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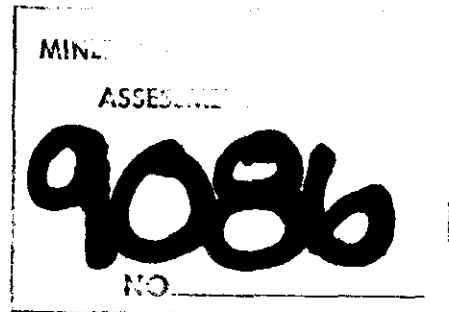
ASSESSMENT REPORT

GEOLOGICAL, GEOCHEMICAL AND PROSPECTING REPORT
ON THE
JOCK GROUP OF CLAIMS
CONSISTING OF JOCK 1-5 CLAIMS (70 UNITS)

TOODOGGONE RIVER AREA
OMINECA MINING DIVISION

by

MOHAN R. VULIMIRI
AND
SHEILA A. CRAWFORD



LOCATION: N.T.S. 94E/7W
57°15' N Latitude
126°55' W Longitude

OWNER: SEREM LTD.

OPERATOR: SEREM LTD.

DATES WORK PERFORMED: June 10, 14, 19, 24, 30, 1980
July 21, 22, 1980
August 24, 1980

DATE: DECEMBER 17, 1980

ABSTRACT

Geochemical silt sampling and soil sampling based on a grid were carried out on the Jock group of claims located south of Toodoggone River (N.T.S. 94E/7W), approximately 280 kilometres north of Smithers, B.C.

The claims are underlain by Toodoggone volcanic rocks intruded by plutonic rocks of Lower Jurassic age.

Two distinct geochemical anomalous zones with significant values in lead, up to 1180 ppm, and silver, up to 3.4 ppm, are located on Jock 1, Jock 3 and Jock 5 claims.

Only minor mineralization, consisting of galena, was discovered. This may be due to extensive oxidation of any base metal mineralization at surface. The area underlain by the claims is highly gossanous.

Intensive prospecting with mapping, and geophysical methods consisting of I.P. and V.L.F. are recommended.

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1. INTRODUCTION

The Jock claim group, consisting of Jock 1 to 5 mineral claims, is approximately located between 57°13' and 57°17' N latitude and between 126°53' and 126°57' W longitude, in the Toodoggone River area, N.T.S. map sheet 94E/7E (Figures 1 and 2), in the Omineca Mining Division. Most of the property is above timber line. The elevation ranges from 1500 metres to 2000 metres above sea level.

Access is by fixed wing plane from Smithers to Sturdee Airstrip, a distance of about 280 kilometres, and from Sturdee Airstrip to the property by helicopter, a distance of 10 kilometres.

Claims status:

<u>Claim Name</u>	<u>Record No.</u>	<u>Units</u>	<u>Date Recorded</u>
Jock 1	2652	20	March 24, 1980
Jock 2	2653	20	March 24, 1980
Jock 3	2892	18	July 7, 1980
Jock 4	2893	8	July 7, 1980
Jock 5	2894	4	July 7, 1980

The work consists of predominantly geochemical silt and soil sampling, minor geological mapping and prospecting. The geochemical silt and soil sampling was conducted by S.A. Crawford, J. Sweeney, R. MacRae, J. Rushton, R. Stowe and prospecting and mapping was carried out by S.A. Crawford, M.R. Vulimiri, J.F. Carne, M. Carr, and P. Tegart.

Previous work in the area was carried out by Kennco Explorations on the Pillar group of claims east of the property in 1969 (Assessment Report 1906).

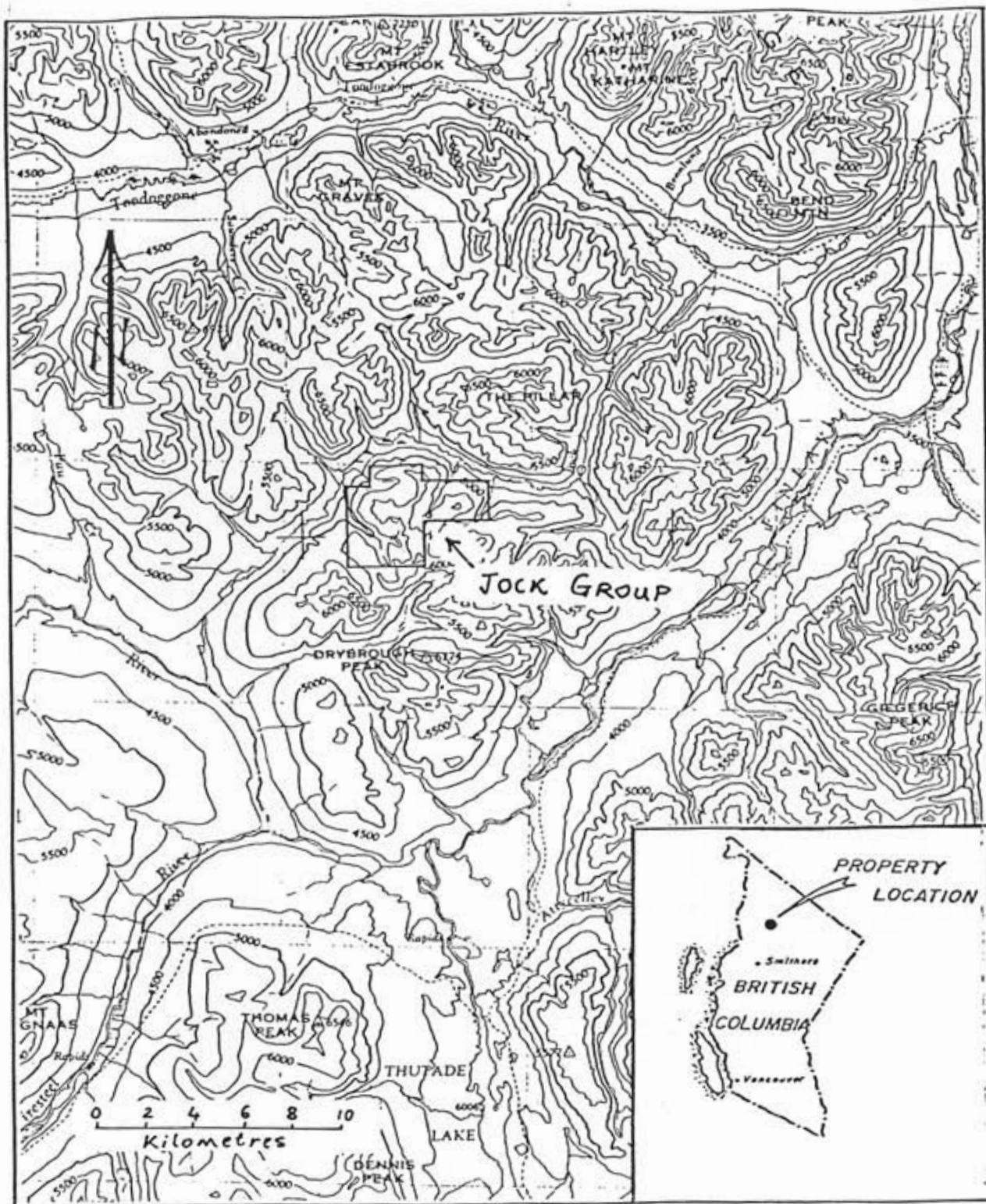


Fig. 1. Location Map: Jock Group

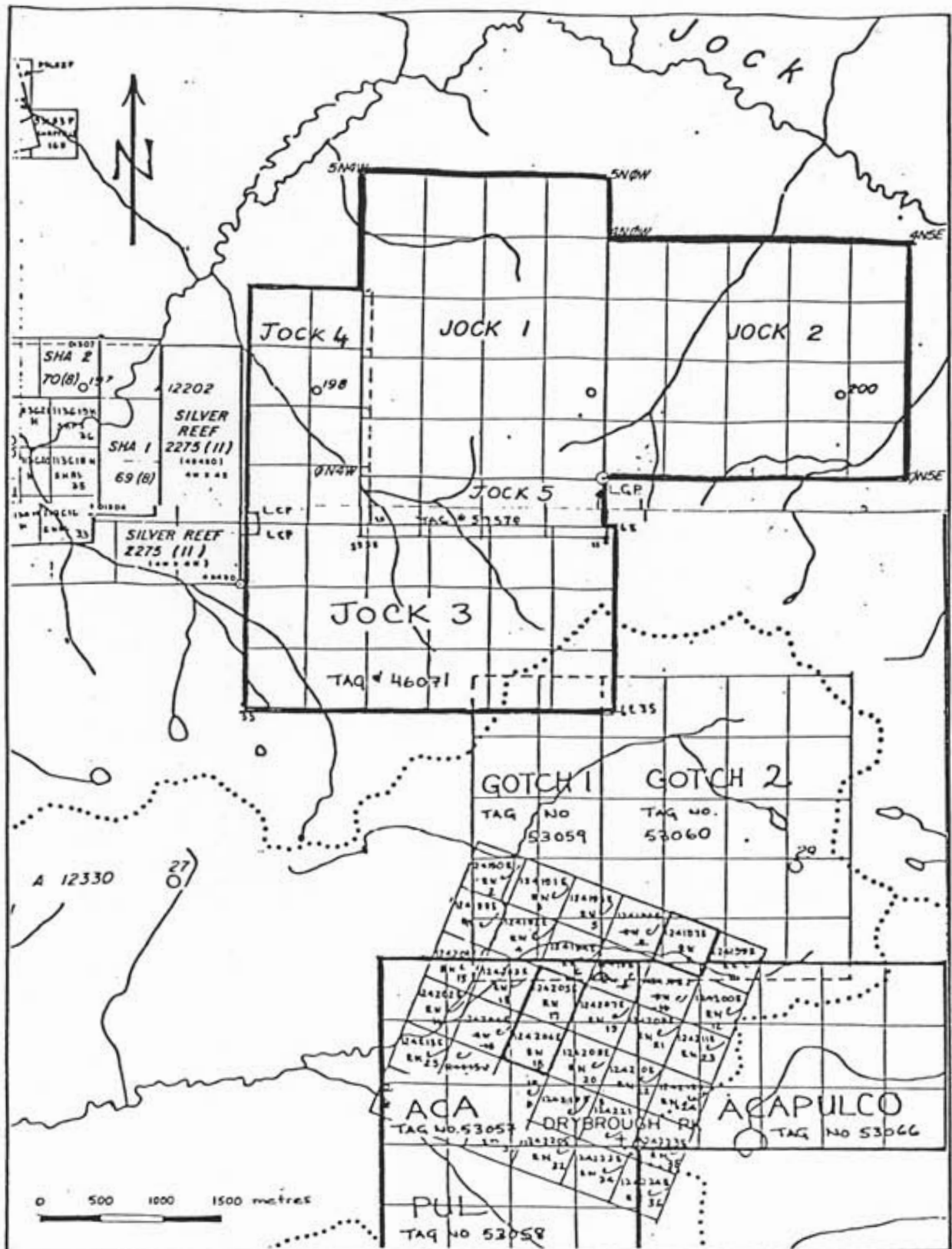


Fig. 2. Claims Map: Jock Group.

