ASSESSMENT REPORT

ZN CLAIM GROUP

Duncan Lake, B.C.

NTS 82/K7

by

W. Don Sutherland, BASc
Geological Engineer

February 3, 1993

Province of British Columbia

Ministry of Energy, Mines and Petroleum Resources

ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TYPE OF REPORT/SURVEY(S)	TOTAL COST
Geochemical Soil Sampling	$11,891.63

AUTHOR(S) W. Don Sutherland SIGNATURE(S) W. Don Sutherland

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED ..... YEAR OF WORK 92

PROPERTY NAME(S) ZN Claim Group

COMMODITIES PRESENT Copper, Zinc

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN

MINING DIVISION Slocan NTS 82 K/7

LATITUDE 50°21' North LONGITUDE 116°54' West

NAMES and NUMBERS of all mineral tenures in good standing (when work was done) that form the property [Examples: TAX 1-4, FIRE 2 (12 units); PHOENIX (Lot 1706); Mineral Lease M 123; Mining or Certified Mining Lease ML 12 (claims involved)]:

ZN-1 to ZN-8 (8 units), ZN-11 to ZN-24 (14 units), ZN-25 (10 units), ZN-26 (20 units), ZN-27 (18 units), ZN-28 (18 units), ZN-29 (12 units)

GOVERNMENT AGENT
NELSON
FEB 5 1993
TRANS. #

OWNER(S)

(1) W. Don Sutherland (2)

MAILING ADDRESS

Glenbow Road, RR 2, Cochrane, Alberta, TOL OWO

OPERATOR(S) (that is, Company paying for the work)

(1) W. Don Sutherland
Glenbow Road RR2 Cochrane AB TOLOWO

(2) Hudson Bay Exploration
406, 470 Granville St., Vancouver B.C. V6C 1V5

MAILING ADDRESS

(3) Inco Exploration & Technical Serv.
666 Burrard Street, Park Place
Vancouver BC V6C 2X8

SUMMARY GEOLOGY (lithology, age, structure, alteration, mineralization, size, and attitude):

Quartzite, Limestone, Dolomite, Volcanics in Howser Syncline, Cambrian in age, strike 340°, dips steeply (70°) to East, plunge 10° North. Alteration to green schist faCIES, chalcocite, covallite, malachite in talus.

REFERENCES TO PREVIOUS WORK Assessment Report, ZN GROUP, by Richard D. Hall, P. Eng., February 29, 1992

(over)

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Map Pocket

Soil Sample Analysis Plot - Copper
Soil Sample Analysis Plot - Lead
Soil sample Analysis Plot - Zinc

Appendices

I Data Sheets
II Magnetic Profiles with Copper Values
III Total Field Profiles with Zinc Values
IV Assay Certificates
V Petrographic Study

ZN CLAIM GROUP ASSESSMENT REPORT

Introduction

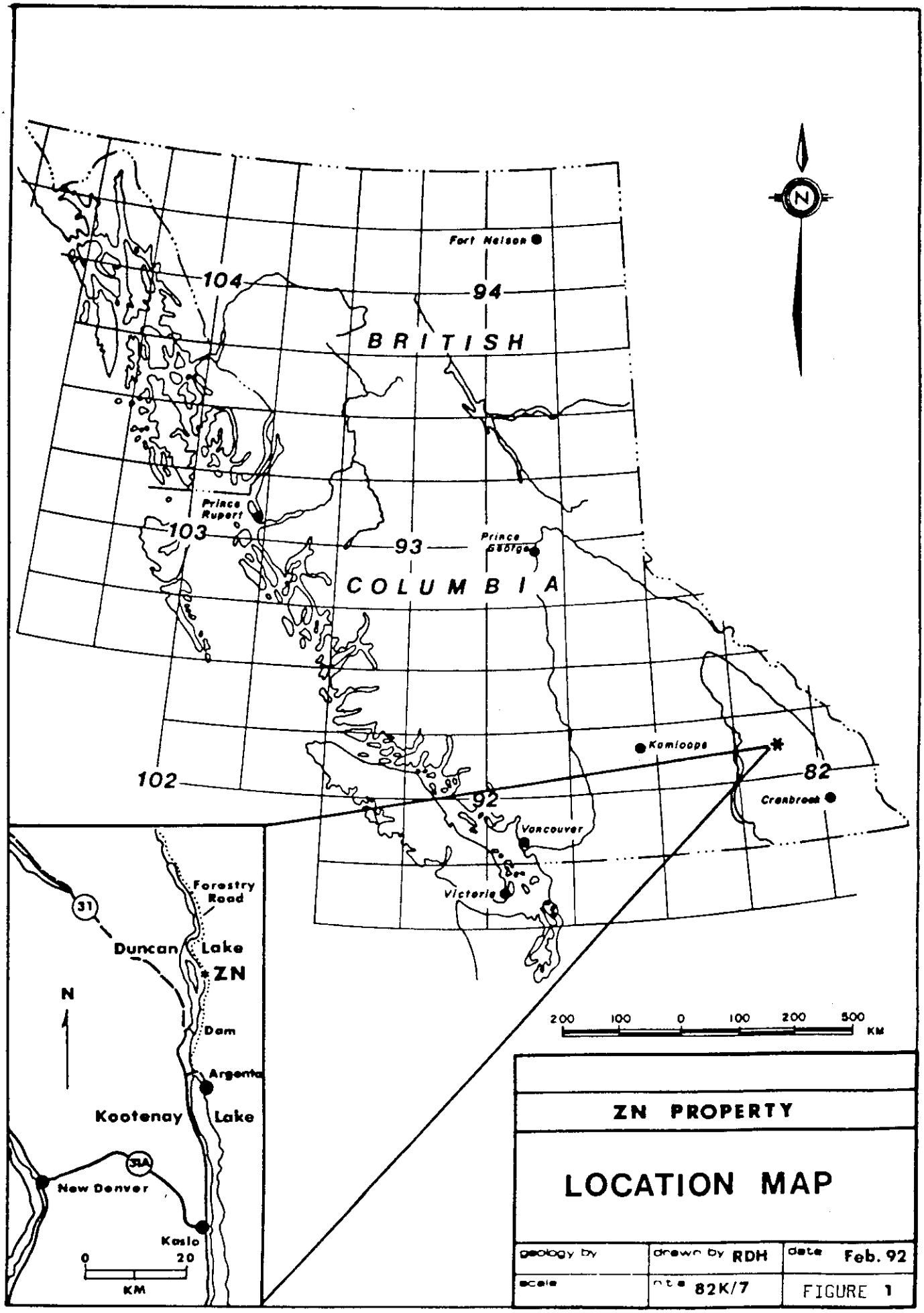
The ZN Claim Group is comprised of 100 claim units located along the east side of Duncan Lake, Slocan Mining Division, British Columbia.

The claims were staked in 1991 to cover the down-dip geological projection of several lead-zinc occurrences within the Badshot formation. The known lead-zinc occurrences, all held by Cominco Ltd., extend along a strike length of 10 km. It is a reasonable assumption that mineralization will extend in the down-dip as well as the strike direction.

Prospecting in 1991 located chalcocite mineralization assaying 5% Cu in volcanic talus in the approximate centre of the claim group. The mineralized material was weakly magnetic. A subsequent geophysical survey defined a 900m long magnetic trend immediately up-slope from the copper bearing talus. The geophysical survey also defined a total field VLF electromagnetic anomaly similar in signature to an orientation profile which was run over the Duncan Mine.

This report presents the results of a detailed geochemical survey over the magnetic anomaly and the total field anomaly. Both anomalous areas are extensively covered by overburden. The purpose of the geochemical survey was to determine if the magnetic anomaly was coincident with anomalous copper values., and if the total field anomaly was coincident with anomalous zinc values.

This report is prepared in compliance with Section C of the Mineral Act Regulations as documentation for the geochemical sampling program representing exploration expenditures in the amount of $11,891 filed for assessment purposes in January 1993.



ZN PROPERTY

LOCATION MAP

geology by	drawn by RDH	date Feb. 92
scale	nts 82K/7	FIGURE 1

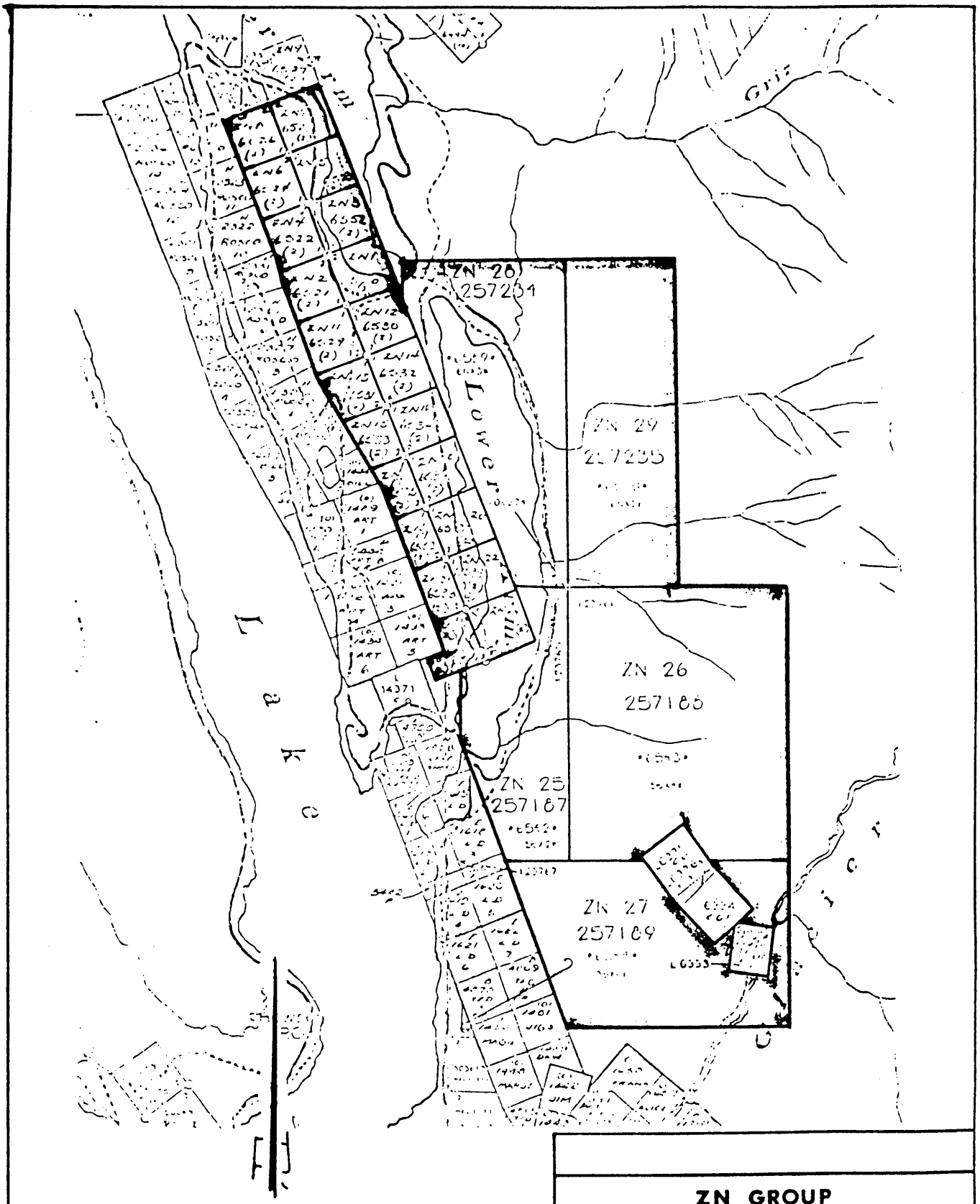
Location and Access

The Zn Claim Group is located at 50°21' north latitude and 116° 54' west longitude, NTS 82 K/7. The claims extend for approximately 7 km north-south and 3 km east-west. They straddle the lower arm of Duncan Lake and lie along the Duncan Lake Peninsula and the east shore of the lake.

Access is by way of the Duncan Lake Forestry Road from Cooper Creek. This is an all weather road that crosses the property for 5 km. The 17 km marker on the Duncan Lake Forestry Road is 100m south of the hub for the geophysical and geochemical grid. This base station is coincident with the common location post for Claim ZN 25, ZN 26, ZN 28 and ZN 29. Cooper Creek is on paved Provincial Highway No. 41, 40 km north of Kaslo.

Physiography and Timber

The property is situated in the Columbia Mountains and lies between Duncan Lake and Mount Simpson. Elevations range from 580m at Duncan Lake to 1,675m along the eastern border. Terrain slopes vary from moderate near the lake shore to very steep inland to the east. The lower elevations support a mature growth of fir and cedar which declines uphill with increasing immature to scrub cedar above the 1,000m elevation. There is a large area of clear-cut in the north-east section of the property.



ZN GROUP		
CLAIM MAP		
PROJECT	DRAWN RDH	FIGURE
NTS 82K/7E	DATE Feb.92	2
R.D. HALL, Ph.D., P.Eng.		

Property and Ownership

The property consists of 100 claim units made up of 22 two-post claims and 5 four post claims. They are:

Claim Name	Tenure No.	No. of Units	Expiry Date
ZN-1	257165	1	Feb 16/95
ZN-2	257166	1	Feb 16/95
Zn-3	257197	1	Feb 16/95
Zn-4	257167	1	Feb 16/95
ZN-5	257168	1	Feb 16/95
ZN-6	257169	1	Feb 16/95
ZN-7	257170	1	Feb 16/95
ZN-8	257171	1	Feb 16/95
ZN-11	257174	1	Feb 17/95
ZN-12	257175	1	Feb 17/95
ZN-13	257176	1	Feb 17/95
ZN-14	257177	1	Feb 17/95
ZN-15	257178	1	Feb 17/95
ZN-16	257179	1	Feb 17/95
ZN-17	257180	1	Feb 17/95
ZN-18	257181	1	Feb 17/95
ZN-19	257198	1	Feb 17/95
ZN-20	257182	1	Feb 17/95
ZN-21	257183	1	Feb 17/95
ZN-22	257184	1	Feb 17/95
ZN-23	257185	1	Feb 17/95
ZN-24	257186	1	Feb 17/95
ZN-25	257187	10	Feb 18/95
ZN-26	257188	20	Feb 18/95
ZN-27	257189	18	Feb 18/95
ZN-28	257234	18	Apr 09/95
ZN-29	257235	12	Apr 09/95

The claims are owned 100% by W. Don Sutherland of R.R. #2 Cochrane, Alberta.

Summary of Work Done

The following work has been done on the property.

1991

Geological reconnaissance and prospecting

15 man days

1992

Geophysical Surveys

10 line-kilometres

2000 stations

7200 readings

34 man days

Geochemical Surveys

423 samples

24 man days

Petrographic Study

Whole Rock Analysis

4 samples

The Geochemical Surveys reported on herein were conducted on Claims ZN-25, ZN-26, ZN-28 and ZN-29.

Geology

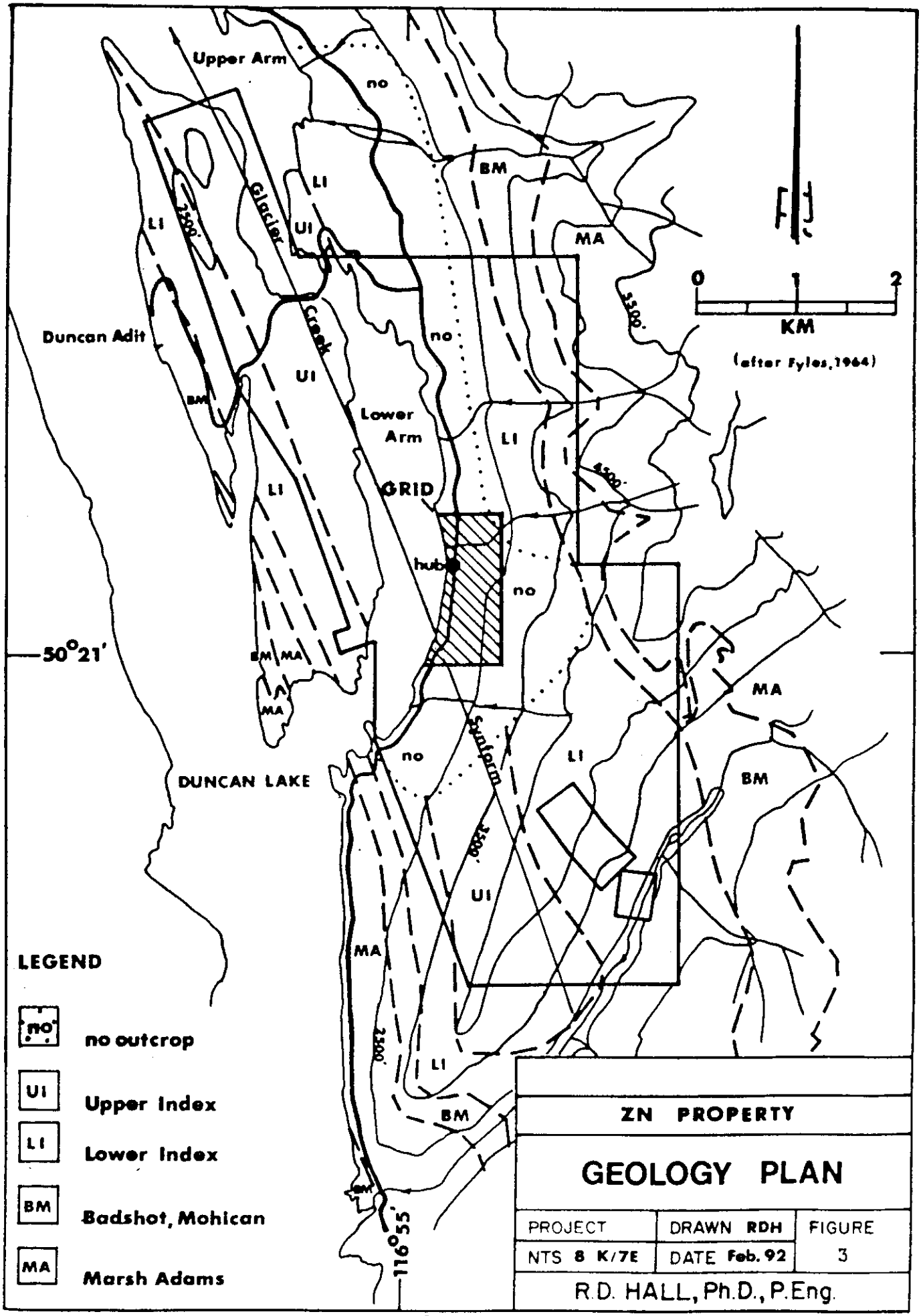
The Duncan Lake area lies within the Kootenay tectonic terrain of the Omineca Belt structural subdivision of the Columbian orogen.

The Duncan Anticline and the Howser Syncline are the principle structural elements of the area. The property covers the west limb of the Duncan Anticline, and both the core and east limb of the Howser Syncline.

Quartzites of the Marsh Adams Formation and carbonates of the Badshot-Mohican formations, defining the east limb of the Howser Syncline are exposed along east perimeter of the property (Figure 3). The remainder of the property is thought to be underlain by younger strata of the Index Formation of the Lardeau Group as mapped by Fyles (1964). However, much of the property at lower elevations and in proximity to Duncan Lake has little or no outcrop, and the structural relationships within the Howser Syncline are complex. The Index Formation is subdivided into an upper division of green chloritic schists and a lower division of grey carbonaceous schists. Both strata and cleavage strike approximately 340° and dip moderately to steeply east. The dominant lineation plunges 10° to the north by northwest.

The magnetic trend defined by the geophysical survey is believed to lie along the contact zone between the Upper Index Formation and the Lower Index Formation. Petrographic study of talus fragments from this area suggest that the magnetic material is an altered basic volcanic.

Figure 3 shows the relationship of the property to the prominent geological features. It also shows the location of the geophysical-geochemical sampling grid to the property boundary and main topographic features.


Upper Arm
no
BM
LI
UI
MA
Glacier
Creek
2500'
3300'
4500'
0
1
2
KM
(after Fyles, 1964)
Duncan Adit
Lower Arm
GRID
hub
50°21'
DUNCAN LAKE
Sundown
4800'
2500'
116°55'
LEGEND
no outcrop
Upper Index
Lower Index
Badshot, Mohican
Marsh Adams
ZN PROPERTY
GEOLOGY PLAN
PROJECT
DRAWN RDH
FIGURE
NTS 8 K/7E
DATE Feb. 92
3
R.D. HALL, Ph.D., P.Eng.

Program

The Geophysical survey carried out on the ZN Claim Group in January, 1992 (see Assessment Report, ZN Group by Richard D. Hall, P. Eng., February 29, 1992) defined two distinct geophysical anomalies:

1. A 1,000 to 1,500 gamma magnetic anomaly trending approximately parallel to the regional geologic strike, extending over a length of 700 metres and still open in both directions. The anomaly lies immediately up-slope from the discovery site of magnetic basaltic talus that assayed 5% Cu.

2. A Total Field VLF anomaly coincident with a distinct topographic trend, which is 700 m long and still open to the south-east. The Total Field expression is similar to that obtained in an orientation traverse over the major zone of lead-zinc mineralization in the Duncan Mine on Cominco's adjoining property to the west.

It was assumed that the magnetic anomaly represented the up-slope source of the magnetic copper bearing talus, and that the Total Field VLF anomaly was the geophysical expression of a Duncan Mine type zone of zinc mineralization. Sampling was carried out in three stages.

Stage I

Reconnaissance sampling to determine the suitability of geochemical sampling in the subject area.
Number of Samples: 19

Stage II

Preliminary sampling over the Magnetic Anomaly.
Number of Samples: 36

Stage III

Detailed sampling over Magnetic Anomaly and Total Field VLF Electro Magnetic Anomaly.
Number of Samples: 368

SOILS SURVEY GRID MAP: ZN CLAIMS

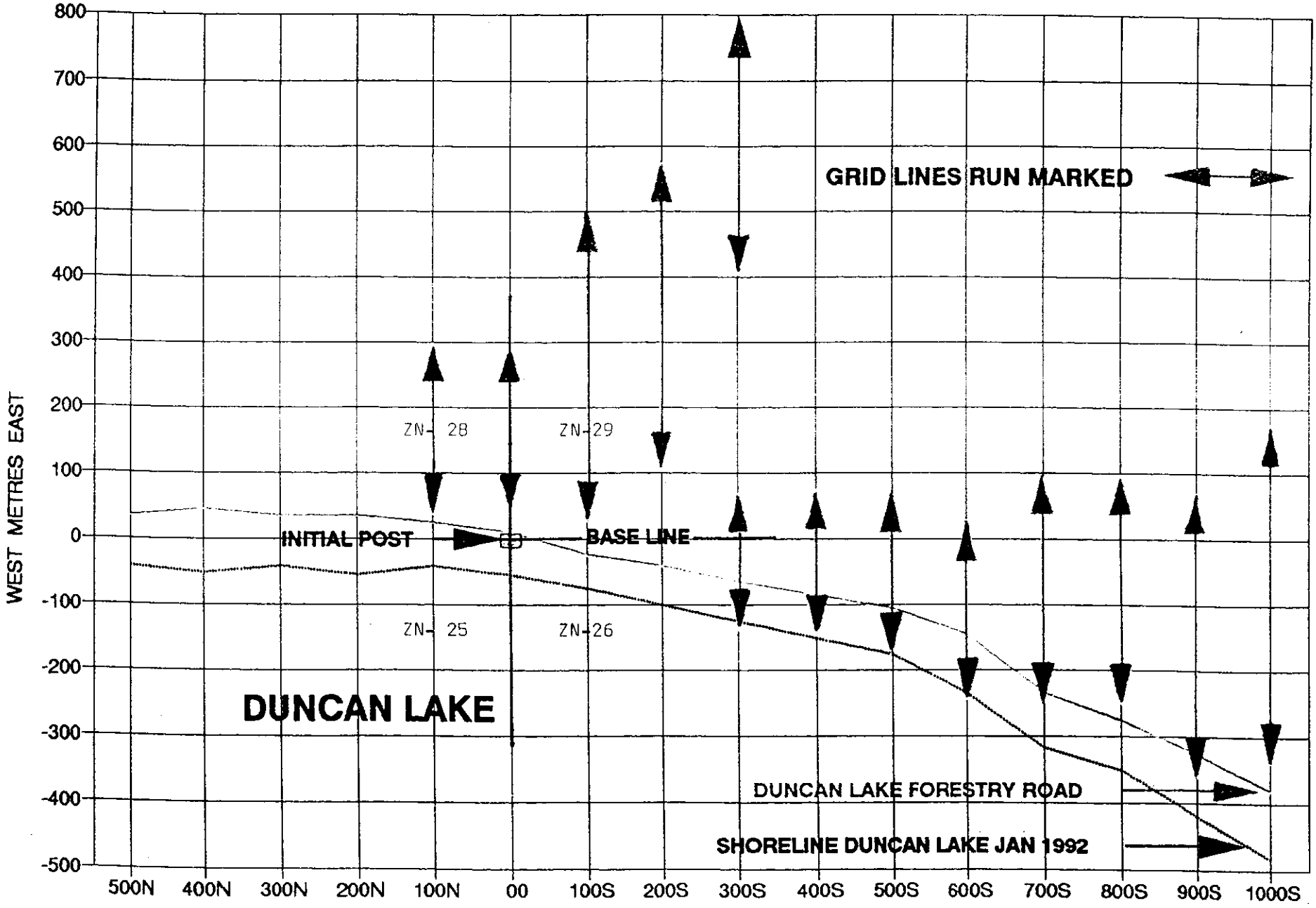


Figure 4

Detailed Sampling

Sampling Procedure

Sample traverses were conducted over the geophysical grid on the lines which had produced the Magnetic and Total Field VLF anomalies. Samples were taken at 10m intervals over the anomalous areas and at 20m intervals for 100m beyond the anomaly limits. Holes were dug by grub-hoe at each sample site to varying depths, depending on the thickness of vegetation and the amount of near surface talus. Wherever possible, good B-Zone loam was the sample media. Organic material and talus were excluded. Sample pits varied from 20 cm to 50 cm in depth, and individual samples weighed approximately 400 grams. Ninety percent of the samples were of good B-Zone soil. The remaining ten percent had a high sand (7) or grit (10) component or were of the dark grey variety (20). The samples described as dark grey in the data sheets contained an undetermined amount of finely ground black argillite and are thought to be a mixture of talus and immature soil rather than the normal B-Zone material.

