

002783

GEOLOGICAL AND GEOCHEMICAL REPORT

on

LOMOND CLAIM GROUP  
NELSON MINING DIVISION

82 F 3 W  
40° 0' N, 117° 19' W

82F3W018

for

CARMAC RESOURCES LTD. N.P.L.  
#333-885 DUNSMUIR ST., VANCOUVER, B.C.

by

Robert G. Potter, M.A.Sc. P. Eng.

PROPERTY FILE

Vancouver, B.C.

September 19, 1977

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## SUMMARY

The Lomond property, located in the Salmo area of B.C. is underlain by dolomites and limestones of the Nelway Formation (Cambrian).

Showings on the property consist of limonitic masses which are generally concordant with black to grey dolomite host rocks. Remnant nodules galena are reported.

Significant mineralization in the Salmo and Metaline (Washington) district includes sphalerite/galena and pyrite/sphalerite/galena ores. The high iron content of the Lomond showings and their probable stratigraphic level indicates that the original sulphide masses are of the pyrite/sphalerite/galena type.

Analyses of soils collected over part of the property show areas of anomalously high lead and zinc which reflect both areas of known mineralization and possible extensions of these.

RECOMMENDATIONS

The following program of work should be carried out to further explore the Lomond property:

1. Expansion of the existing grid to cover the remainder of the claim block.
2. Geochemical and geological coverage of the expanded grid.
3. Spontaneous potential survey.
4. Trenching of anomalies.
5. Percussion drilling of targets selected from the results of the above work.

If satisfactory results are obtained from the above work a second phase drilling program should be considered.

COST ESTIMATE

PHASE I

1. Geochemical survey; 200 samples @ 5.00/sample	\$1,000.00
2. SP Survey; 20 line km @ \$120.00/km	2,400.00
3. Trenching	2,000.00
4. Percussion drilling; 1200 ft. @ 5.00/ft,	6,000.00
5. Geology and Supervision	<u>3,000.00</u>
	SUB TOTAL
	14,000.00
Contingencies 10%	<u>1,440.00</u>
	TOTAL
	\$15,840.00

PHASE II

Drilling \$25,000.00

## INTRODUCTION

During the period September 1 to 5, 1977, Merv Engineering Ltd. carried out a program of geological mapping and soil sampling on the Lomond claim group.

The writer carried out the geological mapping and supervised the geochemical program.

