



GEOLOGICAL AND GEOCHEMICAL REPORT

Joni, Keli, Edy, Hose, Jeri, Sin, Ott, Tomi,  
Ralfo, Mumbo, Chungo and Boz Claims

Claim Sheet 95 D/6

Latitude  $60^{\circ} 23'$

Longitude  $127^{\circ} 20'$

Yukon Territory

Covering work completed during May 20 - July 25, 1983

By D.C. Miller

Submitted July 25, 1983

091471

SULPETRO MINERALS LIMITED

Kamloops, B.C.

This report has been prepared by  
the Geological Survey of Canada  
under the supervision of Mr. J. H. Stewart  
and Mr. J. H. Stewart, Director of the  
Department of Mines, Ottawa, Ontario  
of \$ 14,000 —

*J. H. Stewart*  
Regional Director, Exploration and  
Geological Services for Commissioner  
of Yukon Territory.

1914

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## LOCATION AND ACCESS

The claims are located 80 km eastward of Watson Lake, Yukon. Access is by helicopter or some 40 km of winter road leading from the Alaska Highway at Contact Creek.

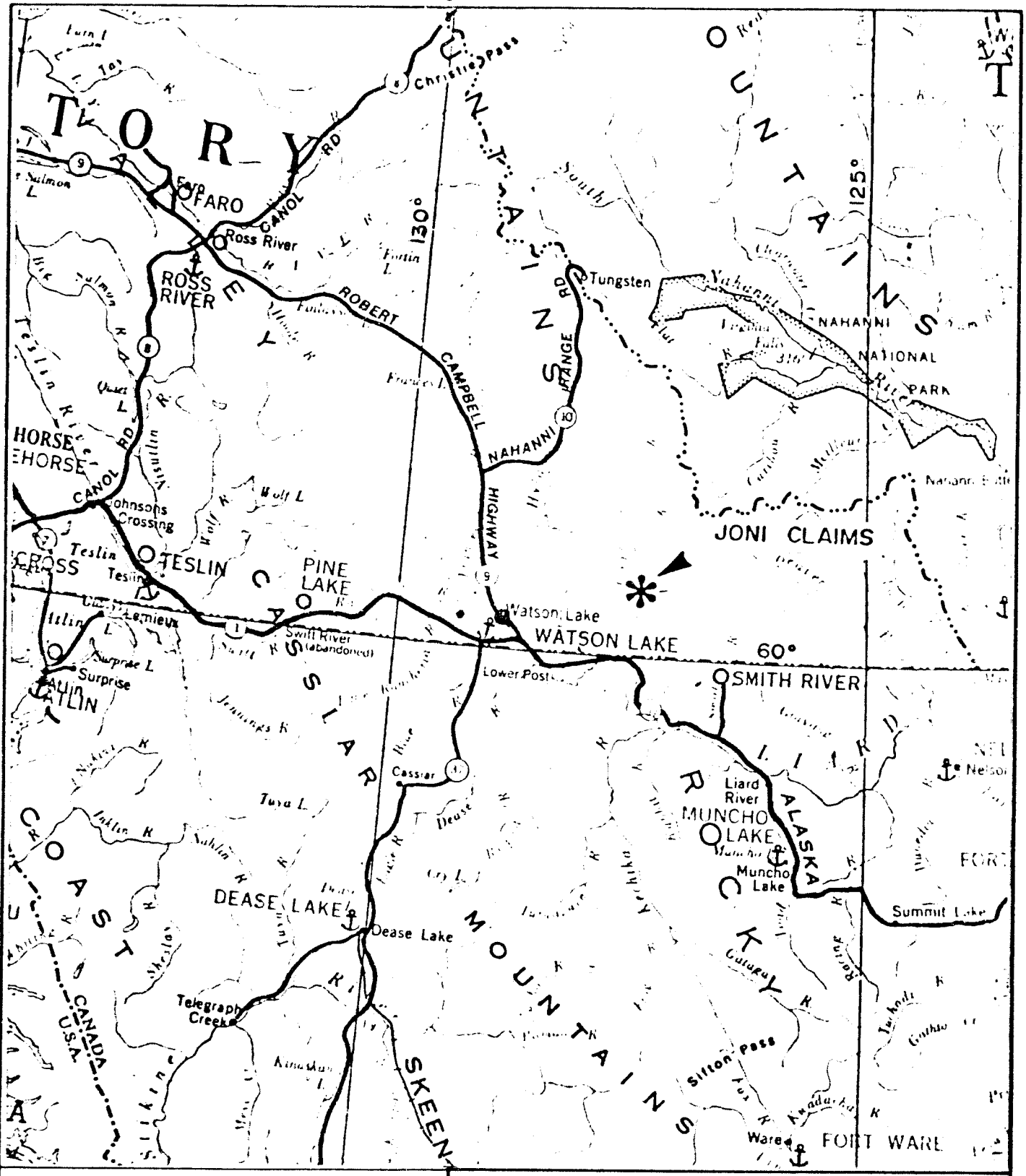
## PHYSIOGRAPHY

The claims are drained by Otter Creek and its tributaries. Topography is mountainous with relief in the order of 300 m. Some 50% of the claim block (western portion) was burned by a forest fire in July, 1982. The remainder was burned about 1947. The recent fire also destroyed the log cabins and core stored at the adjoining Mel property.

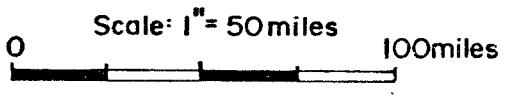
## PROPERTY

The property includes the following adjoining claims:

<u>Claim Name</u>	<u>Grant No.</u>	<u>Anniversary Date</u>
Keli 1 - 4	YA 66842-45	August 10
Joni 1 - 8	YA 66846-53	August 10
Hose 1 - 8	YA 66919-26	August 24
Keli 5 - 8	YA 66927-30	August 24
Jeri 1 - 8	YA 66931-38	August 24
Ralfo 1 - 7	YA 66939-45	August 24
Chungo 1 - 8	YA 66946-53	August 24
Ott 1 - 8	YA 66954-61	August 24
Edy 1 - 7	YA 66962-68	August 24
Tomi 1 - 8	YA 66969-76	August 24
Mumbo 1 - 8	YA 66977-84	August 24
Boz 1 - 4	YA 66985-88	August 24
Sin 1 - 8	YA 66989-96	August 24
Yang 1 - 6	YA 66997-YA 67002	August 24
TOTAL	96 claims	