The area was staked because of favourable sieve sample results obtained in 1979. The purpose of the present work was to delineate any targets for occurrence of precious or base metal mineralization on the claim area.

2. GENERAL GEOLOGY

Minor geological mapping was carried out on the Jock 1, Jock 3, and Jock 5 claims. The geology consists of Toodoggone volcanic rocks intruded by plutonic rocks of Lower Jurassic age.

The volcanic rocks consist of feldspar porphyry, crystal lapilli tuffs. The intrusive rocks consist of predominantly quartz monzonite. The volcanic rocks strike mainly north-east and dip towards the west. As shown in Figure 3, the intrusive rocks occur towards the east of the property.

3. GEOCHEMICAL SILT SAMPLING

All the creeks draining the claims' area were sampled for silt at an interval of approximately 150 metres, depending on where suitable silt could be found. Samples were collected from active material, that is, under flowing water. Only fine grained silt was collected and placed in brown paper envelopes. The sample site and number were plotted on a map with a scale of 1 centimetre to 100 metres. The stream gradient and the flow of the stream were noted.

4. GEOCHEMICAL SOIL SAMPLING

Soil sampling was carried out based on a grid at an interval of 100 metres in areas returning anomalous stream sediment values. Two grids were laid out on the Jock 1 and

Jock 3 claims. Samples of soil were collected from the "B" horizon, where developed, or above "C" horizon, location and number were plotted on a map (1 centimetre to 100 metres) and site was marked with flagging tape.

5. GEOCHEMICAL ANALYSIS

The samples were sent to Min-En Laboratories and were analysed for gold, silver, lead, zinc and copper. The analytical procedure for each element is briefly described below:

The samples are dried at 95° C. Soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed and pulverized by ceramic plated pulverizer.

For gold, a suitable sample, weight 5 or 10 grams, is pretreated with HNO₃ and HClO₄ mixture.

After pretreatment the samples are digested with Aqua Regia solution, and after digestion the samples are taken up with 25% HCl to suitable volume.

Sample solutions are prepared with Methyl Iso-Butyl Ketone for the extraction of gold.

With a set of suitable standard solutions, gold is analysed by Atomic Absorption instruments. The obtained detection limit is 5 ppb.

For silver, lead, zinc, and copper, samples weighing 1.0 gram are digested for 6 hours with HNO₃ and HClO₄ mixture.

After cooling, the samples are diluted to standard volume. The solutions are analysed by Atomic Absorption Spectrophotometers using the CH₂H₂-Air Flame combination.

6. INTERPRETATION

6.1 Silt Sampling:

The purpose of the silt sample survey is to determine the potential of the property and to find targets for future exploration on the claims. Samples which returned anomalous values are underlined (Figures 4 and 5). Areas to the southeast of Jock 3, south of Jock 1 and Jock 5, returned anomalous values in lead (up to 90 ppm) and silver (up to 12 ppm).

These areas which returned anomalous silt sample values were covered by soil sampling based on grids at 100 metre spacings. JK-1 grid covers claims Jock 1 and Jock 5 and JK-2 grid covers Jock 3 claim (Figures 6a to 6e and 7a to 7e).

6.2 Soil Sampling:

The soil samples on the JK-1 grid returned highly anomalous lead and silver values. Two anomalous zones, approximately trending north-south and east-west, with values up to 1000 ppm lead and 5 ppm silver, were delineated. The zones are approximately 700 metres long and 300 metres wide (with values greater than 200 ppm lead). One of the zones is 400 metres long and 500 metres wide, with values greater than 2 ppm silver (see Figures 6b, 6c and 7b, 7c). The anomalous zones appear to be coincident with the topography.

Soil samples on the JK-2 grid also returned highly anomalous lead and silver values. The anomalous zone, approximately trending north-east and east-west, returned values up to 1180 ppm lead and 3.4 ppm silver (Figures 7b and 7c). The zone is approximately 500 metres