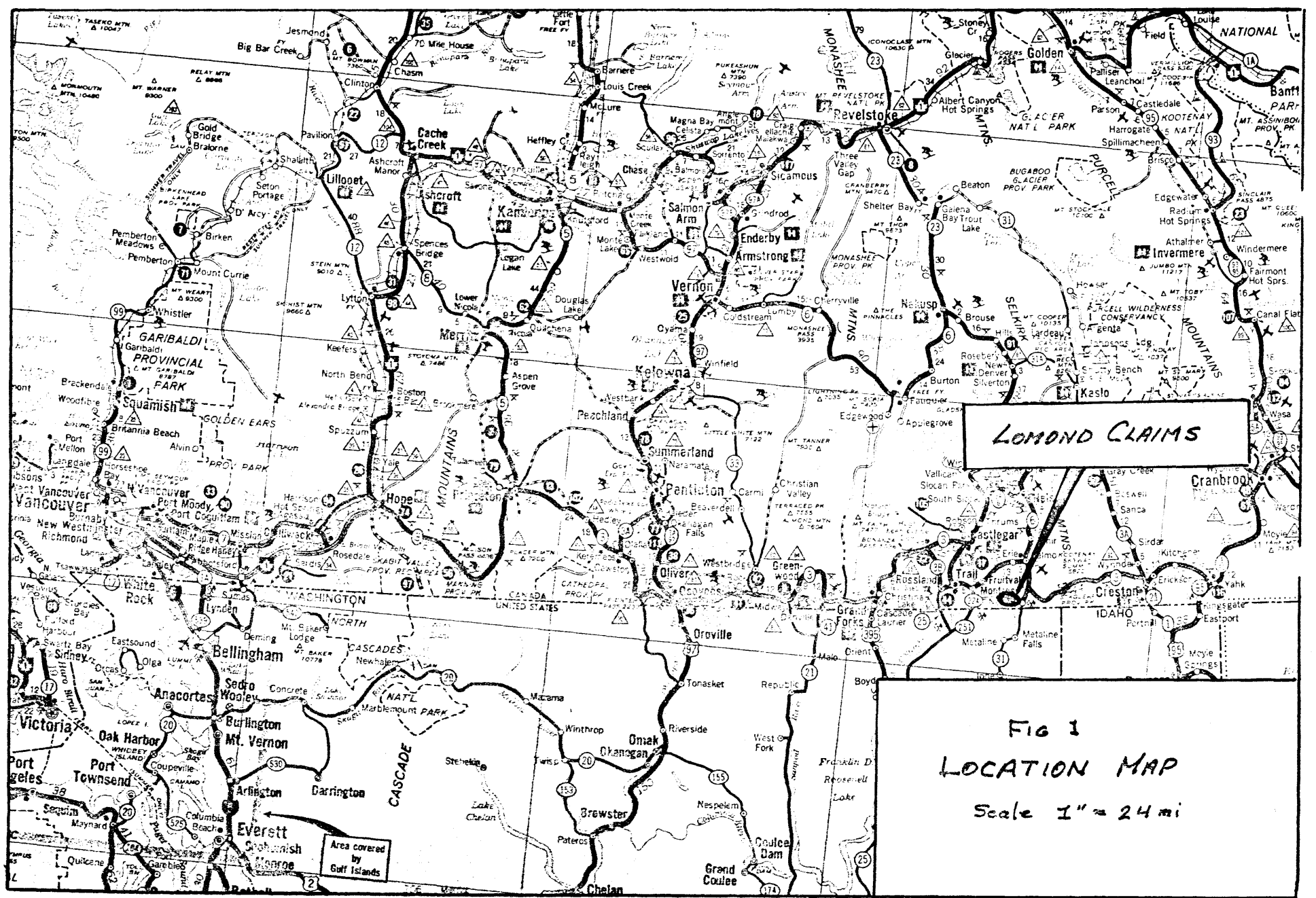
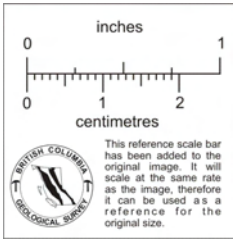
This report is based on observations on the property and on a study of available literature of the Salmo and Metaline lead-zinc areas.

## LOCATION AND ACCESS

The Lomond property is located 1 km west of the border crossing point of Nelway in the Nelson Mining Division of B.C. Co-ordinates are  $49^{\circ} 0' N$ ,  $117^{\circ} 19' W$ ; NTS reference 82F3W.

Access is by highway number 3 via Trail and Salmo and by highway number 6 about 28 km south from Salmo to Nelway. The Nelway-Waneta road passes through the southern part of the property between km 1 and 3 west of Nelway.

Several old logging trails on the property require only minor repair to provide good access within the claim group.



**LOMOND CLAIMS**

**FIG 1**  
**LOCATION MAP**  
Scale 1" = 24 mi

PROPERTY

The subject property comprises a contiguous block of 15 full sized and fractional reverted crown-grant mineral claims. The ground is currently held by J.W. MacLeod of #333-885 Dunsmuir St., Vancouver, B.C. (FMC #143081)

Figure 2 shows the claim layout and the area surveyed as per this report.

Details of the claims are as follows:

<u>NAME</u>	<u>LOT NO.</u>	<u>ACREAGE</u>	<u>RECORD DATE</u>
Hastings	6598	51.65	October 1, 1976
Glasgow	6599	38.09	"
Salmo	6600	51.65	"
Pioneer	6601	51.65	"
Lake View	6602	40.12	"
Medol	6603	49.91	"
Renfrew	6604	51.65	"
Golden Rod	6605	23.20	"
International	6606	11.84	"
Golden Fleece	6607	23.73	"
Pioneer No. 1 Fr.	6608	8.16	"
Renfrew No. 1	6609	40.24	"
International No. 1	6610	36.99	"
Glasgow No. 1 Fr.	6611	12.05	"
Salmo No. 1 Fr.	6612	15.71	"

## HISTORY

Sporadic prospecting was carried out on the ground covered by the Lomond claims between 1908 and 1929.

