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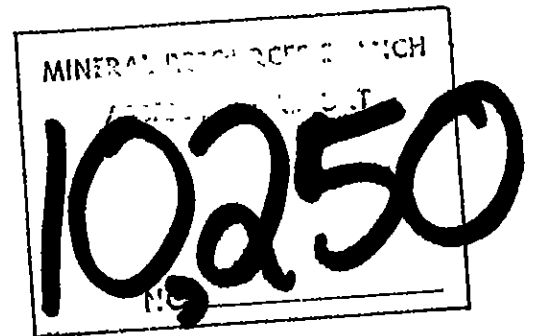
ASSESSMENT REPORT

GEOCHEMICAL REPORT
ON THE
JOCK CLAIM GROUP
(79 UNITS)

OMINECA MINING DIVISION

by

SHEILA A. CRAWFORD



LOCATION: 57°13' to 57°17' N Latitude
126°53' to 126°57' W Longitude
N.T.S. 94E/2W and 7W

OWNER/OPERATOR: SEREM LTD.

DATES WORK PERFORMED: August 11, 12 and 29, 1981

DATE OF REPORT: March, 1982

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INTRODUCTION

The Jock claim group is located between 57°13' and 57°17' N latitude and 126°53' and 126°57' W longitude, in the Toodoggone River map sheet area, N.T.S. 94E/2W and 7W, Omineca Mining Division (see Figures 1 and 2). Topography is moderately rugged. Approximately two-thirds of the property lies above tree-line.

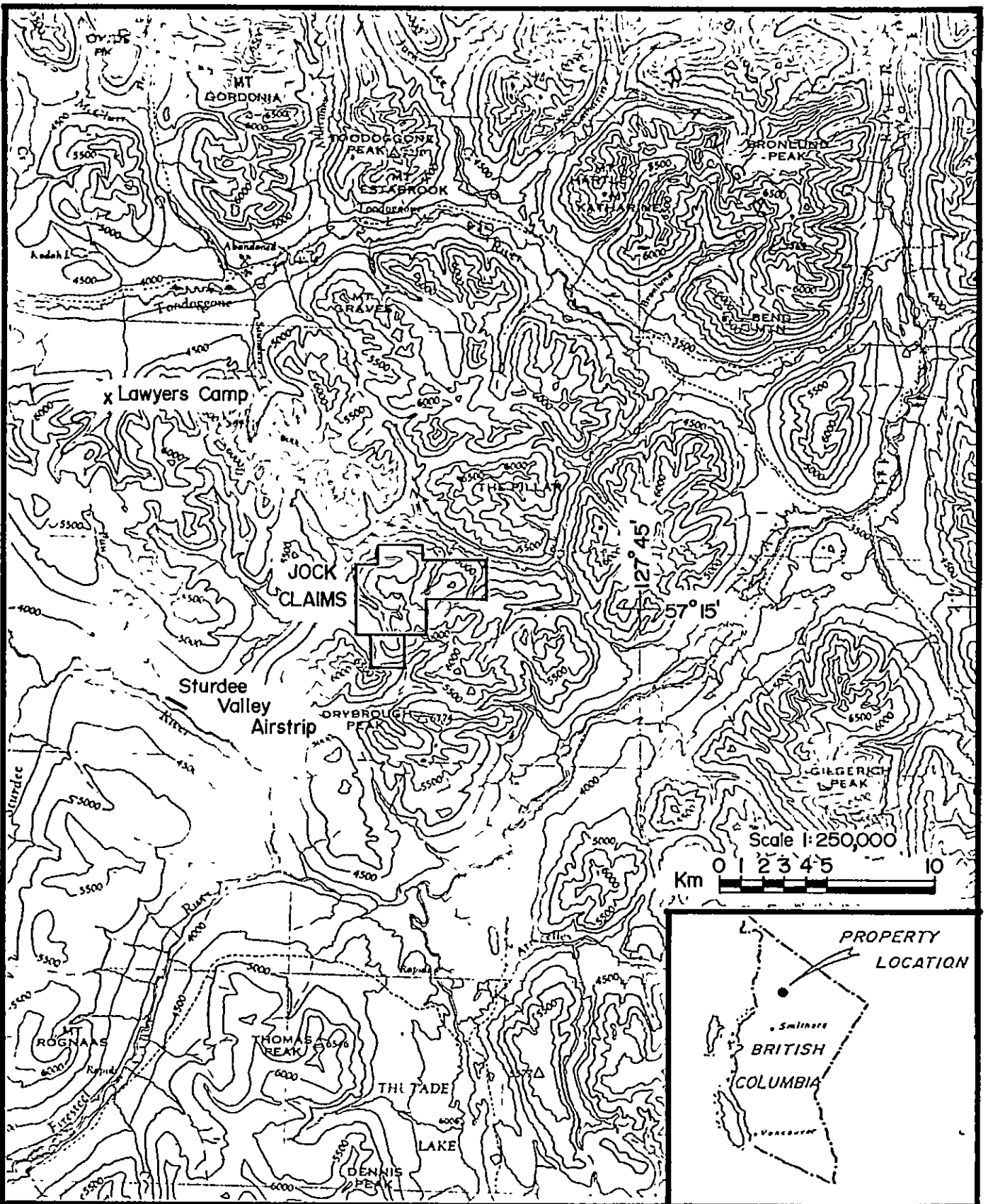
Access is by plane from Smithers to Sturdee Valley airstrip, a distance of 280 kilometres, and from the airstrip to the property by helicopter, a distance of 10 kilometres.