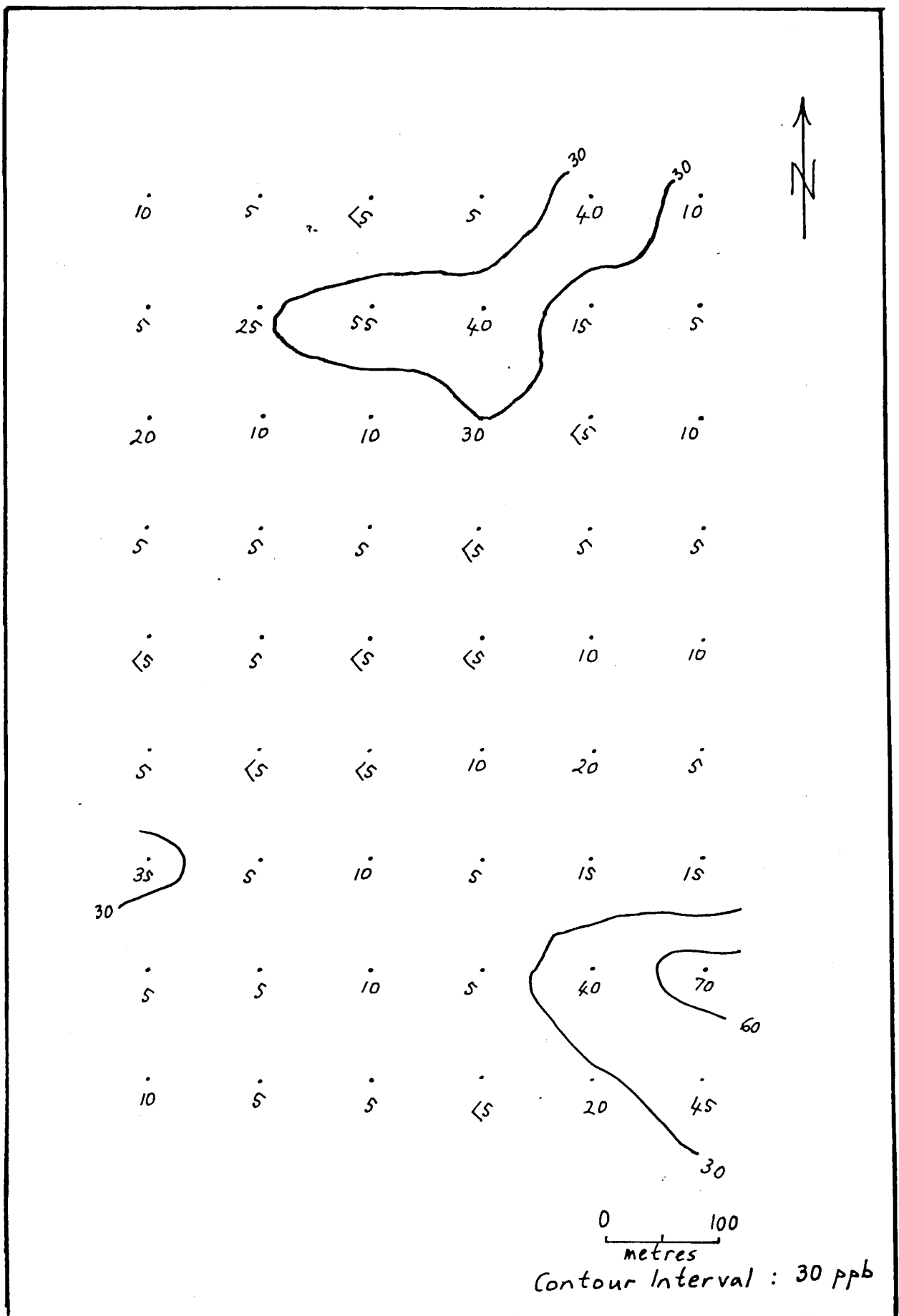


Figure 6a: JK-1 Grid: Soil Geochemistry: Gold.
JOCK GROUP

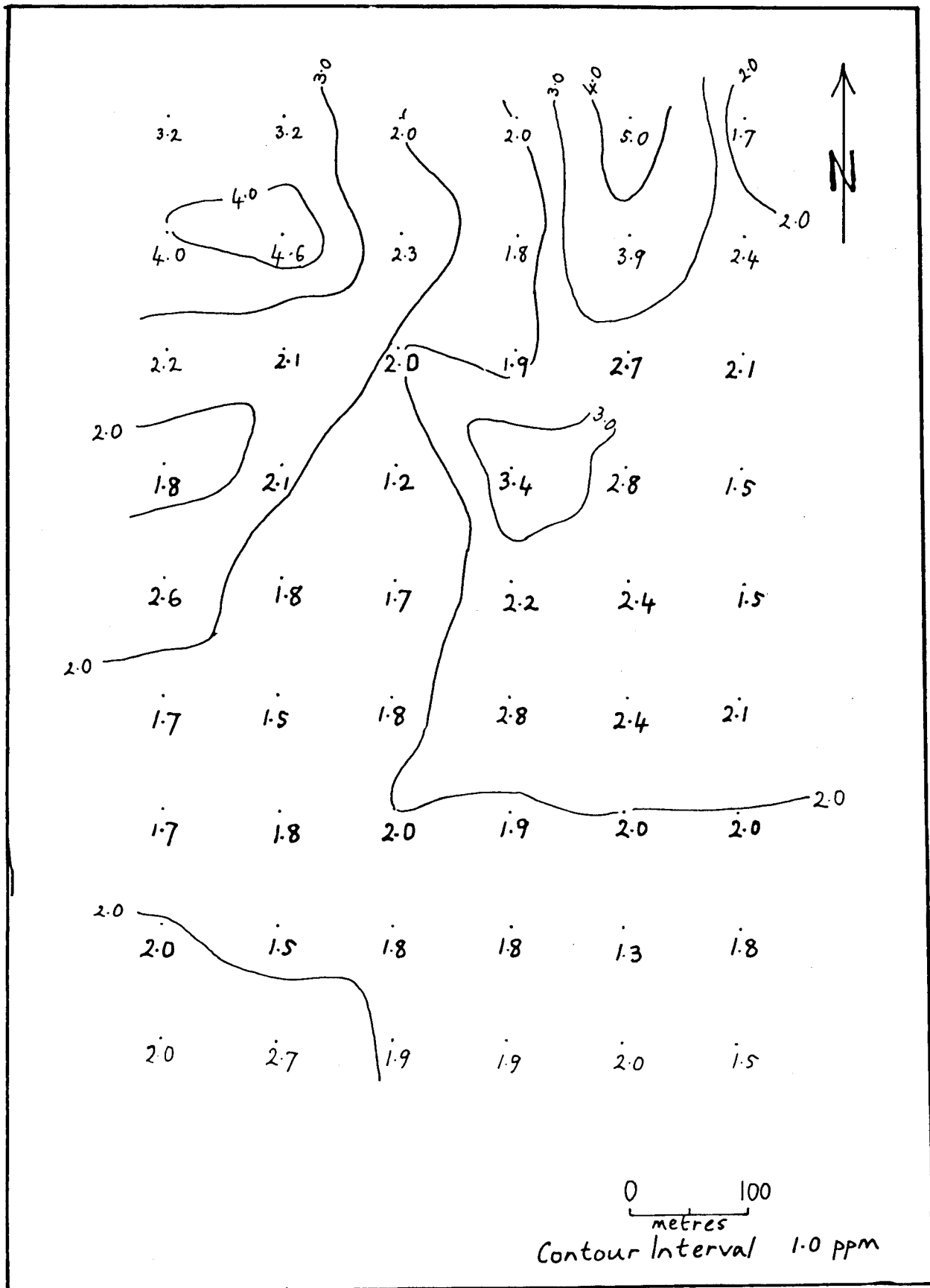


Figure 6b: JK-1 Grid - Soil Geochemistry: Silver.
JOCK GROUP

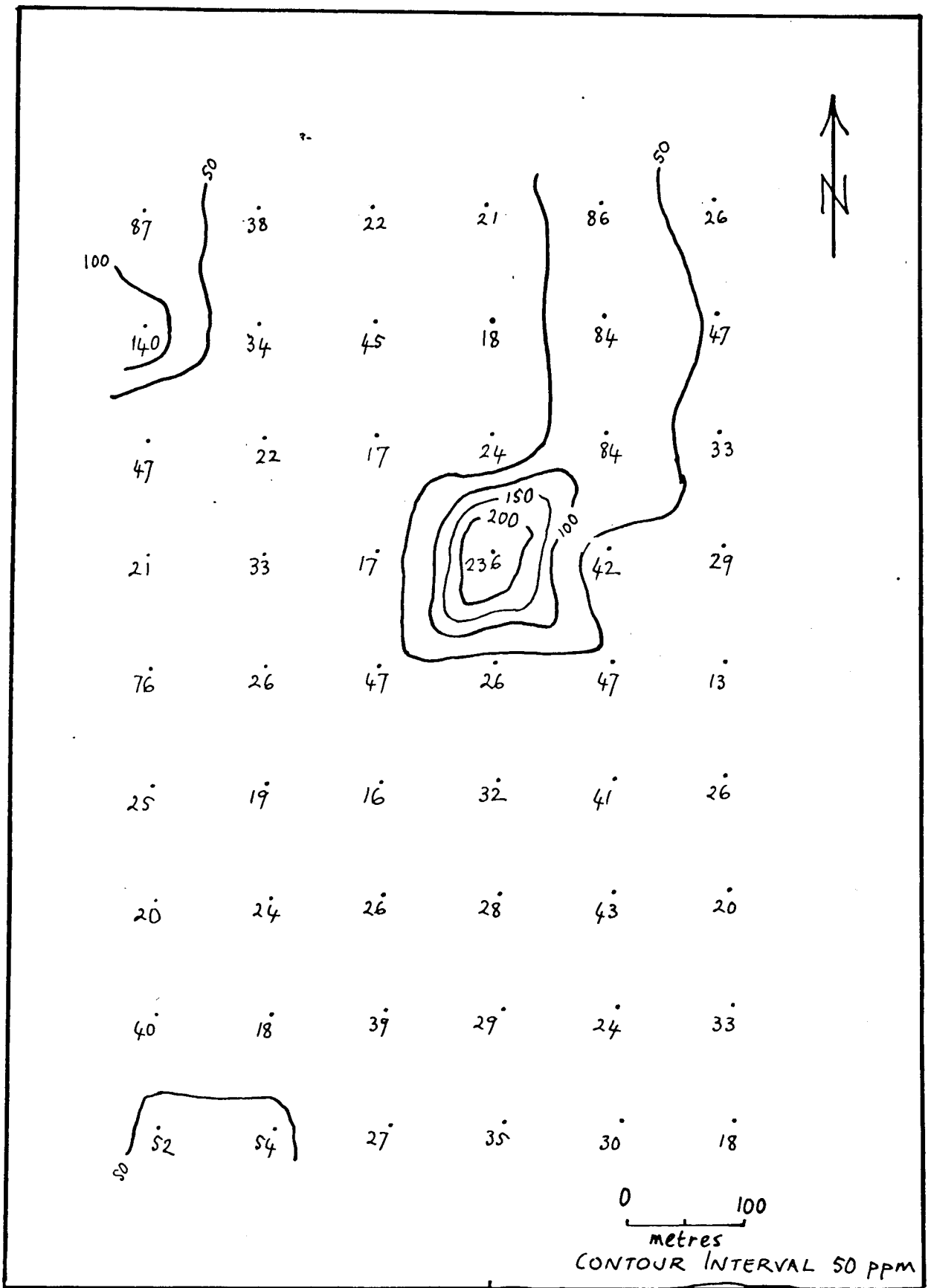


FIGURE 6c: JK-1 GRID: SOIL GEOCHEMISTRY: COPPER
JOCK GROUP

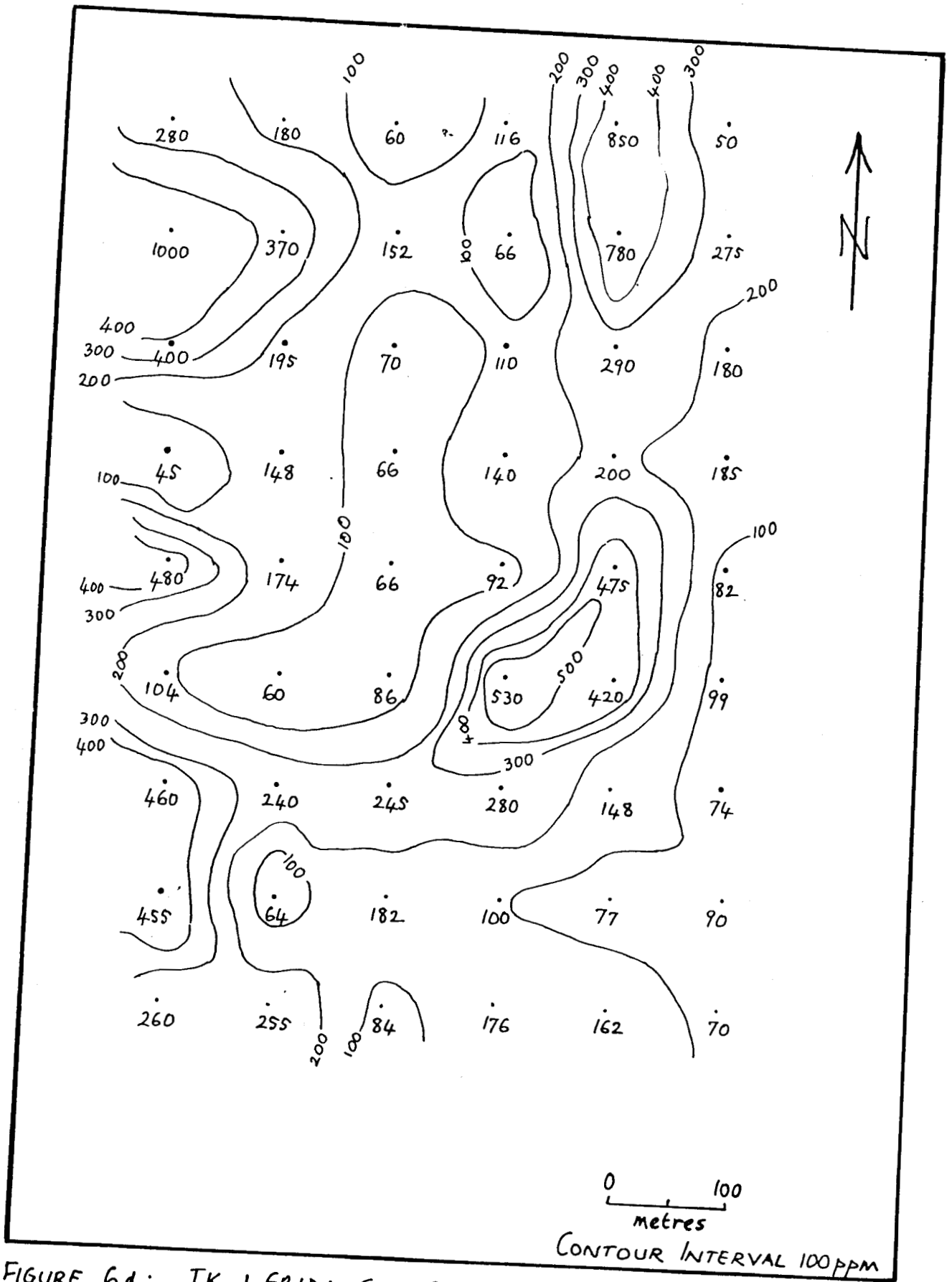


FIGURE 6a: JK-1 GRID: SOIL GEOCHEMISTRY: LEAD
JOCK GROUP

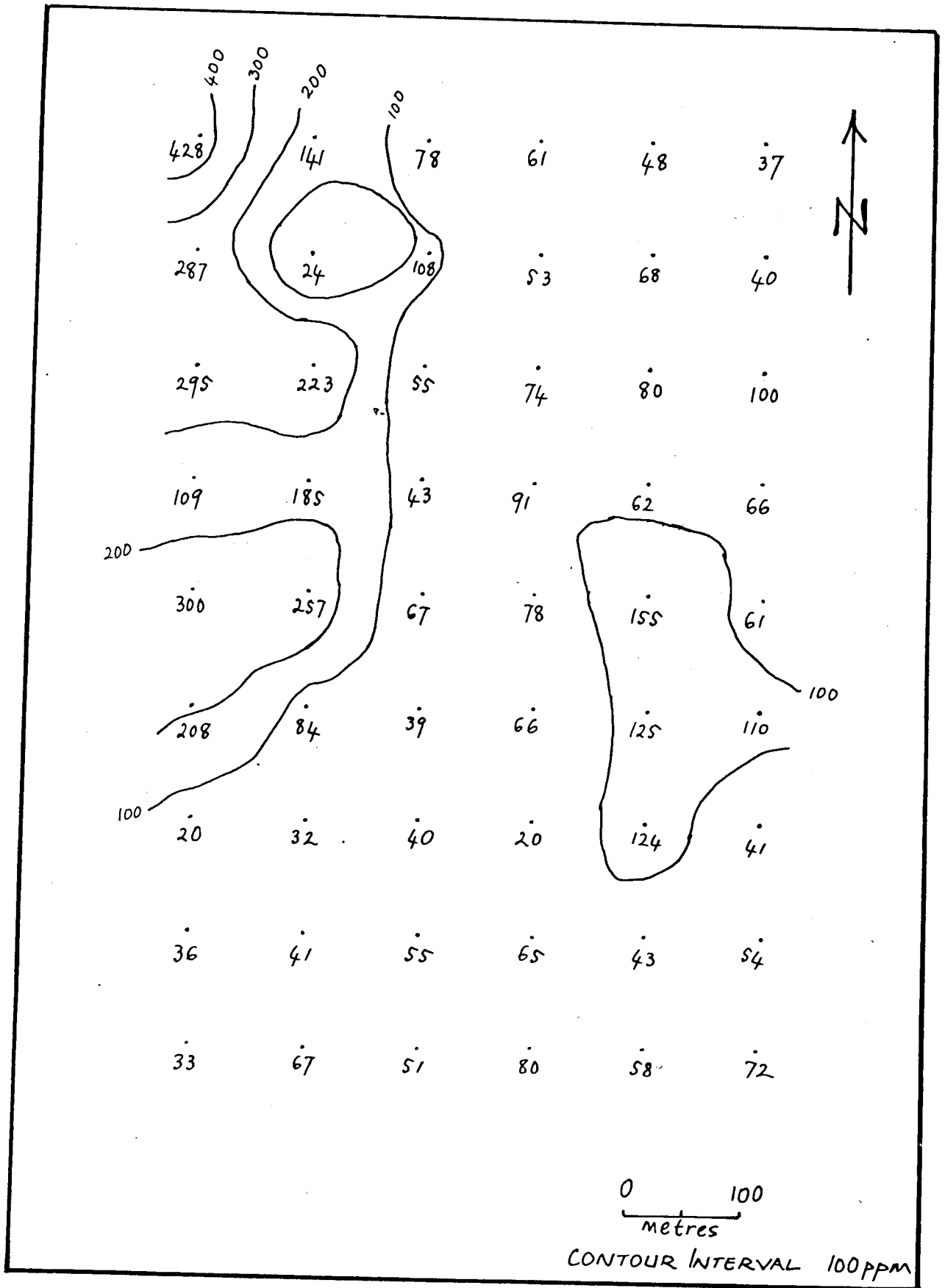


FIGURE 6e: JK-1 GRID - SOIL GEOCHEMISTRY: ZINC
JOCK GROUP

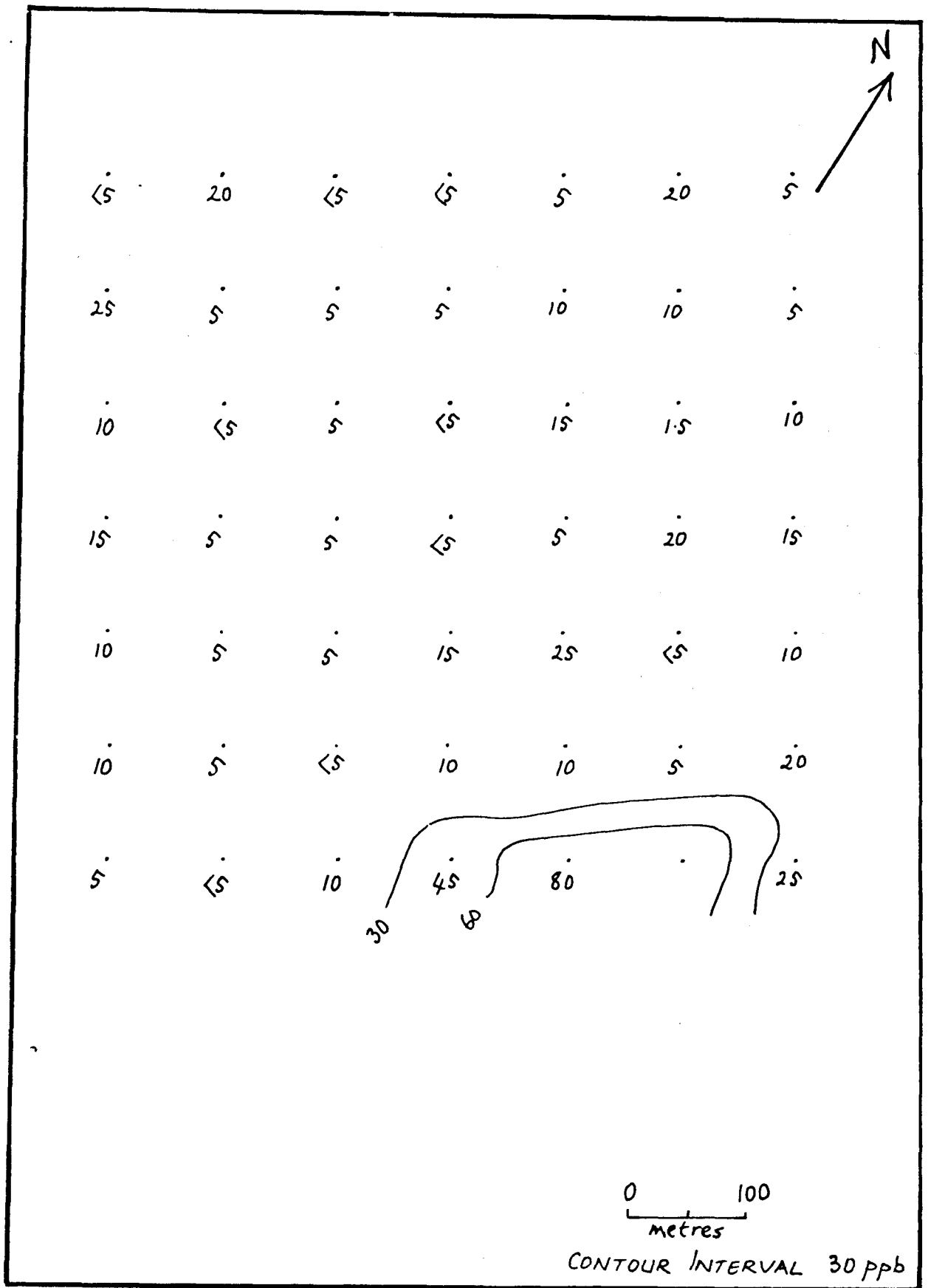


FIGURE 7a: JK-2 GRID - SOIL GEOCHEMISTRY: GOLD