Sheep Creek Gold Mines Ltd. held an option on the property during 1946 and 1947. A reported 816 ft. of diamond drilling was done at this time but results were negative.

During the period 1948 to 1950 the deposits were worked under lease. Shipments of iron oxides were made to Lehigh Cement Works of Metaline Falls, Washington totaling 7292 tons. About 19 tons of selected galena rich nodules were also shipped to Trail. Estimated grades of this material are 25% Pb., 2.4% Zn., and 2 oz. Ag. per ton.

International Lead and Zinc Mines Ltd. acquired the property in 1951. A geological study was carried out in 1952.

No further activity to the present is reported.



### GEOLOGICAL SETTING

The Lomond Property lies within the Salmo Lead-Zinc area. The Salmo area is located at the southern end of the Kootenay arc, a structural belt which extends from Revelstoke through Salmo to north-eastern Washington state. The Kootenay arc comprises early Paleozoic sediments of which limestones and dolomites of Cambrian age are the most important economically.

Table I shows columnar sections of Ordovician and Cambrian rocks for the Salmo and Metaline (Washington) areas. Lead zinc mineralization in the Salmo area is notably concentrated in the Reeves member of the Laib Formation (eg Reeves Mac Donald, H.B., Jersey and Emerald Mines ) A few miles to the south, in the Metaline district of Washington, lead-zinc ore bodies are found mostly within a zone of secondary dolomite lying at the top of the Metaline (Nelway) formation immediately below the Ledbetter slate (Active formation) The mineralogy of ores from both areas is characteristically sphalerite and galena with minor pyrite.

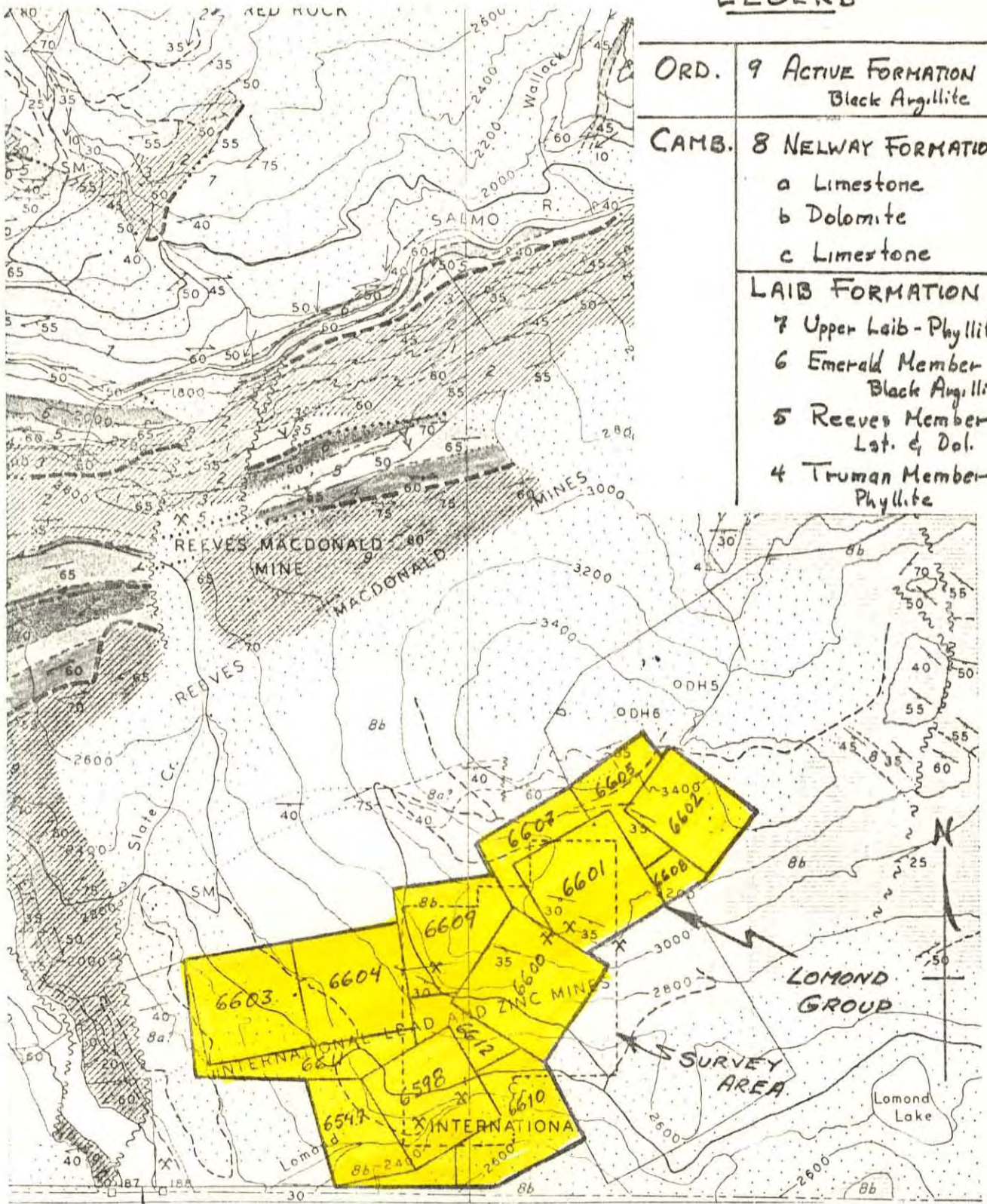
A second mineral bearing horizon is recognized in the Metaline area. This lies about 1000 to 1500 feet below the slate contact. The ores of this zone carry sphalerite and galena but are pyrite rich. The host rocks are dolomites. This horizon is best known at the Yellowhead mine near Metaline Falls, Washington. A measure of the grade of ore from the Yellowhead is reported by Dings and Whitebread (1) as 10.5% Zn and 0.58% Pb. The Yellowhead horizon lies within the stratigraphic interval represented by the middle dolomitic member of the Nelway Formation.

