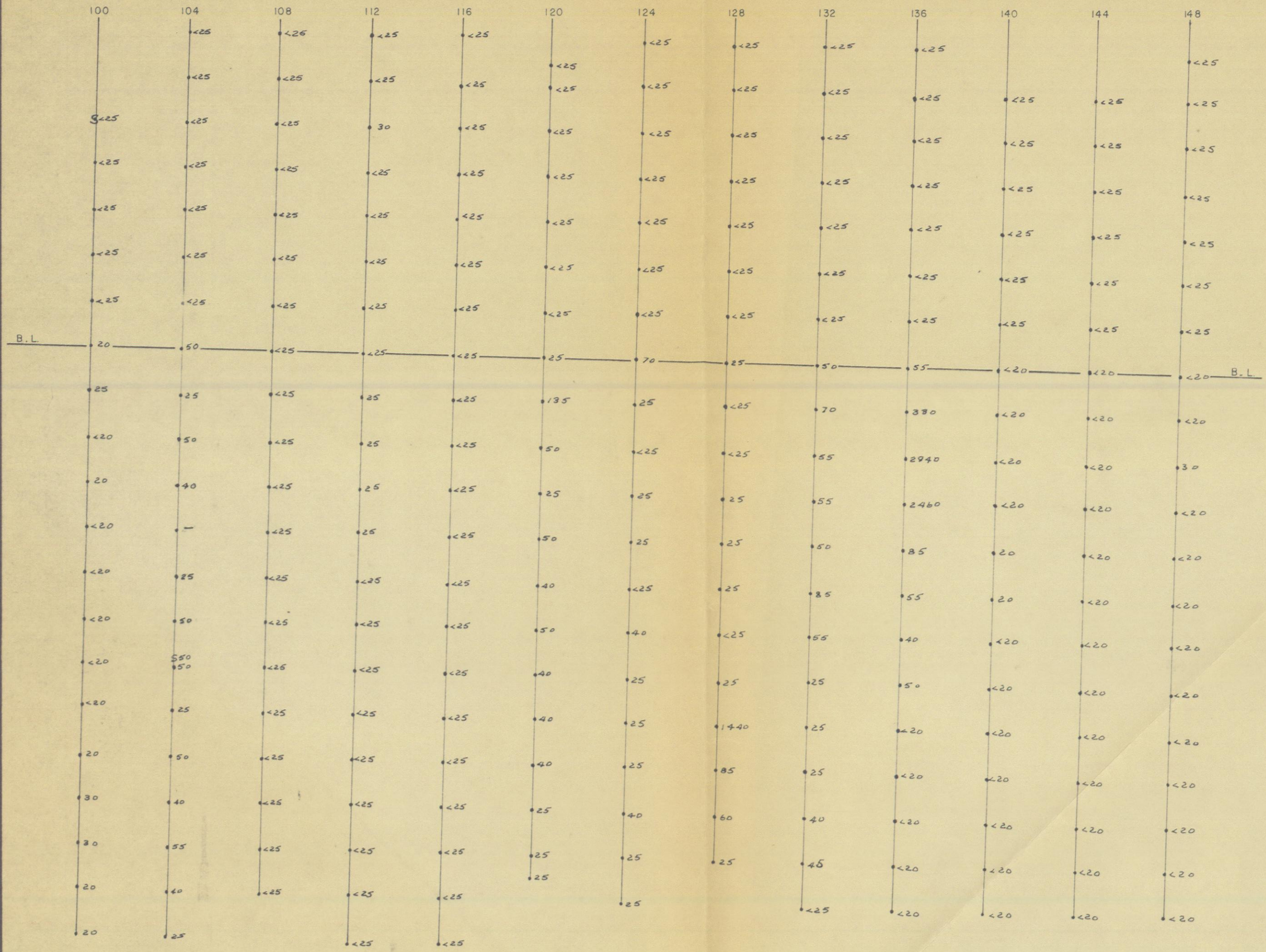
Cominco

Drawn by: G. P.		Traced by: G.R.D.	
Revised by	Date	Revised by	Date

GEOCHEMICAL SURVEY - Cu
LAY GROUP

YUKON TERRITORY — NTS 105K-2

Scale: 1" = 400' | Date: JANUARY, 1968 | Plate: L-3



S - Silt Sample