JOCK GROUP

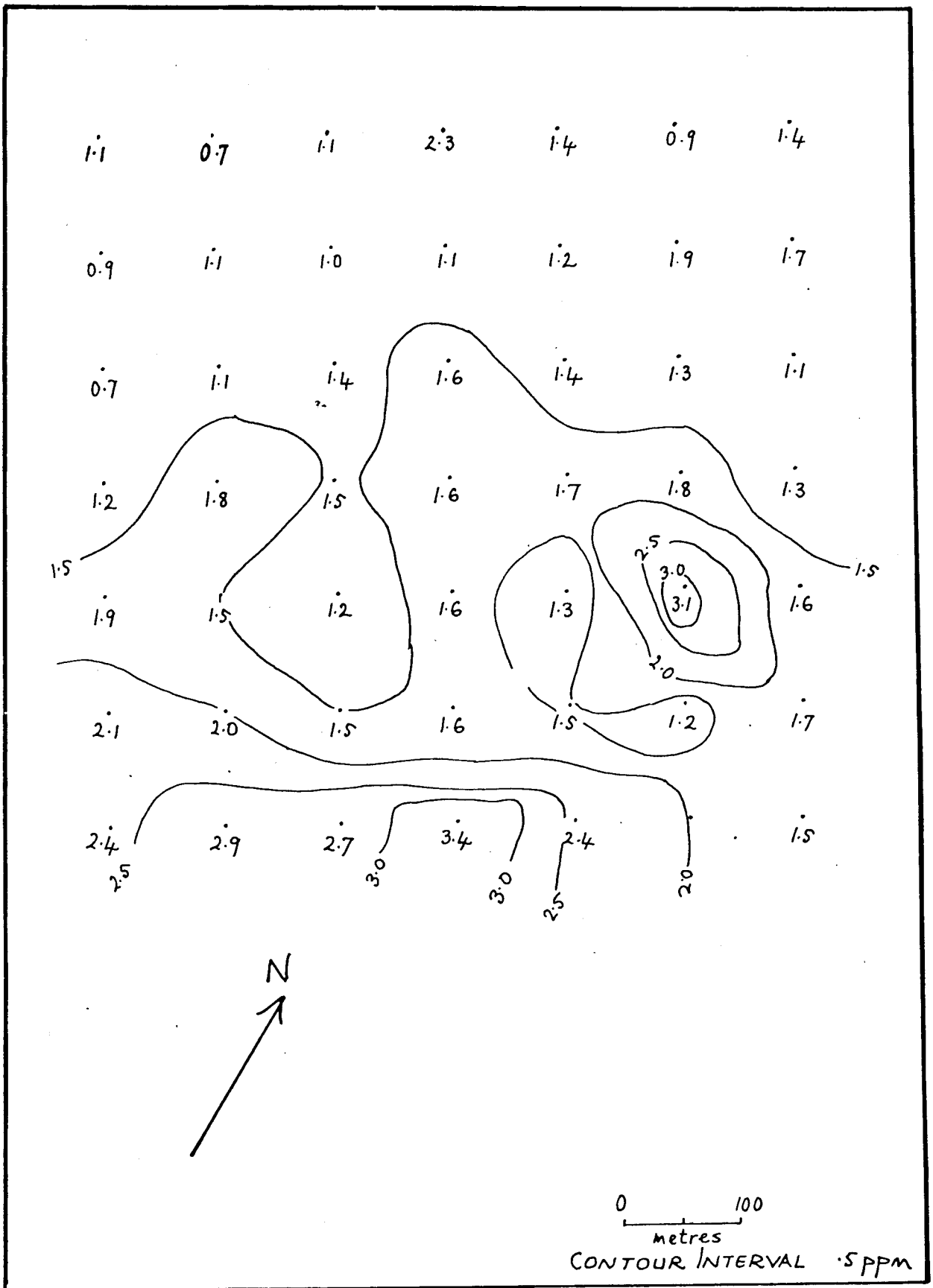


FIGURE 7b : JK-2 GRID - SOIL GEOCHEMISTRY : SILVER
JOCK GROUP

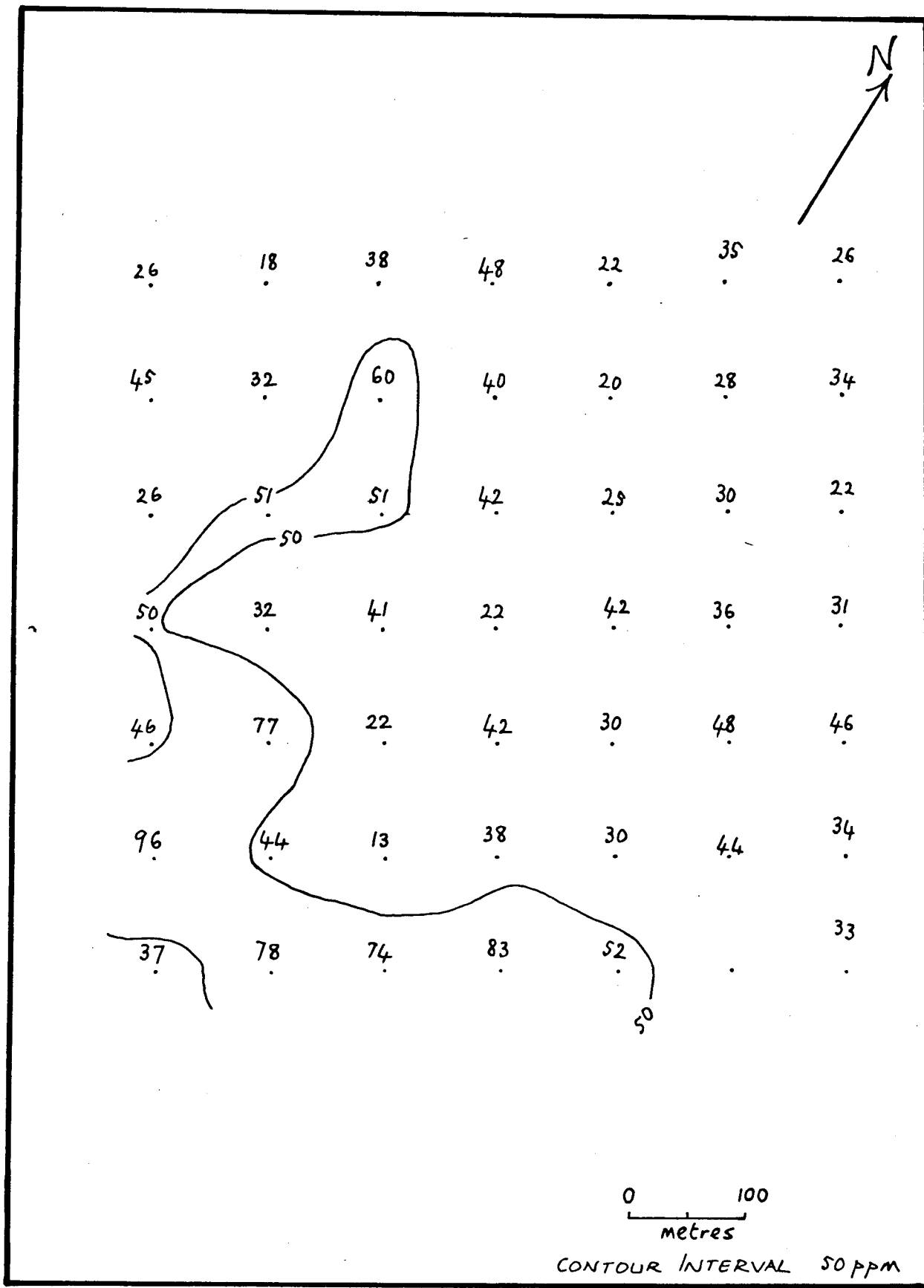


FIGURE 7c : JK-2 GRID - SOIL GEOCHEMISTRY: COPPER
JOCK GROUP

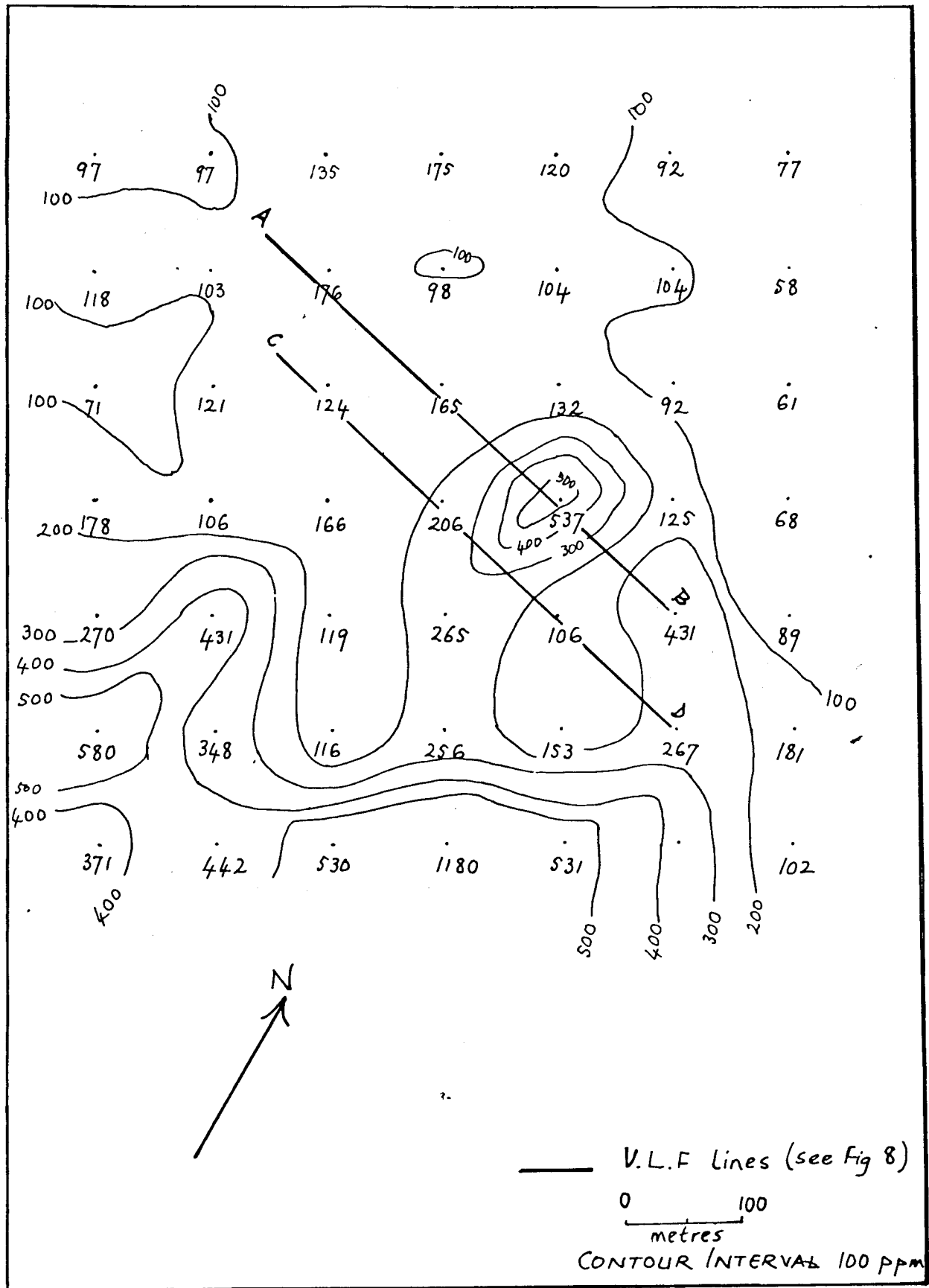


FIGURE 7d: JK-2GRID: SOIL GEOCHEMISTRY: LEAD
JOCK GROUP

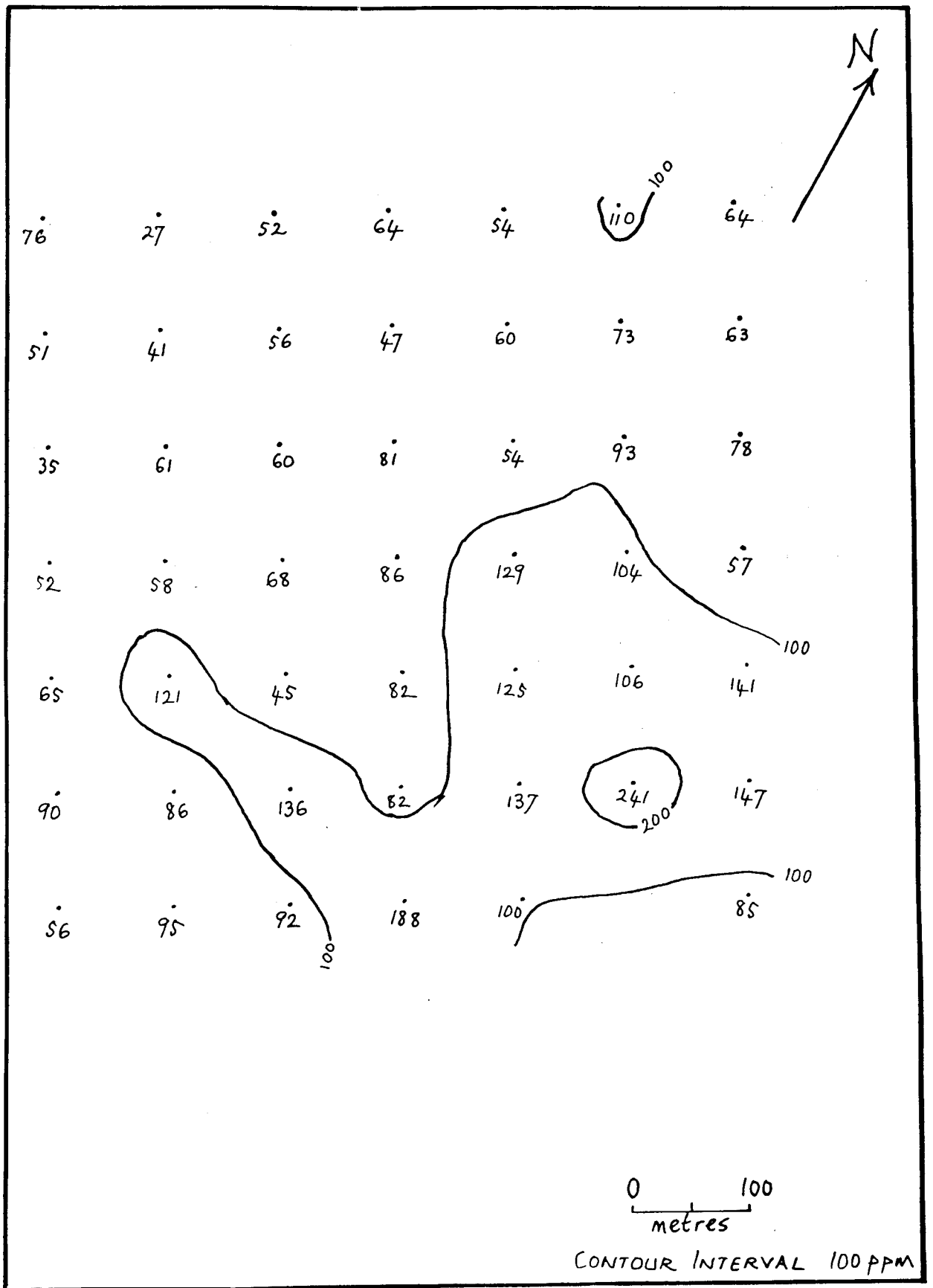


FIGURE 7e : JK-2, GRID - SOIL GEOCHEMISTRY : ZINC
JOCK GROUP

long and is open to the south, with values greater than 500 ppm lead and 2.5 ppm silver. The anomalous zones appear to be coincident with the topography.