TABLE I - COLUMNAR SECTIONS OF ORDOVIAIAN AND CAMBRIAN ROCKS

		SALMO AREA			METALINE AREA		
ORDOVIAIAN	FORMATION	LITHOLOGY	APPROX THICKNESS	FORMATION	LITHOLOGY	APPROX. THICKNESS	
		<u>ACTIVE</u>	Black argillite, slate and argillaceous limestone.	?	<u>LEDBETTER</u>	Black carbonaceous argillite and slate.	2200 to 2500
CAMBRIAN	<u>NELWAY</u>			<u>METALLINE LIMESTONE</u>		4500 to 6500	
	Upper Member: * ?	Fine grained grey massive lst. locally dolomitic	?	* Josephine Unit:	Black and grey dolomite	0 to 200	
	Middle Member: * ?	Fine grained grey dolomite with discontinuous layers of spotted black dolomite.	?	Grey lst. Unit:	Massive grey lst.	0 to 1500	
	Lower Member:	Fine grained, bedded dark grey limestone.		Bedded Dolomite Unit:	Light grey dolomite with beds and lenses of spotted black dolomite.	3500	
	<u>LAIB</u>			Bedded Limestone Unit:	Thin to med. bedded dark grey limestone.	1000 to 1200	
	Upper Laib:	Grey and green phyllite		<u>MAITLEN PHYLLITE</u>	Green phyllite with limestone near top	5000	
	Emerald Member:	Black argillite	200-500				
	*Reeves Member:	Grey limestone locally dolomitized	130-450				
	Truman Member:	Brown and green argillite	60-350	* Lead-Zinc mineralization			

**LEGEND**

ORD.	9 ACTIVE FORMATION Black Argillite
CAMB.	8 NELWAY FORMATION
	a Limestone
	b Dolomite
LAIB FORMATION	7 Upper Laib - Phyllite
	6 Emerald Member Black Argillite
	5 Reeves Member Lst. & Dol.
	4 Truman Member Phyllite



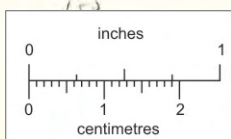
**LOMOND CLAIM GROUP**

FIG. 2

**AREA GEOLOGY AND PROPERTY MAP**

SCALE 1" = 2000'

0 1000 2000



This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

(Geol from Fyles & Hewlett fig 3)



### PROPERTY GEOLOGY

Control for geological and geochemical coverage was established by compass and chain (topofil) North-south lines are spaced at 100 meters with stations along same at 50 meters. Total linear coverage is 9.6 km.