Pb in Parts per Million

EAST GROUP

Cominco

Drawn by: G. P.		Traced by: G.R.D	
Revised by	Date	Revised by	Date

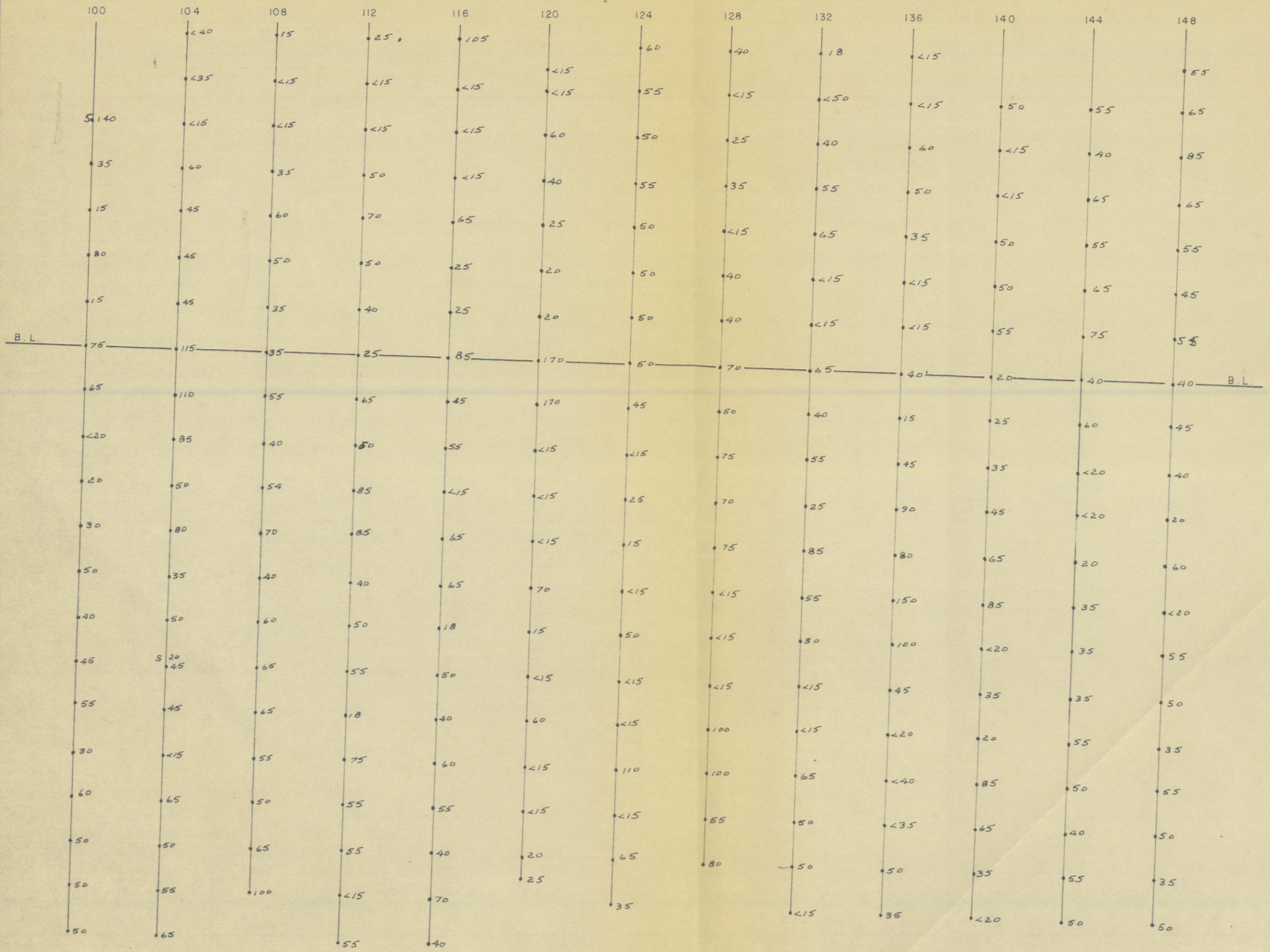
GEOCHEMICAL SURVEY - Pb

LAY GROUP

YUKON TERRITORY NTS 105K-2

Scale: 1" = 400' | Date: JANUARY, 1968 | Plate: L - 4