The claim group is comprised of the following claims:

<u>Claim Name</u>	<u>Record No.</u>	<u>No. of Units</u>
JOCK 1	2652	20
JOCK 2	2653	20
JOCK 3	2892	18
JOCK 4	2893	8
JOCK 5	2894	4
ITSCH	4129	<u>9</u>
		79

The claims are owned and operated by SEREM Ltd. Previous work is described in the assessment report submitted by SEREM Ltd. in March, 1981.

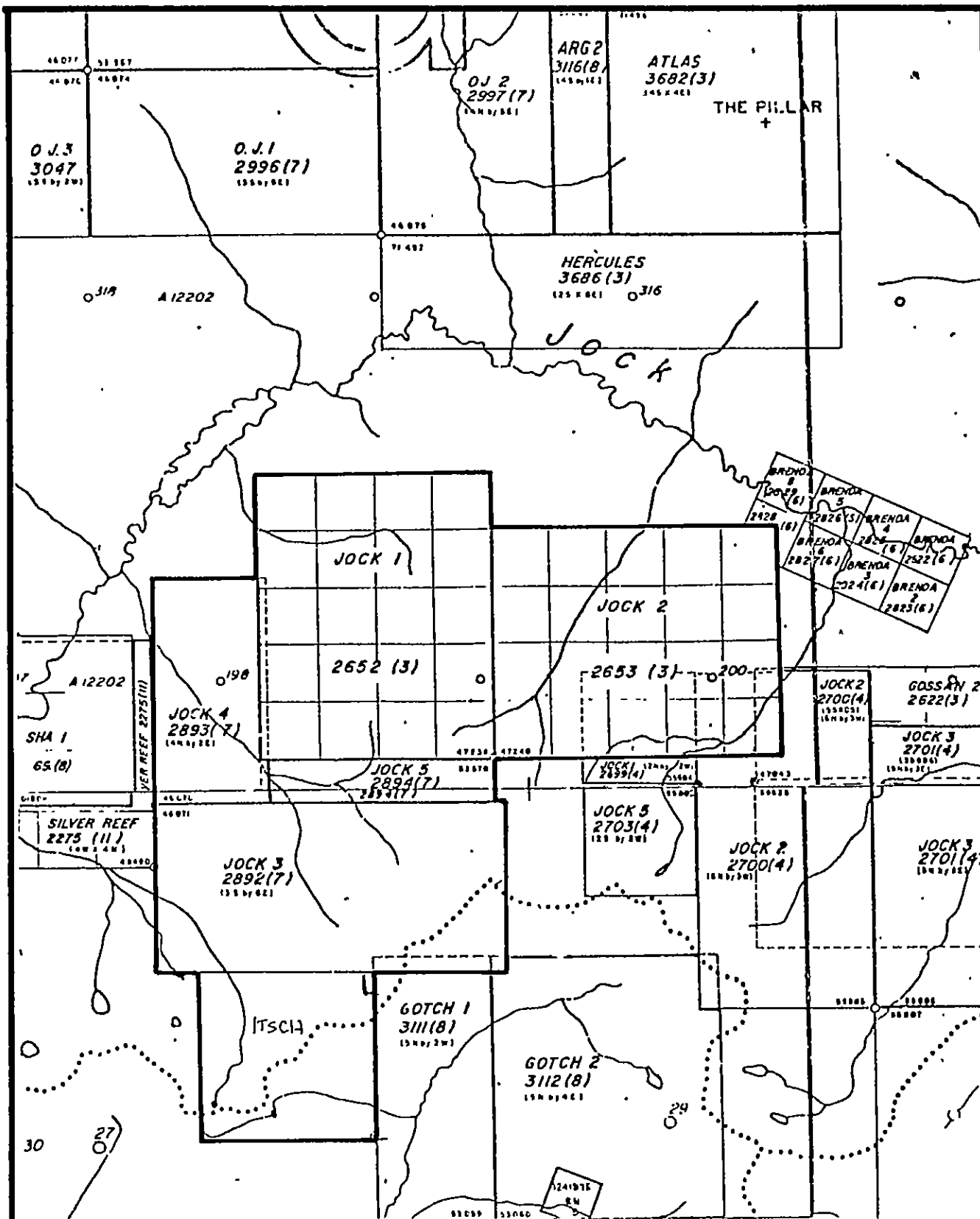
During the 1981 field season, geochemical soil and silt sampling, along with minor mapping and prospecting, were carried out on these claims. The Itsch claim was staked to cover an area of favourable geology. 253 soil and silt and 5 rock samples were analysed for gold and silver, and copper, lead, zinc or molybdenum. The purpose of this survey was to test areas of anomalous silt values or favourable geology (see 1981 report).



JOCK CLAIMS, LOCATION MAP

FIGURE:

1



JOCK CLAIMS, CLAIMS MAP

FIGURE:

2

GEOCHEMICAL SOIL, ROCK, AND SILT SAMPLING

Soil samples were taken at 100 to 150 metre intervals on traverses at approximately constant elevation. Pacing or Topofil was used to control distance and the localities were plotted on a 1:10,000 scale topographic map. Outcrops and talus were examined while collecting the soils, and samples with favourable characteristics were sent for analysis.

For the grid survey, a baseline was set with compass and surveyor's chain and picketed every 50 metres. Soil lines were run with Topofil and compass, using the baseline as control.

Soil was placed in brown paper envelopes, and characteristics such as depth of sampling, horizon, colour, grain size and amount of organic material were noted. Soils on the talus slopes have no B horizon; therefore the C horizon was sampled. The grid area is a plateau of poorly drained soil developed on felsensmeer or gravel. Samples are a mixture of A and C horizons.