Two areas of relatively good rock exposure are found on the property. These are the vicinity of Lomond Creek south of the Nelway-Waneta road and the break in slope at the top of the hill about 600 meters north of the road. The rocks of both areas are dolomites including black carbonaceous rocks with spots and bands of white calcite, and blue grey to buff rocks of fine to sugary texture which locally have small drusy vugs (5 to 10 mm). The vugs probably represent remnants of the primary porosity which permitted ingress of dolomitizing solutions.

Bedding features have been largely obliterated by dolomitization. The banding in black dolomite and indistinct flaggy jointing of some grey dolomite outcrops appear to represent depositional planes. These are best seen along the road cut 200 meters south-east of the Hydro substation. General strike is east-west with dips ranging from 20 to 40 degrees to the south.

Small outcrops of dense fine grained, lightgrey limestone are scattered along the hillside north of the old road which cuts diagonally across the property.

The dolomites which underlie the Lomond ground are considered by Fyles and Hewlett (2) to belong to the middle member of the Nelway Formation.

Known mineralization within the property includes several zones of limonitic material within the dolomites of Lomond Creek and the hilltop outcrops. The showings along the creek as presently exposed are from 1 to 3 meters thick and up to 10 meters long.

These are conformable to bedding. The hill top showings are small (1 x 5m and .1 x 1m) and appear to cross-cut bedding.

PROPERTY GEOLOGY CONT'D.

The showings consist of earthy limonite and hard goethite. Nodules of galena and cerussite are reported to have been found at the Lomond Creek workings in the 1940's but none were seen by the present writer. Grab samples were collected across limonitic zones during the course of the present survey. These returned the following values:

<u>SAMPLE LOCATION</u>	<u>% Zn</u>	<u>% Pb</u>	<u>Oz/T Ag</u>
14 E 7.85 N	3.80	1.22	.09
15.9E 8.7 N	1.44	.91	.06
20 E 15.9 N	.70	.38	.06

These iron rich deposits are the oxidized remnants of sulphide masses with a high pyrite content. The high mobility of zinc relative to that of lead in the oxidizing environment would indicate a parent material having a higher zinc to lead ratio than is given by the above sample results. The expected composition plus the probable stratigraphic position of the showings indicates that the original sulphide masses and those which may exist at depth are of the type found at the Yellowhead Mine.

GEOCHEMISTRY

Samples were collected from B horizon soils on 50 meter stations. These were packed in craft envelopes and shipped to Vangeochem Lab. Ltd., 1521 Pemberton Ave., North Vancouver, B.C.

The minus 80 mesh fraction of samples were digested by nitric and perchloric acids for analysis by atomic absorption.

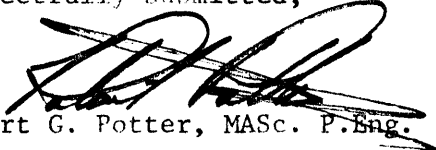
Figure 3 shows the frequency distribution for lead and zinc in the soil samples. Anomalous levels for the two elements have been chosen by consideration of the distribution curves and by the spatial distribution of the values on the ground. These are greater than 100 ppm for lead and 400 ppm for zinc.

Figures 5 and 6 show values plotted in plan at a scale of 1:2500 for zinc and lead respectively.

Anomalous areas outlined are virtually coincident for both metals. The strongest anomalies occur over the areas of relatively dense outcrop adjacent to showings and old workings (A). The hilltop anomaly (B) (16 N on lines 18 E to 22 E) shows a down slope migration pattern for up to 200 meters south of the source area.

The anomaly of 12.5 N between 19 E and 22 E (C) and that of line 18 E between 10 N and 11.5 N may reflect a continuation of the mineralized horizon of the creek showings. Anomalies E and F are probably reflecting continuations of the hilltop mineralization.

Respectfully submitted,

  
Robert G. Potter, M.A.Sc. P.Eng.