Analysis

Soil samples were analyzed by Terramin Research Labs Ltd. of Calgary, Alberta in accordance with the following procedure:
The samples were dried and sieved through 80 mesh nylon screen (maximum particle size 20 microns). A portion of the prepared sample (250 mg) was digested in a hot nitric/perchloric acid mixture and then analyzed for copper, lead and zinc by atomic absorption spectrophotometry. Results are reported in parts per million for each element.

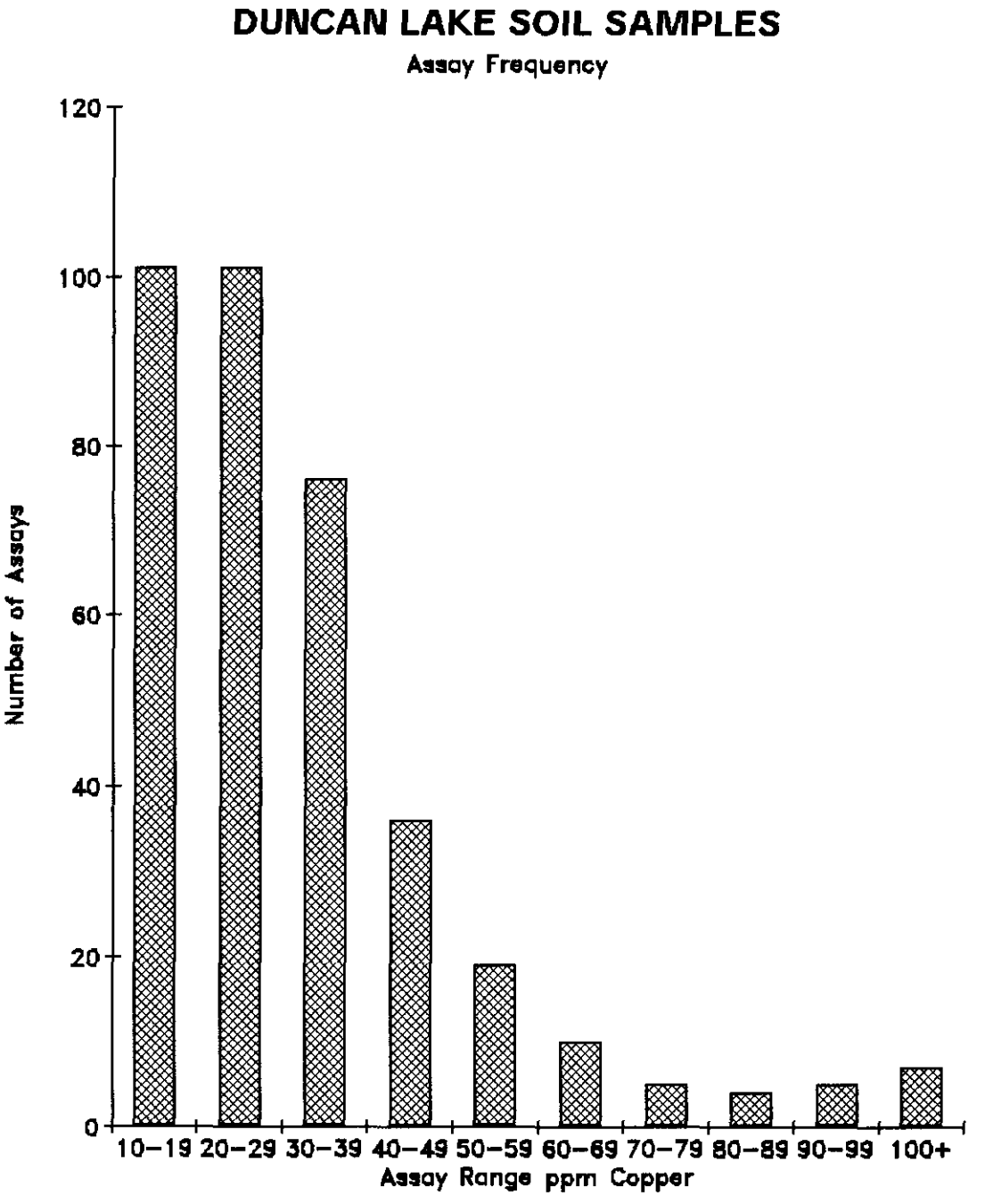
Results

A total of 368 samples were collected. Of these, 364 were soil and 4 were rock. Rock samples are of outcrop (3) which was encountered on the traverse lines, and talus (1) which was judged to be of particular interest. Sample locations, descriptions, sample depth, sample number and analysis are presented for each traverse line on the accompanying data sheets. (Appendix I)

The assay statistics for the 364 soil samples are as follows:

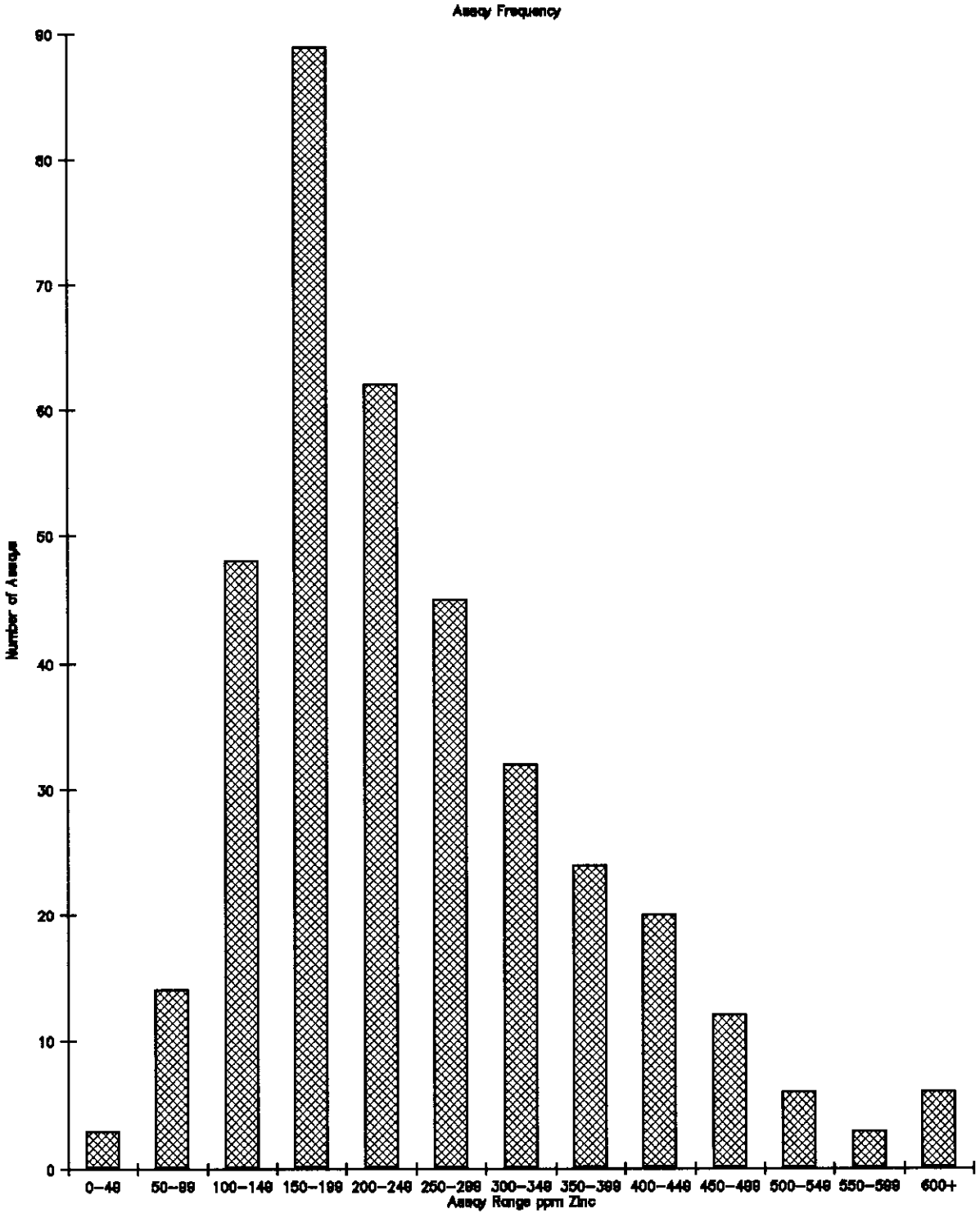
	Results in ppm		
	Copper	Lead	Zinc
Mean	33	15	249
Standard Deviation	28	5	124
High Assay	368	54	860
Low Assay	10	2	37

Individual histograms showing the assay frequency over the distribution range follow.

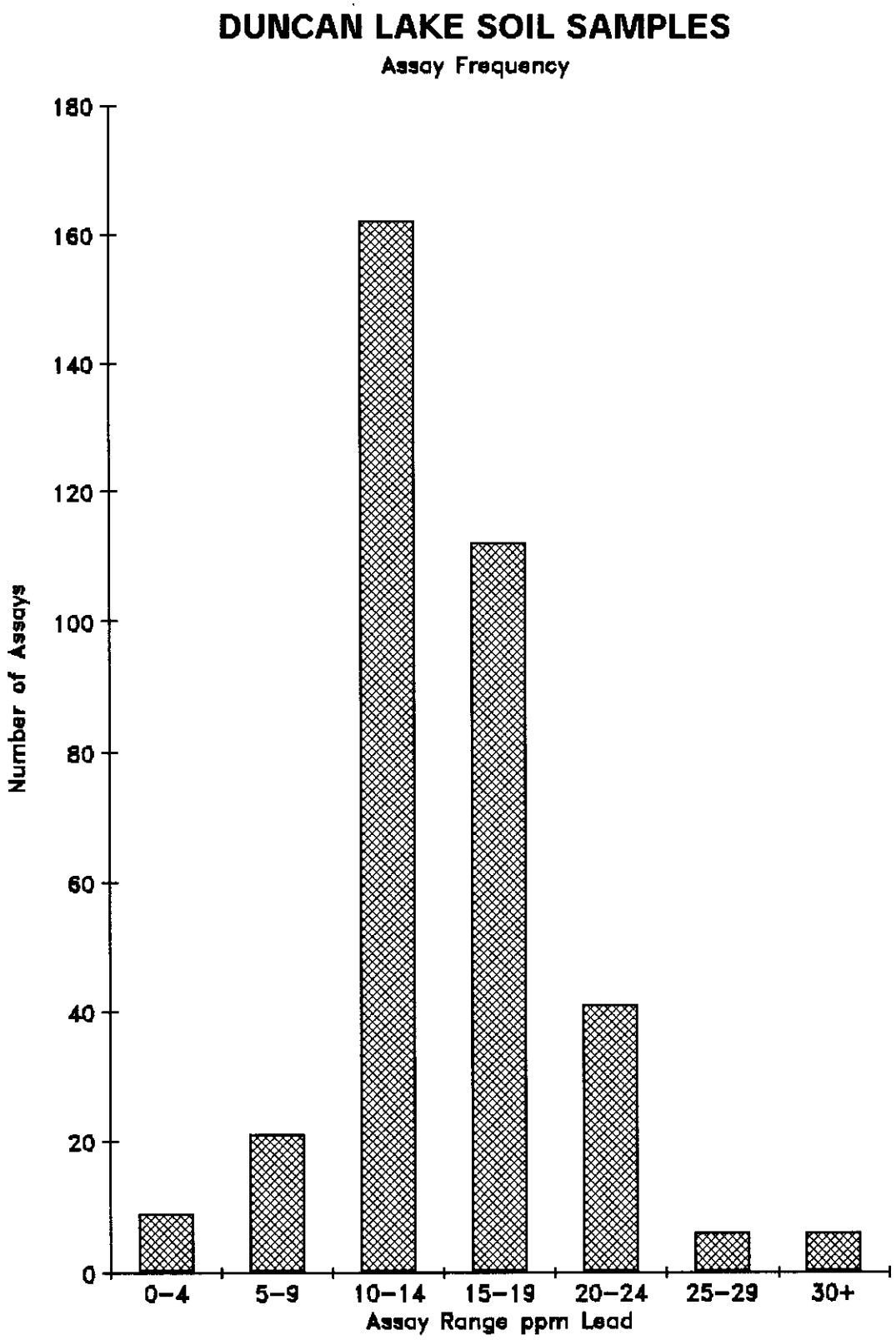

DUNCAN LAKE SOIL SAMPLES
Assay Frequency
Number of Assays
120
100
80
60
40
20
0
10–19
20–29
30–39
40–49
50–59
60–69
70–79
80–89
90–99
100+
Assay Range ppm Copper

COPPER

DUNCAN LAKE SOIL SAMPLES



ZINC


DUNCAN LAKE SOIL SAMPLES
Assay Frequency
Number of Assays
180
160
140
120
100
80
60
40
20
0
0-4
5-9
10-14
15-19
20-24
25-29
30+
Assay Range ppm Lead

LEAD

Copper Values

There is a remarkable co-relation between anomalous copper values in the soils and the magnetic profiles. This is especially striking on lines 3+00S, 4+00S and 5+00S, i.e., immediately up-slope from the discovery site of the 5% Cu talus material. The talus material is weakly magnetic, in the range required to produce a 500 to 1000 gamma anomaly in mass and it is a reasonable conclusion that the magnetic anomaly overlies the source of the copper bearing talus.

Anomalous copper values in the soils overlying the Magnetic Anomaly are in the 60 ppm Cu to 130 ppm Cu range, i.e., two to four times the mean and standard deviation for copper values. The copper values are shown in section with the Magnetic Profiles in Appendix II.

There is a cluster of anomalous copper values over and adjacent to the total field anomaly on Lines 2+00S and 3+00S. This is where the highest copper value in the soil sampling was obtained (368 ppm Cu). The values appear to lie along the regional north-south formational trend rather than in the strike direction of the total field anomaly. The co-incidence of values with the anomaly may be due to the sampling pattern rather than geology. Two samples on Line 1+00S 100m to the north returned 81 ppm Cu and 161 ppm Cu respectively. The samples are of black argillite chips mixed with black soil exposed by bulldozer activity at the edge of a clear-cut. They are anomalous in zinc (600 ppm Zn and 770 ppm Zn) as well as copper.

Zinc Values

The background level of zinc in the soils in the sampled area is quite high, with the mean value of all samples being approximately 250 ppm Zn. For evaluation purposes, only those in the top four percentile, i.e., those greater than twice the mean are considered anomalous. The anomalous values occur in two areas:

1) On lines 1+00S, 2+00S and 3+00S flanking the total field anomaly. All are down-slope from the anomaly even though they lie on both sides of it. Terrain slopes are to

the west on the south-west side of the anomaly and to the north on the north-east side of the anomaly. Even so, there is strong evidence that the anomalous values trend north-south with the regional strike, rather than parallel to the anomaly. As with the copper values associated with the total field anomaly, it is suspected that the association of zinc values with the anomaly is due to the sample pattern rather than geology. On Line 1+00S, two of the three anomalous values are related to media high in black argillite that was also anomalous in copper. The zinc values are shown in section with the total field profiles in Appendix III.

2) On Lines 8+00S and 9+00S coincident with and just to the west of the magnetic anomaly. The anomalous zinc values are close to or accompanied by anomalous copper values. All samples in this area are from B-Zone soils with a very minor talus component.

Lead Values

Lead values in the soil are very low in the sampled area. The mean value of all samples was 15 ppm Pb with a standard deviation of 5 ppm. Only 5 of the 364 samples assayed higher than 30 ppm Pb. The highest value of 54 ppm Pb occurs on Line 5+00S coincident with the magnetic anomaly but is not accompanied by anomalous copper or zinc values. Three of the remaining four anomalous samples were taken to the north of the magnetic anomaly. The remaining sample was from Line 9+00S within the anomalous area. It assayed 38 ppm Pb and was accompanied by a copper value of 46 ppm Cu.

Assay results for copper, lead and zinc are plotted on individual plans for each element (Map Pocket). Assay certificates are presented in Appendix IV.

Rock Samples

Four rock samples were taken during the soil sampling program. Three of these were from outcrop encountered on the sample traverses, the fourth was from rusted talus from close to outcrop but of different material. Assay results were as follows:

		Analysis in ppm		
Location	**Description**	**Cu**	**Pb**	**Zn**
Line 2+00S				
3+70 E	Black Argillite o.c.	18	32	290
5+80 E	Black Argillite o.c.	60	580	1900
Line 3+00S				
3+00 E	Rusted Argillite Talus	34	131	820
3+05 E	Rusted Greywake o.c.	36	41	370

The results show a strong co-relation between zinc and lead in two of the samples with somewhat elevated copper values in one of these. This sample from 5+80 E on Line 2+00S is from a massive rock cliff that was encountered at the end of the sample traverse. This suggests two possibilities:

(1) That the high zinc values in the soils down-slope could be generated from the outcropping argillite and from the talus derived therefrom

or

(2) That the black argillite horizons are significantly mineralized with zinc, lead and copper, and that they offer attractive exploration potential.

Petrographic Study

In addition to the geochemical sampling, a suite of talus samples was collected for whole rock analysis and petrographic study from the location of the 5% Cu talus sample at 4+00S 1+37W on the geophysical grid. The report on this study by Inco Exploration and Technical Services Inc. is presented in full in Appendix V.

Conclusions

Copper analyses from the soil sampling program and the Inco Exploration and Technical Services Inc. whole rock analysis and petrographic study support the proposition that the 5% copper magnetic talus was sourced by bedrock material from below the Magnetic Anomaly. The copper prospect has been upgraded to the drill target category. Cross-sectioning of the magnetic anomaly by diamond drilling on Line 4+00S is warranted as an initial test of this target.

Other secondary copper targets exist in the sampled area, notably on Line 3+00S from 4+00 E to 5+50 E. More detailed sampling and geophysics are warranted here. The secondary copper targets will probably be associated with carbonaceous argillite which may or may not be magnetic.

Results from sampling over the Total Field Anomaly are less conclusive. The background zinc values in the soils is unusually high, indicating a zinc-rich environment, however, this is not necessarily indicative of an ore-grade zinc deposit. It is doubtful that the Total Field Anomaly has any generic relationship to the zinc values. It is more likely that the high zinc values relate to carbonaceous stratigraphy which crosses the Total Field anomaly in the sampled area. Outcrop sampling up-slope from the presently sampled area is a suggested first step in exploring for a zinc deposit on the subject property.

Summary

A geochemical soil sampling program was performaed on the ZN Claim Group at Duncan Lake in the Slocan Mining Division in the autumn of 1992.

The purpose of the program was to find out if the soils overlying a magnetic anomaly contained anomalous copper values and if the soils overlying a total field VLF electromagnetic anomaly were anomalous in zinc. A total of 423 soil samples were taken and analysed for copper, lead and zinc. Multi-element analyses were performaed on 36 of these. The results show a distinct co-relation of anomalous copper values with magnetics. Petrographic study of talus from the magnetic anomaly indicated that the rock formation is basalt and the copper occurs as chalcocite, covallite and malachite. Elevated zinc values are common over the sampled areas but there is no direct co-relation between high zinc values and the total field anomaly.

Respectfully submitted

W. Don Sutherland, BASc
Geological Engineer

February 3, 1993

Cost Statement, 1992

September 14 - 16

W. Don Sutherland	750.00
E. Allan Tipman 3 days x 200	600.00
Vehicle 3 days x 30	90.00
Motel	97.05
Meals	120.00
Assays	105.72
Paid by W. Don Sutherland	1,762.77

September 25

J. Morin 1 day x 250	250.00
D. Rawlek 1 day x 125	125.00
Vehicle 1 day x 30	30.00
Motel	67.50
Meals	58.80
Assays	64.00
Petrographic Study & Report	1,500.00
Paid by Inco Exploration & Technical Services Inc.	2,095.30

October 13 - 15

E. Yarrow 3 days x 250	750.00
M. Moore 3 days x 125	375.00
Vehicle 3 days x 30	90.00
Motel	127.00
Meals	178.00
Assays	488.00
Paid by Hudson Bay Exploration	2,008.00

November 2 - 11

W. Don Sutherland 10 days x 250	2,500.00
Vehicle 10 days x 20	200.00
Motel	331.20
Meals	172.36
Assays	1,822.00
Assessment Report Preparation	1,000.00
Paid by Regional Resources Inc.	6,025.56
Grand Total	**11,891.63**
Allocated to Asessment Credit	10,000.00
Balance to PAC Account	1,891.63

Certification

I, W. Don Sutherland of RR #2, Cochrane, Alberta Canada hereby certify:

1. That I graduated from the Faculty of Applied Science and Engineering of the University of Toronto with the degree of Bachelor of Applied Science (BASc) in 1949.

2. That my profession is that of Geological Engineer.

3. That I have practiced my profession continuously since graduation, and have forty-two years experience in mineral exploration.

4. That I have experience and expertise in the utilization of geochemical techniques in mineral exploration.

5. That I personally conducted the field sampling program on which this report is based, and

6. That I am the owner of the ZN Claim Group on which the subject geochemical soil sampling program was performed.

Dated at Cochrane, Alberta, Canada,
This 3rd day of February, 1993

W. Don Sutherland, BASc
Geological Engineer

Statement of Qualifications

The following is a summary of my professional experience, submitted as evidence of my qualifications for preparing this Assessment Report pursuant to Section 7, Subsection (3) Part C of the Mineral Act Regulations.

ACADEMIC QUALIFICATIONS:

Engineering Degree in Mining Geology (B.A.Sc)
University of Toronto, 1949

Certificate in Gemology
Gemological Association of Australia, 1973

PROFESSIONAL EXPERIENCE:

1982 to 1992

Consulting Geologist, Calgary, Alberta

Consultant to various companies engaged in gold and uranium exploration in Canada, United States and Australia.

Clients included Hecla Mining Company, Sigma Resources Group, Regional Resources Inc., Waddy Lake Resources, Lac Minerals, Agip Canada, Total Eastcan, Mosquito Consolidated Gold Mines and Currie Rose Resources.

As Principal of Sutherland Management Services, managed Mosquito-Lyon Lake $5,000,000 underground program at Wells, B.C. from August, 1988 to July 1989. Project was completed on schedule and on budget.

1978 to 1981

Minerals Exploration Manager and Director
Energy Reserves Canada Ltd., Calgary, Alberta

Responsible for all mineral exploration and development activities of the Energy Reserves Group in Canada and Australia.

Initiated ore delineation, underground development and pilot milling on the Cinola gold deposit, a 45,000,000 ton low grade open pit gold project in the Queen Charlotte Islands.

1974 to 1978

Senior Associate
David S. Robertson & Associates Ltd., Toronto, Ontario

Planned and directed Inco and T.V.A. uranium exploration joint venture in North-Central United States, Reporting directly to Inco and T.V.A. at Vice President level.

Directed and supervised confirmation drilling on Key Lake uranium ore deposits in Saskatchewan, leading to the sale of Inexco interest to S.M.D.C. and Eldorado.

Calculated ore reserves of Denison and Rio Algom mines at Elliot Lake for Ontario Hydro, preparatory to uranium sales contracts.

1971 - 1973

Senior Economic Geologist
Newaim Consortium, Melbourne, Australia

The Newaim Consortium was an alliance of:

The Bank of New South Wales
The Australian Mutual Provident Society
Newmont Mining Corporation
Engelhard Industries
International Chemical Industries

Investigated and evaluated new Australian mineral discoveries, reporting to the Consortium and making recommendations concerning the involvement of members in the financing and development of the discoveries.