Silts were taken from streams draining the Itsch claim area at intervals of approximately 150 metres. Samples were collected from active material, that is, under flowing water, and placed in brown paper envelopes. The stream gradient is moderate to gentle and the flow rate was moderate to slow.

GEOCHEMICAL ANALYSIS

Samples were sent to Min-En Laboratories and were analysed for gold, silver, copper, lead, zinc and molybdenum. 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, copper, lead, zinc and molybdenum, 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 for silver, copper, and lead. The C₂H₂-NO₂ mixture is used for molybdenum.

GEOCHEMICAL RESULTS AND INTERPRETATION

Contour soil and stream silt analyses are plotted on Figures 3a for gold and silver, 3b for copper and molybdenum, and 3c for lead and zinc. Threshold values are underlined and anomalous values are circled.

Gold is marginally anomalous in a few areas: the highest value in soils is 130 ppb. Silver is anomalous on the western portion of Jock, running greater than 3.0 ppm silver in several samples. Elsewhere, silver is anomalous in a few isolated areas. Copper is generally in the background range except for a few marginal anomalies on Jock 2. Lead anomalies correspond to gossan areas and are enhanced by residual enrichment in these strongly leached soils. Lead values which occur on the northwest Jock 1 claim may be related to galena-bearing veins in the volcanics. Molybdenum is marginally anomalous on Jock 2 and in the background-threshold range elsewhere.

The following table lists descriptions and analyses of rocks collected on the contour traverses. Locations are plotted on Figures 3a to 3c.

<u>Sample No.</u>	<u>Description</u>	<u>O=Outcrop F=Float</u>	<u>Au ppb</u>	<u>Ag</u>	<u>Cu ppm</u>	<u>Pb</u>	<u>Mo</u>
CL-39-81- 2	Grey siliceous quartz-eye lapilli tuff	F	5	1.2			
- 7	Sheared, limonitic volcanic	F	5	0.4		15	2
- 8	Rock chips from gossan - propylitic altered volcanic with disseminated pyrite	F	40	0.8			
- 9	Silicified, hematized volcanic	F	50	0.8	5		4
BL-32-81-40	Vuggy quartz breccia in mafic volcanic	O	5	8.2			

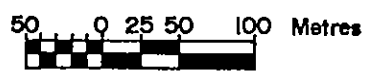
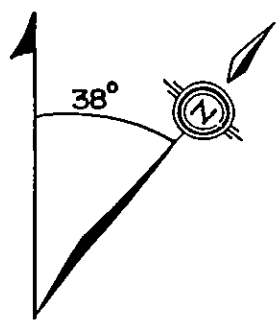
The location of the soil grid is plotted on the contour geochemistry maps. Gold, silver, copper, lead and molybdenum soil grid analyses are plotted on Figures 4a to 4e respectively. Values are contoured. Figure 4f is a map of geological features in the soil grid area. Augite porphyritic andesites (Takla group) contain several fracture-controlled zones of quartz + calcite + barite breccia in argillic alteration envelopes.

The area is virtually barren in lead and molybdenum. Copper is weakly anomalous and coincides with silver anomalies. Two unrelated gold anomalies also occur in the area. In general, the geochemistry does not indicate any economic mineralization.

Marginal anomalies in gold, silver, copper and lead occur in the silts taken from streams draining the Itsch claim. Silver is in the threshold range for most of the samples; anomalies in the other elements are more erratically distributed. Highest values are 270 ppb gold, 3.0 ppm silver, 140 ppm copper, 89 ppm lead and 197 ppm zinc.

0S	50	10	50	50			
	10	50	105	50	50		
1S	10	20	50	50	50	50	
	50	50	50	15	50	50	50
2S	50	50	50	10	50	50	50
	50	10	50	50	50	10	50
3S	10	50	50	10	45	50	50
	50	50	10	50	50	50	50
4S	50	10	50	50	50	15	50
	50	50	50	15	50	50	50
5S	15	50	50	10	50	50	10
	50	50	10	50	50	50	10
6S	10	50	50	10	50	50	
	50	50	50	50	50	50	15
7S	50	50	50	50	10	50	
	50	50	50	50	50	50	50
8S	50	50	50	50		50	
	50	50	50	10	10		
9S	50	10	50	50	50		

IW O IE



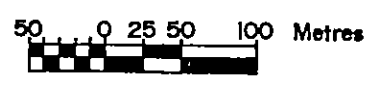
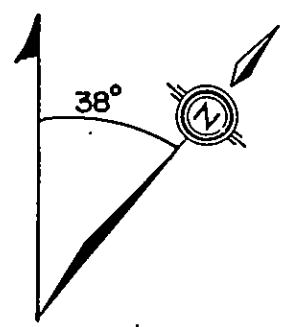
○ Soil sample site, ppb Au:
 ≥20 ppb Au. /
 ≥50 ppb Au. /
 ≥100 ppb Au. /