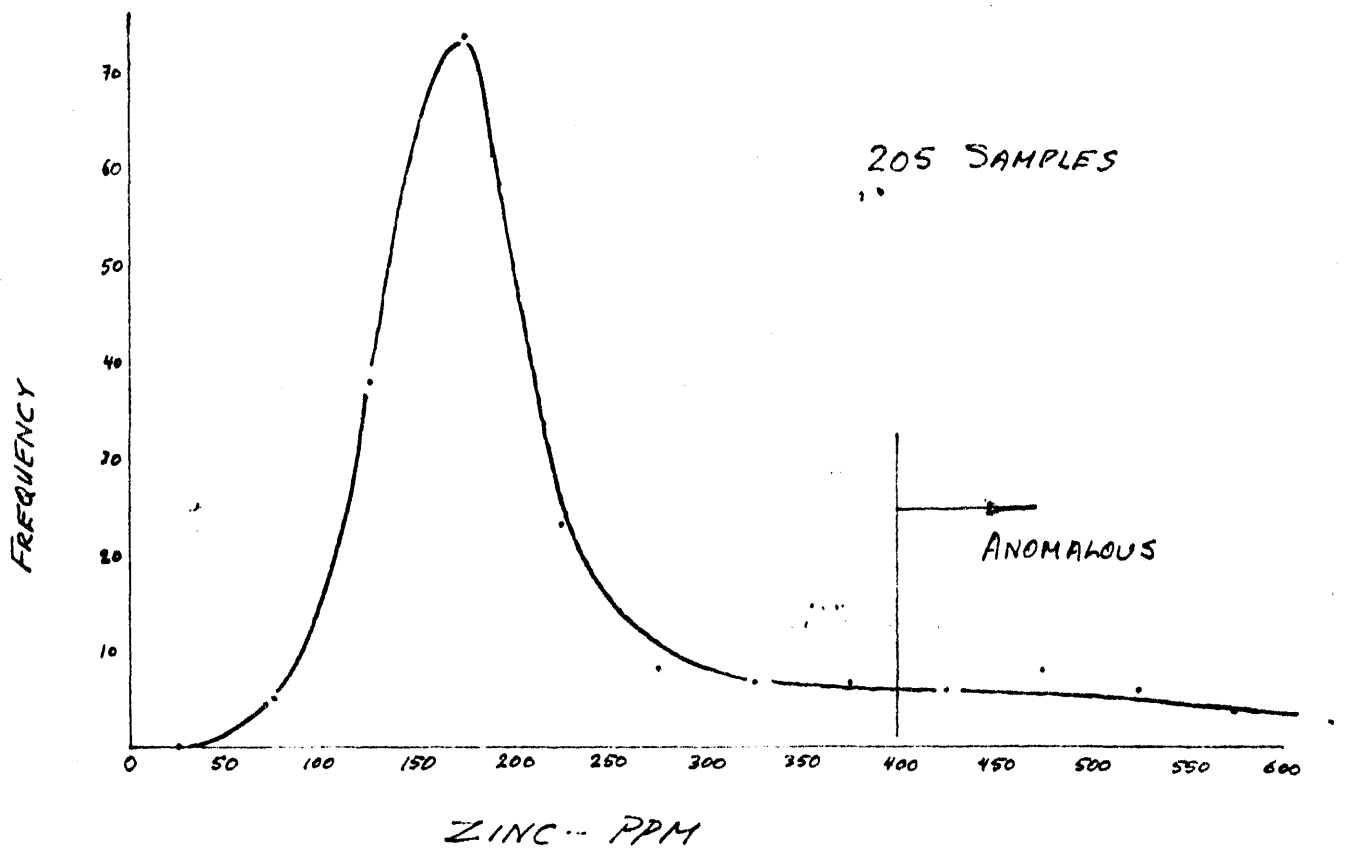
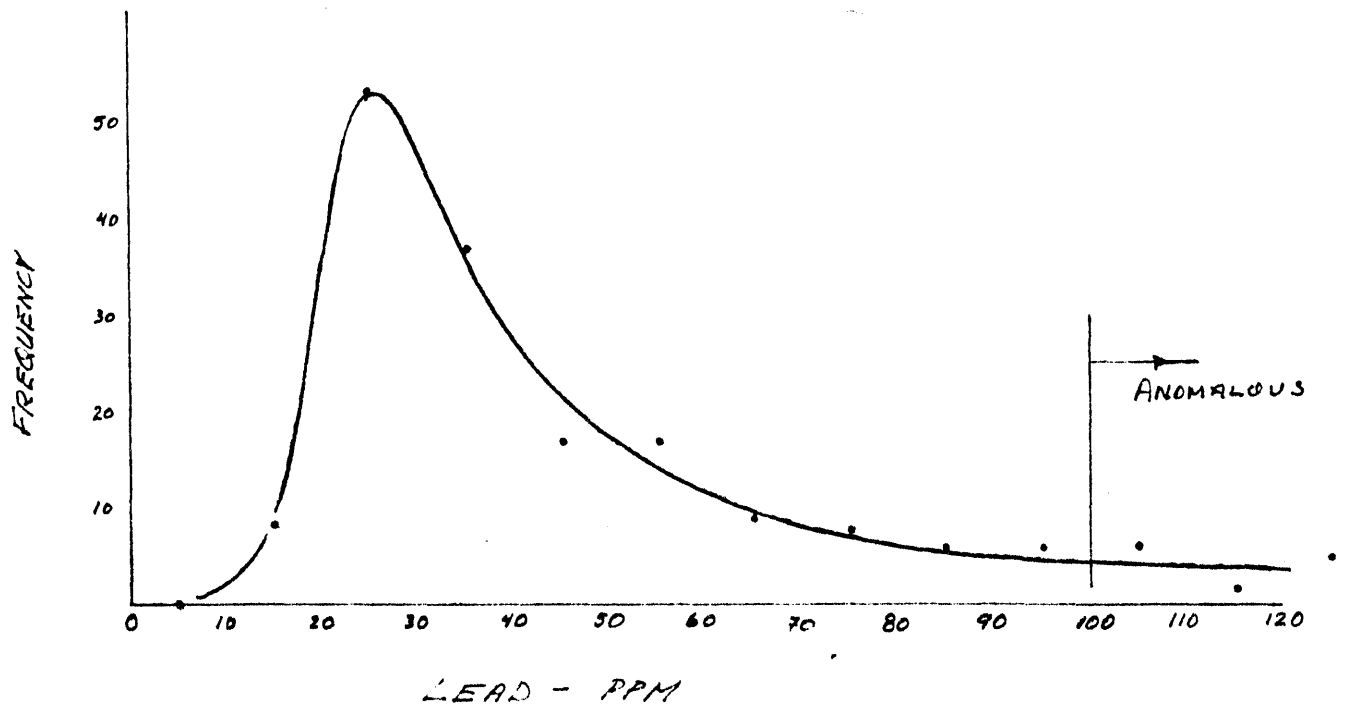