7. MINERALIZATION AND ALTERATION

Though the geochemical soil samples returned significant lead and silver results with large anomalous zones, no significant mineralization was found through prospecting to date. Galena mineralization associated with quartz and calcite occurs on the JK-2 grid. Several samples were sent for assay with the assay results shown below:

Sample No.	Description	Au Oz/t	Ag	Pb	Zn %	Cu
Jock #1	Altered feldspar porphyry andesite		.01	.07	.01	
Jock #2	Highly siliceous volcanic rock		.01	.01	.02	
Jock #3	Feldspar porphyritic andesite with pyrite		.01	.01	.01	
Jock #4	"		.01	.01	.01	
SC-24-80-4	Feldspar porphyritic andesite with pyrite		.01	.01	.01	
SC-24-80-7	"		.03	.09	.01	
SC-46-80-2	Quartz carbonate vein with galena	.009	.2	.02	.01	
SC-46-80-4	"	.003	.19	.01	.01	
SC-46-80-13	"	.001	.58	1.12	2.49	.012
SC-46-80-14	"	.002	.13	.01	.01	

8. GEOPHYSICAL METHODS

Two lines with spacing of 50 metres were run for V.L.F. across the geochemical anomalous zone in lead delineated through soil sampling on the JK-2 grid (Figure 7b).

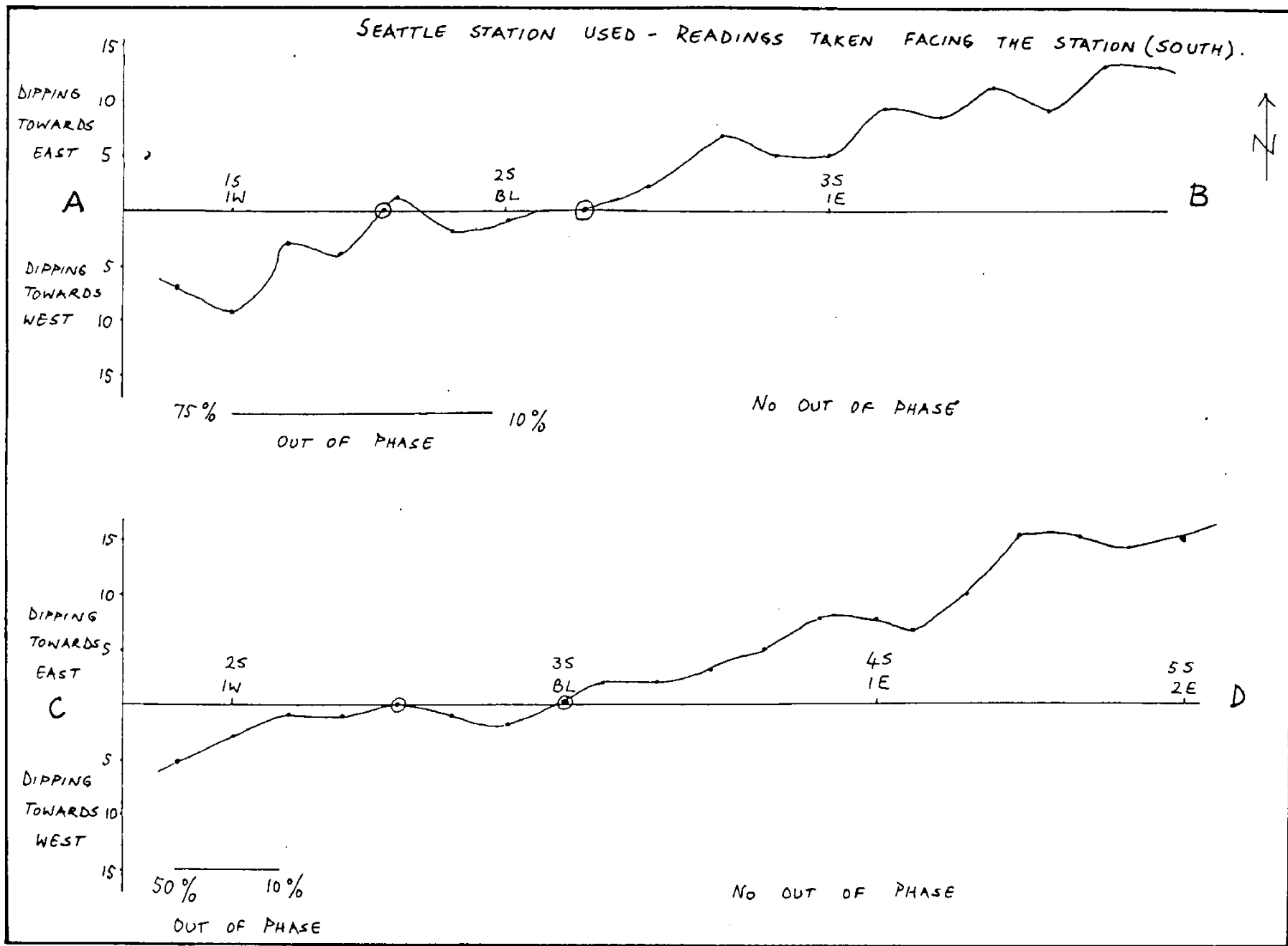


FIGURE 8 : V.L.F PROFILES - SEE JK-2 GRID (LEAD) FOR LOCATION.