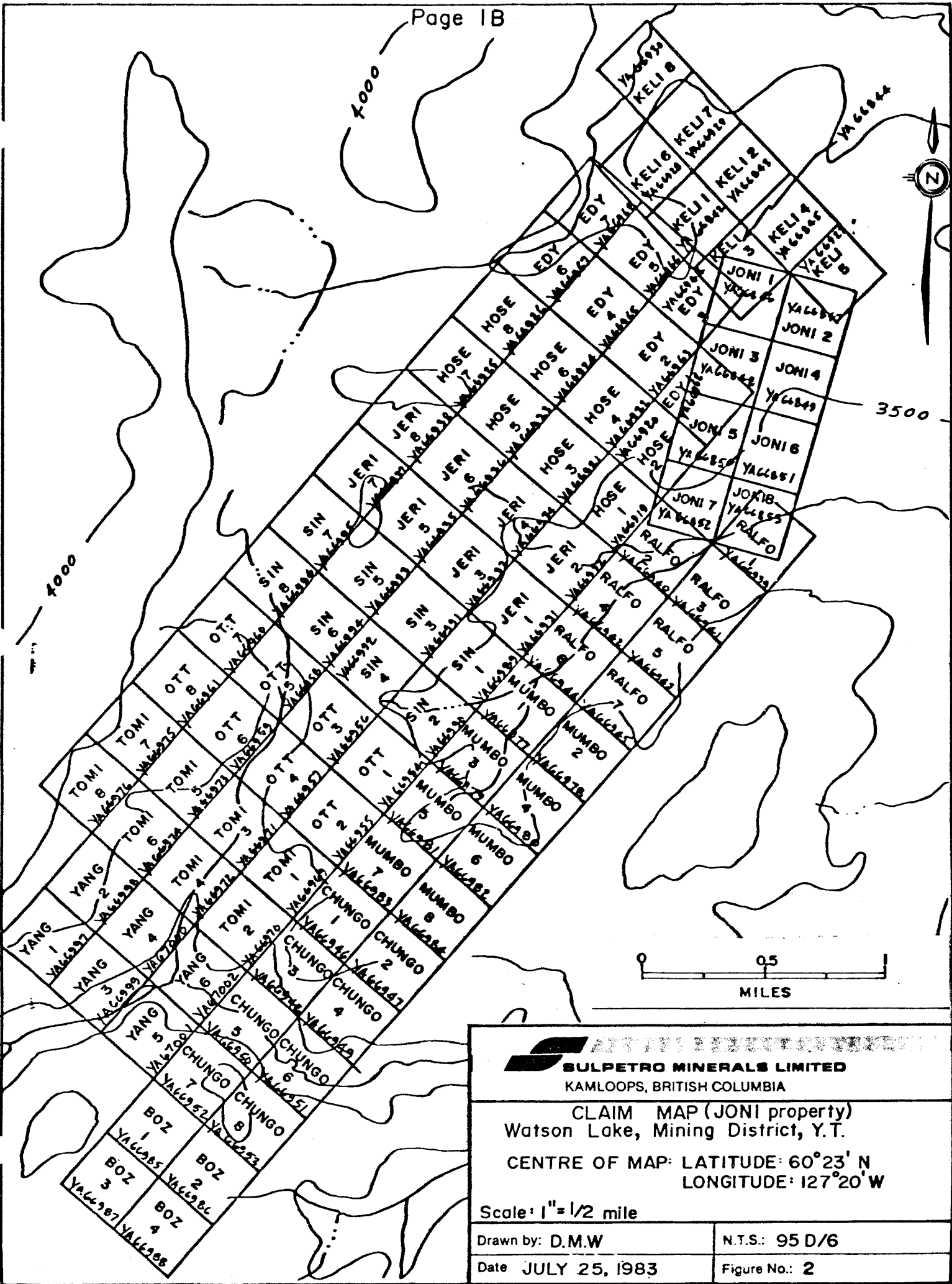


**SULPETRO MINERALS LIMITED**  
KAMLOOPS, BRITISH COLUMBIA



**JONI CLAIMS  
LOCATION MAP**

Project no. 6251	
Drawn by: D.M.W.	N.T.S.: 95 D/6
Date: JULY 25, 1983	Figure No.: 1



**SULPETRO MINERALS LIMITED**  
 KAMLOOPS, BRITISH COLUMBIA

CLAIM MAP (JONI property)  
 Watson Lake, Mining District, Y.T.

CENTRE OF MAP: LATITUDE: 60°23' N  
 LONGITUDE: 127°20' W

Scale: 1" = 1/2 mile

Drawn by: D.M.W	N.T.S.: 95 D/6
Date: JULY 25, 1983	Figure No.: 2

## HISTORY

In 1981, during regional silt follow-up, smithsonite mineralization was discovered at the top of a cryptograined limestone unit at the contact with the wavy banded limestone unit. This is apparently at the same stratigraphic position as the Mel deposit some 7 km to the southwest. Three grab samples from three separate small outcrops averaged 9.6% zinc, less than 0.1% lead, 0.03 oz/ton silver and 0.03% barium. The new zone was called the Mel-East or Joni.

In 1982 a soil sampling program indicated anomalous zinc values along the favourable contact for several hundred metres.

## SUMMARY OF CURRENT WORK

In June, 1983, the Mel-East soil grid was extended to the south, tied into drainages, and additional soil and silt sampling was done to the southwest on the Ralfo and Mumbo claims. Previous high zinc silt values were obtained in this area during regional prospecting in 1978. The claim location line was used as a baseline and six crosslines, spaced 450 m apart, were claimed, flagged and sampled at 25 m intervals. Four crosslines, spaced 100 m apart, were added to the south part of the Joni grid and soil samples were collected at 20 m intervals along these lines.

Orientation of lines was by compass. The baseline was extended using a nylon chain and crosslines were measured by topofil distance meters. Total length of lines measured and flagged was 5890 m.

A total of 228 soils, 10 silts, and 10 rock samples were collected and analyzed by the atomic absorption method for zinc, lead and silver by Kamloops Research and Assay Laboratory, Kamloops, B.C.

Geochemical results are shown on accompanying sheets 1 and 2 in pocket.

In addition to geochemical work, geological mapping was conducted along all grid lines and results are shown on accompanying sheets 3 and 4.

GEOLOGY

INTRODUCTION

Sufficient outcrops were found on the Mel-East grid to trace the favourable contact through the claims. Fossils, believed to be ribbed brachiopods, were found in the cryptograined limestone unit at the baseline at station 92 north. Hopefully, these fossils can be dated.

On the Ralfo and Mumbo claims, dolomite and limestone, thought to correlate with the Ordovician Sunblood Formation, were found in a number of small outcrops. Block faulting is necessary to accomodate these rocks in their present position.

Four mile geological mapping of the area is reported in Geological Survey of Canada Paper 68-38. Property units described in the following table are correlated with GSC map units.

TABLE OF FORMATIONS

Period	GSC Map Unit	Property Map Unit	Lithology	Thickness Metres
Middle Ordovician	9	7	Dark and light grey dolomite, minor limestone	600 +
Cambrian and Ordovician	8	6	Dark grey wavy banded limestone	800 +
	8	5	Calcareous phyllite	?
Lower Cambrian		4	Smithsonite, silicified dolomite	4m +
	5	3	White-grey cryptograined limestone and dolomite	150 +
	-	3a 3b	Dolomite Silicified dolomite	

## STRATIGRAPHY

### Unit 3b

Unit 3b is an alteration zone consisting of silicified dolomite some 10 m + thick located just below smithsonite mineralization. This zone does not extend much beyond the mineralized area.

### Unit 3a

Unit 3a is dolomite alteration within Unit 3 and appears to be mainly restricted to the mineralized area.

### Unit 3 - (G.S.C. Unit 5)

Unit 3 consists of white to grey cryptograined and fine grained limestone. The unit resembles limestone to the west at Mel but does not contain the brown mudstone layers common at Mel. The base of this limestone is not defined. Ribbed brachiopod fossils found in 1983 may help verify the age of this limestone. Pale brown carbonate is common filling fractures and small vugs.

### Unit 4

Unit 4 comprises smithsonite and silica mineralization at the top of Unit 3. The zone is poorly exposed over a strike length of 170 m. The thickness is 4m +.

### Unit 5 (G.S.C. Unit 8 Rabbit Kettle Formation)

Unit 5 comprises brown and grey calcareous phyllite and the base of Unit 6. At Mel-East it is thin or absent and is included with Unit 6.

### Unit 6 (G.S.C. Unit 8 Rabbit Kettle Formation)

Unit 6 comprises wavy banded silty limestone and is gradational with Unit 5. This unit has a distinctive appearance with grey limestone and anastomosing silty layers.

Unit 7 (G.S.C. Unit 9 ? - Sunblood Formation)

Unit 7 consists of light to dark grey, grey weathered dolomite with minor medium grey limestone. Some chert modules are present locally.

STRUCTURE

Beds on the Joni claims strike nearly north and dip 30 - 50° westward. The trace of the favourable contact is partly controlled by topography. This contact is marked by a recessive alder covered gully at the top of Unit 3 near mineralization. Bedding is readily measured in the wavy banded limestone but is rarely obvious in massive limestone and dolomite of Unit 3. East of the Joni and Ralfo claims, crypto-grained limestone is faulted downwards and covered by wavy banded limestone.

On the Ralfo and Mumbo claims, light grey dolomite and medium grey limestone are exposed in a number of small outcrops. No good bedding attitudes were observed. The limestone apparently overlies the dolomite and both are apparently in fault contact with the wavy banded limestone.

MINERALIZATION AND ALTERATION

A total of 10 rock samples, each about 5 pounds were chipped from mineralization on the Joni claims. The following table summarizes results:

Sample No.	Assay % Zn	PPM Pb	PPM Ag	Approx. True Width Metres	Grid Location
83 - 1	4.65	24	0.7	1.2	100 N, 99 + 98 E
83 - 2	4.70	32	0.6	1.2	100 + 2N, 99 + 98 E
83 - 3	0.18	17	0.5	1.0	100 N, 99 + 93 E
83 - 4	5.38	15	0.4	1.7	99 + 98 N, 99 + 99E
83 - 5	0.26	110	0.4	1.7	99 + 95N, 100 E
83 - 6	0.90	24	0.8	1.7	101 + 50N, 99 + 97 E
83 - 7	0.74	25	1.0	1.7	101 + 50N, 99 + 94 E
83 - 9	0.05	27	0.9	1.2	101 + 52N, 99 + 98 E
83 - 10	0.47	32	1.0	1.7	101 + 48N, 99 + 97 E
83 - 11	0.08	9	0.4	1.2	101 + 12N, 99 + 88 E

Mineralization consists of intensely silicified rock containing brown smithsonite pseudomorphs of sphalerite to 2 cm but commonly much smaller grains to less than 1 mm. Smithsonite also occurs along fractures and as coatings on surfaces. Weathering is dark reddish brown to rusty with minor black manganese ? weathering. Matrix material is mainly medium grey silica, commonly leached and pitted where mineralization has been removed. Some crystalline quartz crystals in small vugs are present locally.