JOCK 3 CLAIMS, SOIL GRID: GOLD IN SOILS

FIGURE:
4a

JK

0S	0.9	0.6	0.6	0.7			
	0.8	0.7	0.6	0.6	0.5		
1S	1.3	1.1	1.0	0.7	1.0	1.0	0.9
	1.4	1.2	1.0	0.8	0.9	0.8	1.0
2S	1.1	1.0	1.0	1.0	1.1	0.9	0.9
	1.2	1.2	1.0	0.9	0.9	0.9	1.0
3S	1.2	0.5	0.7	0.8	0.7	1.0	1.0
	1.4	1.6	1.4	1.3	1.4	0.8	1.3
4S	1.6	2.0	1.2	1.6	1.3	1.4	1.4
	1.2	1.2	1.1	1.0	0.8	1.5	1.3
5S	1.2	1.1	1.1	1.3	0.8	0.8	1.0
	2.6	2.7	3.0	1.6	0.9	1.0	0
6S	1.0	0.9	1.0	0.9	1.0	0.8	
	0.9	0.9	1.1	1.1	0.9	1.1	2.8
7S	1.0	1.2	1.0	0.9	1.7	1.2	
	0.9	0.5	0.7	0.6	0.8	1.2	1.0
8S	0.7	0.8	0.7	0.8		1.1	
	0.8	0.7	0.9	1.0	0.7		
9S	0.9	0.9	1.0	0.9	0.7		



W O E

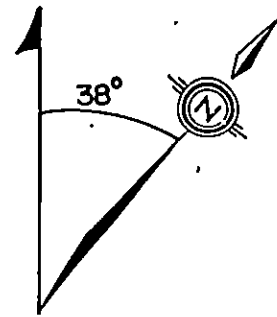
○ Soil sample site, Silver in ppm:
 ≥ 2.0 ppm Ag. /
 ≥ 3.0 ppm Ag. /
 ≥ 4.0 ppm Ag. /

**JOCK 3 CLAIMS, SOIL GRID:
SILVER IN SOILS**

FIGURE:
4b

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0S	79	10	15	8			
	28	6	8	10	9		
1S	55	24	15	10	10	10	7
	118	15	16	9	11	7	8
2S	60	43	28	13	12	8	6
	63	48	35	16	11	16	10
3S	56	52	41	36	15	10	8
	45	63	45	27	21	12	13
4S	42	99	32	68	43	15	14
	65	45	74	46	25	21	49
5S	96	70	68	195	54	37	31
	66	62	90	30	29	30	
6S	44	33	38	27	32	37	
	30	32	21	11	23	29	39
7S	54	48	21	13	18	16	
	68	25	26	16	18	36	16
8S	67	53	24	20	27		
	88	38	36	57	86		
9S	90	63	75	42	66		



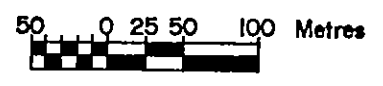
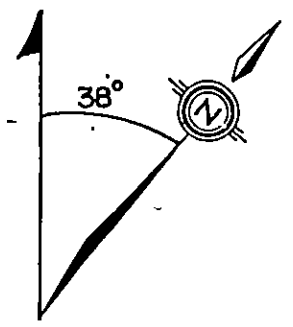
○ Soil sample site, ppm Cu:
 ≥60 ppm Cu. /
 ≥100 ppm Cu. //
 ≥200 ppm Cu. ///

JOCK 3 CLAIMS, SOIL GRID: COPPER IN SOILS

FIGURE:
4C

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0S	16	10	14	12			
	20	19	17	18	12		
1S	21	26	24	20	21	16	15
	22	22	18	19	17	21	18
2S	19	17	20	21	16	15	18
	16	18	45	13	14	20	21
3S	12	11	13	13	30	15	16
	21	22	20	16	16	17	21
4S	22	24	18	21	25	21	36
	22	23	24	19	18	30	19
5S	26	23	22	19	12	11	26
	17	16	16	10	12	11	0
6S	16	13	16	17	13	11	
	21	15	14	12	12	17	58
7S	11	16	18	17	16	32	
	13	10	12	16	15	31	22
8S	15	16	13	17	24		
	20	14	16	16	14		
9S	19	12	32	19	15		



W O E

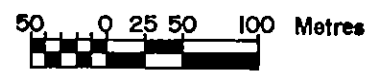
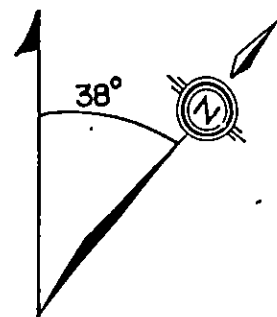
○ Soil sample site, Lead in ppm:
 12
 ≥40 ppm Pb. /
 ≥80 ppm Pb. /
 ≥160 ppm Pb. /

JOCK 3 CLAIMS, SOIL GRID: LEAD IN SOILS

FIGURE:
4d

ll

0S	0	0	0	0				
	2	1	1	1	1			
1S	0	0	0	0	0	0	0	
	2	1	1	1	3	2	1	
	2	3	1	1	2	1	2	
2S	2	1	1	1	1	4	2	1
	1	3	1	1	2	2	2	2
3S	1	3	4	2	1	2	1	1
	2	1	1	1	1	1	2	1
4S	2	2	1	1	1	2	2	1
	1	1	1	2	2	1	1	
5S	1	1	1	1	4	1	1	
	1	1	2	1	1	2	1	
6S	1	3	2	2	2	1	1	
	2	1	2	1	2	1	1	
7S	1	1	1	2	1	2	1	
	1	1	1	1	2	1	2	
8S	1	1	4	3	1			
	1	2	1	1	2			
9S	2	1	1	2	1			