The V.L.F. profiles are shown in Figure 8. The profiles show two cross-over points northwest of the anomalous zone delineated through soil sampling. The cross-overs are not coincident to the lead anomaly. They also suggest a broad conductor. The inference is based on data from only two lines. The broad conductor may be due to extensive pyrite occurring in the country rocks and not due to any other base metals.

I.P. may be useful for delineating any presence of base metal mineralization at depth.

9. CONCLUSIONS AND RECOMMENDATIONS

Extensive geochemical anomalous zones with values up to 1180 ppm lead were delineated on the Jock 1, 3 and 5 claims. Only minor mineralization, consisting of galena, was found through prospecting. This may be due to extensive leaching or oxidation of any base metal mineralization at surface by the breakdown of pyrite. The area underlain by the claims is highly gossanous.

More intensive prospecting, mapping and geophysical methods consisting of V.L.F. and I.P. should be carried out to determine the presence of any subsurface base metal mineralization.

10.

STATEMENT OF EXPENDITURESJOCK 1 & 2Wages:Geochemical sampling: June 10, 14, 17, 19, 24, 1980

S. Crawford	1½ days @ \$ 70.00	\$105.00	
J. Rushton	½ day @ \$ 50.00	25.00	
R. MacRae	1 day @ \$ 40.00	40.00	
J. Sweeney	½ day @ \$ 40.00	<u>20.00</u>	\$ 190.00

Geological mapping and prospecting:

June 19, 24, 1980

S. Crawford	2 days @ \$ 70.00	\$140.00	
M.R. Vulimiri	1 day @ \$100.00	<u>100.00</u>	240.00

Analyses

80 silts analysed for Cu,Pb,Zn,Ag, & Au @ \$8.85	\$708.00	
30 soils analysed for Cu,Pb,Zn,Ag & Au @ \$8.85	<u>265.50</u>	973.50

Board, Lodging and Field ExpensesPer Man Day

Food	\$ 10.80	
Expediting	3.00	
Equipment (lumber, hardware, generator, radio telephone)	10.43	
Fixed wing support (does not include mobilization or JP-4 fuel hauls)	13.19	
Helicopter support "	5.50	
Fuel (propane, oil stoves)	<u>4.12</u>	
	\$47.04	

6.5 man days @ \$47.04		305.76
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Transportation

Helicopter: 1 hr: 30 min. @ \$310 + \$102 (fuel)		<u>618.00</u>
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Total for Jock 1 and 2		\$2,327.26
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Continued .../

STATEMENT OF EXPENDITURES (Continued)JOCK 3, 4 and 5Wages:Geochemical sampling: June 30, July 21, 22, 1980

J. Rushton	1 day @ \$ 50.00	\$ 50.00	
R. Stowe	1 day @ \$ 40.00	<u>40.00</u>	\$ 90.00

Geological mapping and prospecting:

July 21, 22, 1980

S. Crawford	2 days @ \$ 70.00	\$140.00	
M.R. Vulimiri	1 day @ \$100.00	100.00	
P. Tegart	1 day @ \$150.00	150.00	
M. Carr	1 day @ \$ 70.00	<u>70.00</u>	460.00

Geophysical work - VLF: August 24, 1980

S. Crawford	1 day @ \$ 70.00	\$ 70.00	
J. Carne	1 day @ \$100.00	<u>100.00</u>	170.00

Analyses

56 soils analysed for Pb,Zn,Cu, Ag & Au @ \$8.85	\$955.60	
10 rocks assayed for Pb,Zn,Cu,Ag & Au @ \$33.50	<u>335.00</u>	1,290.60

Board, Lodging and Field Expenses

(Costs as per details on p. 9)

9 man days @ \$47.04		423.36
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Transportation

Helicopter: 2 hrs:25 min. @ \$310 + \$102 (Fuel)		<u>995.60</u>
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Total for Jock 3, 4 and 5		\$3,429.56
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Report Writing & Drafting:

M.R. Vulimiri 1 day @ \$100.00	\$100.00	
D.G. Dolsen 1 day @ \$ 70.00	<u>70.00</u>	<u>170.00</u>

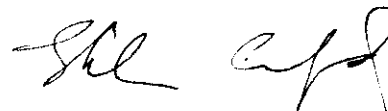
TOTAL EXPENDITURES FOR JOCK 1-5		<u><u>\$5,926.82</u></u>
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CERTIFICATE OF QUALIFICATIONS

I, Sheila A. Crawford, certify that:

1. I am a geologist, employed by SEREM Ltd.
2. I have an Honours Bachelor of Science (First Class) in Geology from Carleton University in Ottawa, Ontario.
3. I have worked in mineral exploration or geological mapping since 1975 and have acted in responsible positions since 1979.
4. I personally examined the property and directed the geochemical survey.
5. I have no financial interest, either direct or indirect, in the property.

Vancouver, B.C.



Sheila A. Crawford.

11.

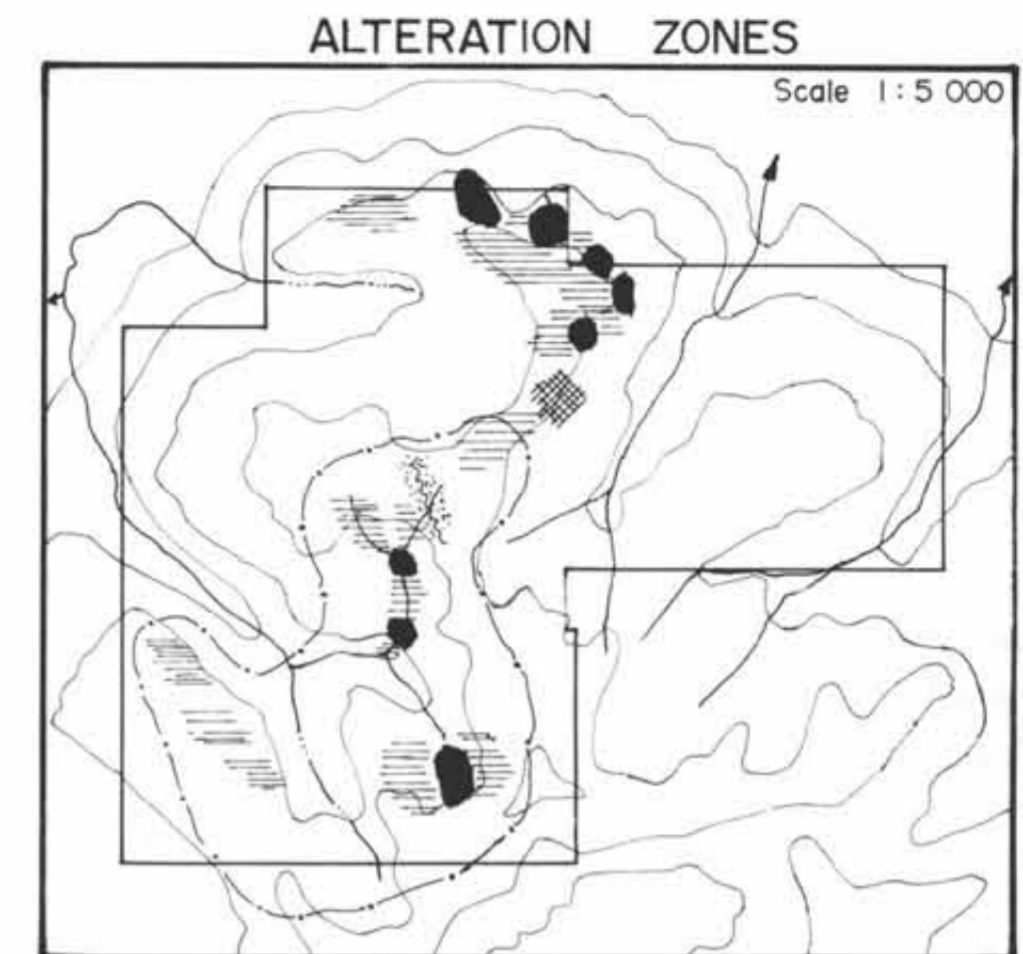
CERTIFICATE OF QUALIFICATIONS

I, Mohan R. Vulimiri, certify that:

1. I am a geologist, employed by Serem Ltd.
2. I am a graduate with a Master of Science Degree in Economic Geology from the University of Washington.
3. I have been involved in mineral exploration in British Columbia since 1970 and have acted in responsible positions since 1974.
4. I have no financial interest, either direct or indirect, in the property.
5. I personally examined the property.
6. The information contained in this report was obtained under my supervision.

Vancouver, B.C.

Mohan Vulimiri
Mohan R. Vulimiri.



LEGEND

- Quartz Monzonite
- Toodoggone Volcanic Rocks: F_p - feldspar porphyry; xit - crystal lapilli tuffs; X - rhyolites
- K-feldspar Alteration
- Argillic Alteration
- Propylitic (Epidote & Chlorite) Alteration with pyrite and marcasite
- Silicification, and Quartz veins & veinlets
- Strike & dip of bedding
- Columnar jointing
- Deformational jointing
- Fault (known, inferred)
- Limit of gossan
- Geological contact (known, inferred)
- Limit of outcrop

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
9026
NO.