An attempt was made to expose more mineralization by digging with hand tools near mineralized outcrops. Overburden proved to be too deep to make such trenching feasible.

Immediately below mineralization, limestone is intensely silicified and dolomitized over 10 m plus. Below this, variable dolomitization is present. Along strike from mineralization, this alteration gradually decreases over a distance of several metres.

## GEOCHEMISTRY

### ZINC

Zinc soil values range from 16 to 905 ppm. Threshold is estimated at 155 ppm from a cumulative frequency graph (Figure 3) and definitely anomalous values commence at 340 ppm. Anomalous values are indicated on the accompanying map (Sheet 1).

A number of possibly anomalous values occur on the Mel-East grid extension and on the western part of the Ralfo claims.

Two silt samples at line C-125W and line D-275W are strongly anomalous in zinc (902 and 1109 ppm) duplicating 1978 results.

### LEAD

Lead values range from 10 to 912 ppm. From a cumulative frequency graph (Figure 4) the lead threshold is estimated at 78 ppm and definitely anomalous values are those above 136 ppm.

Analysis results and anomalous values are shown on Sheet 2. Again, anomalous results occur on the extension of the Mel-East grid and on Lines B and C west on the Ralfo 2 and 4 claims.

P.P.M. ZINC →

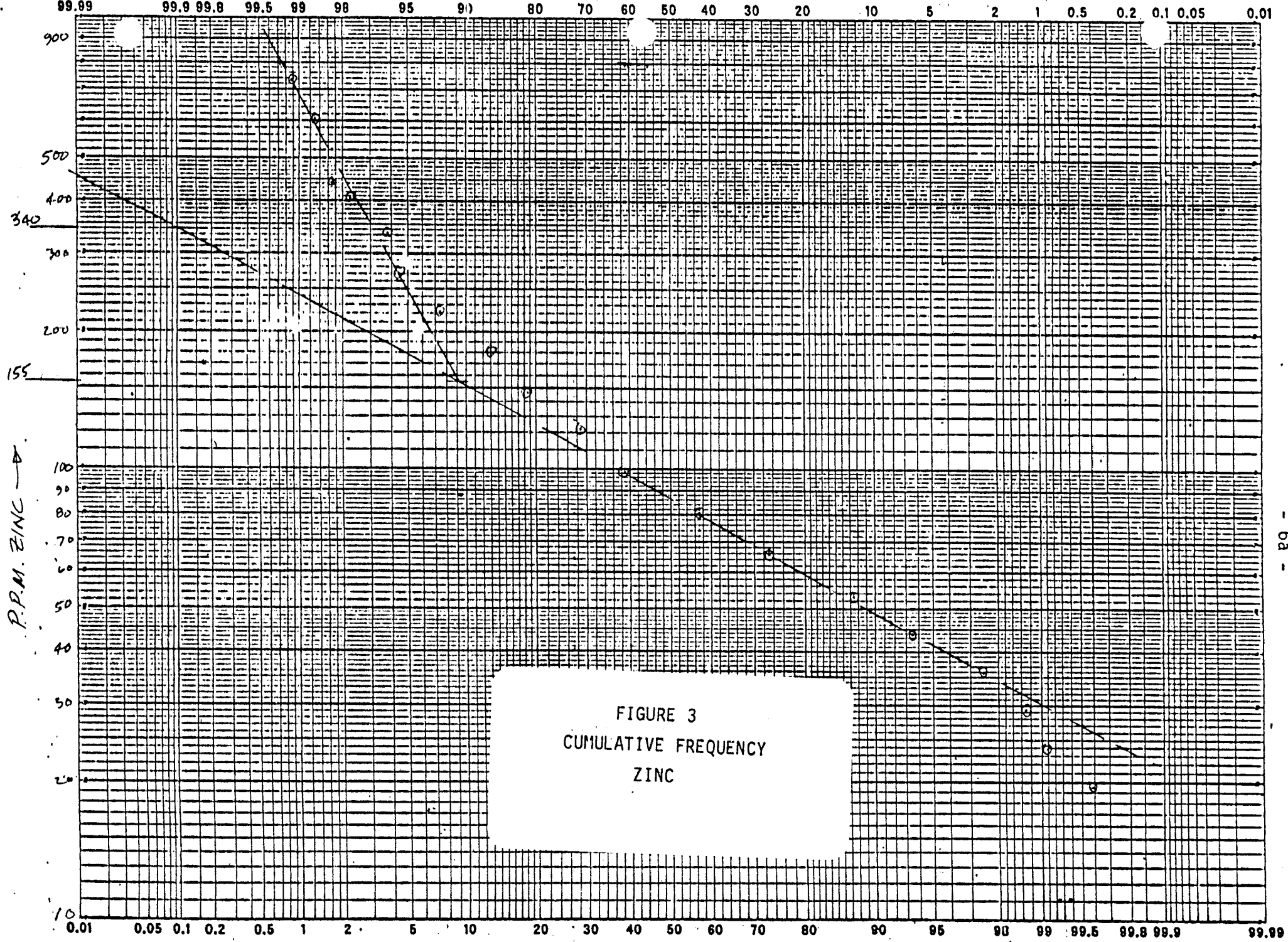


FIGURE 3  
CUMULATIVE FREQUENCY  
ZINC

CUMULATIVE FREQUENCY % →

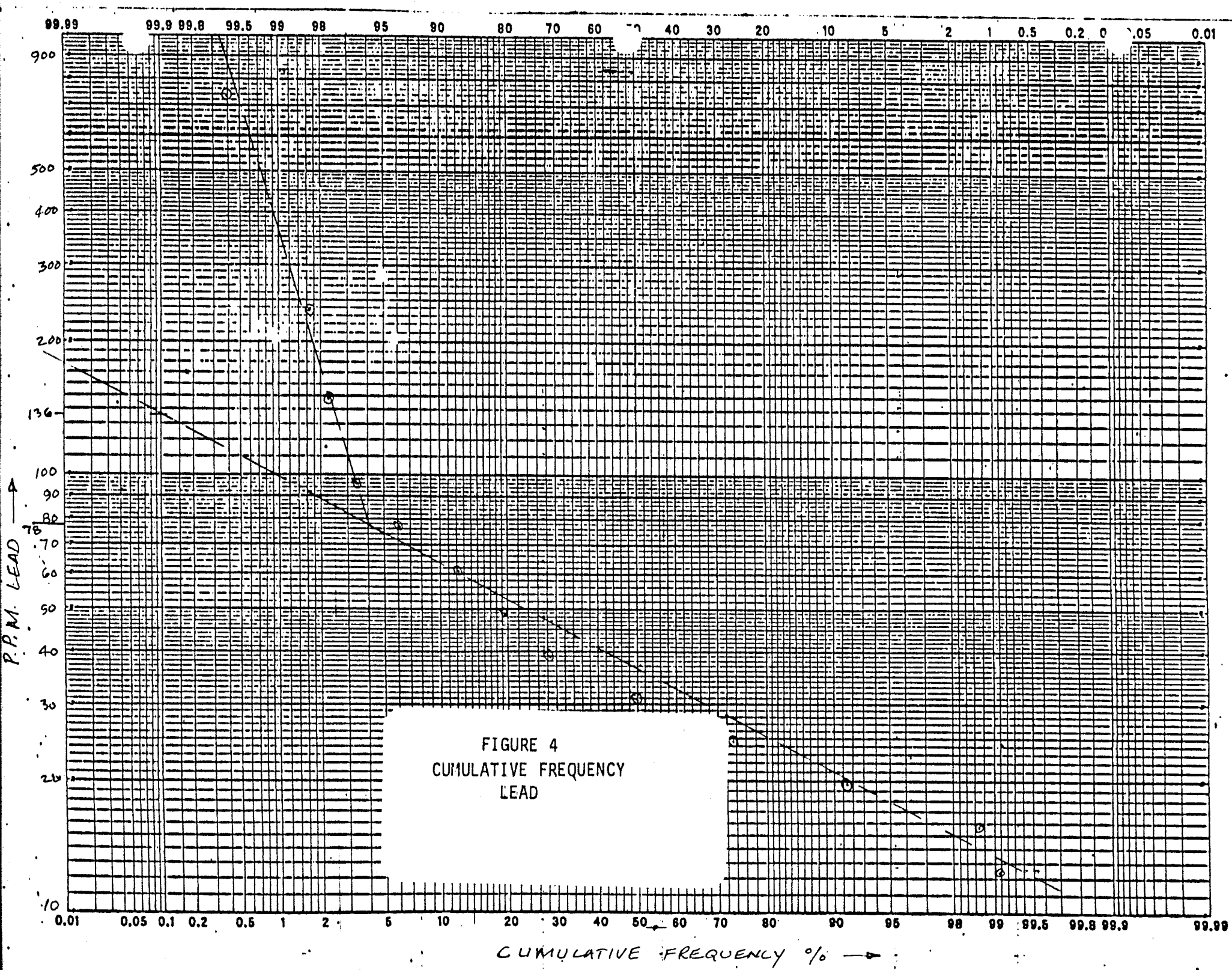


FIGURE 4  
CUMULATIVE FREQUENCY  
LEAD

SILVER

Silver values range from 0.3 to 1.2 ppm and higher values are generally associated with high lead values. Threshold was not estimated for silver as no significant anomalies are present.

CONCLUSIONS AND RECOMMENDATIONS

1. Geologically, the Ralfo and Mumbo claims are more complex than previously realized. A basic synclinal structure is apparently complicated by faulting. Fossils found in the crypto-grained limestone on the Joni 8 claim may help date this unit.