210 0620



EAST GROUP

Cominco

Drawn by: G. P.		Traced by: G. R. D.	
Revised by	Date	Revised by	Date

GEOCHEMICAL SURVEY - Zn
LAY GROUP

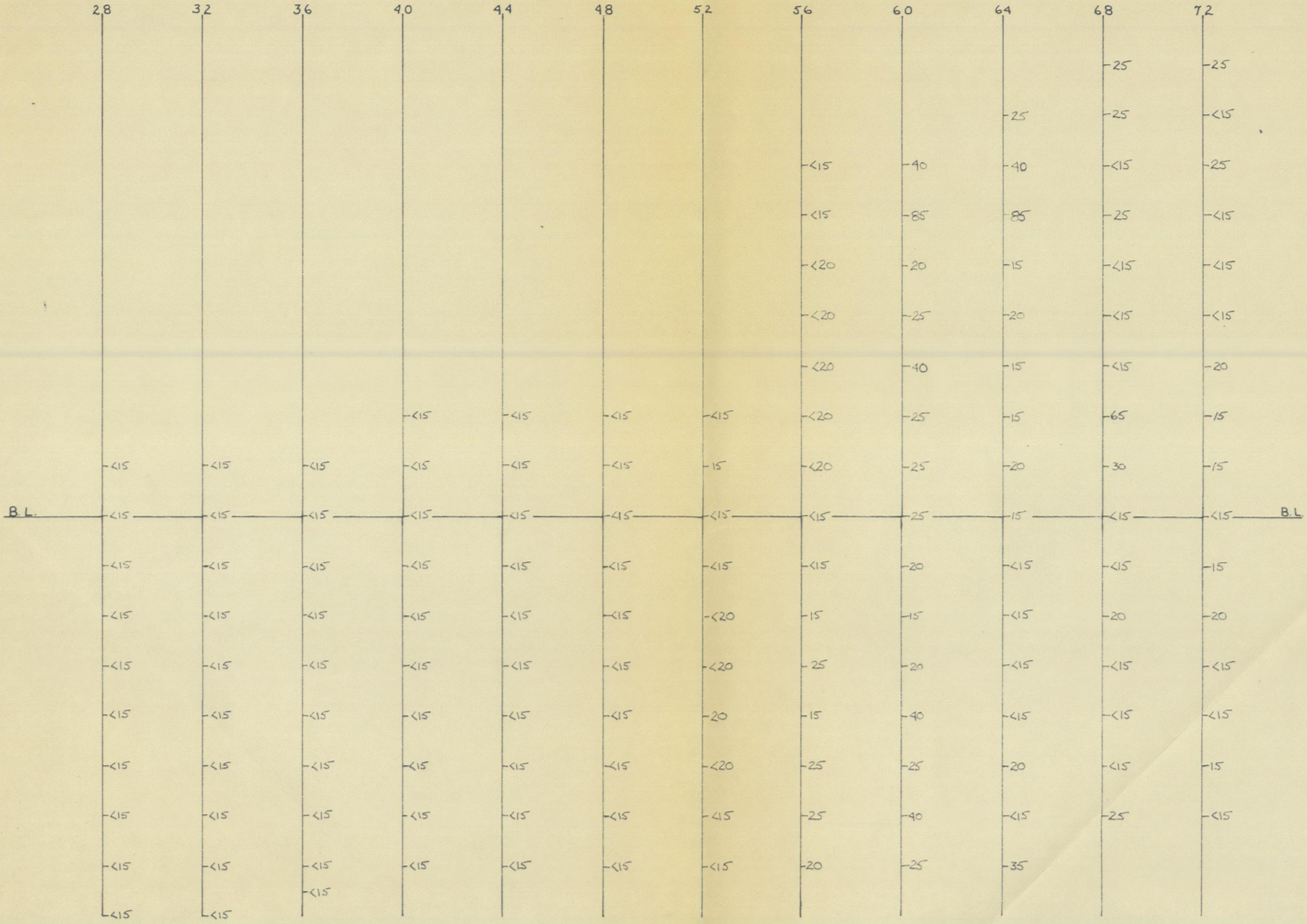
YUKON TERRITORY

NTS 105 K - 2

Scale: 1 " = 400 '