S.E.R.E.M. LTD.

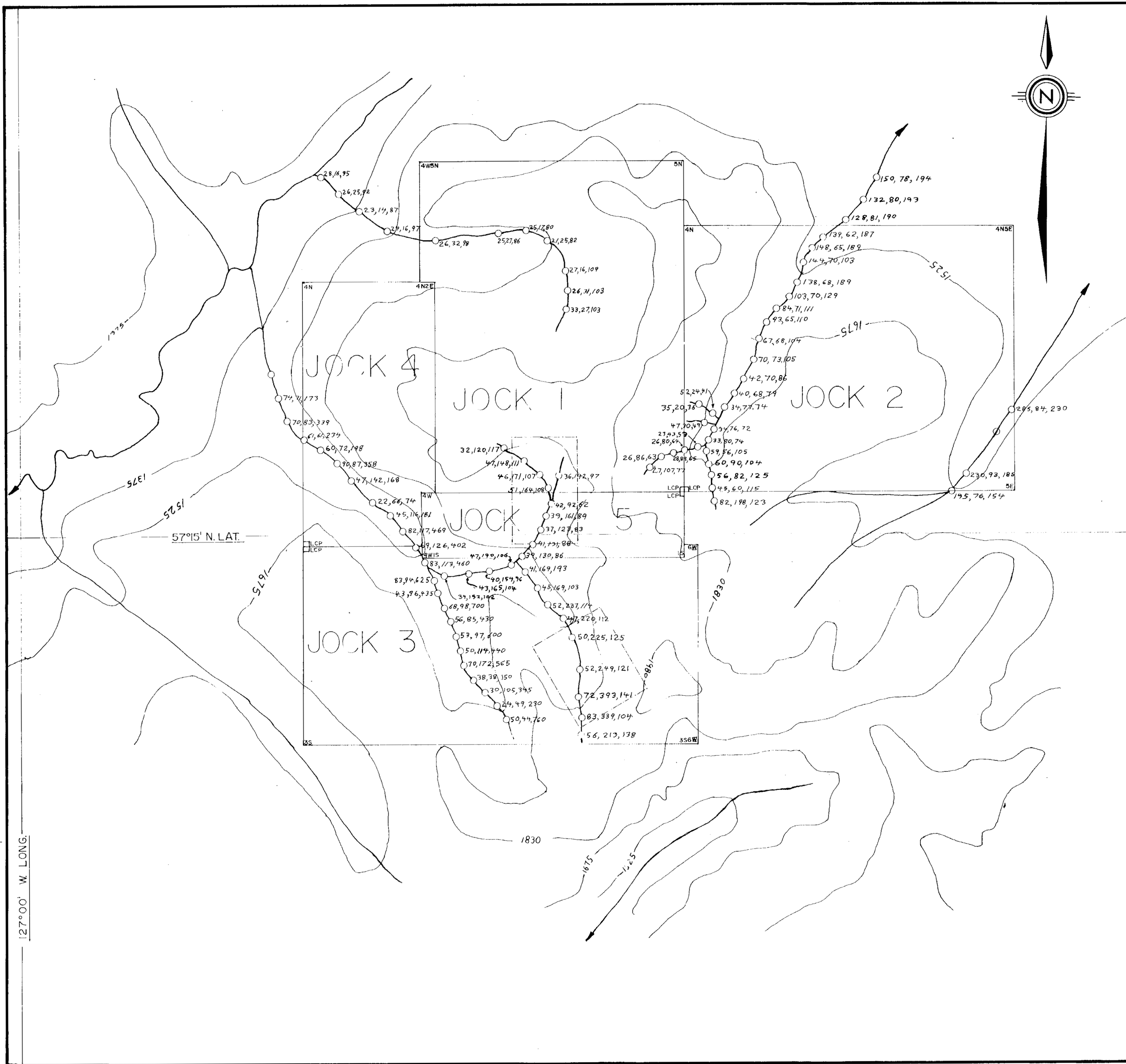
PROJECT **TOODOGGONE REGIONAL**

TITLE **JOCK CREEK**

GEOLOGY

DATE NOV 1980	DATA M.V.	FIGURE 3
NTS. 94E 7W	DRAWN M.V., DGD	
SCALE 1:2 000	CHECKED M.V.	

0 2km



LEGEND

- 56,213,138 SILT SAMPLE LOCATION WITH VALUES IN Cu(ppm),Pb(ppm), Zn (ppm)—ANOMALOUS VALUES UNDERLINED.
- ┌ LCP CLAIM BOUNDARY WITH LEGAL CORNER POST
- SOIL GRID

MINERAL RESOURCES BRANCH
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9086
NO. _____

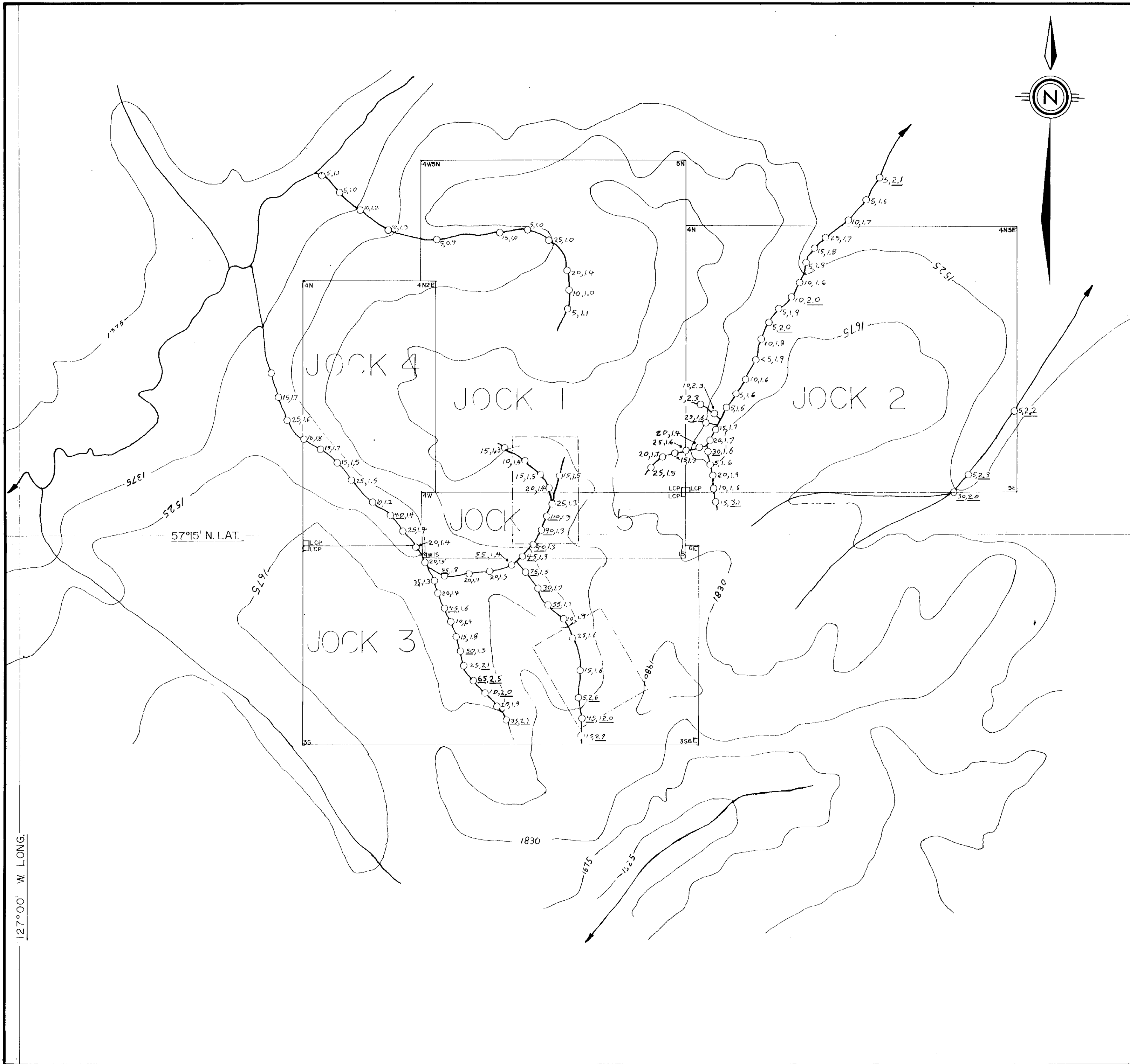
S.E.R.E.M. LTD.

PROJECT **TOODOGGONE REGIONAL**

TITLE **JOCK CREEK**
SILT GEOCHEMICAL DATA
COPPER, LEAD, AND ZINC

DATE	SEPT 1980	DATA	M. VULIMIRI	FIGURE 4
NTS.	94E 7W	DRAWN	M.V., DGD	
SCALE	1 : 2 000	CHECKED	M.V.	

2km



LEGEND

- 45,1.6 SILT SAMPLE LOCATION WITH VALUES IN Au (ppb) & Ag (ppm)—ANOMALOUS VALUES UNDERLINED.
- ┌──┐ CLAIM BOUNDARY WITH LEGAL CORNER POST
- ┌──┐ SOIL GRID

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

9086

NO.

S.E.R.E.M. LTD.

PROJECT **TOODOGONE REGIONAL**

TITLE **JOCK CREEK**
SILT GEOCHEMICAL DATA
GOLD & SILVER

DATE SEPT 1980	DATA M.V., S.C.	FIGURE 5
N.T.S. 94E 7W	DRAWN M.V., D.G.D.	
SCALE 1:2 000	CHECKED <i>KS</i>	