2. Any attempt to hand trench the Mel-East showings should include the use of a plugger and powder to help clear deep overburden. A helicopter site should be cleared at the showings to facilitate work.

Preliminary assays from the Mel-East are misleading as original zinc values have been decreased by oxidation.

3. Anomalous geochemistry extends from the Mel-East southwards 1100 m to a large meadow and deep overburden.

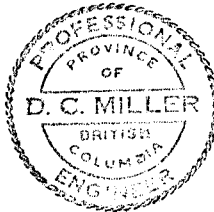
4. Anomalous geochemistry on the Ralfo 2, 4 and 6 claims should be investigated by closer spaced geochemical sampling and geological mapping.

Respectfully submitted,

SULPETRO MINERALS LIMITED

*D.C. Miller*

D.C. Miller, P. Eng.



July 25, 1983

STATEMENT OF QUALIFICATIONS

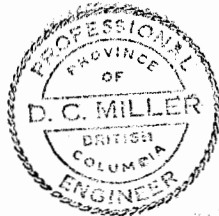
I, David C. Miller, of 1278 Dalhousie Drive, Kamloops, B.C., do hereby certify that:

1. I am a graduate of the University of British Columbia and obtained a B.A. Sc. degree in Geological Engineering in 1959.
2. I have had twenty-four years experience in mining geology and mineral exploration.
3. I am a Registered Professional Engineer in the province of British Columbia.
4. I supervised the work described in this report.

*D.C. Miller*

D.C. Miller,  
P. Eng.

July 25, 1983



LIST OF PERSONNEL, ADDRESSES AND DATES EMPLOYED

1. D.C. Miller

11 - 1278 Dalhousie Drive, Kamloops, B.C., V2C 6G3  
May 20, June 1 - 9, June 15 - 21, June 28 - 30,  
July 4 - 5, July 13 - 16, July 18 - 22, July 25, 1983.

2. N. Taylor

658 Fraser Street, Kamloops, B.C., V2C 3H2  
June 1 - 9, June 15 - 21, June 28 - 30, 1983.

COST STATEMENT - MEL EAST CLAIMS

MAY 20 - JULY 25, 1983

1. WAGES AND SALARIES

51 man days \$ 8,185.00

2. TRANSPORTATION

Frontier Helicopters, Watson Lake  
Tickets 21269, 20197, 21099, 21605 2,526.42

Truck, 1981 G.M.C. Suburban  
4 Wheel Drive, June 1 - 9, June  
15 - 21, June 28 - 30 1,133.00

3. FOOD AND ACCOMODATION

June 2 - 9, June 15 - 21, June 28 - 29  
34 man days 961.75

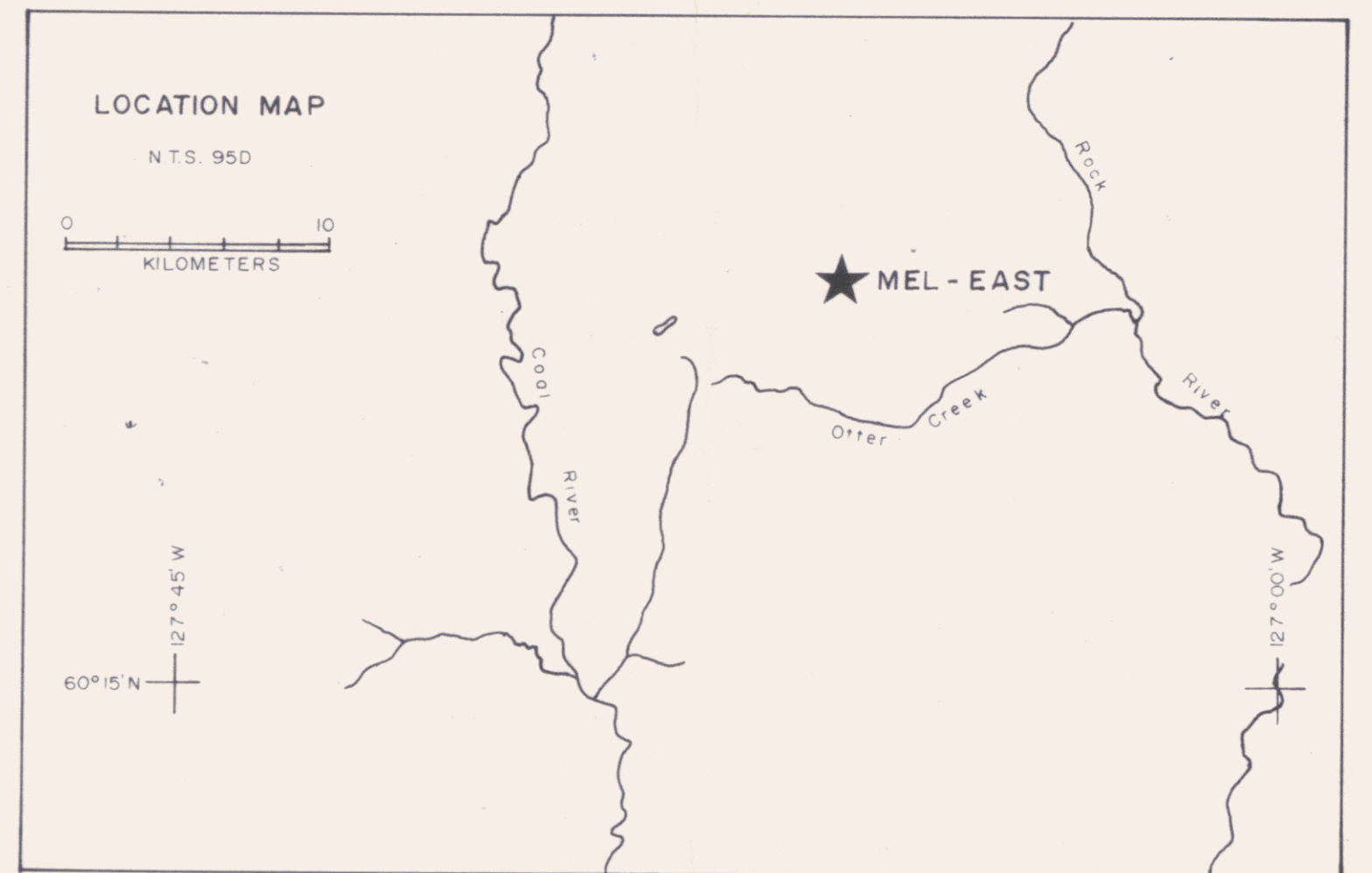
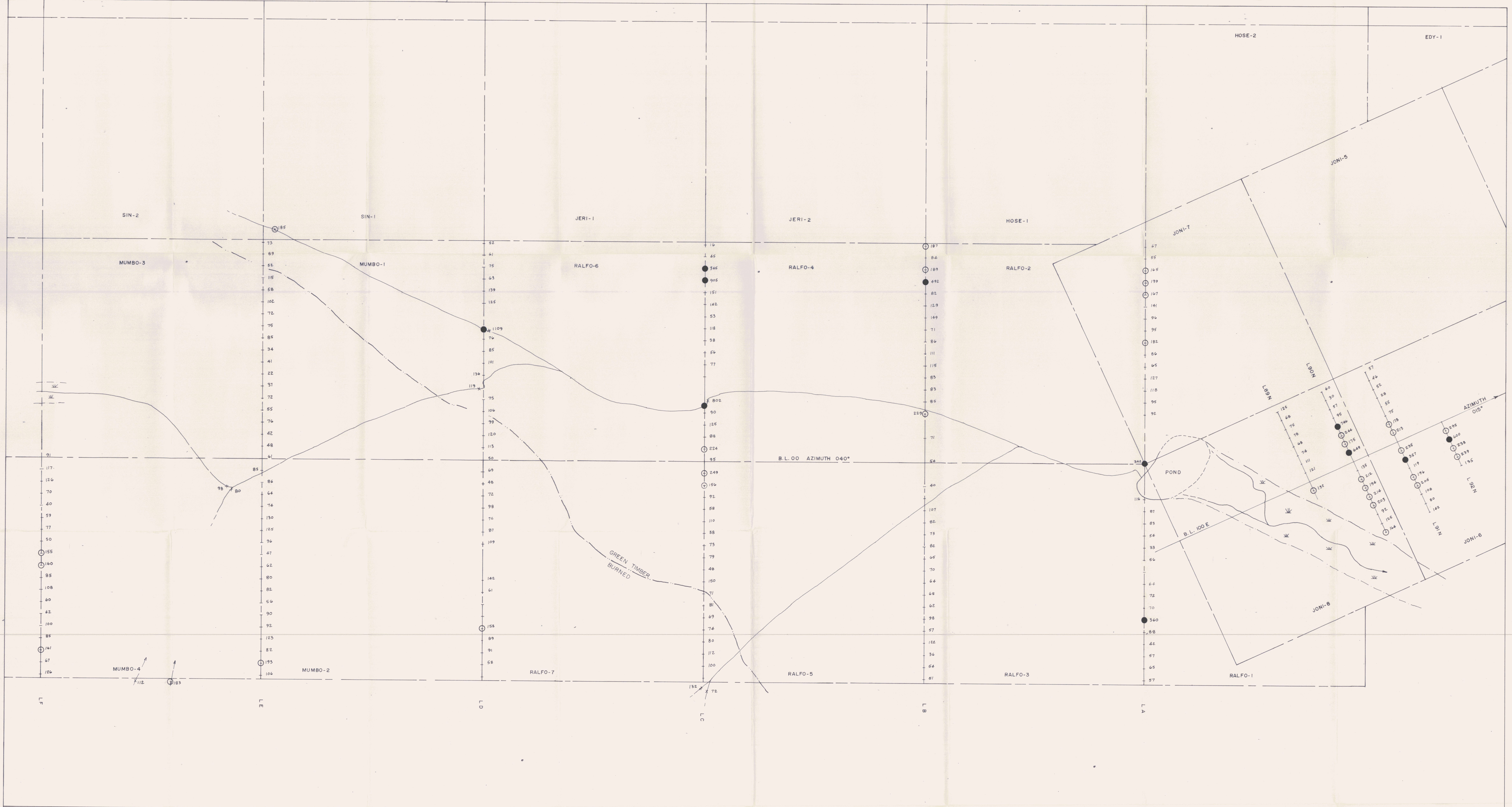
4. ANALYSIS