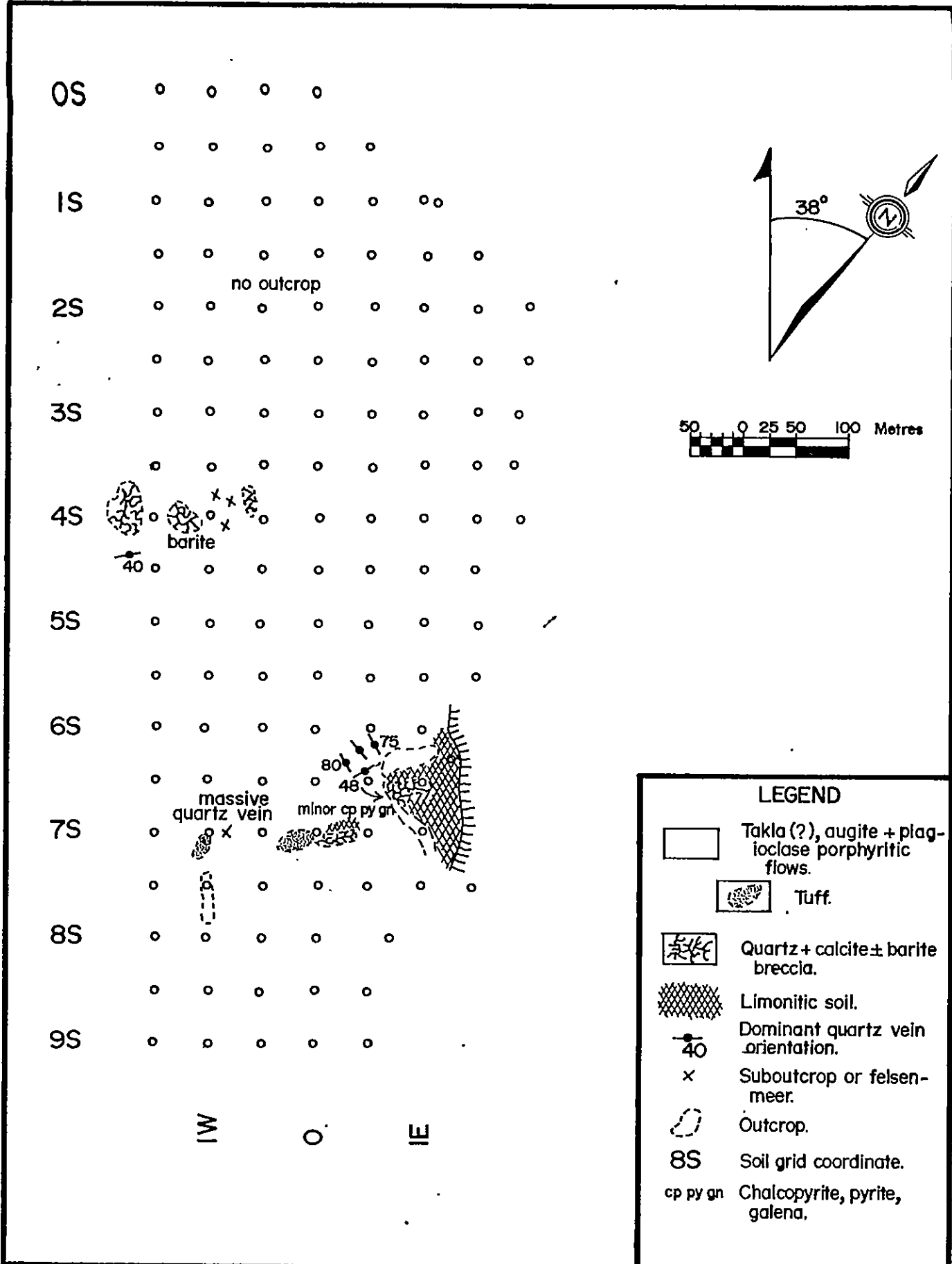
W O E

○ Soil sample site,
 1 Molybdenum in ppm:
 ≥6 ppm Mo. /
 ≥9 ppm Mo. /
 ≥12 ppm Mo. /










**JOCK 3 CLAIMS, SOIL GRID:
 MOLYBDENUM IN SOILS**

FIGURE:
4e

ll



LEGEND

-  Takla (?), augite + plagioclase porphyritic flows.
-  Tuff.
-  Quartz + calcite ± barite breccia.
-  Limonitic soil.
-  Dominant quartz vein orientation.
-  Suboutcrop or felsenmeer.
-  Outcrop.
-  Soil grid coordinate.
-  Chalcopyrite, pyrite, galena.

**JOCK 3 CLAIMS, SOIL GRID:
-GEOLOGY-**

FIGURE:
4f

EL

CONCLUSIONS AND RECOMMENDATIONS

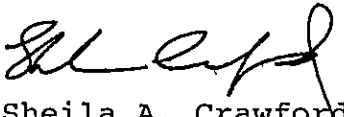
The Jock claim group is underlain by volcanic rocks which have been subjected to intense hydrothermal alteration. A large, highly leached gossan, formed by later oxidation of disseminated pyrite, affects the geochemical signature of the area by enhancing certain elements such as lead and diluting others such as copper. Geochemical sampling has outlined an area on Jock 2 and one on the Itsch claims which have anomalous precious metal values. These areas should be mapped and prospected in detail. Further work would depend on these results.

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 degree (First Class) in Geology from Carleton University in Ottawa, Ontario.
3. I have worked in mineral exploration or geological mapping since 1976 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.