FIG. 3  
 FREQUENCY DISTRIBUTIONS  
 FOR LEAD AND ZINC IN SOILS

L.OMOND PROPERTY - NELSON M.D.

RGP

APPENDIX I


CERTIFICATE



CERTIFICATE

I, ROBERT G. POTTER, of R.R. 1 Fording Harbour, British Columbia,  
do hereby declare:

1. That I am a consulting geological engineer.
2. That I am a graduate of the University of British Columbia  
(BASC 1961) and McGill University (MSc (Applied) 1972).
3. That I have actively practiced my profession both in Canada and  
Europe since graduation.
4. That I am a member in good standing, of the Association of  
Professional Engineers of British Columbia.
5. That I have no financial interest, direct or indirect, in the  
Lomond Property as described in this report, or in the securities  
of Carmac Resources Ltd.

  
Robert G. Potter, MASC, P. Eng.

Dated at the City of Vancouver  
Province of British Columbia  
September 19, 1977

APPENDIX II

REFERENCES CONSULTED

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1. Dings, M.G. and Whitebread, D.H. 1965. Geology and ore deposits of the Metaline zinc-lead district: U.S.G.S. prof. paper 489.
2. Fyles, J.T. and Hewlett, C.G. 1959, Stratigraphy and Structure of the Salmo lead-zinc area: B.C. Dept. of Mines Bull. no. 41.
3. Little, H.W. 1960. Nelson Map-Area, West Half G.S.C. Mem. 308.
4. McConnel, R.H. and Anderson, R.A. 1968. The Metaline District Washington: In Graton-Sales Vol. II, Ore Deposits in the United States. PP 1460-1480.
5. Park, C.F. and Cannon, R.S. 1943 Geology and ore deposits of the Metaline quadrangle Washington: U.S.G.S. prof. paper 202.
6. Reports of the B.C. Minister of Mines 1948 and 1950.