Initiated investigation and negotiations leading to the acquisition and development of the Telfer gold deposit by Newmont Mining Corporation. The Telfer was Australia's largest gold producer from 1980 to 1985, when it became the second largest, after Kidson.

1953 - 1970

Consulting Geologist, Blind River, Ontario

Consultant to New York investment bankers relating to the economic evaluation of new Canadian mineral discoveries.

Manager and general partner of privately financed exploration programs for gold, nickel, copper and uranium.

Clients and partners in the above activities included the senior partners of the following New York firms:

Shearson, Hammill & Co. Inc
Lehman Brothers
Loomis, Sayles & Co. Inc
Kidder, Peabody, Inc.
Clark, Dodge & Co. Inc.
W.A.M. Burden & Co.

President and Managing Director of Surluga Gold Mines Ltd.,
Responsible for all corporate activities, including financing, from early discovery stage through underground development to construction of a 750 tons per day production facility in 1967.

Consultant to Kinlock Syndicate during initial diamond drilling of Spanish American Uranium Mine, now part of Rio Algom's Elliot Lake holdings.

1952 **Mine Manager**
B.C. Metal Mines Ltd., Kaslo, British Columbia

Managed small lead-zinc-silver shipper in Lardeau area of British Columbia.

1951 **Project Geologist**
Mamainse Copper Project, Ontario

Responsible for the discovery and ore definition drilling of copper deposit which was later mined by Coppercorp Ltd.

1950 **Field Geologist**
American Smelting and Refining, Western Australia

Responsibilities included examination and sampling of numerous gold occurrences in western Australia, and planning and supervision of drilling for ore extensions of three former gold producers.

pre 1950 During the summer university recess and in the field season of my graduation year, I worked as a prospector in Quebec and British Columbia, and as an underground miner in Red Lake, Ontario.

REFERENCES

Fyles, J.T. (1964). Geology of the Duncan Lake Area, Lardeau District, British Columbia. British Columbia Ministry of Energy, Mines and Petroleum Resources, Bulletin 49, 87 pages.

Fyles, J.T.(1970). Geological Setting of Lead-zinc Deposits in the Kootenay Lake and Salmo areas of British Columbia: in A.E. Weissenborn, F.C. Armstrong and J.T. Fyles, Editors: Lead-Zinc Deposits in the Kootenay Arc, Northeastern Washington and Adjacent British Columbia: Washington Division of Mines and Geology, Bulletin 61, pp.41-53.

Hall, R.D. (1992). Assessment Report, ZN Group.

Hoy, T. (1982). Stratigraphic and Structural Setting of Stratabound Lead-zinc Deposits in Southeastern British Columbia. Canadian Institute of Mining and Metallurgy Bulletin, Volume 75, Number 840, pp. 114-134.

Muraro, T.W. (1962). Stratigraphy, Structure and Mineralization at the Duncan Mine, Lardeau District, British Columbia. unpublished M. Sc. thesis, Queen's University, Kingston, Ontario.

Read, P.B. and J.C. Wheeler. (1976). Geology, Lardeau west-half, British Columbia: Geological Survey of Canada, Open File 432.

Reesor, J.E. (1973). Geology of the Lardeau Map Area, east-half, British Columbia: Geological Survey of Canada, Memoir 369, 129 pages.

Sangster, D.F. (1970). Metallogenesis for some Canadian Lead-zinc Deposits in Carbonate Rocks: Geological Association of Canada Proceedings, Volume 22, pp.27-36.

Struik, L.C. (1986). Imbricated terranes of the Cariboo gold belt with correlations and implications for tectonics in southeastern British Columbia: Canadian Journal of Earth Sciences, Volume 23, Number 8, pp.1047-1061.

Walker, J.F., M.F. Bancroft, and H.C. Gunning (1929). Lardeau Map-area, British Columbia, General Geology, Mineral Deposits: Geological Survey of Canada, Memoir 161, 142 pages.

APPENDIX I

DATA SHEETS

November, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Over Magnetic Anomaly)

Location	Description	Depth in cm	Sample No.	Analysis in PPM Cu	Pb	Zn
Line 3+00 S						
1+40 W	Brown Sand	45	D-31	28	14	135
1+30 W	Brown Sand	50	D-32	62	15	186
1+20 W	Light Brown Sand	40	D-33	87	15	191
1+10 W	Grey Sand	30	D-34	92	14	187
1+00 W	Grey	50	D-35	109	14	171
0+90 W	Light Brown	35	D-36	44	16	470
0+80 W	Grey	30	D-37	96	9	135
0+70 W	(Roadbed W Side) Grey	40	D-38	38	14	155
0+60 W	Grey	35	D-39	86	11	147
0+50 W	Light Brown	35	D-40	24	18	260
0+40 W	Light Brown	25	D-41	23	19	290
0+30 W	Brown	35	D-42	21	18	240
0+20 W	Grey	45	D-43	30	10	141
0+10 W	Light Brown	30	D-44	36	13	122
0+00 BL	Grey-Brown	35	D-45	37	21	230
0+20 E	Light Brown	35	D-46	20	13	320
0+40 E	Light Brown	40	D-87	16	13	240
0+60 E	Grey-Brown	30	D-48	33	17	198

0+55 W Outcrop 3m x 1m - magnetic green schist

November, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Over Magnetic Anomaly)

Location	Description	Depth in cm	Sample No.	Analysis in PPM Cu	Pb	Zn
Line 4+00 S						
1+50 W	Pale Green	45	D-69	52	18	125
1+40 W	Brown Sand	30	D-68	31	17	154
1+30 W	Brown	20	D-67	35	16	160
1+20 W	Brown	30	D-66	25	14	250
1+10 W	Brown	40	D-65	26	15	230
1+00 W	Grey	45	D-64	128	16	183
0+90 W	(Roadbed W Side) Grey	35	D-63	74	15	162
1+80 W	Grey	20	D-62	84	21	154
0+70 W	Grey	25	D-61	115	20	171
0+60 W	Brown	40	D-60	37	13	180
0+50 W	Brown	35	D-59	17	14	250
0+40 W	Light Brown	40	D-58	50	18	230
0+30 W	Light Brown	35	D-57	13	13	200
0+20 W	Light Brown	35	D-56	43	4	70
0+10 W	Grey-Brown	30	D-55	32	14	210
0+00 BL	Brown	30	D-54	19	12	158
0+10 E	Grey-Brown	30	D-53	17	14	169
0+20 E	Grey	45	D-52	22	8	135
0+40 E	Grey-Brown	30	D-51	19	12	121
0+60 E	Grey	40	D-50	48	14	128
0+80 E	Grey-Brown	30	D-49	10	10	210

November, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Over Magnetic Anomaly)

Location	Description	Depth in cm	Sample No.	Analysis in PPM Cu	Pb	Zn
Line 5+00 S						
1+80 W	Pale Green	30	D-70	57	20	126
1+70 W	Grey Sand	30	D-71	41	15	153
1+60 W	Brown	30	D-72	29	19	151
1+50 W	Brown & Grey	35	D-73	45	18	183
1+40 W	Brown	35	D-74	22	11	280
1+30 W	Brown	20	D-75	31	16	162
1+20 W	Grey	20	D-76	95	16	159
1+10 W	(Roadbed W Side) Grey	30	D-77	60	16	162
1+00 W	Grey	30	D-78	78	10	119
0+90 W	Brown	35	D-79	20	14	177
0+80 W	Brown	40	D-80	20	18	230
0+70 W	Brown	30	D-81	24	54	220
0+60 W	Grey	35	D-82	23	13	206
0+50 W	Grey-Brown	30	D-83	36	12	138
0+40 W	Grey-Brown	40	D-84	24	15	230
0+30 W	Grey-Brown	30	D-85	20	16	210
0+20 W	Grey-Brown	40	D-86	30	11	170
0+10 W	Brown	25	D-87	17	14	230
0+00 BL	Brown	45	D-88	36	12	126
0+20 E	Grey-Brown	40	D-89	28	12	153
0+40 E	Brown	30	D-90	17	13	137
0+60 E	Brown	20	D-91	13	11	260
0+80 E	Grey & Brown	30	D-92	14	15	162

November, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Over Magnetic Anomaly)

Location	Description	Depth in cm	Sample No.	Analysis in PPM Cu	Pb	Zn
Line 6+00 S						
2+40 W	Grey Grit Sand	60	D-115	67	21	200
2+30 W	Grey Grit, Minor Soil	50	D-114	67	20	210
2+20 W	Grey Grit	40	D-113	37	16	210
2+10 W	Dark Brown	45	D-112	41	16	320
2+00 W	Dark Brown	40	D-111	34	19	290
1+90 W	Grey-Brown	45	D-110	37	19	340
1+80 W	Brown	30	D-109	21	16	410
1+70 W	Brown	45	D-108	18	17	270
1+60 W	Brown	45	D-107	26	14	150
1+50 W	Road bed West Grey	35	D-106	46	17	168
1+40 W	Grey	40	D-105	28	10	100
1+30 W	Grey	35	D-104	19	6	60
1+20 W	Pale Yellow	30	D-103	17	6	54
1+10 W	Pale Yellow	40	D-102	26	4	37
1+00 W	Grey-Brown	40	D-101	22	12	110
0+90 W	Grey-Brown	35	D-100	19	9	117
0+80 W	Grey	45	D-99	17	6	111
0+70 W	Grey	45	D-98	14	3	51
0+60 W	Grey	35	D-97	12	2	38
0+40 W	Grey	40	D-96	11	5	71
0+20 W	Grey	40	D-95	14	3	52
0+00 BL	Grey-Brown	35	D-94	29	16	160
0+20 E	Grey	35	D-93	12	3	58

November, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Over Magnetic Anomaly)

Location	Description	Depth in cm	Sample No.	Analysis in PPM Cu	Pb	Zn
Line 7+00 S						
2+50 W	Grey	35	D-116	51	22	192
2+40 W	(Roadbed W Side) Grey	30	D-117	43	17	158
2+30 W	Grey	35	D-118	54	20	189
2+20 W	Brown	25	D-119	32	20	240
2+10 W	Brown	20	D-120	26	20	270
2+00 W	Brown	25	D-121	19	15	240
1+90 W	Brown-Grey	20	D-122	13	16	320
1+80 W	Brown-Grey	30	D-123	30	16	220
1+70 W	Brown-Grey	30	D-124	24	17	290
1+60 W	Brown	30	D-125	25	18	240
1+50 W	Light Brown	30	D-126	15	13	360
1+40 W	Light-Brown	30	D-127	18	15	360
1+30 W	Grey-Brown	30	D-128	16	15	390
1+20 W	Grey	25	D-129	73	25	340
1+10 W	Grey-Brown	35	D-130	30	19	320
1+10 W	Light-Brown	30	D-131	20	15	390
1+00 W	Grey-Brown	30	D-132	31	14	400
0+90 W	Grey-Brown	25	D-133	39	23	370
0+80 W	Dark Grey	25	D-134	37	20	450
0+70 W	Dark Grey	25	D-135	33	20	410
0+60 W	Grey-Brown	25	D-136	49	21	390
0+50 W	Grey-Brown	25	D-137	22	19	360
0+40 W	Grey-Brown	35	D-138	35	24	280
0+30 W	Light Brown	25	D-139	16	16	260
0+20 W	Brown	25	D-140	18	16	230
0+10 W	Brown	30	D-141	20	18	194
0+00 BL	Grey	35	D-142	44	13	230
0+10 E	Pale Brown	30	D-143	23	13	192
0+20 E	Pale Brown	40	D-144	18	14	200
0+40 E	Pale Brown	45	D-145	34	15	280
0+60 E	Buff Calcrete Grit	30	D-146	15	5	82
0+80 E	Light Brown	35	D-147	16	11	260
1+00 E	Yellow-Brown	30	D-148	31	10	210

November, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Over Magnetic Anomaly)

Location	Description	Depth in cm	Sample No.	Analysis in PPM Cu	Pb	Zn
Line 8+00 S						
2+50 W	Light Brown	30	D-149	25	17	320
2+40 W	Grey-Brown	30	D-150	29	15	340
2+30 W	Brown	30	D-151	25	16	390
2+20 W	Brown	20	D-152	17	17	290
2+10 W	Grey	25	D-153	22	13	280
2+00 W	Grey-Brown	30	D-154	20	17	470
1+90 W	Dark Grey	30	D-155	32	20	430
1+80 W	Grey	30	D-156	41	22	400
1+70 W	Grey	30	D-157	53	23	360
1+60 W	Dark Grey	20	D-158	44	23	400
1+50 W	Dark Grey	25	D-159	51	26	520
1+40 W	Dark Grey	30	D-160	48	22	450
1+30 W	Dark Grey	30	D-161	57	23	450
1+20 W	Dark Grey	40	D-162	77	25	430
1+10 W	Yellow-Brown	30	D-163	28	18	300
1+00 W	Yellow-Brown	35	D-164	52	16	250
0+90 W	Dark Grey	30	D-165	34	19	440
0+80 W	Grey	30	D-166	46	20	260
0+70 W	Grey	25	D-167	47	21	430
0+60 W	Yellow-Brown	45	D-168	38	12	159
0+50 W	Grey	30	D-169	34	17	380
0+40 W	Grey	30	D-170	69	24	330
0+30 W	Grey	20	D-171	28	18	480
0+20 W	Grey	25	D-172	58	20	280
0+10 W	Brown	30	D-173	19	16	420
0+00 BL	Dark Brown	30	D-174	18	15	400
0+20 E	Grey	25	D-175	54	22	430
0+40 E	Grey	25	D-176	67	26	440
0+60 E	Grey	25	D-177	26	33	500
0+80 E	Grey-Brown	30	D-178	33	23	590
1+00 E	Brown-Grey	45	D-179	30	21	570

November, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Over Magnetic Anomaly)

Location	Description	Depth in cm	Sample No.	Analysis in PPM Cu	Pb	Zn
Line 9+00 S						
3+60 W	Beach Sand Grey Grit	35	D-180	56	17	165
3+40 W	Brown	20	D-181	18	17	200
3+20 W	Dark Grey	30	D-182	50	17	155
3+00 W	Brown	20	D-183	23	16	240
2+80 W	Dark Brown	30	D-184	28	22	310
2+60 W	Brown	35	D-185	22	17	350
2+40 W	Rust Brown	30	D-186	29	13	192
2+20 W	Pale Brown	20	D-187	28	18	260
2+00 W	Pale Brown	25	D-188	41	19	300
1+90 W	Brown	25	D-189	51	19	250
1+80 W	Pale Brown	40	D-190	40	40	280
1+70 W	Grey	25	D-191	47	17	320
1+60 W	Pale Brown	40	D-192	30	17	310
1+50 W	Grey-Brown	30	D-193	30	20	380
1+40 W	Brown	25	D-194	20	17	380
1+30 W	Brown	25	D-195	27	18	330
1+20 W	Grey-Brown	25	D-196	33	23	370
1+10 W	Dark Brown	25	D-197	36	23	340
1+00 W	Grey-Brown	35	D-198	32	17	290
0+90 W	Dark Grey	35	D-199	36	24	400
0+80 W	Brown	20	D-200	22	14	280
0+70 W	Dark Brown	40	D-201	17	21	530
0+60 W	Brown	20	D-202	31	18	320
0+50 W	Grey	30	D-203	55	19	310
0+40 W	Dark Grey	30	D-204	27	23	510
0+30 W	Brown	30	D-205	30	25	440
0+20 W	Brown	25	D-206	29	18	370
0+00 BL	Dark Grey	25	D-207	42	19	350
0+20 E	Brown	30	D-208	26	16	330
0+40 E	Dark Grey	30	D-209	46	38	360
0+60 E	Grey-Brown	35	D-210	43	22	350
0+80 E	Grey-Brown	40	D-211	32	17	390

November, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Over Magnetic Anomaly)

Location	Description	Depth in cm	Sample No.	Analysis in PPM Cu	Pb	Zn
Line 10+00 S						
3+40 W	Brown	30	D-212	36	14	240
3+20 W	Grey	40	D-213	34	17	176
3+00 W	Dark Brown	30	D-214	26	29	183
2+80 W	Brown	35	D-215	19	14	250
2+60 W	Dark Brown	40	D-216	22	14	240
2+40 W	Grey-Green	35	D-217	26	11	200
2+20 W	Brown	30	D-218	20	15	230
2+00 W	Brown	20	D-219	22	13	250
1+80 W	Dark Brown	30	D-220	49	16	199
1+60 W	Grey & Brown	25	D-221	37	13	181
1+40 W	Brown	30	D-222	24	15	250
1+30 W	Brown	30	D-223	33	14	220
1+20 W	Brown	30	D-224	31	12	200
1+10 W	Brown	30	D-225	22	15	240
1+00 W	Brown	25	D-226	18	13	270
0+90 W	Grey & Brown	30	D-227	27	11	193
0+80 W	Grey	30	D-228	48	12	146
0+70 W	Grey	25	D-229	37	11	110
0+60 W	Grey	30	D-230	30	10	123
0+50 W	Rusty Brown	25	D-231	20	13	240
0+40 W	Brown	30	D-232	37	14	197
0+30 W	Brown	30	D-233	30	16	320
0+20 W	Dark Grey	25	D-234	35	17	280
0+10 W	Brown	35	D-235	18	14	350
0+00 BL	Dark Brown	40	D-236	22	12	380
0+10 E	Grey & Brown	40	D-237	43	13	250
0+20 E	Grey	35	D-238	37	14	176
0+30 E	Grey	40	D-239	42	24	440
0+40 E	Brown	50	D-240	43	15	153
0+50 E	Brown	30	D-241	44	13	165
0+60 E	Grey-Brown	25	D-242	42	14	220
0+70 E	Grey-Brown	40	D-243	28	19	450
0+80 E	Dark Brown	40	D-244	27	33	400
0+90 E	Dark Brown	45	D-245	23	19	350
1+00 E	Grey-Brown	50	D-246	28	14	260
1+20 E	Grey-Brown	25	D-247	74	12	172
1+40 E	Dark Grey	35	D-248	56	7	132
1+60 E	Brown	25	D-249	23	15	210
1+80 E	Grey	40	D-250	51	10	131

November, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Over Total Field Anomaly)

Location	Description	Depth in cm	Sample No.	Analysis in PPM Cu	Pb	Zn
Line 1+00 N						
0+30 E	Grey Grit	70	D-251	43	11	135
0+40 E	Brown-Grey	65	D-252	41	12	126
0+50 E	Brown	40	D-253	23	12	200
0+60 E	Brown	35	D-254	27	16	178
0+70 E	Brown	30	D-255	14	13	220
0+80 E	Brown	35	D-256	15	11	250
0+90 E	Brown	35	D-257	28	16	210
1+00 E	Mottled Rust & Grey	50	D-258	16	3	109
1+10 E	Pale Lime Brown	35	D-259	44	17	220
1+20 E	Brown	40	D-260	17	11	157
1+30 E	Light Brown	35	D-261	24	14	200
1+40 E	Brown/Calcrete Grit	40	D-262	36	3	111
1+50 E	Yellow-Brown	45	D-263	47	13	178
1+60 E	Brown	40	D-264	25	13	171
1+70 E	Reddish-Brown	45	D-265	32	14	145
1+80 E	Light Brown	35	D-266	32	13	135
1+90 E	Brown	40	D-267	12	14	310
2+00 E	Grey-Green	30	D-268	17	9	145
2+20 E	Grey-Green	40	D-269	29	9	147
2+40 E	Grey & Brown	40	D-270	18	11	184
2+60 E	Grey	40	D-271	36	16	160
2+80 E	Brown	25	D-272	35	17	300
3+00 E	Brown & Grey	30	D-273	15	16	169

November, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Over Total Field Anomaly)

Location	Description	Depth in cm	Sample No.	Analysis in PPM Cu	Pb	Zn
Line 0+00						
0+30 E	Brown & Buff/Calcrete	45	D-274	24	6	100
0+40 E	Brown	35	D-275	15	6	187
0+50 E	Dark Brown	20	D-276	29	14	156
0+60 E	Greenish-Grey	45	D-277	60	11	121
0+70 E	Greenish Brown	35	D-278	27	8	98
0+80 E	Brown & Green-Grey	35	D-279	16	10	131
0+90 E	Greenish Brown	30	D-280	26	10	126
1+00 E	Brown/Calcrete Grit	30	D-281	15	16	260
1+10 E	Brown/Calcrete Grit	40	D-282	13	3	77
1+20 E	Brown/Calcrete Grit	25	D-283	12	6	122
1+30 E	Red & Rust	45	D-284	23	10	84
1+40 E	Greenish Grey	40	D-285	20	11	81
1+50 E	Greenish Grey	40	D-286	17	8	131
1+60 E	Brown	35	D-287	18	14	151
1+70 E	Brown	30	D-288	11	13	164
1+80 E	Brown & Grey	30	D-289	18	14	132
1+90 E	Light Brown	30	D-290	13	9	195
2+00 E	Brown & Grey	35	D-291	16	11	164
2+20 E	Brown	30	D-292	21	13	178
2+40 E	Light Brown	30	D-293	14	10	179
2+60 E	Light Brown	30	D-294	10	17	330
2+80 E	Grey-Brown	30	D-295	11	11	220
3+00 E	Grey-Brown	25	D-296	23	13	210

November, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Over Total Field Anomaly)

Location	Description	Depth in cm	Sample No.	Analysis in PPM Cu	Pb	Zn
Line 1+00 S						
0+20 E	Red-Brown	20	D-297	16	10	97
0+40 E	Yellow-Brown	30	D-298	19	13	124
0+60 E	Brown	35	D-299	17	13	210
0+80 E	Light Brown	45	D-300	20	13	170
1+00 E	Pale Grey	35	D-301	30	9	120
1+20 E	Brown	20	D-302	16	13	159
1+40 E	Brown	30	D-303	12	12	180
1+60 E	Yellow-Brown	25	D-304	12	13	180
1+80 E	Brown	25	D-305	14	12	210
2+00 E	Grey-Green	40	D-306	24	13	99
2+10 E	Grey-Green & Brown	25	D-307	15	8	199
2+20 E	Brown	20	D-308	14	11	195
2+30 E	Grey & Grey-Green	30	D-309	22	8	124
2+40 E	Grey-Green	25	D-310	18	9	130
2+50 E	Brown	30	D-311	15	11	191
2+60 E	Light Brown	25	D-312	18	11	240
2+70 E	Light Brown	30	D-313	17	11	250
2+80 E	Grey-Green & Brown	35	D-314	15	11	210
2+90 E	Brown	25	D-315	23	15	175
3+00 E	Grey-Green & Brown	35	D-316	19	11	174
3+10 E	Grey-Green	25	D-317	18	8	153
3+20 E	Brown & Green-Grey	25	D-318	21	11	200
3+30 E	Brown	25	D-319	18	15	230
3+40 E	Brown	25	D-320	12	11	280
3+50 E	Brown & Grey-Green	25	D-321	16	10	200
3+60 E	Brown & Grey	40	D-322	12	9	320
3+70 E	Grey-Green	35	D-323	23	9	210
3+80 E	Brown	25	D-324	17	10	320
3+90 E	Light Brown	20	D-325	15	9	410
4+00 E	Grey	25	D-326	23	13	440
4+10 E	Grey-Green	30	D-327	25	11	250
4+20 E	Brown	30	D-328	19	11	530
4+40 E	Brown & Grey	30	D-329	14	9	460
4+60 E	Black Argillite Chips	20	D-330	81	30	600
4+80 E	Brownish-Black	40	D-331	23	9	680
5+00 E	Black Argillite Chips	40	D-332	161	13	770

November, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Over Total Field Anomaly)

Location	Description	Depth in cm	Sample No.	Analysis in PPM Cu	Pb	Zn
Line 2+00 S						
1+00 E	Grey-Green	35	D-333	47	19	139
1+20 E	Grey-Green & Brown	30	D-334	19	12	118
1+40 E	Grey-Green	35	D-335	30	10	95
1+60 E	Brown	40	D-336	25	14	164
1+80 E	Brown	35	D-337	17	12	210
2+00 E	Brown	30	D-338	31	16	177
2+20 E	Grey & Brown	35	D-339	30	13	260
2+40 E	Brown	35	D-340	33	12	290
2+60 E	Light Brown	35	D-341	56	16	167
2+80 E	Brown	30	D-342	22	11	188
3+00 E	Light Brown	25	D-343	22	10	170
3+10 E	Brown & Grey	40	D-344	34	14	172
3+20 E	Grey-Green	30	D-345	25	11	151
3+30 E	Light Brown	40	D-346	26	12	196
3+40 E	Grey-Green	30	D-347	31	9	120
3+50 E	Green & Green-Brown	40	D-348	36	15	240
3+60 E	Brown	40	D-349	42	17	300
3+70 E	Black Argillite o.c.	0	D-350	18	32	290
3+80 E	Grey-Green	35	D-351	30	13	280
3+90 E	Brown	40	D-352	63	16	480
4+00 E	Brown	55	D-353	114	24	580
4+10 E	Dark Grey	30	D-354	33	21	860
4+20 E	Brown & Grey	30	D-355	61	17	380
4+30 E	Brown & Grey	40	D-356	36	17	480
4+40 E	Light Brown	40	D-357	43	14	300
4+50 E	Grey-Green	35	D-358	34	13	165
4+60 E	Light Brown	40	D-359	15	12	280
4+70 E	Grey-Green	40	D-360	32	10	177
4+80 E	Brown	35	D-361	33	14	360
4+90 E	Light Brown	35	D-362	18	13	260
5+00 E	Pale Grey	40	D-363	31	11	194
5+20 E	Dark Grey	35	D-364	63	14	440
5+40 E	Grey-Brown	25	D-365	37	11	330
5+60 E	Pale Grey	30	D-366	36	11	125
5+80 E	Black Argillite o.c.	0	D-367	60	580	1900

November, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Over Total Field Anomaly)

Location	Description	Depth in cm	Sample No.	Analysis in PPM Cu	Pb	Zn
Line 3+00 S						
4+00 E	Black	35	D-370	181	24	630
4+20 E	Dark Grey	40	D-371	92	24	630
4+40 E	Dark Brown	30	D-372	97	18	450
4+60 E	Brown	30	D-373	27	13	280
4+80 E	Brown	25	D-374	15	12	300
5+00 E	Dark Brown	30	D-375	25	10	470
5+10 E	Brownish Black	30	D-376	49	9	520
5+20 E	Brownish Black	30	D-377	368	11	310
5+30 E	Grey-Brown	40	D-378	28	13	290
5+40 E	Dark Brown	25	D-379	16	12	330
5+50 E	Dark Grey-Brown	20	D-380	31	13	250
5+60 E	Grey-Brown	20	D-381	24	11	200
5+70 E	Dark Grey	25	D-382	52	10	240
5+80 E	Brown	30	D-383	23	15	340
5+90 E	Brown	30	D-384	20	17	230
6+00 E	Brown	35	D-385	23	15	220
6+10 E	Rust-Brown	20	D-386	16	18	220
6+20 E	Rust-Brown	25	D-387	16	14	230
6+30 E	Brown	30	D-388	17	13	161
6+40 E	Rust-Brown	30	D-389	16	13	240
6+50 E	Rust-Brown	20	D-390	12	13	240
6+60 E	Grey-Brown	30	D-391	20	13	153
6+80 E	Brown	25	D-392	14	13	290
7+00 E	Brown	25	D-393	20	12	143
7+20 E	Dark Brown	20	D-394	12	11	157
7+40 E	Brown	25	D-395	21	12	141
7+60 E	Brown	30	D-396	12	12	160
7+80 E	Rust-Brown	25	D-397	15	12	157
8+00 E	Brown	25	D-398	12	13	188
3+00 E	Rusted Argillite Talus	0	D-368	34	131	820
3+05 E	Rusted Greywake o.c.	0	D-369	36	41	370

September, 1992

ZN CLAIM GROUP - SOIL SAMPLES
(Reconnaissance Sampling)

Location		Description	Depth in cm	Sample No.	Analysis in ppm Cu	Pb	Zn
0+40 N	0+65 W	Red Clay	30	D-21	15	14	410
0+20 S	0+65 W	Rust-Brown	35	D-22	41	10	103
0+40 S	0+70 W	Rust-Brown	30	D-23	34	13	95
0+75 S	0+70 W	Rust-Brown	30	D-24	40	13	66
1+20 S	0+85 W	Rust-Brown	25	D-25	30	10	53
1+85 S	0+95 W	Rust-Grey	35	D-26	13	12	69
2+40 S	1+20 W	Pale Yellow	30	D-27	15	12	173
4+00 S	1+50 W	Pale Green	40	D-28	63	21	147
9+90 S	0+45 E	Grey-Green	90	D-29	62	21	190
9+80 S	0+05 E	Grey Brown	50	D-30	53	17	143
10+00 S	0+25 E	Grey	50	D-31	48	18	230
1+00 S	1+95 E	Brown	40	D-32	15	13	191
1+00 S	2+40 E	Brown	40	D-33	16	14	200
1+00 S	3+00 E	Grey-Brown	45	D-34	15	12	240
1+00 S	3+15 E	Light Brown	45	D-35	20	16	210
1+00 S	3+35 E	Brown	35	D-36	20	15	250
1+00 S	3+65 E	Brown-Grey	40	D-37	32	13	195
1+00 S	4+05 E	Light Brown	35	D-38	30	11	360
1+00 S	1+55 E	Brown	30	D-39	15	9	191