STATEMENT OF EXPENDITURESAnalyses

197 soils and silts analysed for Au, Ag, Cu, Pb, Mo or Zn	@ \$10.55	\$2,078.35	
56 soils and silts analysed for Au, Ag, Pb, Mo	@ \$ 9.65	540.40	
2 rocks analysed for Au, Ag, Cu or Pb, Mo	@ \$11.05	22.10	
1 rock analysed for Au, Ag, Cu	@ \$10.15	10.15	
2 rocks analysed for Au, Ag	@ \$ 9.25	18.50	
Shipping cost Smithers to Vancouver Laboratory: 258 samples	@ \$ 0.30	<u>77.40</u>	
		\$2,746.90	\$2,747.00

Wages

Contour soil, rock and stream silt sampling, August 11, 12, 1981:			
C. Lormand	2 days @ \$ 50/day	\$	100.00
B. Lane	2 days @ \$ 56/day		112.00
Soil grid survey, August 29, 1981:			
C. Lormand	1 day @ \$ 50/day		50.00
C. Greig	1 day @ \$ 50/day		50.00
Evaluation, mapping and supervision, Aug. 12, 29, 1981:			
S. Crawford	2 x .5 day @ \$92/day		92.00
Report writing and map preparation, March 1982:			
S. Crawford	2 days @ \$115/day		230.00
Drafting, March 1982:			
C. Greig	1½ days @ \$ 72/day		<u>108.00</u>
			\$ 742.00

Board, Lodging and Field Expenses

7 days @ \$52/day	\$	364.00
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Transportation

Helicopter - 1 hr. 40 min. @ \$475/hr	\$	792.00
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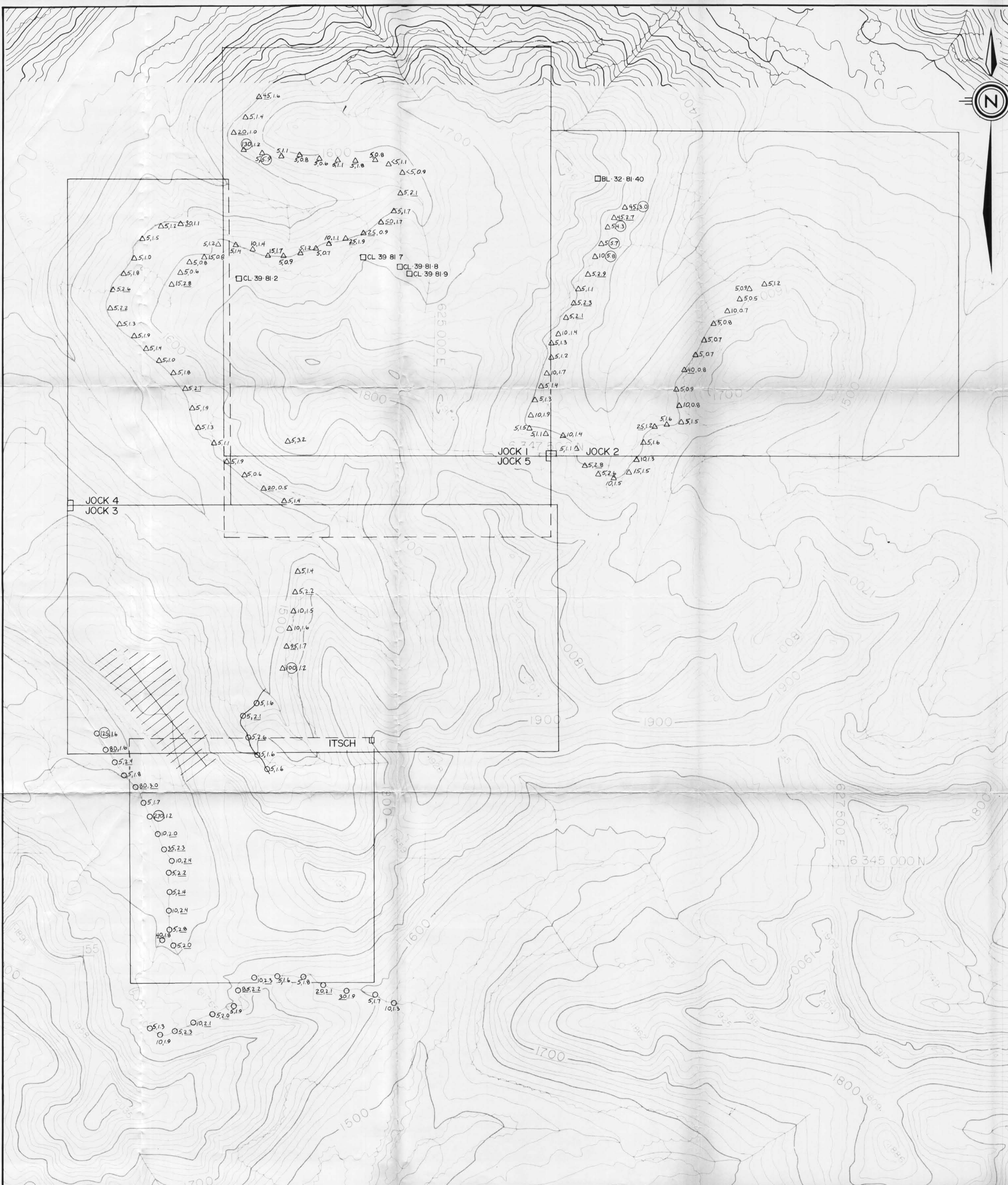
Topographic Map (1:10,000 scale

Burnett Resources	\$	<u>948.00</u>
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Total		<u><u>\$5,593.00</u></u>
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LEGEND

- △5,1,2 SOIL SAMPLE SITE, ppb Au, ppm Ag.
- 5,1,6 SILT SAMPLE SITE, ppb Au, ppm Ag.
- 25,2,2 Au: ≥ 20 ppb; Ag: ≥ 2.0 ppm.
- (25,5,8) Au: ≥ 100 ppb; Ag: ≥ 3.0 ppm.
- CL 39 81-2 ROCK SAMPLE LOCATION.