(Kamloops Research and Assay Laboratory Ltd.)  
238 soils and silts, lead,  
zinc and silver 943.45  
10 rock geochem, lead,  
silver 28.00  
10 assays, zinc 70.00 1,041.45

5. CONSUMABLE FUEL SUPPLIES 50.00

6. TYPING AND PRINTING 150.00

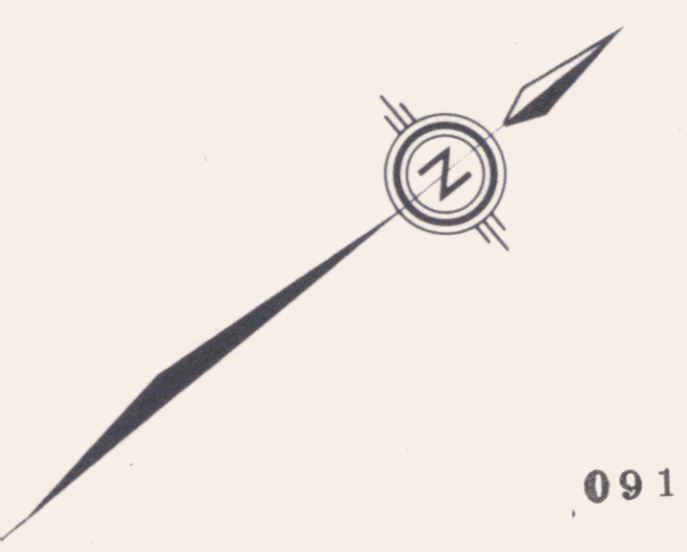
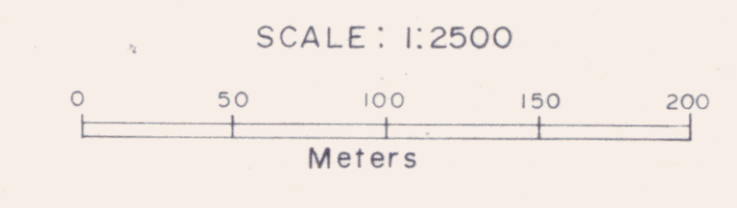
TOTAL \$14,047.62



ZINC

- 155 PPM — THRESHOLD
- 155-340 PPM — POSSIBLY ANOMALOUS ○
- > 340 PPM — DEFINITELY ANOMALOUS ●

- +— GRID STATION & LINE
- SOIL SAMPLE SITE
- SILT SAMPLE SITE
- Meadow / SWAMP
- STREAM
- - - CLAIM BOUNDARY
- - - FOREST FIRE (1982) BOUNDARY