APPENDIX II

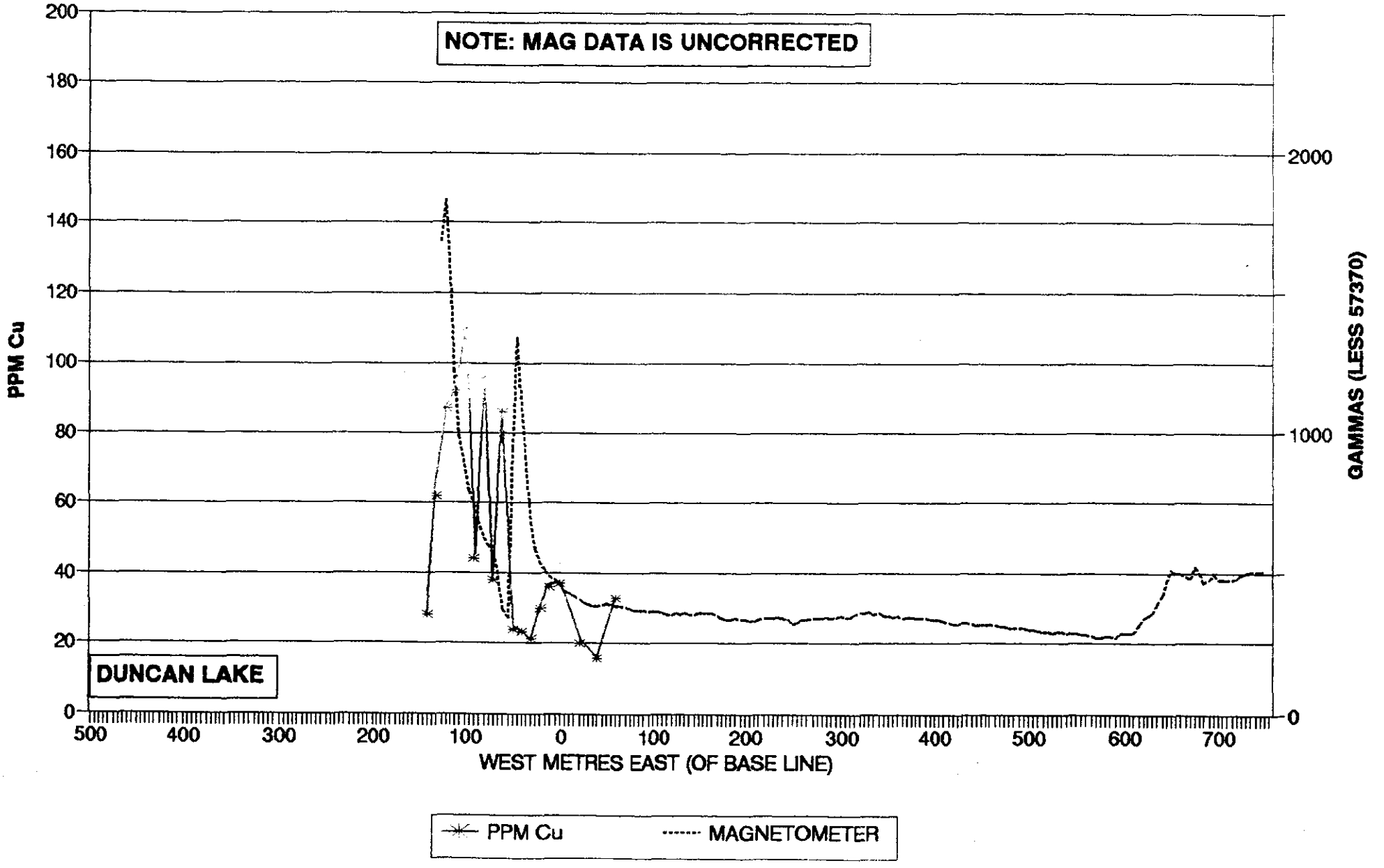
MAGNETIC ANOMALY PROFILES

with

COPPER VALUES

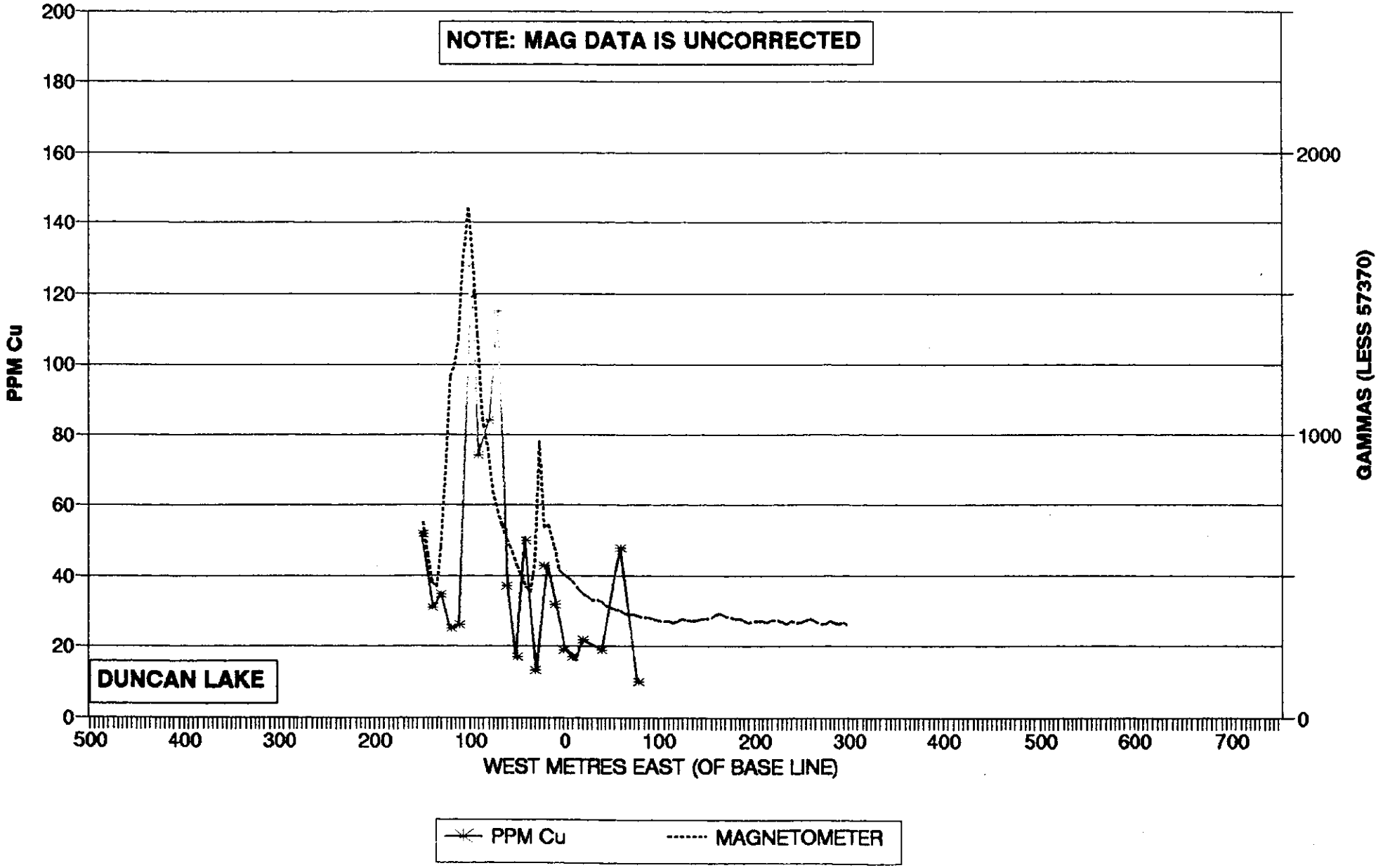
1992 SOILS SURVEY: ZN CLAIMS

LINE 300S PPM Cu VS MAGNETOMETER



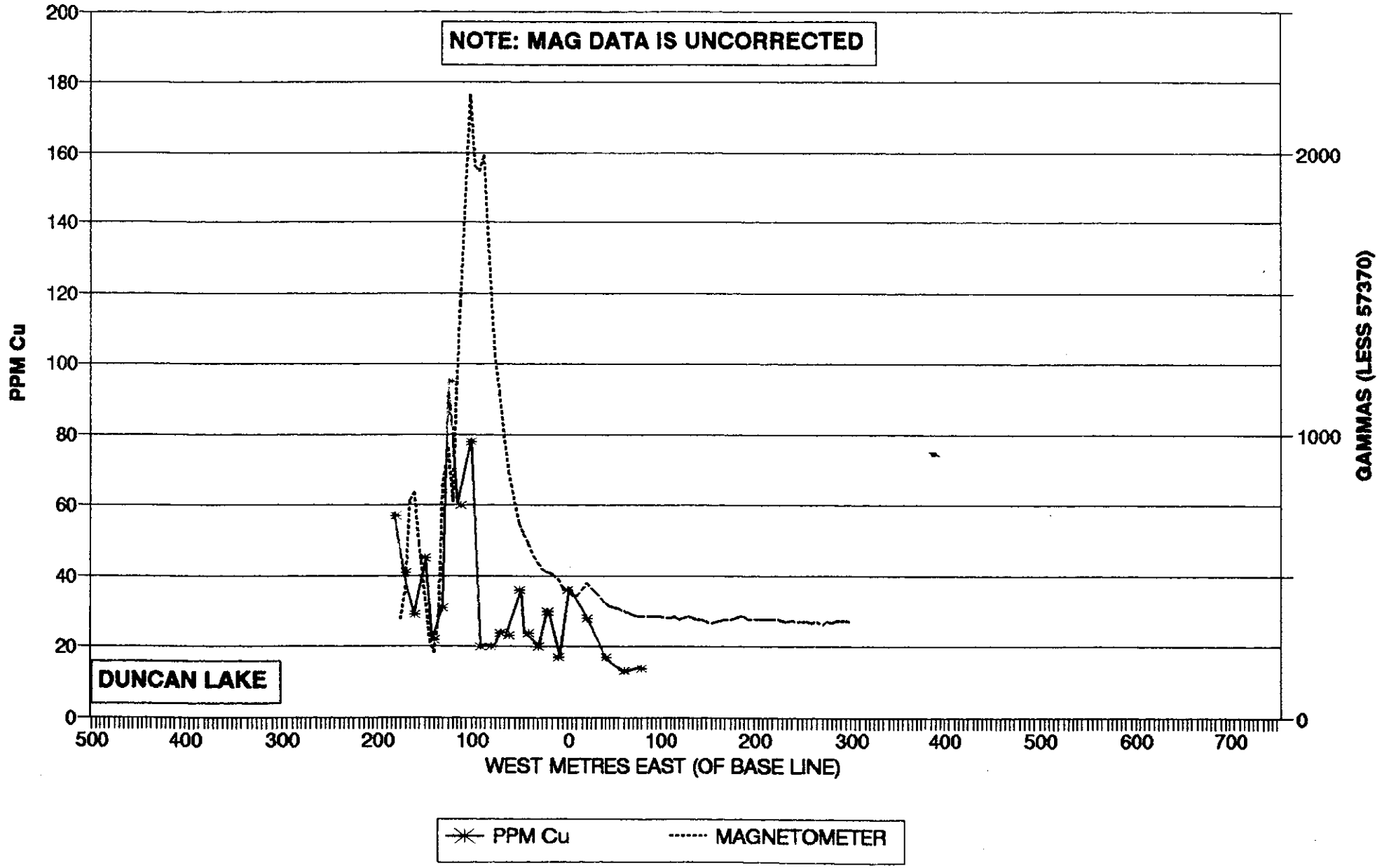
1992 SOILS SURVEY: ZN CLAIMS

LINE 400S PPM Cu VS MAGNETOMETER



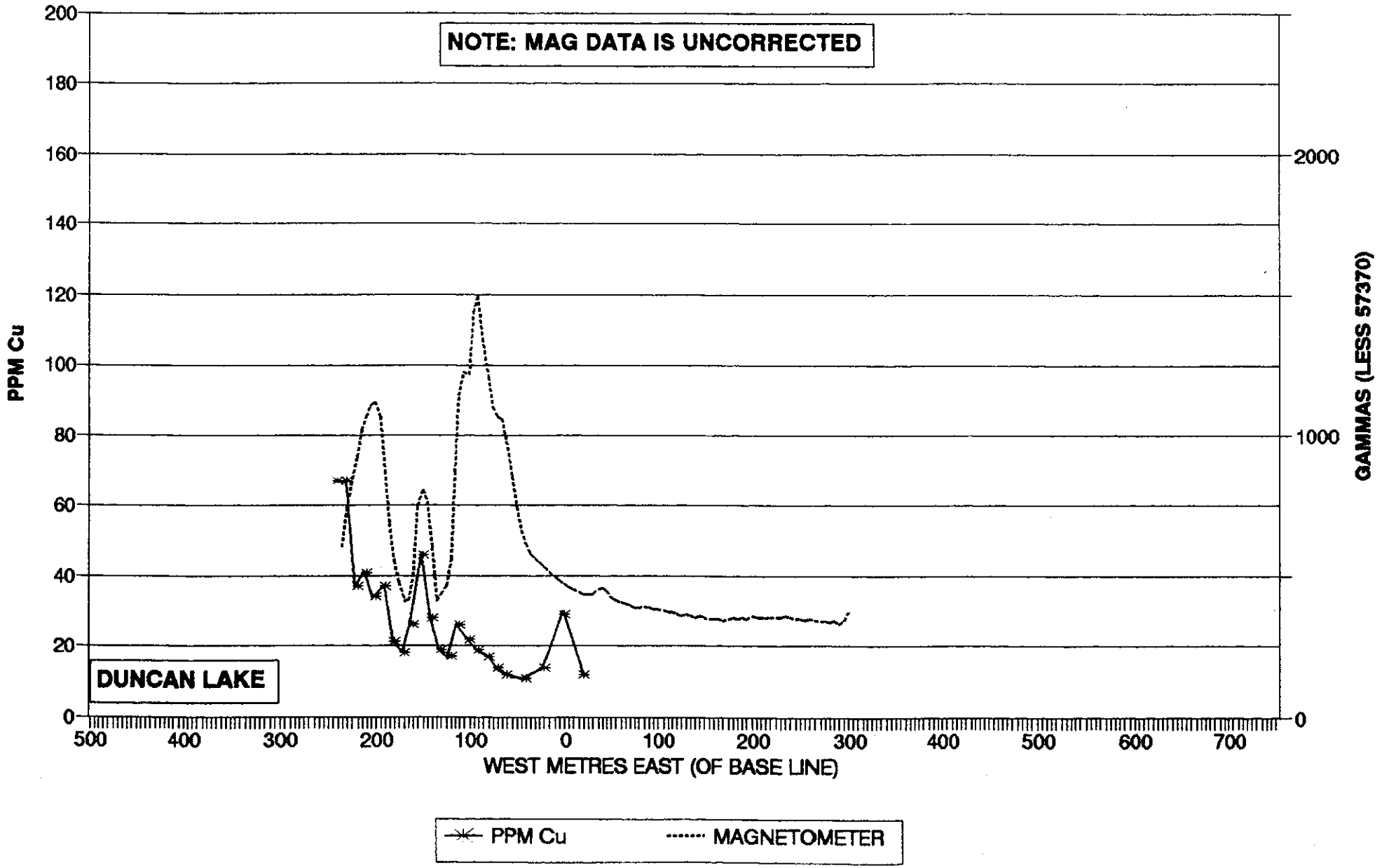
1992 SOILS SURVEY: ZN CLAIMS

LINE 500S PPM Cu VS MAGNETOMETER



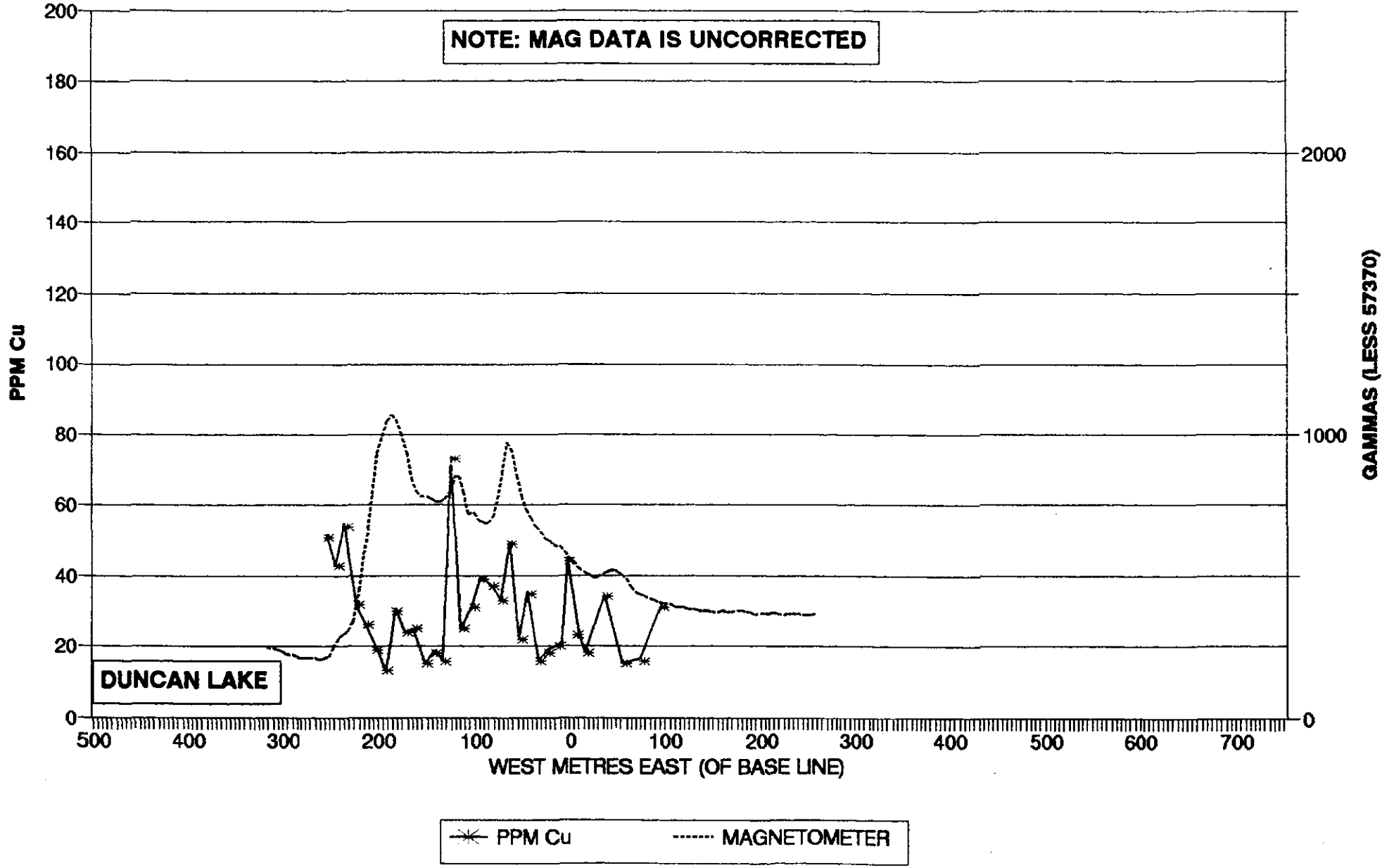
1992 SOILS SURVEY: ZN CLAIMS

LINE 600S PPM Cu VS MAGNETOMETER



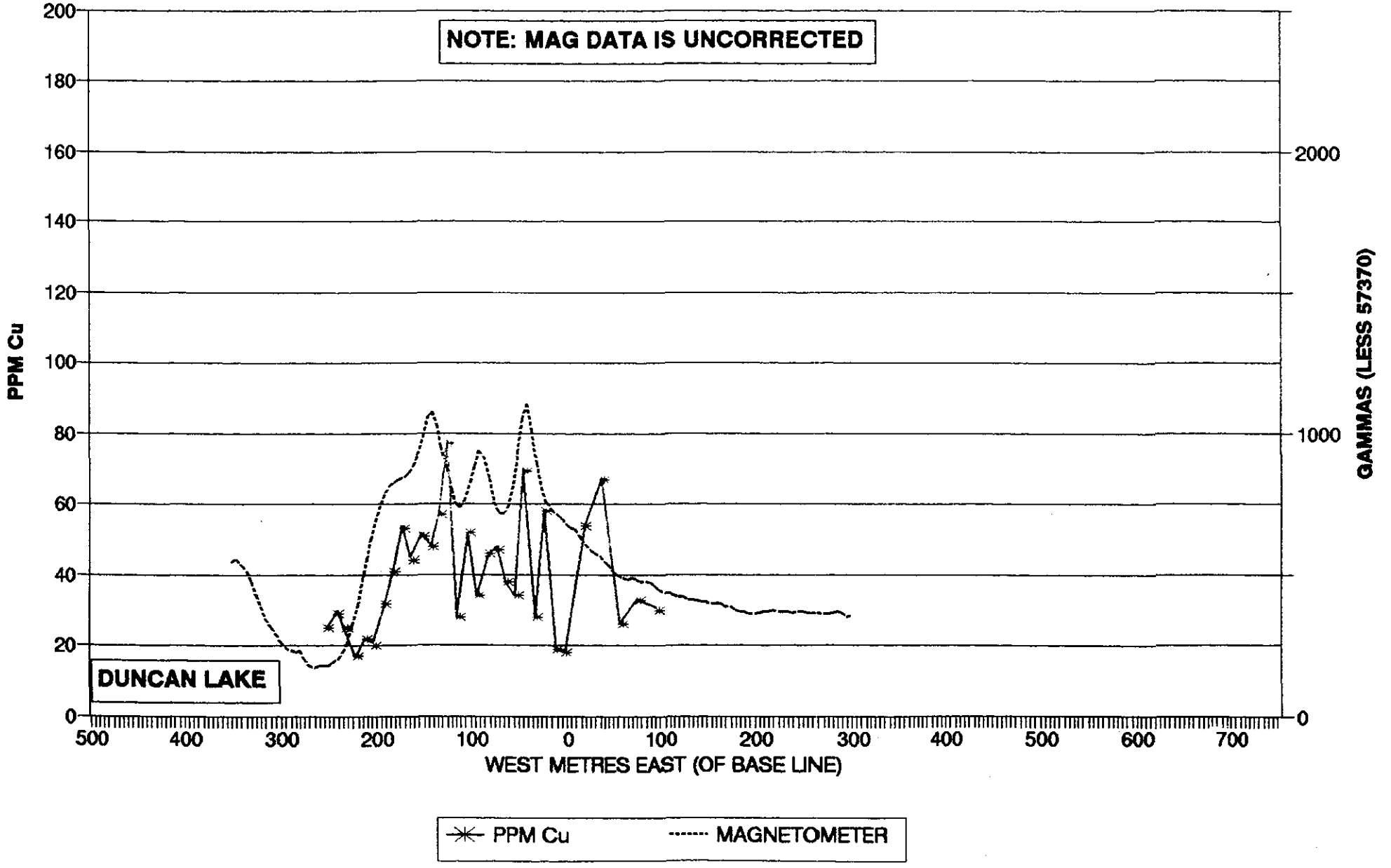
1992 SOILS SURVEY: ZN CLAIMS

LINE 700S PPM Cu VS MAGNETOMETER



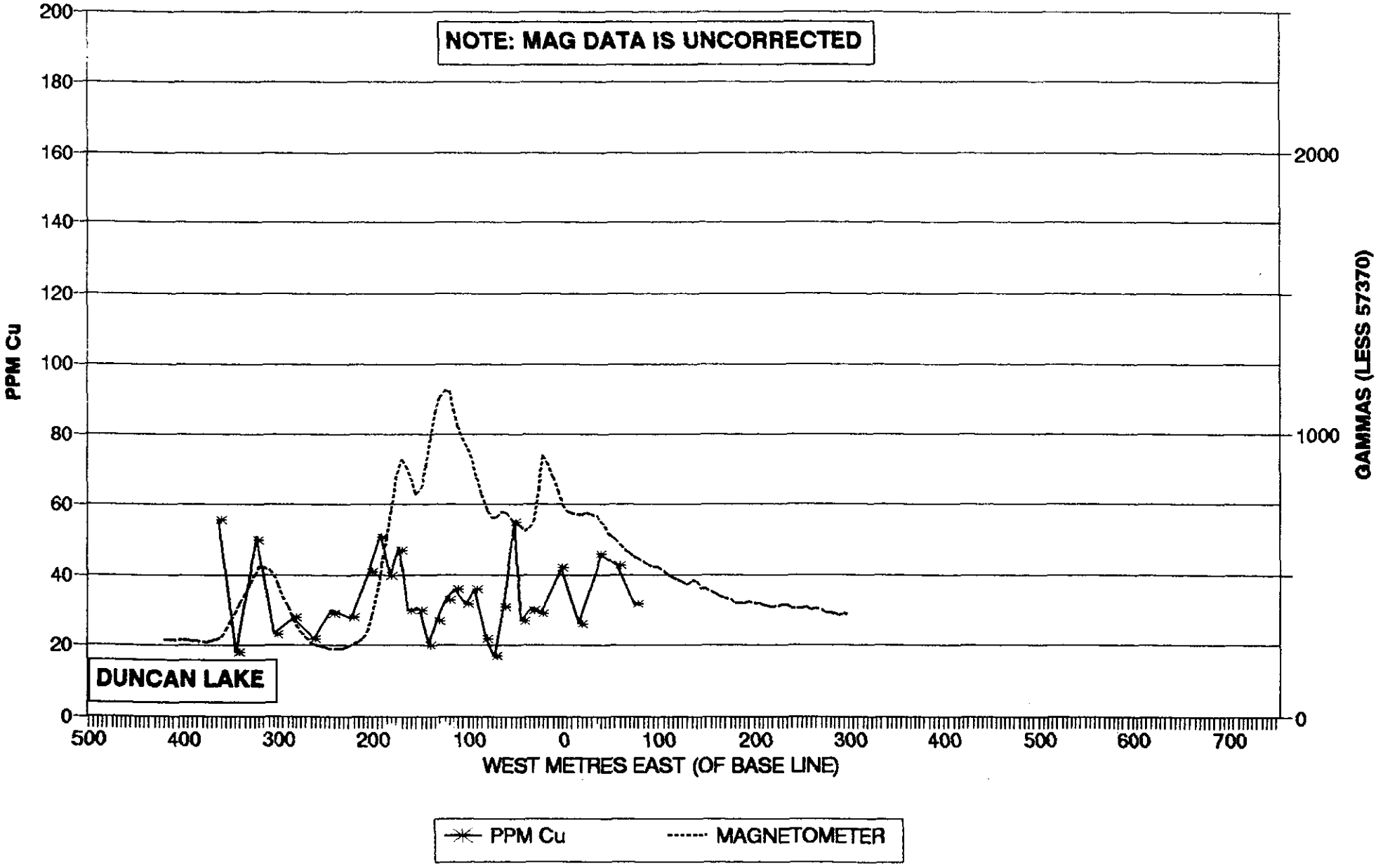
1992 SOILS SURVEY: ZN CLAIMS

LINE 800S PPM Cu VS MAGNETOMETER



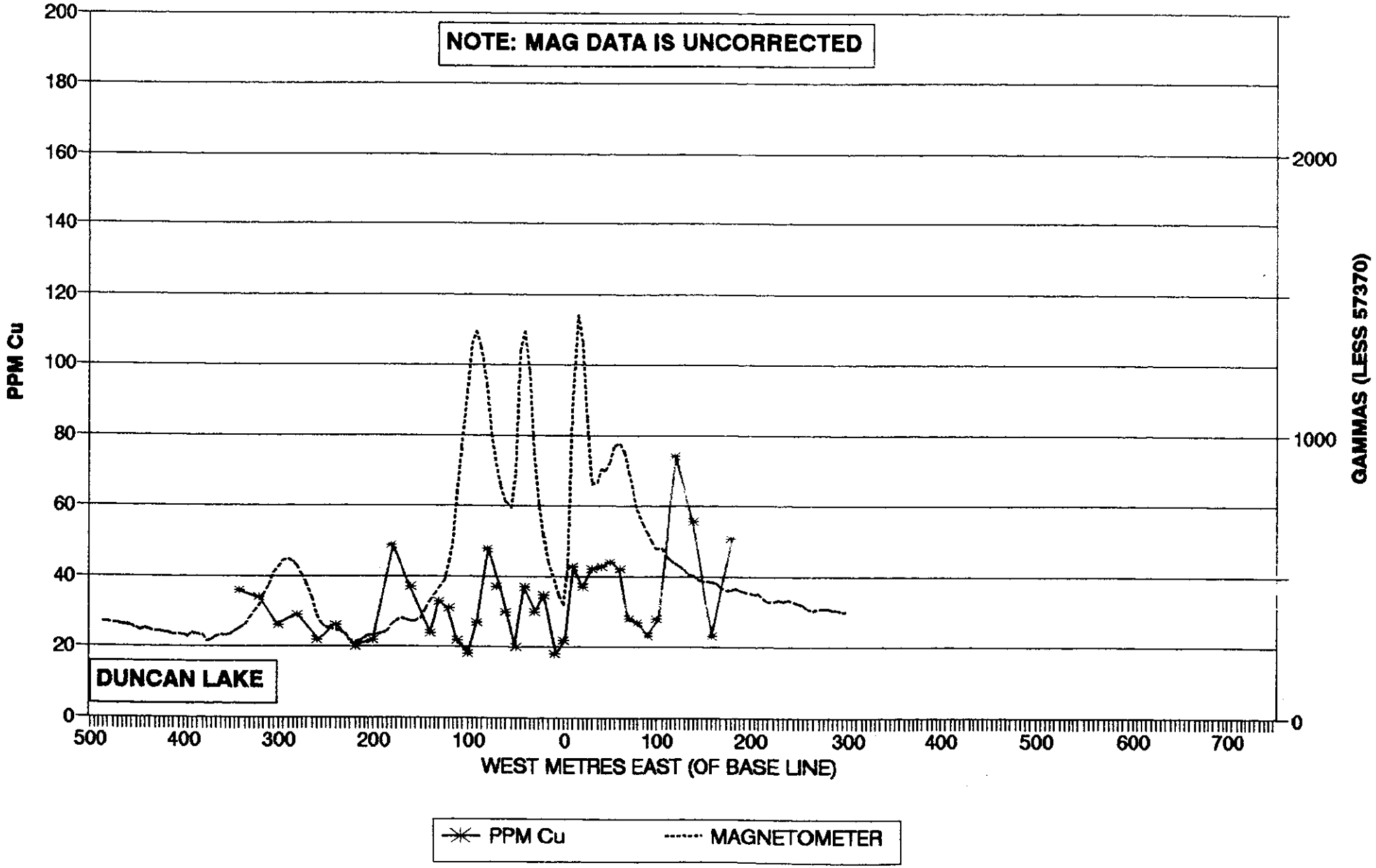
1992 SOILS SURVEY: ZN CLAIMS

LINE 900S PPM Cu VS MAGNETOMETER



1992 SOILS SURVEY: ZN CLAIMS

LINE 1000S PPM Cu VS MAGNETOMETER



APPENDIX III

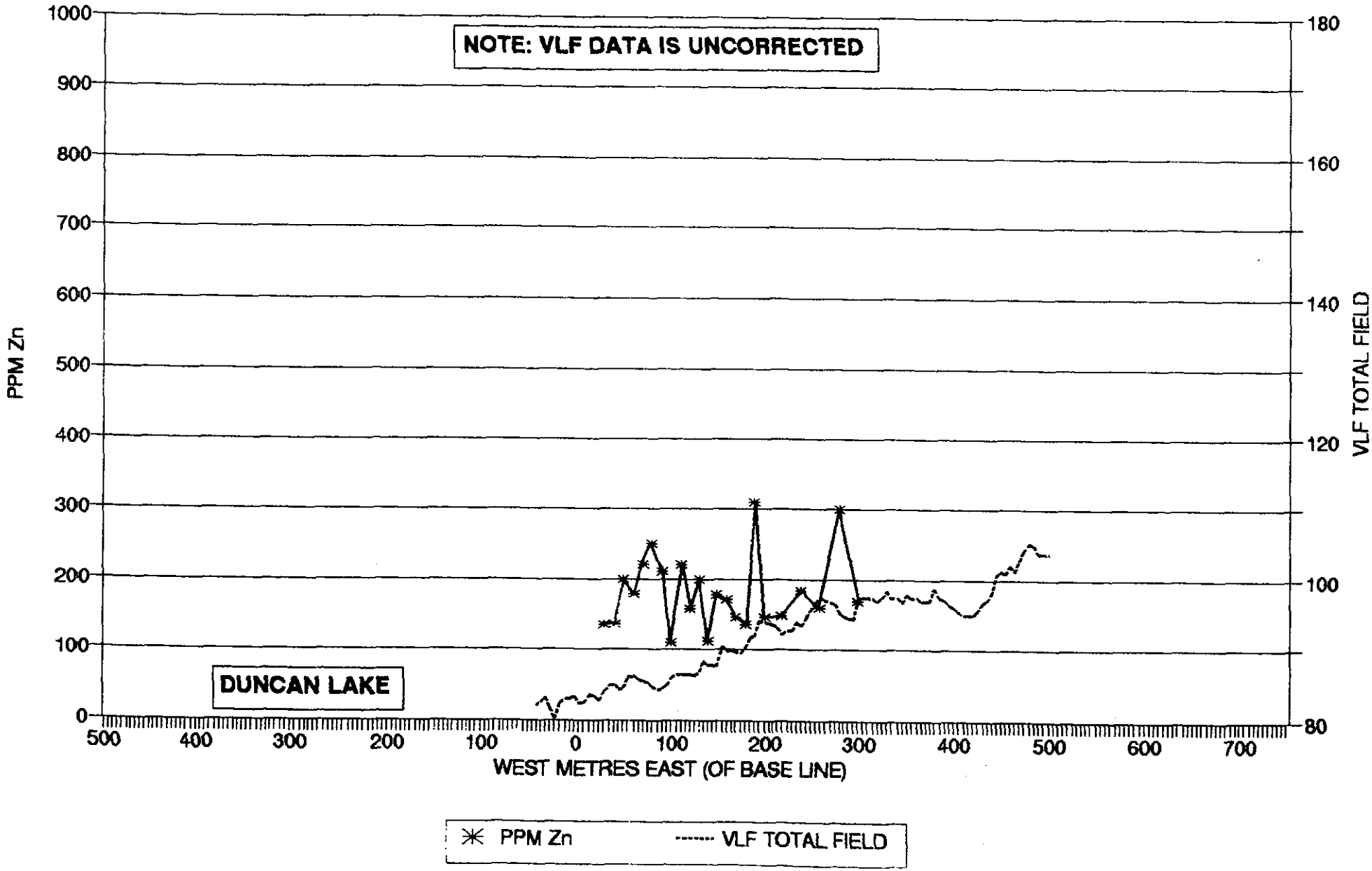
TOTAL FIELD ANOMALY PROFILES

with

ZINC VALUES

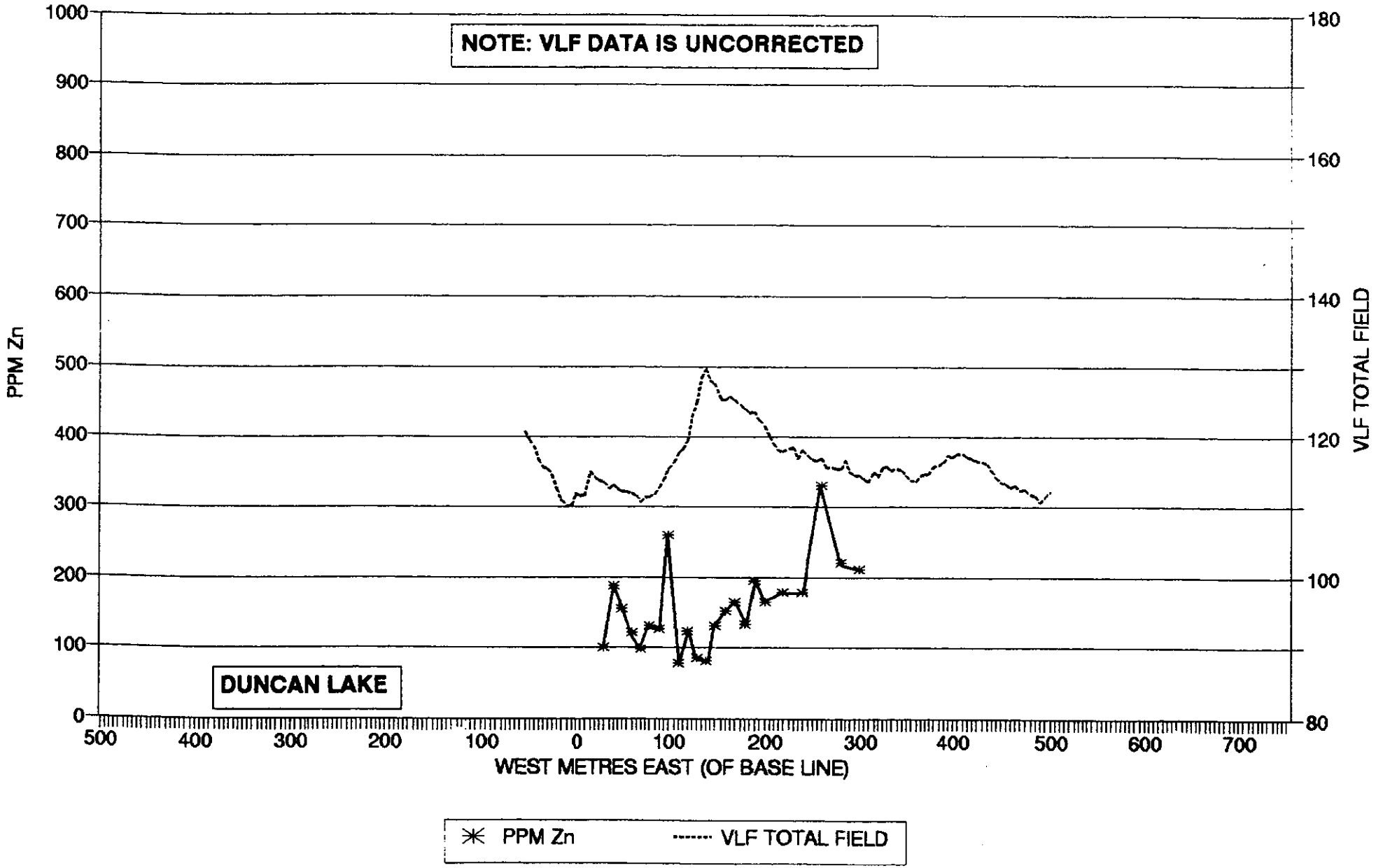
1992 SOILS SURVEY: ZN CLAIMS

LINE 100N PPM Zn VS VLF TOTAL FIELD



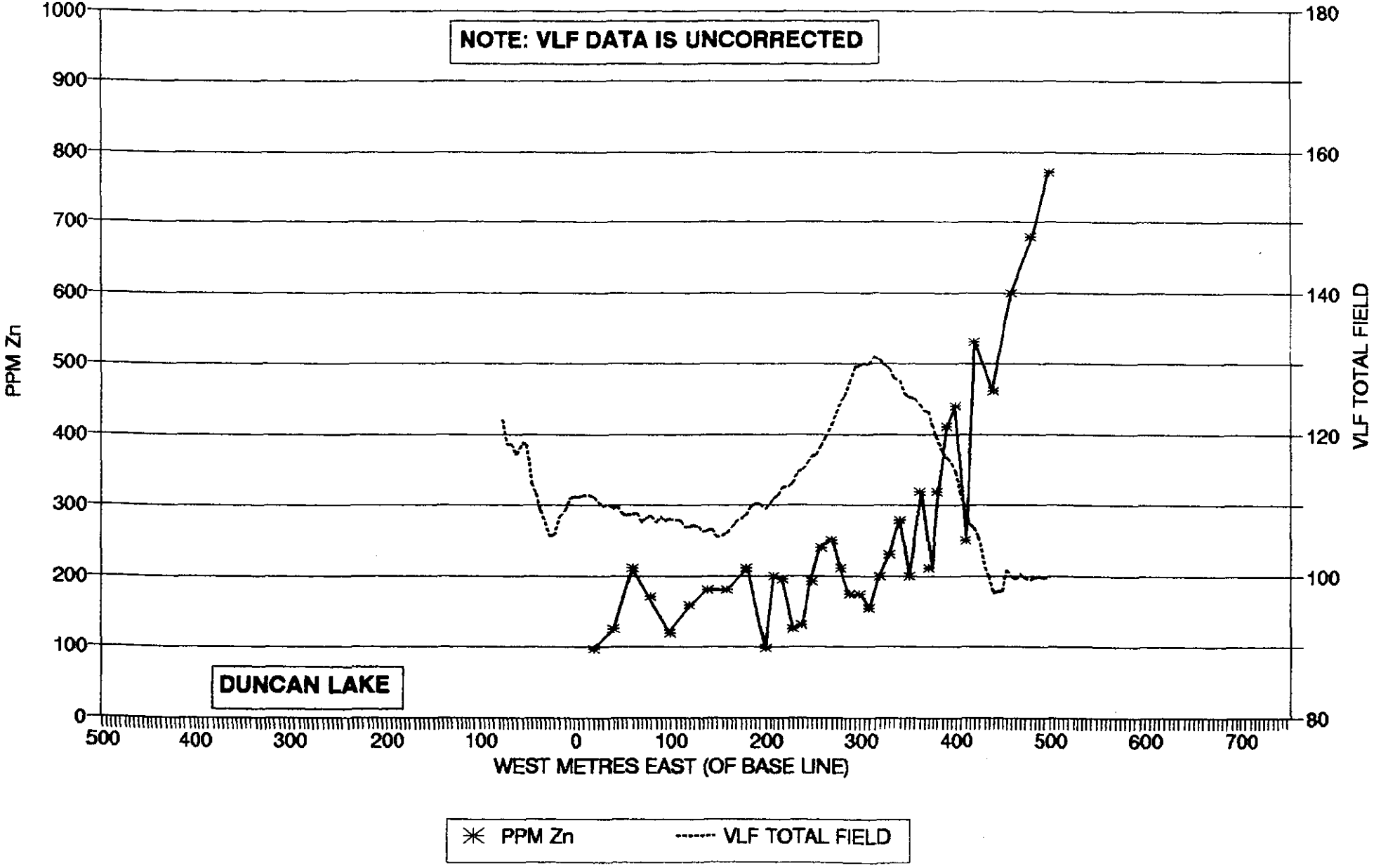
1992 SOILS SURVEY: ZN CLAIMS

LINE 00N PPM Zn VS VLF TOTAL FIELD



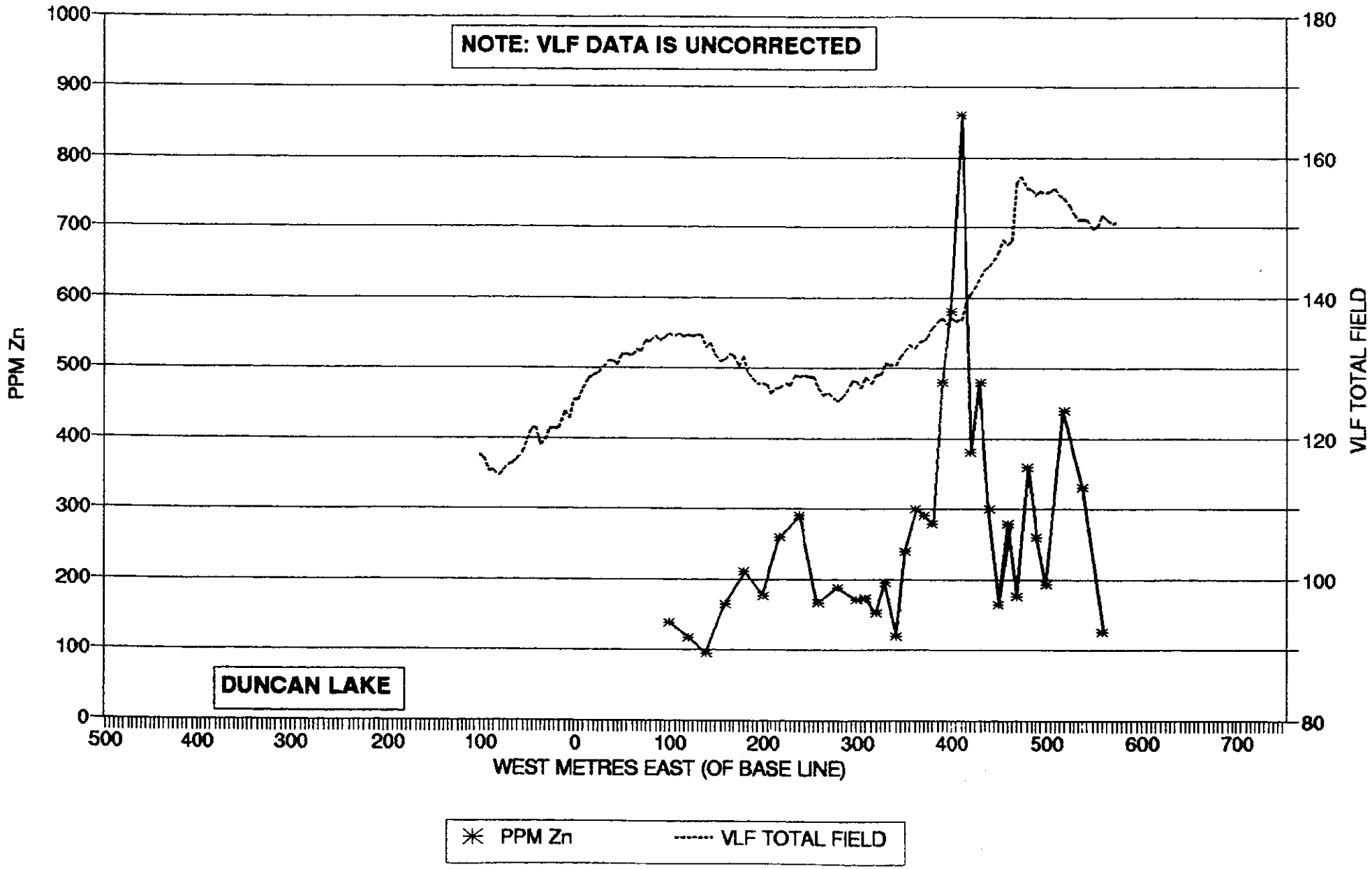
1992 SOILS SURVEY: ZN CLAIMS

LINE 100S PPM Zn VS VLF TOTAL FIELD



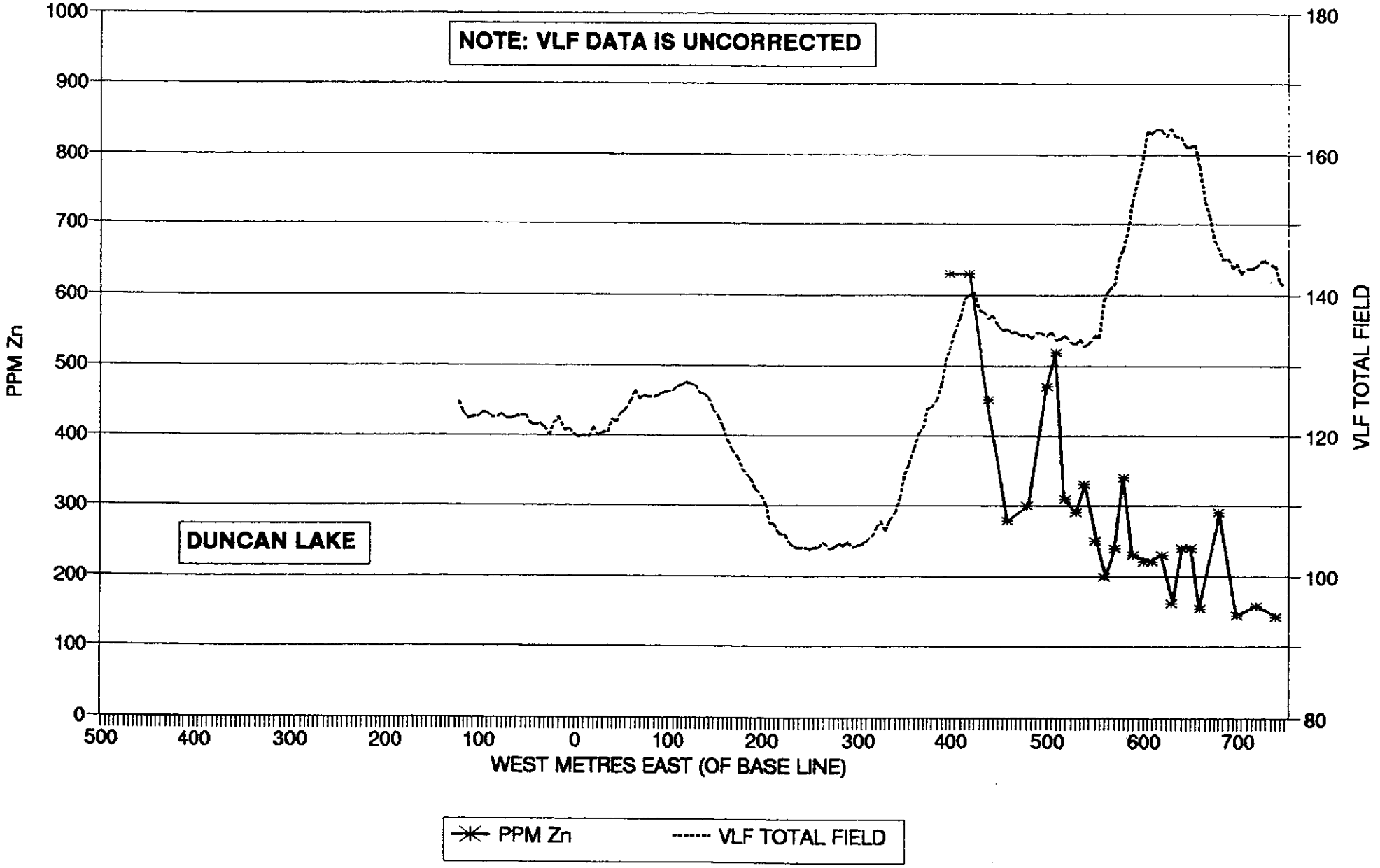
1992 SOILS SURVEY: ZN CLAIMS

LINE 200S PPM Zn VS VLF TOTAL FIELD



1992 SOILS SURVEY: ZN CLAIMS

LINE 300S PPM Zn VS VLF TOTAL FIELD



APPENDIX IV

ASSAY CERTIFICATES

TERRAMIN RESEARCH LABS LTD.

ANALYTICAL REPORT

Don Sutherland

Date: September 24, 1992

Job No: 92-239

Project:

P.O. No:

19 sOIL

Signed: _____

14-2235 30th Avenue N.E., Calgary, Alberta,T2E 7C7
Phone (403) 250-9460 Fax (403) 291-7064

TERRAMIN RESEARCH LABS Ltd.

Job#: 92-239

Project:

	Sample Number	Cu ppm	Pb ppm	Zn ppm
D-	21	15	14	410
	22	41	10	103
	23	34	13	95
	24	40	13	66
	25	30	10	53
	26	13	12	69
	27	15	12	173
	28	63	21	147
	29	62	21	190
	30	53	17	143
	31	48	18	230
	32	15	13	191
	33	16	14	200
	34	15	12	240
	35	20	16	210
	36	20	15	250
	37	32	13	195
	38	30	11	360
	39	15	9	191

TERRAMIN RESEARCH LABS LTD.

ANALYTICAL REPORT

Regional Resources Ltd.

H. Thalenhorst

Strathcona Mineral Serv. Ltd.

cc: Don Sutherland

Date: November 17, 1992

Job No: 92-284

Project:

P.O. No:

364 Soil

4 Rock

Signed: _____

14-2235 30th Avenue N.E., Calgary, Alberta,T2E 7C7
Phone (403) 250-9460 Fax (403) 291-7064

TERRAMIN RESEARCH LABS Ltd.

Job#: 92-284

Project:

	Sample Number	Cu ppm	Pb ppm	Zn ppm
D-	31	28	14	135
	32	62	15	186
	33	87	15	191
	34	92	14	187
	35	109	14	171
	36	44	16	470
	37	96	9	135
	38	38	14	155
	39	86	11	147
	40	24	18	260
	41	23	19	290
	42	21	18	240
	43	30	10	141
	44	36	13	122
	45	37	21	230
	46	20	13	320
	47	16	13	240
	48	33	17	198
	49	10	10	210
	50	48	14	128
	51	19	12	121
	52	22	8	135
	53	17	14	169
	54	19	12	158
	55	32	14	210
	56	43	4	70
	57	13	13	200
	58	50	18	230
	59	17	14	250
	60	37	13	180
	61	115	20	171
	62	84	21	154
	63	74	15	162
	64	128	16	183
	65	26	15	230
	66	25	14	250
	67	35	16	160
	68	31	17	154
	69	52	18	125
	70	57	20	126

Job#: 92-284

Project:

Sample Number	Cu ppm	Pb ppm	Zn ppm
D- 71	41	15	153
72	29	19	151
73	45	18	183
74	22	11	280
75	31	16	162
76	95	16	159
77	60	16	162
78	78	10	119
79	20	14	177
80	20	18	230
81	24	54	220
82	23	13	206
83	36	12	138
84	24	15	230
85	20	16	210
86	30	11	170
87	17	14	230
88	36	12	126
89	28	12	153
90	17	13	137
91	13	11	260
92	14	15	162
93	12	3	58
94	29	16	160
95	14	3	52
96	11	5	71
97	12	2	38
98	14	3	51
99	17	6	111
100	19	9	117
101	22	12	110
102	26	4	37
103	17	6	54
104	19	6	60
105	28	10	100
106	46	17	168
107	26	14	150
108	18	17	270
109	21	16	410
110	37	19	340

Job#: 92-284

Project:

	Sample Number	Cu ppm	Pb ppm	Zn ppm
D-	111	34	19	290
	112	41	16	320
	113	37	16	210
	114	67	20	210
	115	67	21	200
	116	51	22	192
	117	43	17	158
	118	54	20	189
	119	32	20	240
	120	26	20	270
	121	19	15	240
	122	13	16	320
	123	30	16	220
	124	24	17	290
	125	25	18	240
	126	15	13	360
	127	18	15	360
	128	16	15	390
	129	73	25	340
	130	30	19	320
	131	20	15	390
	132	31	14	400
	133	99	23	370
	134	37	20	450
	135	33	20	410
	136	49	21	390
	137	22	19	360
	138	35	24	280
	139	16	16	260
	140	18	16	230
	141	20	18	194
	142	44	13	230
	143	23	13	192
	144	18	14	200
	145	34	15	280
	146	15	5	82
	147	16	11	260
	148	31	10	210
	149	25	17	320
	150	29	15	340

TERRAMIN RESEARCH LABS Ltd.

Job#: 92-284

Project:

	Sample Number	Cu ppm	Pb ppm	Zn ppm
D-	151	25	16	390
	152	17	17	290
	153	22	13	280
	154	20	17	470
	155	32	20	430
	156	41	22	400
	157	53	23	360
	158	44	23	400
	159	51	26	520
	160	48	22	450
	161	57	23	450
	162	77	25	430
	163	28	18	300
	164	52	16	250
	165	34	19	440
	166	46	20	260
	167	47	21	430
	168	38	12	159
	169	34	17	380
	170	69	24	330
	171	28	18	480
	172	58	20	280
	173	19	16	420
	174	18	15	400
	175	54	22	430
	176	67	26	440
	177	26	33	500
	178	33	23	590
	179	30	21	570
	180	56	17	165
	181	18	17	200
	182	50	17	155
	183	23	16	240
	184	28	22	310
	185	22	17	350
	186	29	13	192
	187	28	18	260
	188	41	19	300
	189	51	19	250
	190	40	40	280

Job#: 92-284

Project:

Sample Number	Cu ppm	Pb ppm	Zn ppm
D- 191	47	17	320
192	30	17	310
193	30	20	380
194	20	17	380
195	27	18	330
196	33	23	370
197	36	23	340
198	32	17	290
199	36	24	400
200	22	14	280
201	17	21	530
202	31	18	320
203	55	19	310
204	27	23	510
205	30	25	440
206	29	18	370
207	42	19	350
208	26	16	330
209	46	38	360
210	43	22	350
211	32	17	390
212	36	14	240
213	34	17	176
214	26	29	183
215	19	14	250
216	22	14	240
217	26	11	200
218	20	15	230
219	22	13	250
220	49	16	199
221	37	13	181
222	24	15	250
223	33	14	220
224	31	12	200
225	22	15	240
226	18	13	270
227	27	11	193
228	48	12	146
229	37	11	110
230	30	10	123

Job#: 92-284

Project:

	Sample Number	Cu ppm	Pb ppm	Zn ppm
D-	231	20	13	240
	232	37	14	197
	233	30	16	320
	234	35	17	280
	235	18	14	350
	236	22	12	380
	237	43	13	250
	238	37	14	176
	239	42	24	440
	240	43	15	153
	241	44	13	165
	242	42	14	220
	243	28	19	450
	244	27	33	400
	245	23	19	350
	246	28	14	260
	247	74	12	172
	248	56	7	132
	249	23	15	210
	250	51	10	131
	251	43	11	135
	252	41	12	126
	253	23	12	200
	254	27	16	178
	255	14	13	220
	256	15	11	250
	257	28	16	210
	258	16	3	109
	259	44	17	220
	260	17	11	157
	261	24	14	200
	262	36	3	111
	263	47	13	178
	264	25	13	171
	265	32	14	145
	266	32	13	135
	267	12	14	310
	268	17	9	145
	269	29	11	147
	270	18	11	184

Job#: 92-284

Project:

	Sample Number	Cu ppm	Pb ppm	Zn ppm
D-	271	36	16	160
	272	35	17	300
	273	15	16	169
	274	24	6	100
	275	15	6	187
	276	29	14	156
	277	60	11	121
	278	27	8	98
	279	16	10	131
	280	26	10	126
	281	15	16	260
	282	13	3	77
	283	12	6	122
	284	23	10	84
	285	20	11	81
	286	17	8	131
	287	18	14	151
	288	11	13	164
	289	18	14	132
	290	13	9	195
	291	16	11	164
	292	21	13	178
	293	14	10	179
	294	10	17	330
	295	11	11	220
	296	23	13	210
	297	16	10	97
	298	19	13	124
	299	17	13	210
	300	20	13	170