Date: JANUARY , 1968

Plate: L - 5



Cu in parts per Million

WEST GROUP

Cominco

Drawn by: S.B.B		Traced by:	
Revised by	Date	Revised by	Date

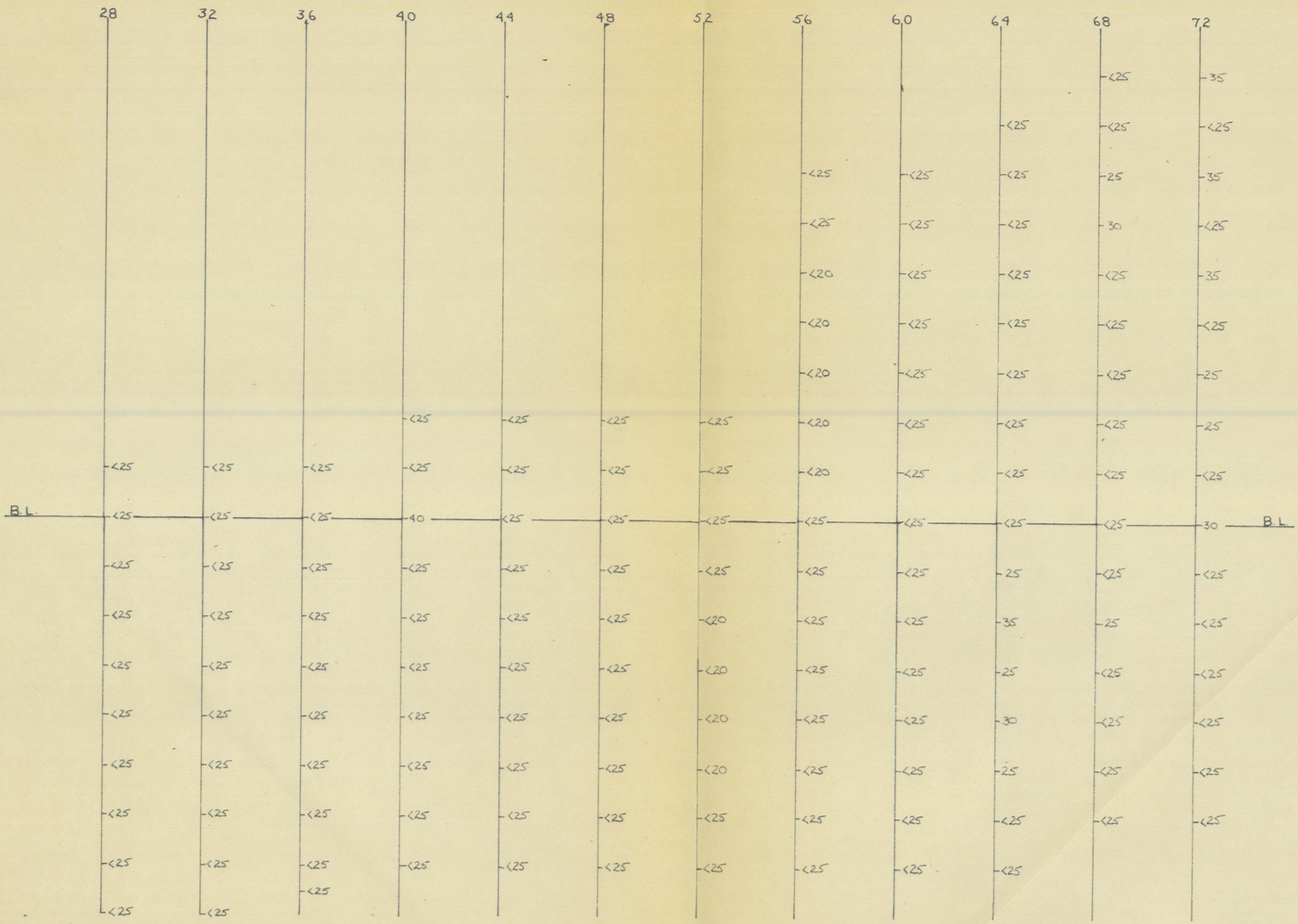
GEOCHEMICAL SURVEY - Cu
LAY GROUP

Scale: 1" = 400'