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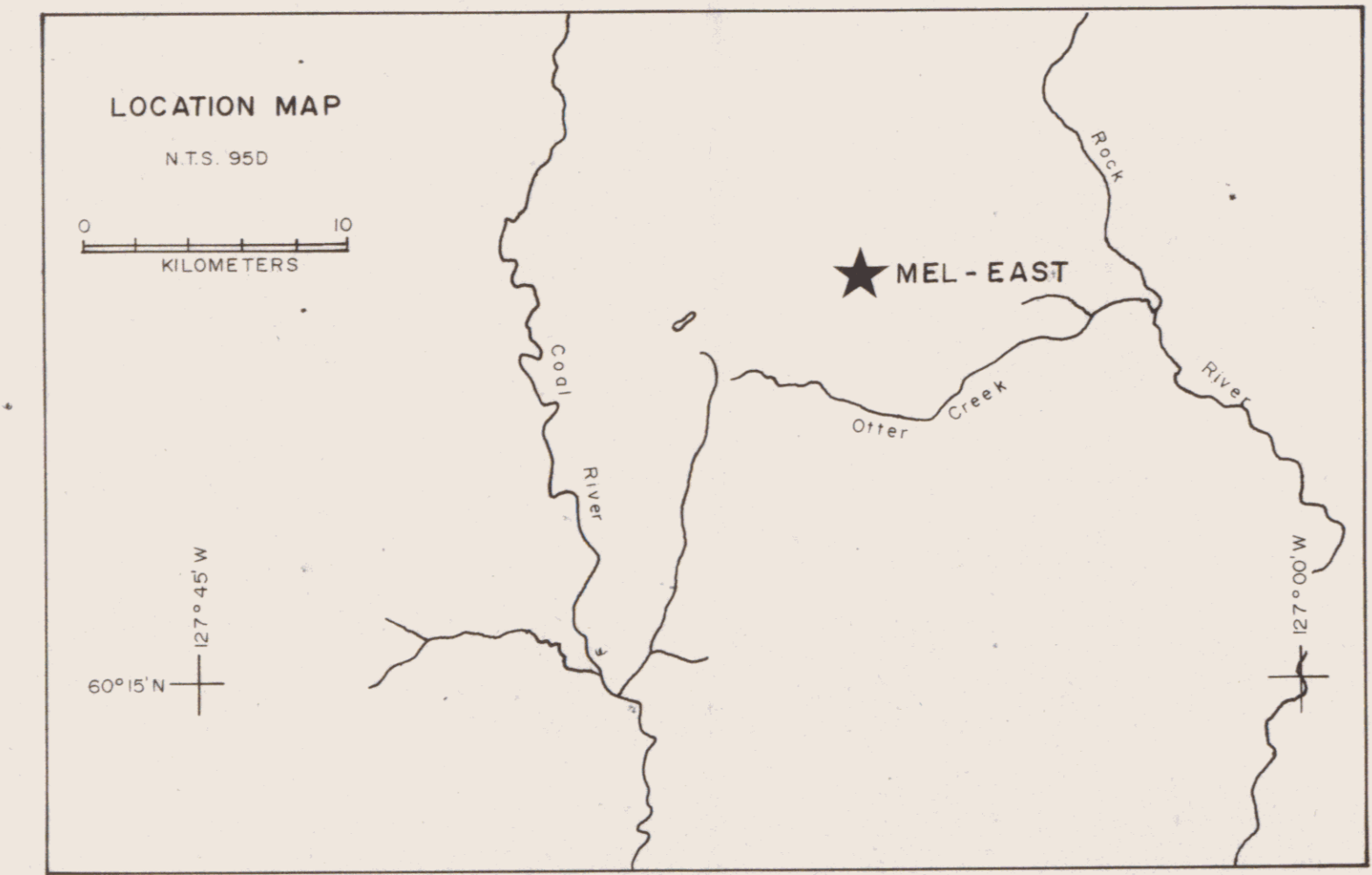
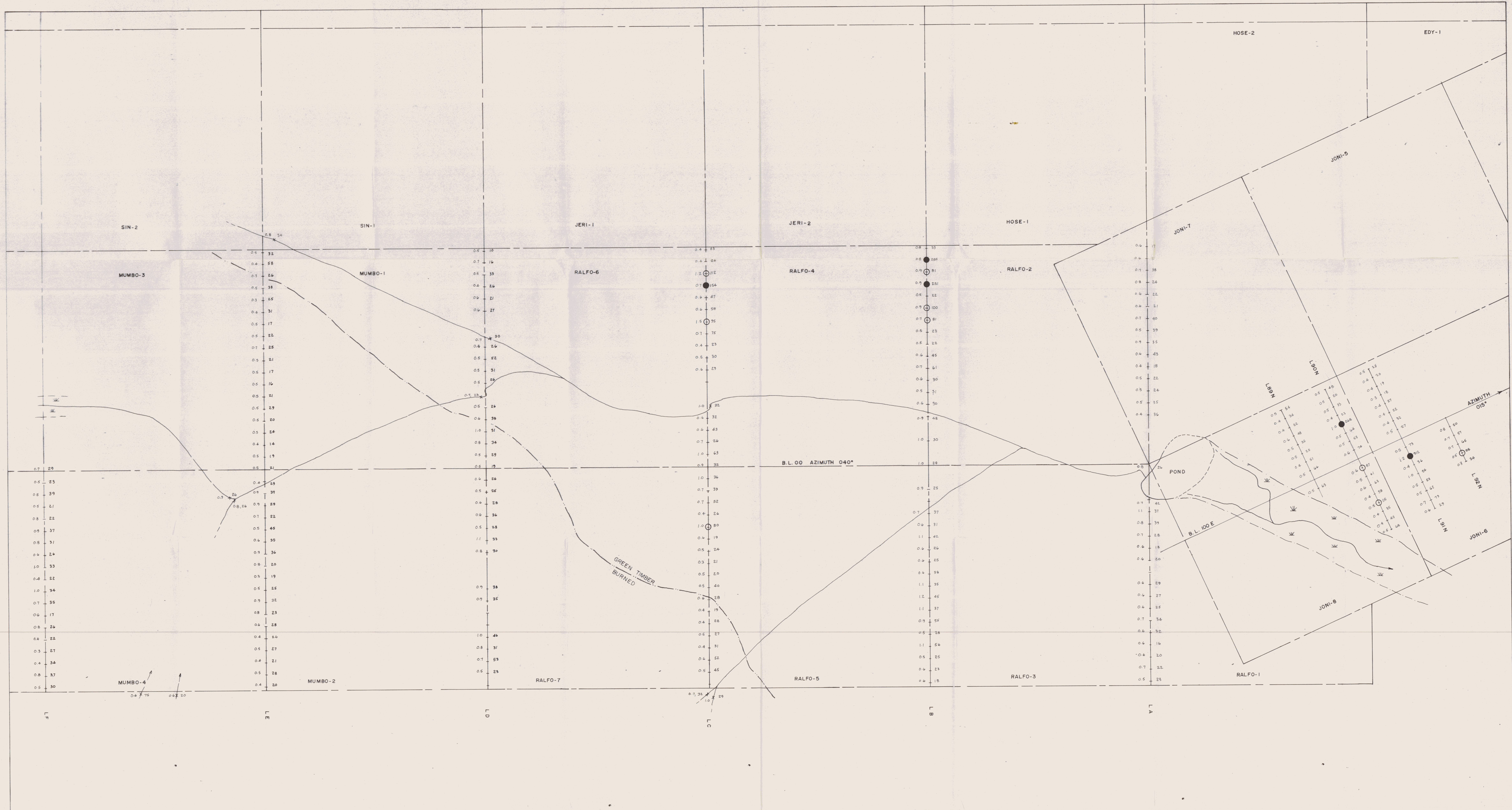
TO ACCOMPANY GEOLOGICAL & GEOCHEMICAL REPORT BY D.C. MILLER DATED JULY 25, 1983

**SULPETRO MINERALS LIMITED**

**MEL - EAST ZONE  
GEOCHEMISTRY, ZINC PPM  
SOIL & SILT**

SCALE: 1:2500

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LATITUDE	REPORT NO.	NTS 83028
LONGITUDE		



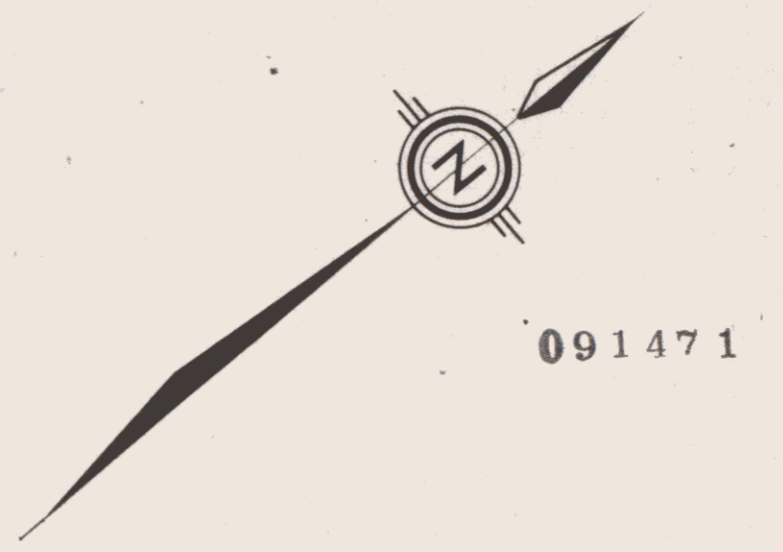
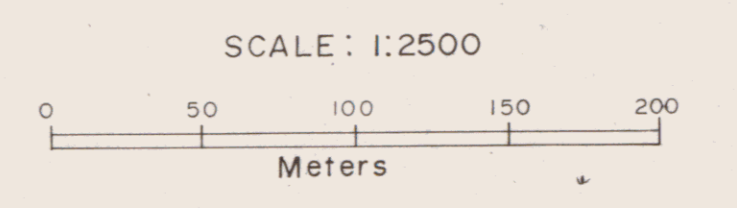
**LEAD**

78 PPM — THRESHOLD

78-136PPM — POSSIBLY ANOMALOUS ○

>136 PPM — DEFINITELY ANOMALOUS ●

- GRID STATION & LINE
- SOIL SAMPLE SITE
- SILT SAMPLE SITE
- x MEADOW / SWAMP
- STREAM
- - - CLAIM BOUNDARY
- - - FOREST FIRE (1982) BOUNDARY