	301	30	9	120
	302	16	13	159
	303	12	12	180
	304	12	13	180
	305	14	12	210
	306	24	13	99
	307	15	8	199
	308	14	11	195
	309	22	8	124
	310	18	9	130

Job#: 92-284

Project:

	Sample Number	Cu ppm	Pb ppm	Zn ppm
D-	311	15	11	191
	312	18	11	240
	313	17	11	250
	314	15	11	210
	315	23	15	175
	316	19	11	174
	317	18	8	153
	318	21	11	200
	319	18	15	230
	320	12	11	280
	321	16	10	200
	322	12	9	320
	323	23	9	210
	324	17	10	320
	325	15	9	410
	326	23	13	440
	327	25	11	250
	328	19	11	530
	329	14	9	460
	330	81	30	600
	331	23	9	680
	332	161	13	770
	333	47	19	139
	334	19	12	118
	335	30	10	95
	336	25	14	164
	337	17	12	210
	338	31	16	177
	339	30	13	260
	340	33	12	290
	341	56	16	167
	342	22	11	188
	343	22	10	170
	344	34	14	172
	345	25	11	151
	346	26	12	196
	347	31	9	120
	348	36	15	240
	349	42	17	300
Rock	350	18	32	290

Job#: 92-284

Project:

	Sample Number	Cu ppm	Pb ppm	Zn ppm
D-	351	30	13	280
	352	63	16	480
	353	114	24	580
	354	33	21	860
	355	61	17	380
	356	36	17	480
	357	43	14	300
	358	34	13	165
	359	15	12	280
	360	32	10	177
	361	33	14	360
	362	18	13	260
	363	31	11	194
	364	63	14	440
	365	37	11	330
	366	36	11	125
Rock	367	60	580	1900
Rock	368	34	131	820
Rock	369	36	41	370
	370	181	24	630
	371	92	24	630
	372	97	18	450
	373	27	13	280
	374	15	12	300
	375	25	10	470
	376	49	9	520
	377	368	11	310
	378	28	13	290
	379	16	12	330
	380	31	13	250
	381	24	11	200
	382	52	10	240
	383	23	15	340
	384	20	17	230
	385	23	15	220
	386	16	18	220
	387	16	14	230
	388	17	13	161
	389	16	13	240
	390	12	13	240

Job#: 92-284

Project:

	Sample Number	Cu ppm	Pb ppm	Zn ppm
D-	391	20	13	153
	392	14	13	290
	393	20	12	143
	394	12	11	157
	395	21	12	141
	396	12	12	160
	397	15	12	157
	398	12	13	188

– Duncan Lake Property –
(Zn)

COMP: HUDSON BAY EXPLORATION
PROJ:
ATTN: ED YARROW

MIN-EN LABS — ICP REPORT

705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2
(604)980-5814 OR (604)988-4524

FILE NO: 2V-1226-SJ1
DATE: 92/11/
* SOIL * (ACT:F3

SAMPLE NUMBER	AG PPM	AL %	AS PPM	B PPM	BA PPM	BE PPM	BI PPM	CA %	CD PPM	CO PPM	CU PPM	FE %	K %	LI PPM	MG %	MN PPM	MO PPM	NA %	NI PPM	P PPM	PB PPM	SB PPM	SR PPM	TH PPM	TI PPM	V PPM	ZN PPM	GA PPM	SN PPM	W PPM	CR PPM	AU-FIRE PPB
L4+00S 0+00W	.1	2.34	1	5	540	.7	5	.42	.1	12	28	2.77	.13	21	.41	147	2	.08	45	320	24	7	32	3	930	24.3	147	1	1	2	15	2
L4+00S 0+20W	.7	1.86	1	8	499	.6	3	5.90	.1	11	42	2.25	.11	13	.76	364	2	.04	39	2430	28	5	224	1	239	16.7	176	1	1	2	19	1
L4+00S 0+40W	.1	2.60	1	5	503	.7	7	.48	.1	13	12	2.61	.11	34	.46	302	2	.05	38	1440	23	11	43	4	1020	27.4	224	1	1	2	16	6
L4+00S 0+60W	.1	3.24	1	5	792	.8	8	.65	.1	14	28	2.82	.12	29	.45	596	1	.04	37	2140	25	12	60	5	1094	24.8	166	1	1	2	16	7
L4+00S 1+00W	.1	1.30	1	3	210	.7	2	1.55	.1	16	64	3.26	.17	24	.97	446	4	.05	57	1480	31	4	41	6	379	32.4	160	1	1	2	28	3
L4+00S 1+20W	.1	.85	1	2	296	.6	2	.36	.1	15	51	3.05	.09	14	.45	227	2	.03	48	840	24	2	18	5	315	17.9	171	1	1	1	17	8
L5+00S 0+00W	.1	.99	1	3	279	.6	1	.25	.1	9	21	2.06	.13	12	.35	198	2	.02	36	270	20	3	18	4	325	16.3	106	1	1	1	15	2
L5+00S 0+20W	.1	.97	1	3	313	.5	2	.38	.1	10	18	2.24	.08	14	.40	331	2	.04	42	460	18	4	23	4	371	17.5	168	1	1	1	16	3
L5+00S 0+40W	.1	.94	1	3	255	.4	2	.20	.1	9	15	2.08	.09	13	.38	248	2	.04	30	330	16	3	16	3	415	16.8	144	1	1	1	13	1
L5+00S 0+60W	.1	1.62	1	4	340	.7	5	.33	.1	13	38	2.81	.13	16	.38	301	2	.04	45	700	22	6	29	4	645	20.5	187	1	1	2	12	1
L5+00S 0+80W	.1	2.61	1	4	471	.7	7	.39	.1	11	13	2.40	.12	22	.33	444	1	.05	25	2260	28	13	46	4	1003	22.6	159	1	1	2	12	1
L5+00S 1+20W	.1	1.37	1	3	227	.6	3	2.05	.1	19	109	3.45	.13	24	.91	638	2	.03	50	1040	28	5	59	6	341	25.0	136	1	1	2	21	2
L5+00S 1+40W	.1	2.45	1	5	524	.7	5	.56	.1	11	16	2.62	.10	25	.29	265	1	.05	33	1300	18	10	51	3	951	20.2	257	1	1	1	10	1
L6+00S 0+00W	1.8	.75	18	3	171	.2	4	7.23	.1	7	16	1.15	.08	5	.40	150	2	.05	58	470	18	7	284	1	228	8.4	51	5	1	1	12	2
L6+00S 0+20W	2.5	.13	32	4	168	.1	7	>15.00	.2	2	12	.38	.02	1	.53	246	2	.09	13	540	22	8	518	1	35	5.7	37	12	1	2	12	5
L6+00S 0+40W	.4	.28	3	6	241	.1	4	7.62	.1	2	11	.48	.04	1	.29	971	1	.14	10	910	14	5	373	1	78	5.9	46	1	1	1	8	1
L6+00S 0+60W	1.8	.44	19	5	230	.1	5	8.87	.1	3	12	.57	.05	2	.39	279	1	.21	14	810	18	7	347	1	114	6.4	38	6	1	2	10	4
L6+00S 0+80W	2.0	.16	21	4	169	.1	5	11.77	.1	2	20	.37	.02	1	.41	215	1	.10	17	580	16	6	356	1	41	4.7	32	8	1	2	10	3
L6+00S 1+00W	2.2	.46	16	4	270	.2	4	8.78	.2	4	22	.77	.06	3	.36	205	2	.13	15	620	17	6	295	1	107	7.5	43	6	1	1	11	2
L6+00S 1+20W	1.9	.47	14	4	342	.2	4	8.30	.1	4	26	.78	.05	3	.32	215	1	.11	19	550	16	6	295	1	129	8.5	41	5	1	1	11	1
L6+00S 1+60W	.1	1.00	1	3	144	.6	2	1.65	.1	12	50	2.81	.11	20	.80	336	6	.03	53	1300	27	4	44	7	228	22.7	144	1	1	2	25	14
L6+00S 1+80W	.8	3.50	1	4	620	.8	8	.56	.1	9	21	2.18	.08	20	.27	254	3	.07	52	5370	27	14	63	2	1384	28.2	264	1	1	2	17	1
L7+00S 0+00W	.1	1.24	1	3	381	.5	3	.40	.1	10	21	2.28	.11	20	.43	260	2	.05	76	1490	20	4	33	4	568	21.3	286	1	1	2	21	4
L7+00S 0+20W	.1	1.75	1	4	521	.6	6	.39	.1	9	11	1.99	.11	25	.33	256	1	.11	37	1600	35	8	33	3	867	24.8	204	1	1	2	17	1
L7+00S 0+40W	.1	1.15	2	4	458	.6	4	.32	.1	11	38	2.59	.11	18	.50	543	7	.04	93	1280	40	5	27	6	408	23.9	273	1	1	2	26	3
L7+00S 0+60W	.2	1.47	8	4	399	.7	5	.27	.1	12	53	2.80	.12	17	.68	198	11	.05	149	1620	33	7	32	7	525	38.6	386	2	1	5	89	1
L7+00S 0+80W	.1	1.88	7	4	400	.8	5	.27	.1	12	48	2.65	.12	19	.67	232	8	.05	152	2590	35	9	36	6	614	35.2	381	2	1	5	97	1
L7+00S 1+00W	.7	2.03	6	4	569	.7	6	.35	.1	11	28	2.35	.12	25	.54	211	5	.08	103	2830	31	10	39	6	748	30.6	352	2	1	3	38	1
L7+00S 1+20W	.1	1.21	2	4	417	.8	4	.20	.1	12	59	3.03	.11	16	.83	312	12	.04	125	1180	38	4	25	7	318	35.5	331	1	1	5	100	2
L7+00S 1+40W	.3	1.78	4	4	916	.6	6	.39	.1	8	16	1.97	.13	26	.46	291	3	.04	54	3970	27	10	49	4	776	26.1	344	1	1	2	23	1
L7+00S 1+60W	.9	3.32	7	5	588	.9	9	.39	.1	10	24	2.29	.10	24	.39	234	4	.08	76	2660	32	17	40	5	1354	31.9	225	1	1	2	27	1
L7+00S 1+80W	.3	1.74	7	4	510	.6	7	.38	.1	9	21	2.07	.13	27	.46	291	3	.07	56	2050	29	11	36	6	721	28.5	290	2	1	2	23	1
L7+00S 2+00W	.1	1.72	1	4	697	.6	7	.27	.1	10	15	2.15	.12	31	.45	550	3	.07	64	2360	31	10	34	5	819	27.1	288	1	1	2	21	3
L7+00S 2+20W	.1	1.76	6	4	415	.7	5	.27	.1	12	24	2.51	.10	29	.58	330	3	.08	73	1820	31	10	27	6	679	27.2	251	1	1	2	26	2
L7+00S 2+60W	.1	1.73	1	3	789	.5	6	.38	.1	9	19	1.93	.09	20	.35	942	4	.06	51	3150	33	11	42	4	842	27.6	264	1	1	2	21	2
L7+00S 2+80W	.8	2.38	15	5	363	.9	7	.37	.1	14	86	3.12	.11	21	.73	245	9	.07	122	1490	42	13	33	9	693	38.3	291	2	1	3	39	4

APPENDIX V

PETROGRAPHIC STUDY

INCO EXPLORATION AND TECHNICAL SERVICES INC.
MEMORANDUM

TO J. Morin

FROM B. C. Jago DATE January 7, 1993

SUBJECT **BRITISH COLUMBIA/PETROLOGY OF MINERALIZED FLOAT FROM THE ZN CLAIMS CU DISCOVERY**

Introduction

This study was undertaken as part of a program to examine the economic potential of a new Cu discovery located near Duncan B.C. Whole rock and trace element geochemistry were used to characterize four samples of float including one which contained 5.9% Cu. This sample also was characterized petrographically.