MINERAL RESOURCES DIVISION
 10,250

SEREM LTD.
 TOODOGGONE PROJECT
 JOCK CLAIMS
 GOLD & SILVER GEOCHEMISTRY

DATE: MARCH 82 DATA: S.C.
 N.T.S: 94E/2W & 7W DRAWN: C.G.
 SCALE: 1:10,000 CHECKED: [initials]

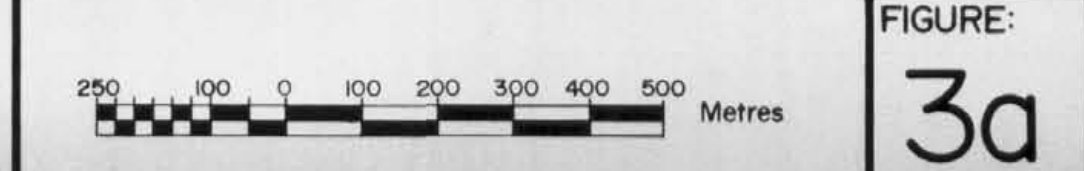
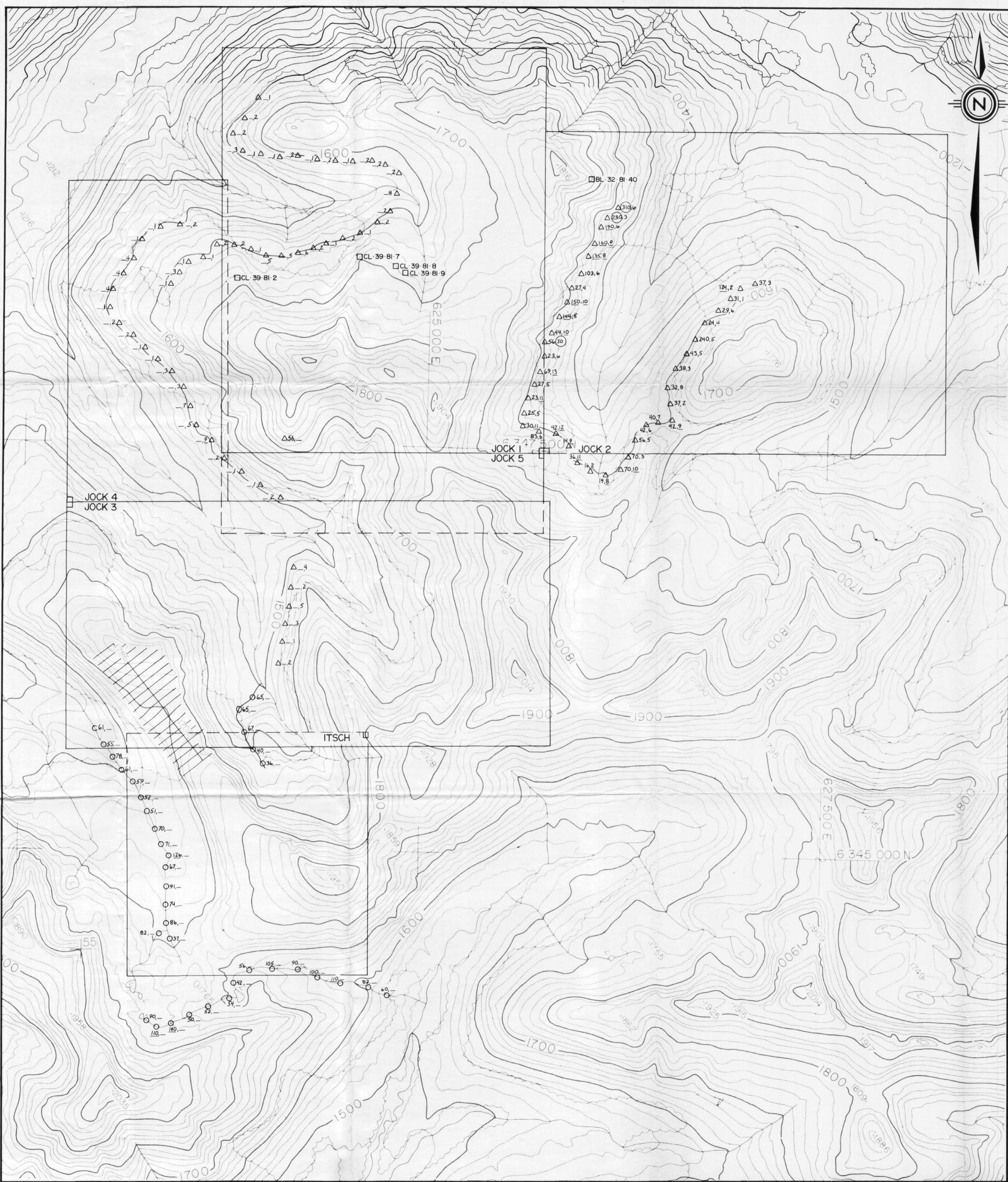


FIGURE:
 3a

LEGEND

- CL 39 81 2 ROCK SAMPLE LOCATION.
- Δ 32.8 SOIL SAMPLE SITE, ppm Cu, ppm Mo.
- 61.- SILT SAMPLE SITE, ppm Cu, ppm Mo.
- 125.2 Cu: ≥110 ppm; Mo: ≥8 ppm.
- 230/20 Cu: ≥220 ppm; Mo: ≥20 ppm.