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DATED JULY 25, 1983

<b>SULPETRO MINERALS LIMITED</b>			
<b>MEL - EAST ZONE</b>			
<b>GEOCHEMISTRY, SILVER &amp; LEAD PPM</b>			
<b>SOIL &amp; SILT</b>			
SCALE: 1:2500	APPROX. LAT & LONG OF LOWER RT. COR. OF DWG.	PROJECT NO. - 2251	SHEET NO. - 2 OF 4
	LATITUDE	REPORT NO.	N.T.S. 250/6
	LONGITUDE		

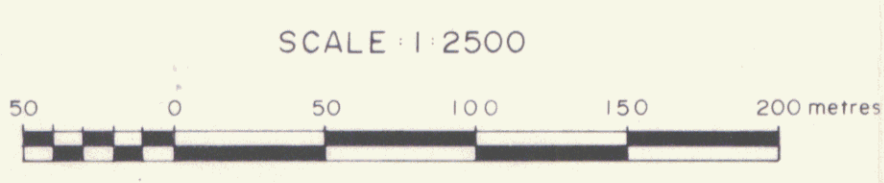
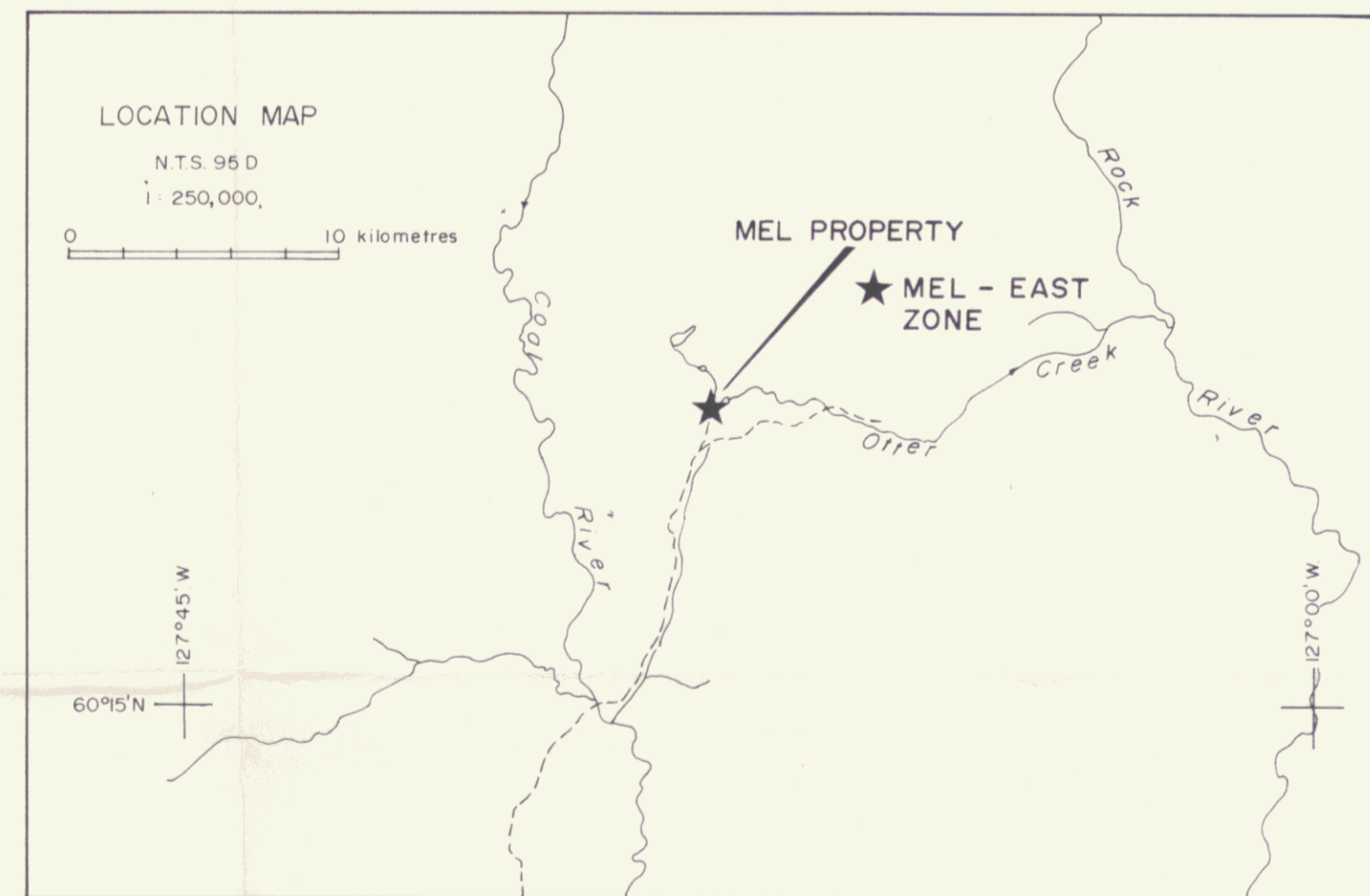


**SYMBOLS**

- SAMPLE LINE
- - - CLAIM BOUNDARY
- W SWAMP, MEADOW
- ~ CREEK
- X SILT SAMPLE
- + SOIL SAMPLE
- ROCK SAMPLE
- ⊙ HELI-PORT

- 7 GREY DOLOMITE
- 6 GREY WAVY BANDED LIMESTONE
- 5 BROWN AND GREY CALCAREOUS PHYLLITE
- 4 SILICIFIED DOLOMITE, SMITHSONITE
- 3 CRYPTOGRAINED LIMESTONE
- 3a DOLOMITE
- 3b SILICIFIED DOLOMITE

- ⊙ OUTCROP
- +// BEDDING (Horizontal, inclined, vertical)
- /// FAULT (Defined, approximate)
- - - GEOLOGIC CONTACT
- ⊙ FOSSIL LOCATION