Conclusions

High grade Cu mineralization (5.9% Cu) occurs in a greenschist facies basaltic or mixed basaltic epiclastic/terrigenous sediment protolith. The principal copper minerals are primary chalcocite and secondary covellite; the principal silicate minerals are plagioclase, epidote, chlorite and quartz. Abundant malachite has formed along fractures and foliation planes.

Whole rock and trace element geochemistry suggests that the Cu mineralized rock is a modestly (?) altered alkali basalt and that the unmineralized samples are tholeiitic basalts to andesites. Mass loss and mass gain calculations cannot be performed due to the limited size of the sample suite but qualitatively, it appears that the Cu mineralized sample has undergone some mass loss which probably was associated with mineralization. The other samples are altered to a lesser degree as suggested by a limited spread of the data points on the TiO_2 - Zr plot.

It is strongly recommended that a more detailed examination of this property be undertaken to find the source of the high grade Cu-mineralized float. The most likely source is the magnetic high which is located up-slope in a linear topographic depression. A larger sample suite, comprising at least 30 rocks, should be collected with a view to determining the lithologies that are present and the nature of alteration that is associated with mineralization. Petrographic examination suggests that the chalcocite is primary, although the significance of chalcocite mineralization in such a host rock is unknown. Of principal importance is that it may be possible to produce a very high grade Cu concentrate from this rock using existing flotation technologies.

Petrology

Appendix A contains a detailed petrographic report of RX128806. Samples of the other three rocks, that were characterized geochemically, were not available for thin section analysis. Sample RX128806 is composed of a modestly recrystallized and modestly to strongly foliated assemblage of plagioclase, epidote, chlorite, quartz, apatite, pyrrhotite, covellite, chalcocite, malachite and magnetite±ilmenite. The four phase silicate assemblage is typically of that formed during greenschist facies metamorphism of a weakly altered basalt. The anomalous high Fe, Ti, P, Na and Ca contents are not unusual for an alkali basalt protolith but there also is some indication that the protolith may have been an epiclastic sediment that was derived largely from basaltic source rock including some terrigenous sediments. Chalcocite occurs as fine to medium grained anhedra throughout the sample. Cross-cutting fractures and grain margins are altered to covellite. Malachite has formed through supergene process and will greatly aid surface prospecting due to its characteristic green colour.

Malachite has formed through supergene process and will greatly aid surface prospecting due to its characteristic green colour.

Geochemistry

Geochemical analysis of four rock samples from the ZN claims are given in the attached Table 1. Our analysis of the sample of mineralized float (RX128806) confirms the high Cu grade determined by Terramin Research Labs of Calgary on similar material collected by the property owners.

Whole rock and trace element analyses of the mineralized and non-mineralized float samples were used to augment the petrographic interpretation. All samples plot with the field for rocks of tholeiitic parentage on the Irvine and Baragar (Figure 1) and Myashiro (Figure 2) classification diagrams. On the Winchester and Floyd (Figures 3 and 4) and Jensen cation plot (Figure 5), there is some disagreement as to whether the samples are basaltic or andesitic/dacitic in composition and whether or not the mineralized sample is a tholeiitic basalt or alkali basalt. Because the trace element geochemistry is less likely to be affected during alteration, it is concluded that the mineralized sample (RX128806) is an alkali basalt and the three unmineralized samples (RX051034, RX051035, RX051036) are tholeiitic basaltic andesites. On the extended element plot (Figure 6) sample RX128806 shows obvious differences with the other three (RX051034, RX051035, RX051036) and is strongly depleted in K, Pb and Ni but relatively enriched in Nb, Sr, Ti and Cu. Although differences in the geochemistry of these two groups of samples, particularly in their Sr, Pb, K and Cu contents, could be ascribed to a greater degree of alteration of the mineralized sample (RX128806), high field strength element and transition element content differences are real and show there are two different protoliths. This difference is illustrated very well on Figure 7, a plot of TiO_2 vs Zr.

Figure 7 can be used to illustrate changes in mass balance of unaltered protoliths which are due to mass gain, for example, silica flooding, or mass loss due, for example, to additions of FeO or MgO. The four samples available for this study are not enough to begin to determine the composition of an unaltered protolith. The spread in data of the three unmineralized samples suggests that the group as a whole has been altered (as suggested by the projection of the data points through the origin). The very high TiO_2 content of the mineralized sample is unusual for any basaltic rock and strongly suggests that this sample has been affected by mass loss. **It is important to note that this is only a preliminary conclusion that is based on four samples.**

Bruce Fago

/dh

Attachment:

x.c.: P. J. Rush
R. A. Alcock
File

TABLE 1 GEOCHEMICAL ANALYSIS OF MINERALIZED (RX128806) AND UNMINERALIZED FLOAT (RX051034, RX051035, RX051036) FROM THE ZN CLAIMS CU DISCOVERY

	Units	RX128806	Terramin Labs	RX051034	RX051035	RX051036
SiO_2	wt. %	43.17		58.87	57.09	62.57
TiO_2	wt. %	2.52		1.13	1.22	0.97
Al_2O_3	wt. %	15.06		18.07	19.15	17.50
CaO	wt. %	5.17		0.55	0.45	0.41
Fe_2O_3	wt. %	15.2				
MgO	wt. %	1.80		2.41	1.93	1.70
Na_2O	wt. %	5.40		1.48	1.76	0.86
K_2O	wt. %	0.56		3.90	4.10	3.48
MnO	wt. %	0.08		0.16	0.16	0.14
P_2O_5	wt. %	1.29		0.20	0.16	0.18
LOI	wt. %	3.2				
Cr	ppm	41		112	135	96
Ni	ppm	9		60	74	48
Co	ppm	10		38	36	23
V	ppm	190		120	166	140
Sc	ppm	16.8		25	24	24
Ba	ppm	631		1989	2877	832
Sr	ppm	500		183	204	211
Zr	ppm	174		125	139	97
Y	ppm	30		45	37	24
Nb	ppm	38		11.0	9.0	7.0
U	PPM	5		5.0	5.0	5.0
Th	PPM	3		9.0	9.0	8.0
Zr/Y		5.8		2.8	3.8	4.0
Ag	ppm	12.3	11.9	0.2	0.2	0.2
Au	ppb	not detected	10	not detected	not detected	not detected
Cu	ppm	59389	50000	10	19	24
Pb	ppm	4	6	61	132	38
Zn	ppm	107	33	138	133	94

INCO EXPLORATION & TECHNICAL SERVICES, Inc. 11-DEC-1992
PETROGRAPHIC REPORT

C92-2156 **C92-2156**

Report To: J. MORIN Date Submitted: 10-DEC-1992
Investigator: B. JAGO Examined: 10-JAN-1993

GR Project #: ME Property #:

---------- LOCATION ----------

Property: **ZN CLAIMS NEAR DUNCAN B.C.**
Country: CANADA NTS: UTM:
Prov/Stat: BRITISH COLUMBIA Twp/Cnty: LARDEAU DISTRICT
Grid Name: Coord Code:
Grid: N/S E/W Elev Level:
Borehole: at Units: M

---------- TREATMENT ----------

Smpl Type: GRAB
Field #: TS:Y PS:Y PTS: HS: SEM: XRD:Y Other:
Sample #: **RX128806** WRA:Y BMs:Y PMs:Y XTr:Y NATr:Y REE: Other:

---------- PETROGRAPHY ----------

Rock Name: **METABASALT (?)** Abbreviation:

Alteratn: **POSSIBLE WEAK CHLORITIZATION ALTHOUGH THE TIMING IS UNCERTAIN**
Metam Grd: GREENSCHIST
Protolith: BASALT OR MAFIC EPICLASTIC SED

Major Minerals: **PLAG EPI CHL APA COV CC MAL**
Mode:

Trace Minerals: MAGNETITE ILMENITE ? MUSCOVITE QUARTZ SPHENE

Description:
WEAKLY TO STRONGLY FOLIATED PORPHYROBLASTIC SCHIST. ABUNDANT GREEN COLOURED SECONDARY CU MINEALS OCCUR ALONG FRACTURES AND FOLIATION PLANES. THIN SECTION EXAMINATION SHOWS THAT THE ROCK CONTAINS MAJOR AMOUNTS OF STRONGLY INEQUIGRANULAR, STRONGLY RECRYSTALLIZED PLAGIOCLASE, MEDIUM GRAINED GRANULAR AND WEAKLY POIKILOBLASTIC APATITE, FINE TO COARSE GRAINED XENOBLASTIC EPIDOTE AND COARSE GRAINED PORPHYROBLASTIC FE-CHLORITE. THE FINE GRAINED MATRIX IS COMPOSED OF QUARTZ, MUSCOVITE, SPHENE, MAGNETITE AND ILMENITE (?). THIS METAMORPHIC ASSEMBLAGE IS STRIKINGLY SIMILAR TO THAT EXPECTED FROM THE GREENSCHIST FACIES METAMORPHISM OF A WEAKLY ALTERED BASALT. THE PRINCIPAL OPAQUE MINERALS ARE MALACHITE (?), CHALCOCITE (CC) AND COVELLITE (COV). CHALCOPYRITE IS NOT PRESENT AND COVELLITE IS SECONDARY AFTER CHALCOCITE. MALACHITE IS FORMING AT THE EXPENSE OF BOTH COVELLITE AND CHALCOCITE AND IS RESPONSIBLE FOR THE APPELE GREEN COLOUR OF THE FRACTURE SURFACES IN THE HANDSPECIMEN.

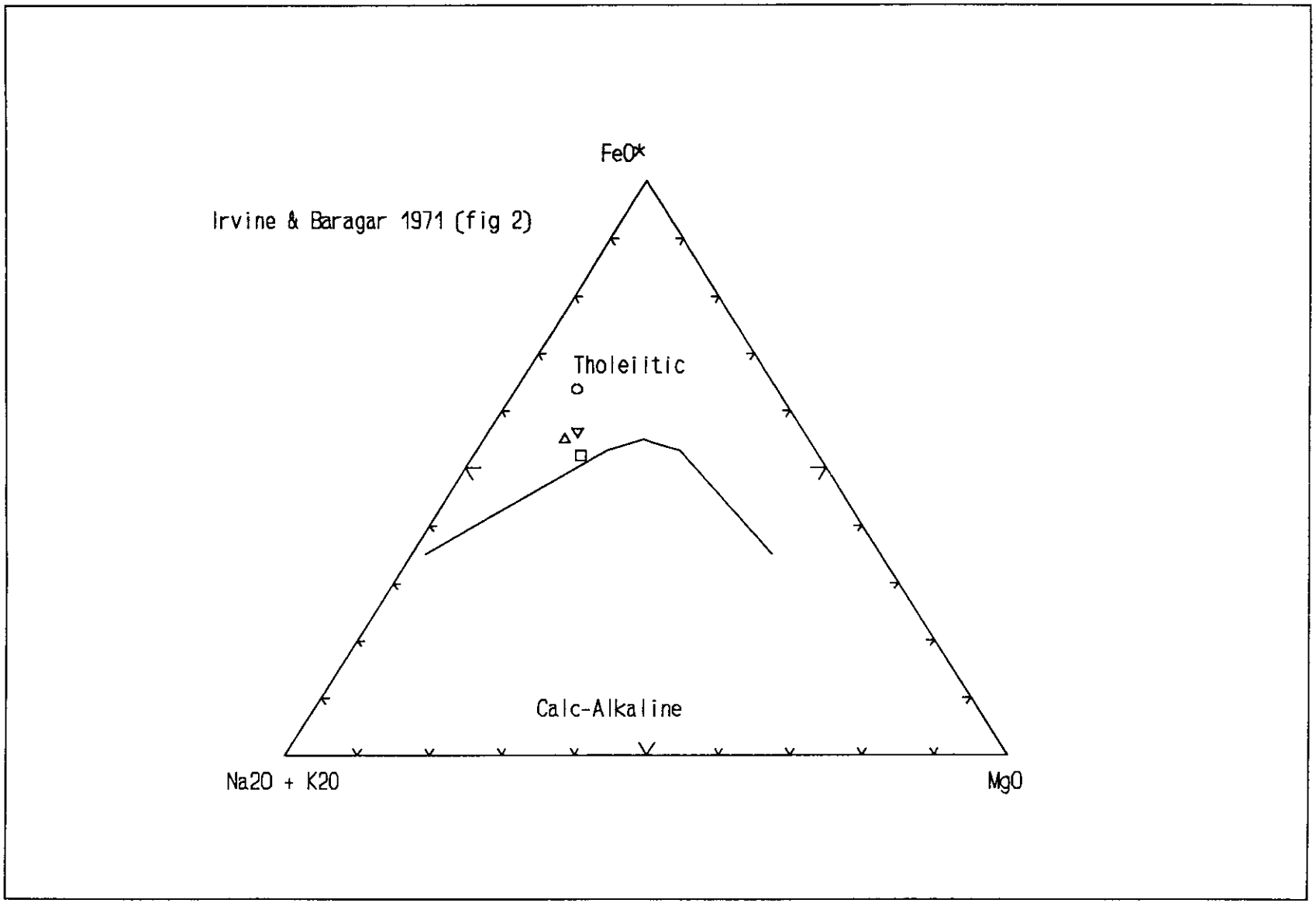


Figure 1: Irvine and Baragar plot for reconnaissance samples from ZN claims

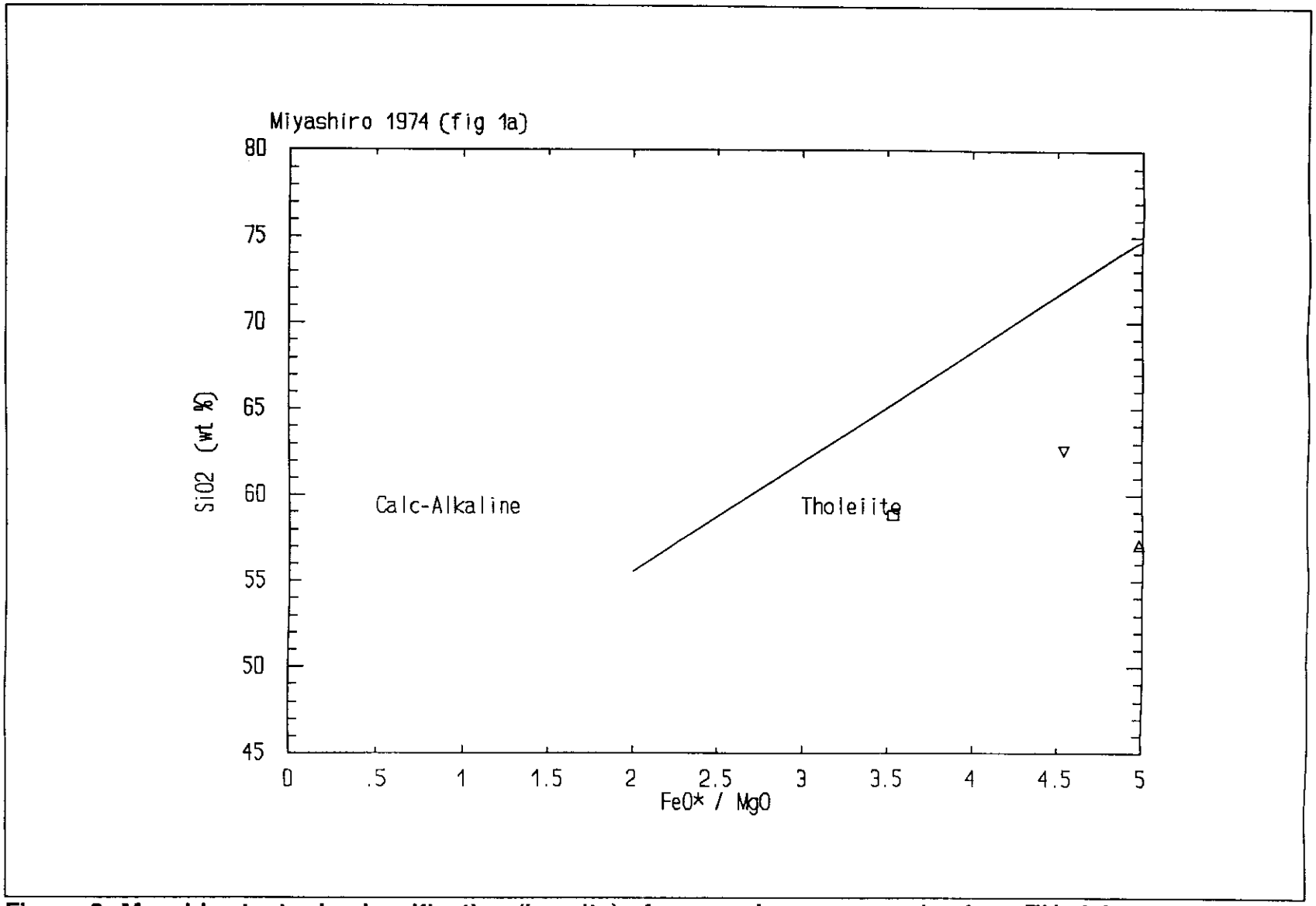


Figure 2: Myashiro tectonic classification (basalts) of reconnaissance samples from ZN claims

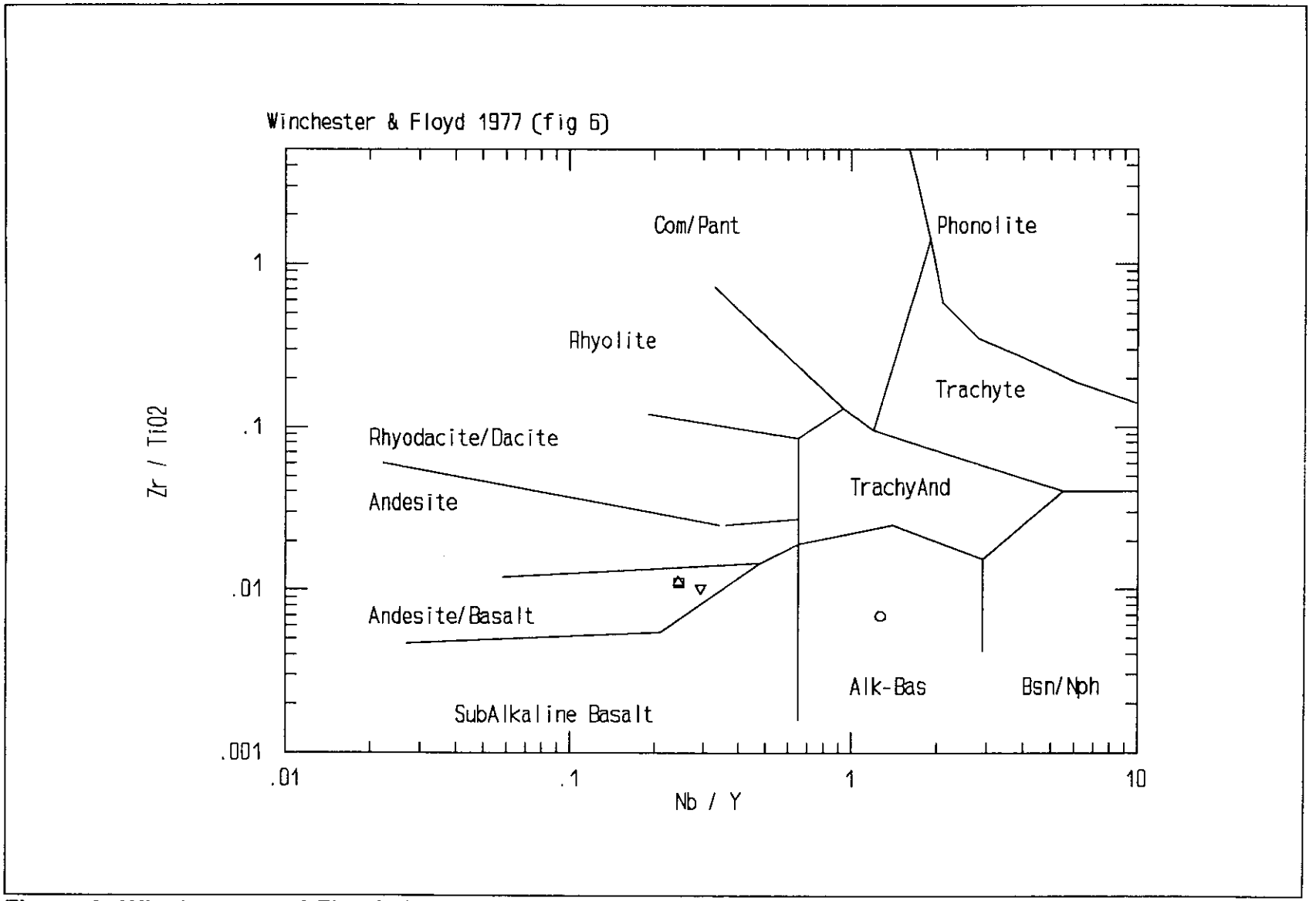


Figure 3: Winchester and Floyd classification diagram for reconnaissance samples from the ZN claims

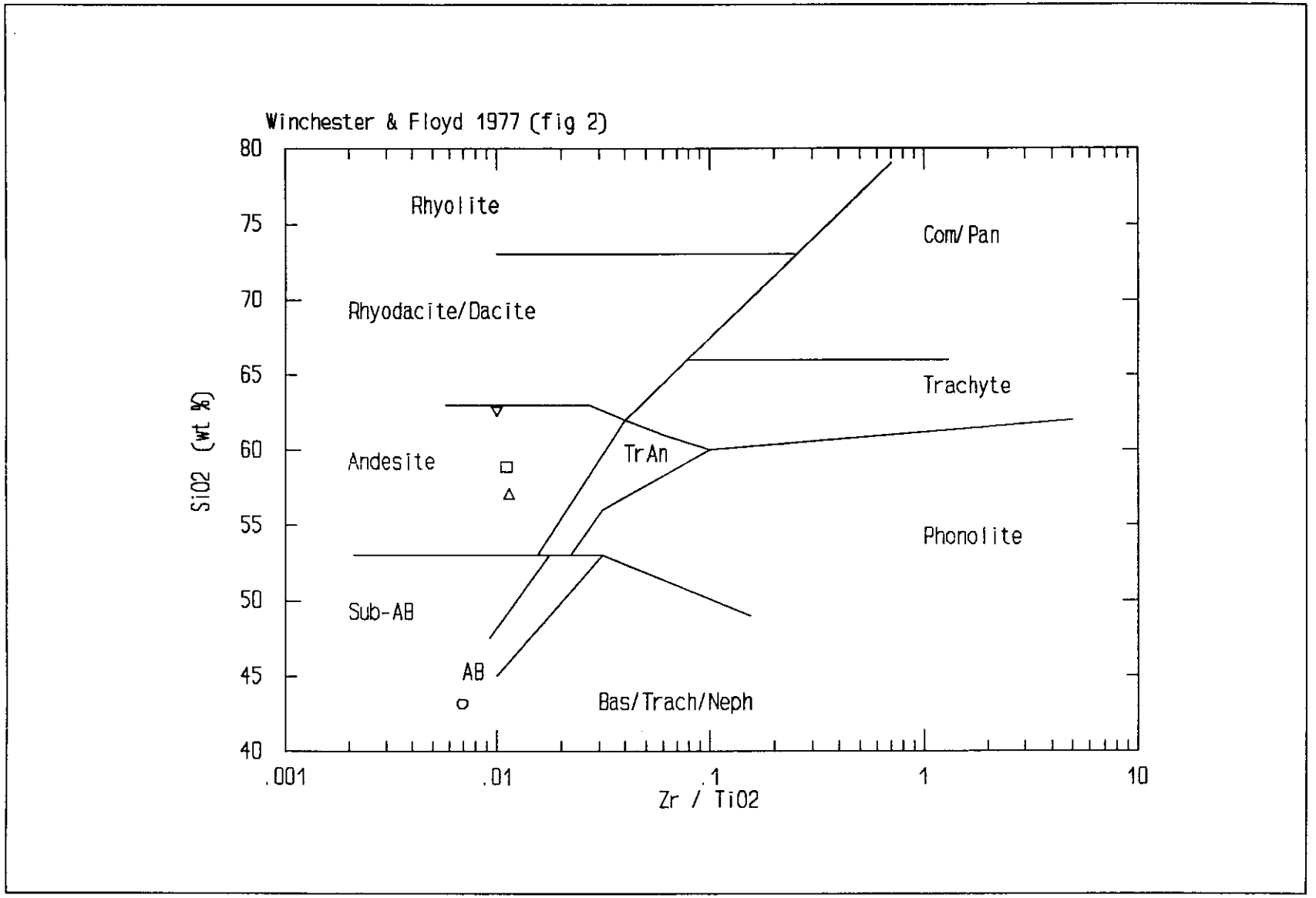


Figure 4: Winchester and Floyd classification diagram for reconnaissance samples from the ZN claims