10,250

SEREM LTD.
 TOODOGGONE PROJECT
 JOCK CLAIMS
 Cu AND Mo GEOCHEMISTRY

DATE: MARCH 82 DATA: S.C.
 N.T.S: 94E/2W 9.7W DRAWN: C.G.
 SCALE: 1:10,000 CHECKED:

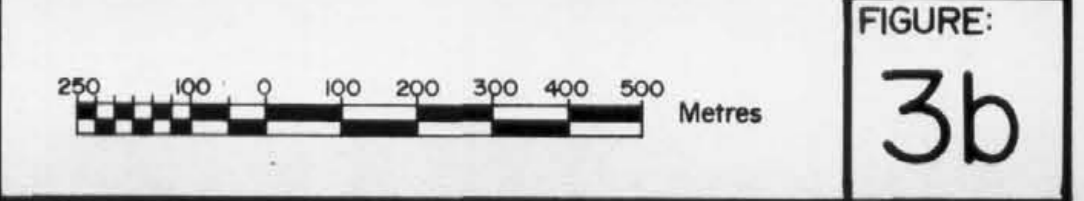
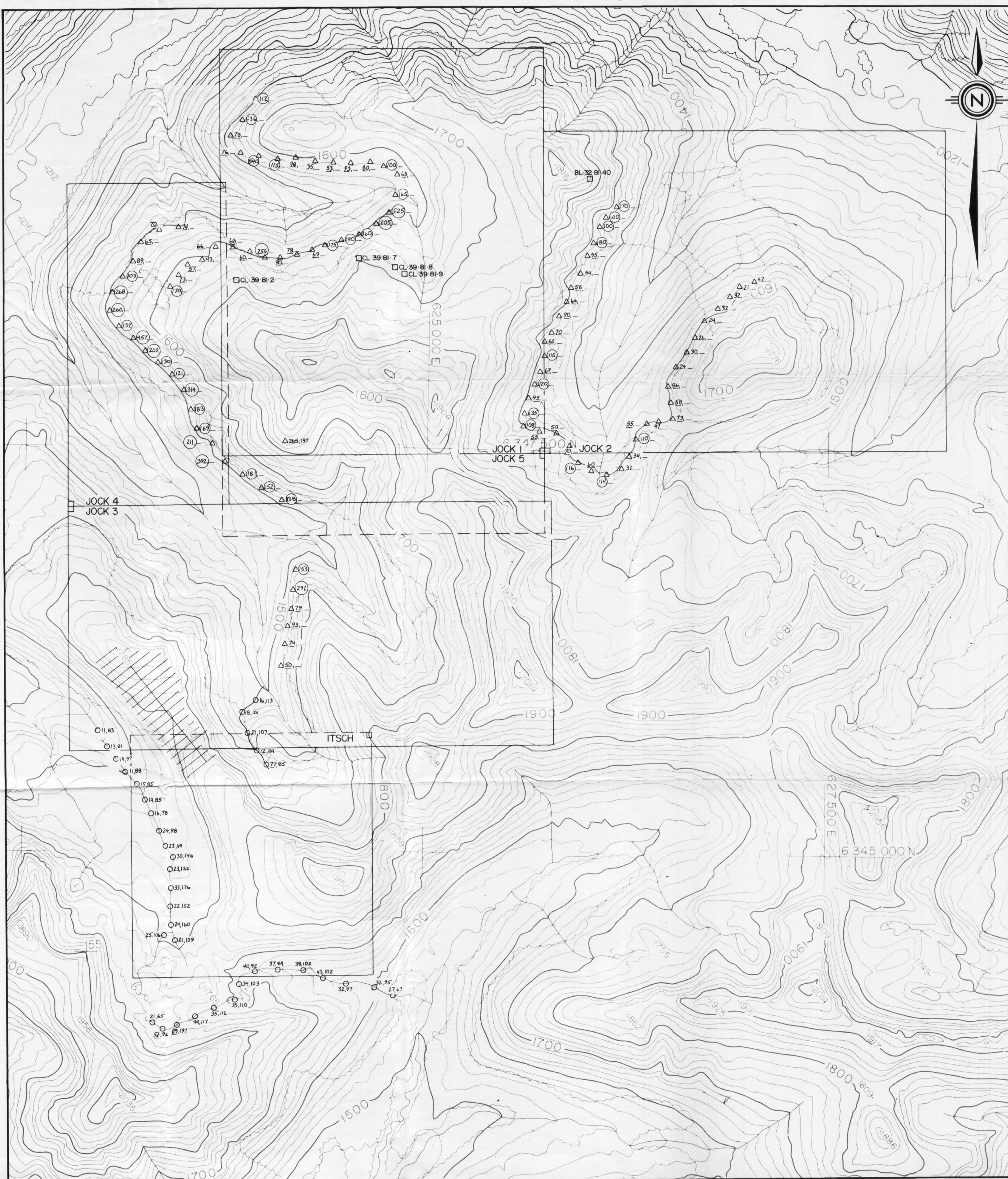


FIGURE:
 3b

LEGEND

- BL 32-81-40 □ ROCK SAMPLE LOCATION.
- △ 18, 01 SOIL SAMPLE SITE, ppm Pb, ppm Zn.
- 42, ... SILT SAMPLE SITE, ppm Pb, ppm Zn.
- 23, 320 Pb: ≥50 ppm; Zn: ≥350 ppm.
- 46, 700 Pb: ≥100 ppm; Zn: ≥700 ppm.



10,250

SEREM LTD.
 TOODOGGONE PROJECT
 JOCK CLAIMS
 LEAD & ZINC GEOCHEMISTRY

DATE: MARCH 82 DATA: S.C.
 N.T.S. 94E/2W 8 7W DRAWN: C.G.
 SCALE: 1:10,000 CHECKED: [Signature]