Date: May 8, 1968

Plate:

210-0620



Pb in parts per Million

WEST GROUP

Cominco

Drawn by: S.B.B.		Traced by:	
Revised by	Date	Revised by	Date

GEOCHEMICAL SURVEY - Pb
LAY GROUP

Scale: 1" = 400'

Date: May 8, 1968

Plate:

28	32	36	40	44	48	52	56	60	64	68	72
										15	65
									50	50	45
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<15	<15	35	50	35	170	30	65	50	50		
30	90	35									

Zn in parts per Million

WEST GROUP

Cominco

Drawn by: S.B.B.		Traced by:	
Revised by	Date	Revised by	Date

GEOCHEMICAL SURVEY - Zn
LAY GROUP

Scale: 1" = 400' | Date: May 8, 1968 | Plate:

210-0620

LEGEND

CRETACEOUS

- 12a. Medium- to fine-grained equigranular muscovite biotite granodiorite
- 12b. Medium-grained porphyritic (K feldspar) biotite quartz monzonite

MESOZOIC

PERMIAN OR YOUNGER?

- Massive cobble and pebble conglomerate with fragments of mica quartz schist (1), andesite (9a), chert (9b), limestone (7), serpentine (10).
- Serpentine, serpentinized peridotite

PENNSYLVANIAN AND/OR PERMIAN

MIDDLE AND UPPER PENNSYLVANIAN (?)

PALEOZOIC

- 9a. Massive, green andesitic volcanic rocks, commonly amygdaloidal; includes common pyroclastic and less common pillowed varieties.
- 9b. Grey, green and red argillaceous chert and chert pebble conglomerate.

DEVONIAN AND MISSISSIPPIAN

UPPER DEVONIAN AND MISSISSIPPIAN

- Massive medium and dark grey chert; medium grey limy slate and argillaceous chert; chert pebble grit.

SILURIAN (?) AND DEVONIAN

MIDDLE DEVONIAN

- 7a. Medium to dark grey platy, thin-bedded, fetid limestone.
- 7b. Massive light grey dolomitic limestone.
- Massive, medium to light grey orthoquartzite.

ORDOVICIAN (?) AND SILURIAN

- Dark grey to black graphitic graptolitic slate.

CAMBRIAN AND/OR RANGEN (?)

MIDDLE AND UPPER CAMBRIAN (?)

- Buff weathering, thinly laminated, ochre-coloured, calcareous siltstone and phyllitic siltstone.
- Medium grey chlorite quartz phyllite, locally graphitic or calcareous; foliated green chloritic tuff; locally garnet, staurolite, biotite, quartz schist.

LOWER CAMBRIAN (?)

PROTEROZOIC

- Thinly laminated biotite-garnet-diopside-quartz-skarn: light grey marble; amphibolite.
- Light grey, massive and thin bedded, muscovite quartz schist and micaceous quartzite, locally gritty; minor graphitic micaceous quartzite.

- Stratigraphic position uncertain, probably Cambrian possibly equivalent to 4; white weathering, banded limy siltstone and phyllitic siltstone; hornfels.

Areas of little or no outcrop

Geological boundary (defined, approximate, assumed)

Limit of geological mapping

Bedding, inclined

Foliation, inclined

Fault (defined, assumed)

F Fossil locality

Mineral deposit

*87 Isotopic age determination with age in M.Y.

The Consolidated Mining and Smelting Company of Canada Limited					
DRAWN BY: G R D		TRACED BY:		GENERAL GEOLOGY	
REVISED BY	DATE	REVISED BY	DATE	VANGORDA DISTRICT Y.T.	
				SCALE: 1" = 4 Miles	DATE: OCTOBER, 1967	PLATE: VA 1-67

COMINCO 210-D622