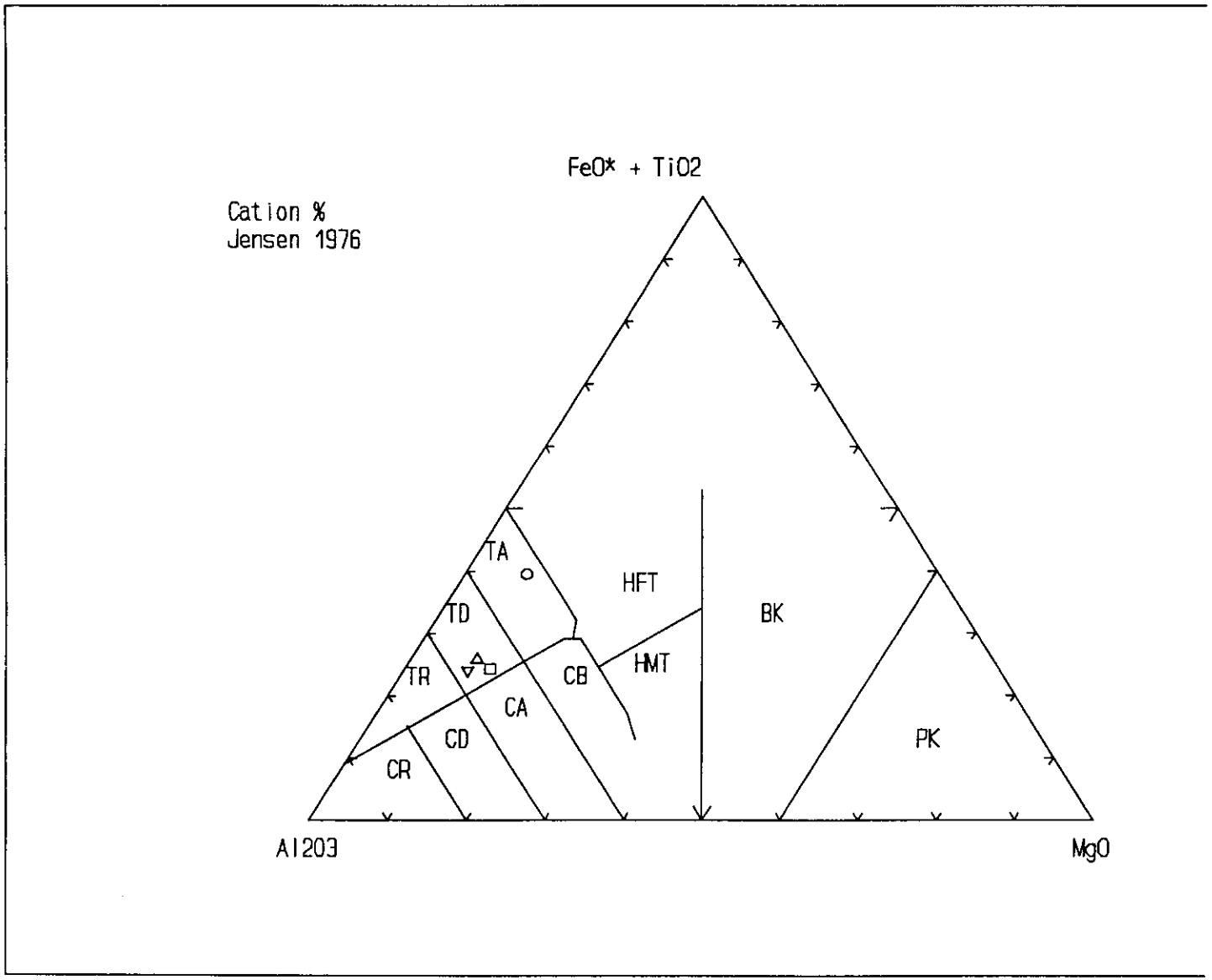


Figure 5: Jensen cation plot for reconnaissance samples from ZN claims

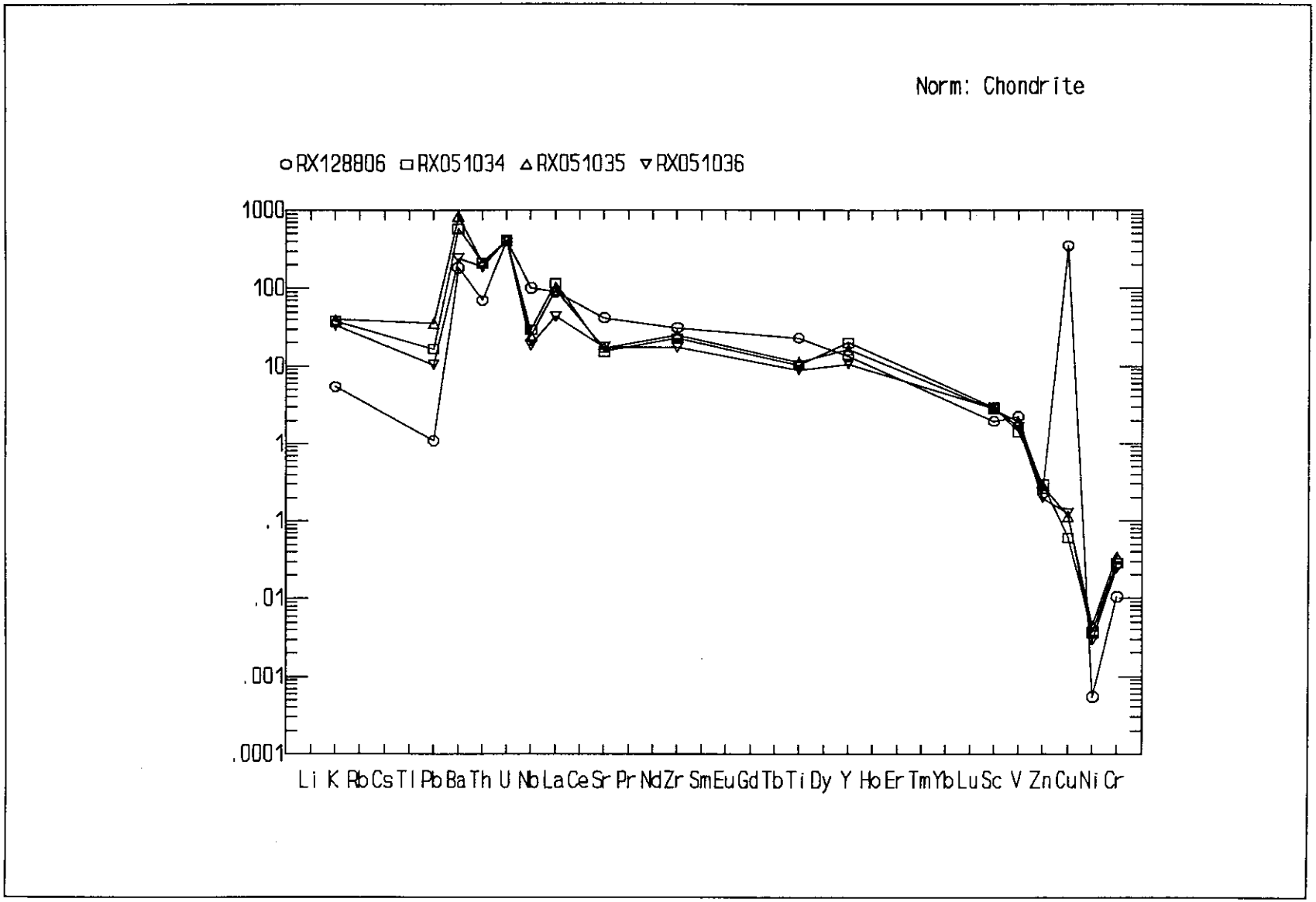


Figure 6: Extended element plot of reconnaissance samples from the ZN claims

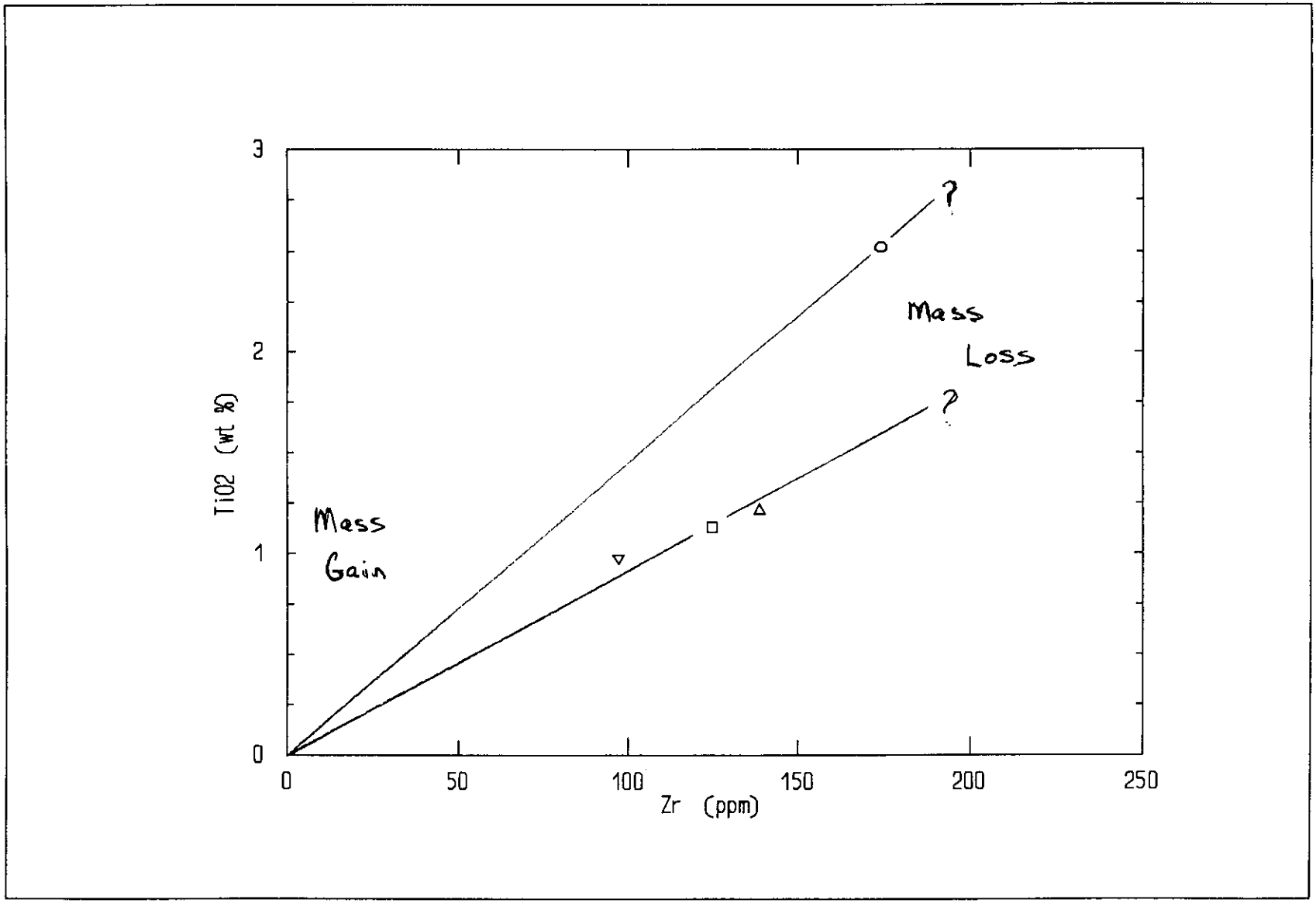


Figure 7: TiO_2-Zr plot for reconnaissance samples from the ZN claims

LINE500N | LINE400N | LINE300N | LINE 200N | LINE 100N | LINE 00 | LINE 100S | LINE 200S | LINE 300S | LINE 400S | LINE 500S | LINE 600S | LINE 700S | LINE 800S

750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0 BASE LINE
50
100
150
200
250
300
350
400
450
500

EAST
METRES
WEST

LINE 100N: 169 | 300 | 160 | 184 | 147 | 145 | 310 | 135 | 145 | 171 | 178 | 111 | 200 | 157 | 220 | 109 | 210 | 250 | 220 | 178 | 200 | 126 | 135

LINE 00: 210 | 220 | 330 | 179 | 178 | 164 | 195 | 132 | 164 | 151 | 131 | 81 | 84 | 122 | 77 | 260 | 126 | 131 | 98 | 121 | 156 | 187 | 100 | [410] | [103] | [95] | [66]

LINE 100S: 770 | 680 | 600 | 460 | 530 | 250 [360] | 440 | 410 | 320 | 210 [195] | 320 | 200 | 280 [250] | 230 | 200 [210] | 153 | 174 [240] | 175 | 210 | 250 | 240 | 191 | 130 [200] | 124 | 195 | 199 | 99 | [191] | 210 | 180 | [191] | 180 | 159 | 120 | 170 | 210 | 124 | 97 | [53]

LINE 200S: 1900(OC) | 125 | 330 | 440 | 194 | 260 | 360 | 177 | 280 | 165 | 300 | 480 | 380 | 860 | 580 | 480 | 280 | 290(OC) | 300 | 240 | 120 | 196 | 151 | 172 | 170 | 188 | 167 | 290 | 260 | 177 | 210 | 164 | 95 | 118 | 139 | [69]

LINE 300S: 141 | 157 | 143 | 290 | 153 | 240 | 240 | 161 | 230 | 220 | 220 | 230 | 340 | 240 | 200 | 250 | 330 | 290 | 310 | 520 | 470 | 300 | 280 | 450 | 630 | 630 | 198 | 240 | 320 | 230 | 122 | 141 | 240 | 290 | 260 | 147 | 155 | 135 | 470 | 171 | 187 | 191 | 186 | 135 | [173]

LINE 400S: 210 | 128 | 121 | 135 | 169 | 158 (147) | 210 | 70 (176) | 200 | 230 (224) | 250 | 180 (166) | 171 | 154 | 162 | 183 (160) | 230 | 250 (171) | 160 | 154 | 125[147]

LINE 500S: 162 | 260 | 137 | 153 | 153 (106) | 230 | 170 (168) | 210 | 230 (144) | 138 | 206 (187) | 220 | 230 (159) | 177 | 119 | 162 | 159 (136) | 162 | 280 (257) | 183 | 151 | 153 | 126

LINE 600S: 58 | 160 (51) | 52 (37) | 71 (46) | 38 (38) | 51 | 111 (32) | 17 | 110 (43) | 37 | 54 (41) | 60 | 100 | 168 | 150 (144) | 270 | 410 (264) | 340 | 290 | 320 | 210 | 210 | 200

LINE 700S: 210 | 260 | 82 | 280 | 200 | 192 | 230 (286) | 194 | 230 (204) | 260 | 280 (273) | 360 | 390 (386) | 410 | 450 (381) | 170 | 400 (352) | 350 | 340 (331) | 390 | 360 (344) | 360 | 240 (225) | 290 | 220 (290) | 320 | 240 (288) | 270 | 240 (251) | 189 | 158 | 192 (264) | (291)

LINE 800S: 570 | 590 | 500 | 440 | 430 | 400 | 420 | 280 | 480 | 330 | 380 | 157 | 430 | 260 | 440 | 250 | 300 | 430 | 450 | 520 | 400 | 360 | 400 | 430 | 470 | 280 | 290 | 390 | 340 | 320

1992 SOIL SAMPLING PROGRAM

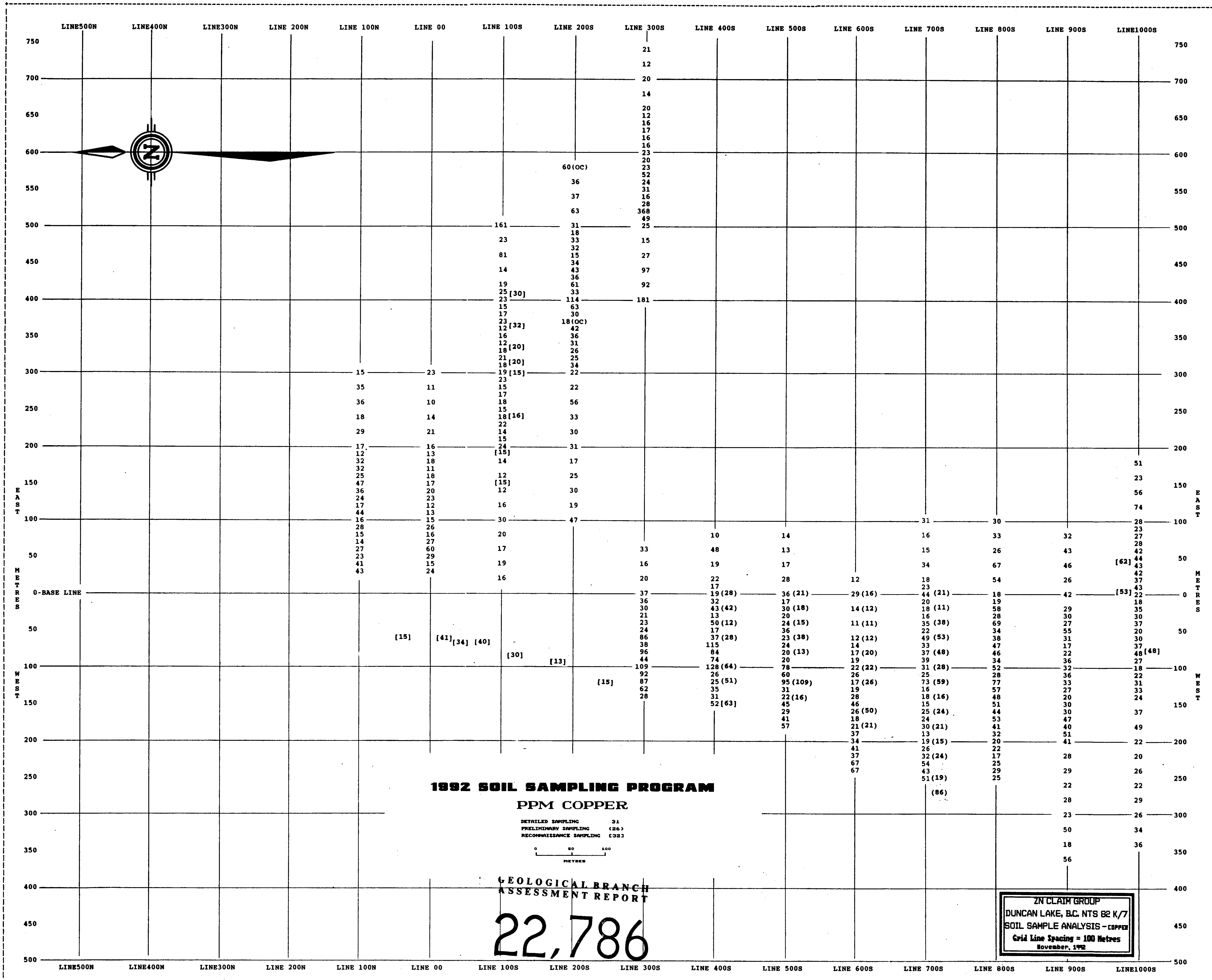
PPM ZINC

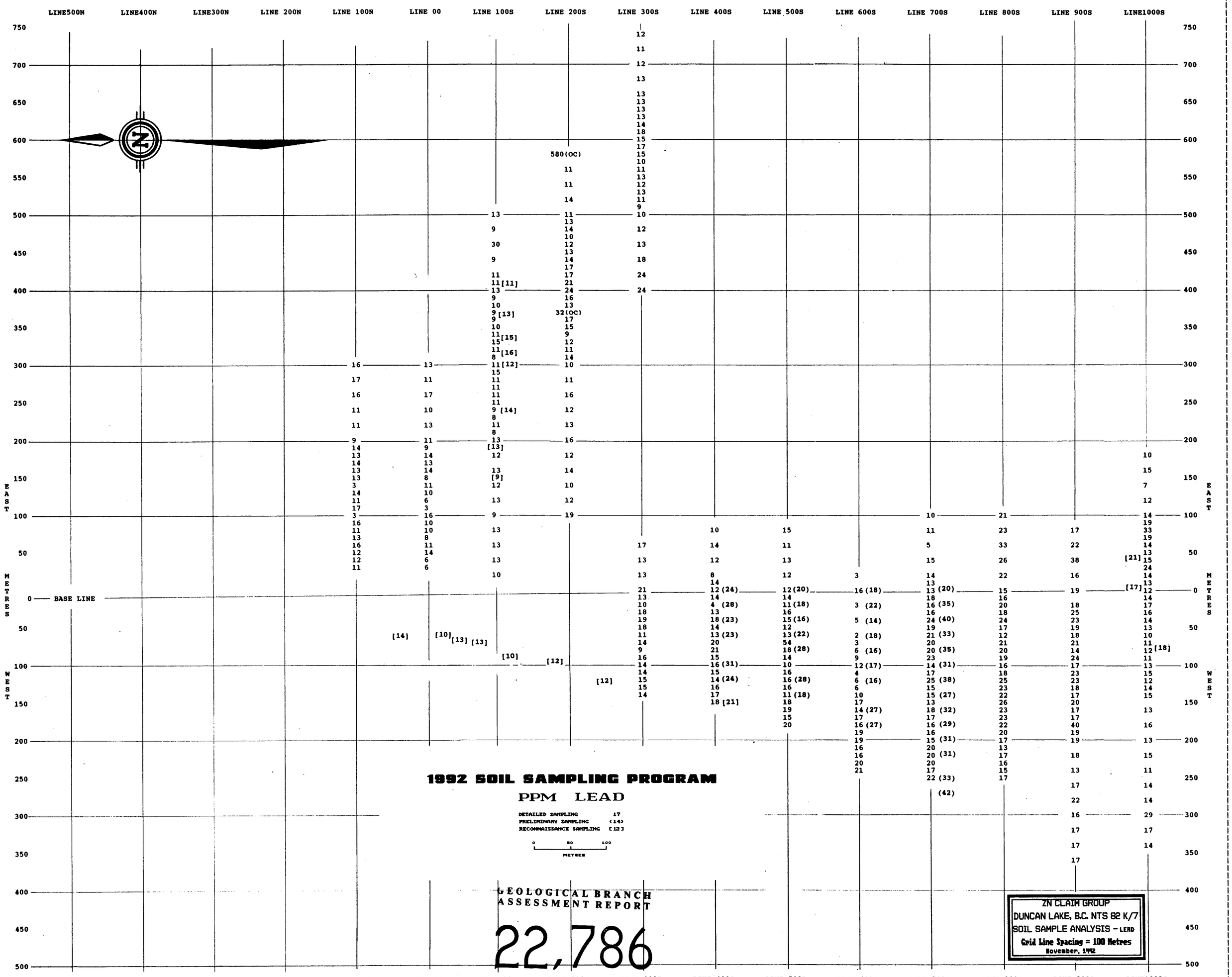
DETAILED SAMPLING 260
PRELIMINARY SAMPLING (162)
RECONNAISSANCE SAMPLING [210]

0 50 100
METRES

ZN C
DUNCAN LA
SOIL SAMPL
Grid Line
Above

LINE500N | LINE400N | LINE300N | LINE 200N | LINE 100N | LINE 00 | LINE 100S | LINE 200S | LINE 300S | LINE 400S | LINE 500S | LINE 600S | LINE 700S | LINE 800S | LINE


1992 SOIL SAMPLING PROGRAM
PPM COPPER
DETAILED SAMPLING 31
PRELIMINARY SAMPLING (26)
RECONNAISSANCE SAMPLING [32]
0 50 100
METRES
GEOLOGICAL BRANCH
ASSESSMENT REPORT
22,786
ZN CLAIM GROUP
DUNCAN LAKE, B.C. NTS 82 K/7
SOIL SAMPLE ANALYSIS - COPPER
Grid Line Spacing = 100 Metres
November, 1992
LINE500N
LINE400N
LINE300N
LINE 200N
LINE 100N
LINE 00
LINE 100S
LINE 200S
LINE 300S
LINE 400S
LINE 500S
LINE 600S
LINE 700S
LINE 800S
LINE 900S
LINE1000S
0-BASE LINE
EAST
METRES
WEST


LINE500N
LINE400N
LINE300N
LINE 200N
LINE 100N
LINE 00
LINE 100S
LINE 200S
LINE 300S
LINE 400S
LINE 500S
LINE 600S
LINE 700S
LINE 800S
LINE 900S
LINE1000S
BASE LINE
EAST
WEST
METRES
1992 SOIL SAMPLING PROGRAM
PPM LEAD
DETAILED SAMPLING 17
PRELIMINARY SAMPLING (14)
RECONNAISSANCE SAMPLING [12]
0 50 100
METRES
GEOLOGICAL BRANCH
ASSESSMENT REPORT
22,786
ZN CLAIM GROUP
DUNCAN LAKE, B.C. NTS 82 K/7
SOIL SAMPLE ANALYSIS - LEAD
Grid Line Spacing = 100 Metres
November, 1992