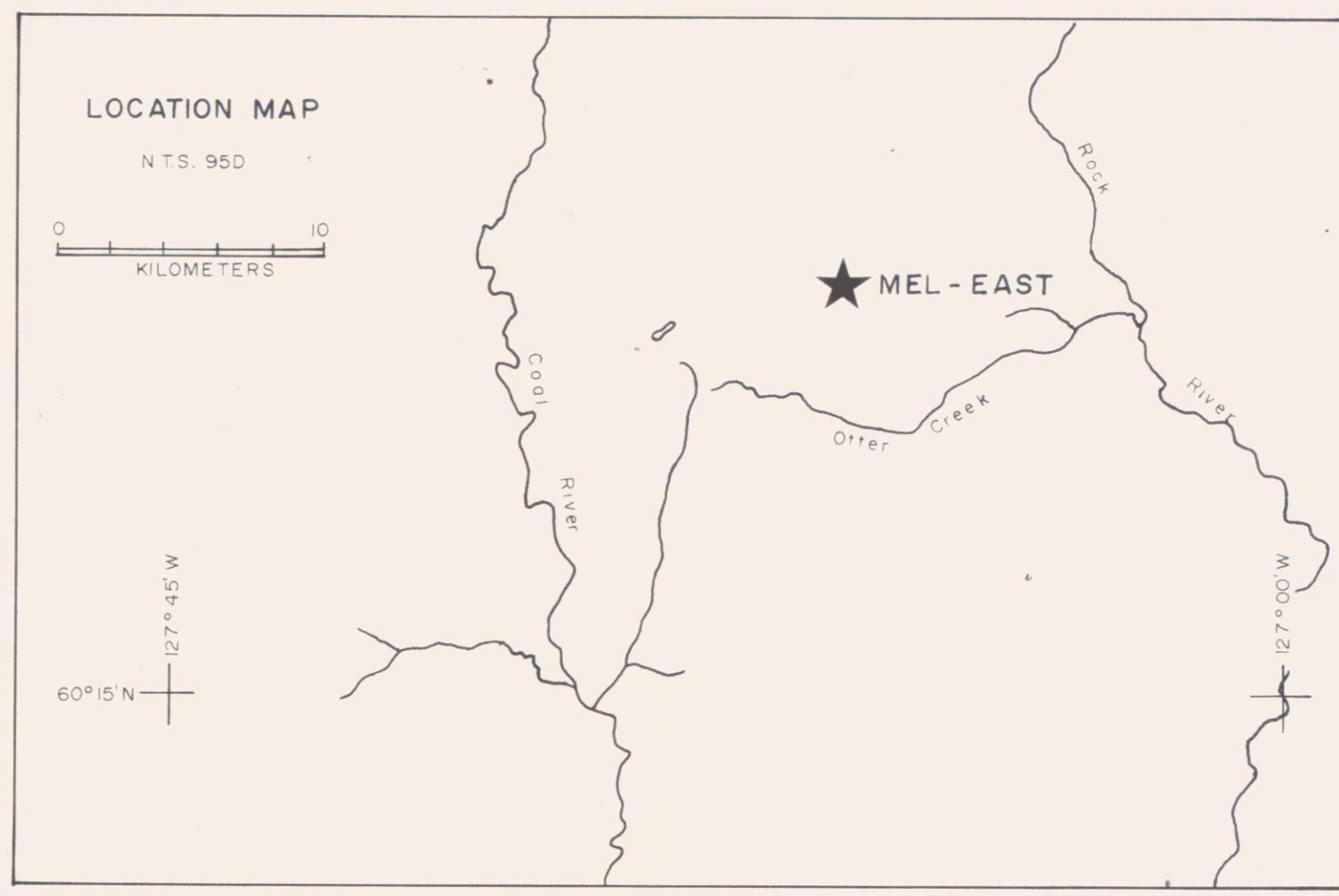
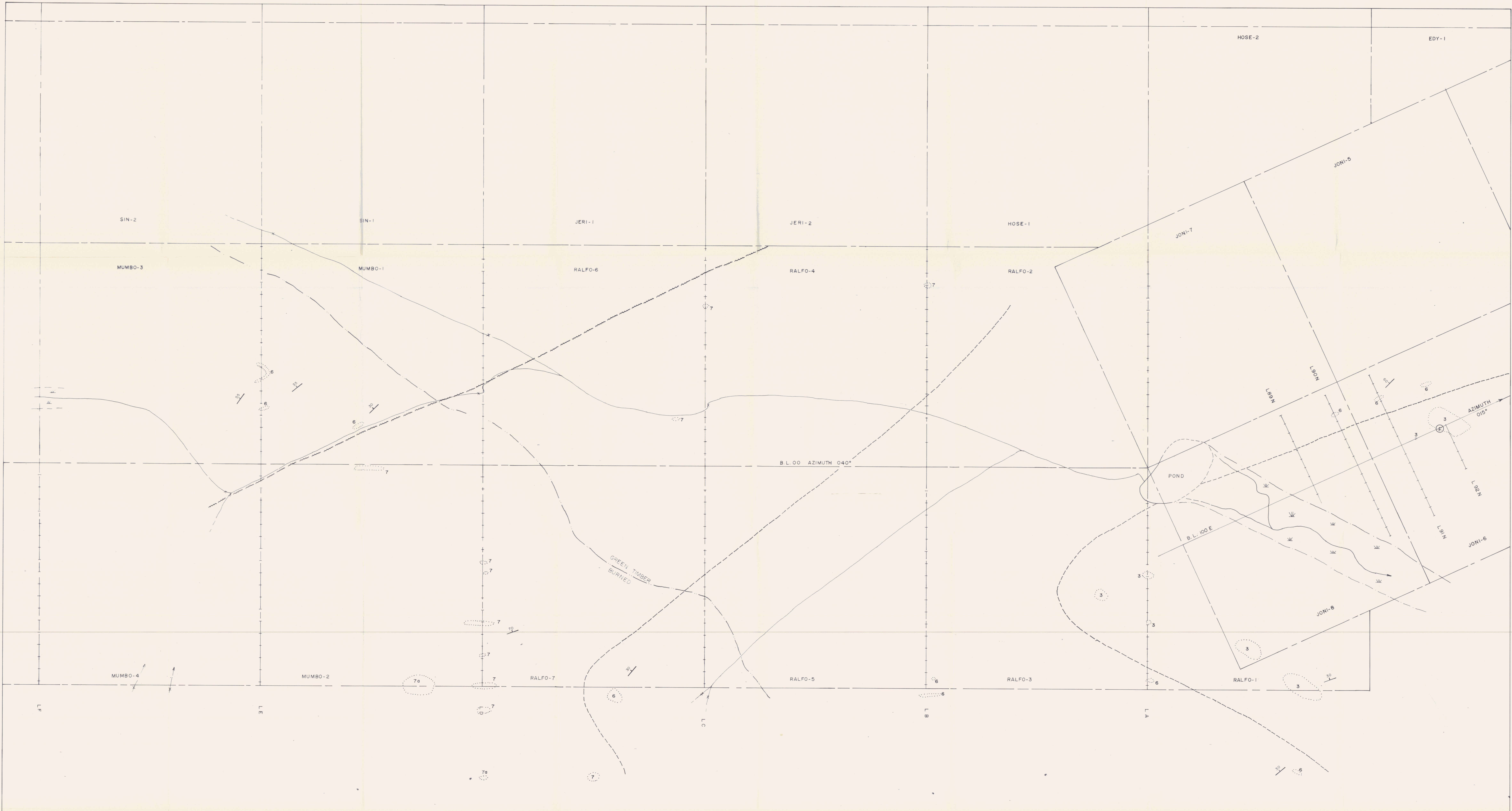


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KAMLOOPS, B.C.

**MEL - EAST ZONE 091471**  
GEOLOGY  
JONI & KELI CLAIMS

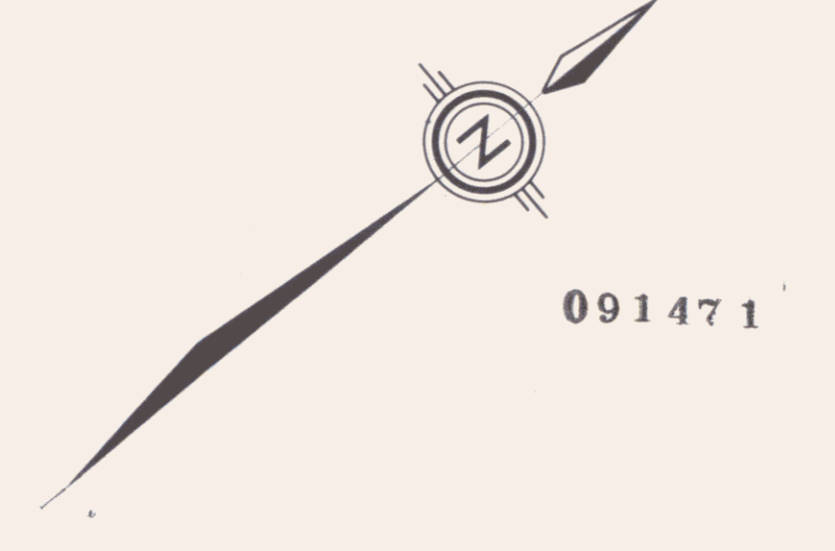
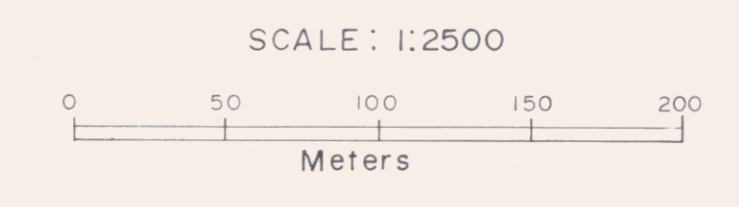
SCALE 1:2500	APPROX LAT & LONG OF LOWER RT COR OF DWS	PROJECT NO. 6251	SHEET NO. 3 OF 4
APPROX LAT & LONG OF LOWER RT COR OF DWS	60° 22' 00" LATITUDE	REPORT NO.	N.T.S. 95D/8
122° 16' 00" LONGITUDE			



- 7 GREY DOLOMITE, 7g GREY LIMESTONE
- 6 GREY WAVY BANDED LIMESTONE
- 5 BROWN AND GREY CALCAREOUS PHYLLITE
- 3 CRYPTOGRAINED LIMESTONE

- OUTCROP
- + + + BEDDING (Horizontal, inclined, vertical)
- ||| FAULT (Defined, approximate)
- - - GEOLOGIC CONTACT
- ⊕ FOSSIL LOCATION

- +— GRID STATION & LINE
- ⊕ SOIL SAMPLE SITE
- ⊗ SILT SAMPLE SITE
- ~ MEADOW / SWAMP
- >— STREAM
- - - CLAIM BOUNDARY
- · - · - FOREST FIRE (1982) BOUNDARY



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**MEL-EAST ZONE  
GEOLOGY  
RALFO & MUMBO CLAIMS**

SCALE: 1:2500

APPROX. LAT. & LONG. OF LOWER RT. COR. OF DRWG.	PROJECT NO. 8251	SHEET NO. 4 OF 4
REPORT NO.		NTS. 950/6