

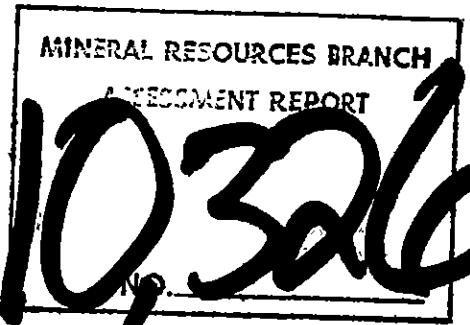
ASSESSMENT REPORT

GEOLOGICAL AND GEOCHEMICAL REPORT
ON THE
ATLAS AND HERCULES CLAIMS
(32 UNITS)

OMINECA MINING DIVISION

by

SHEILA A. CRAWFORD



LOCATION: 57°16' N to 57°19' N Latitude
126°51' W to 126°57' W Longitude
N.T.S. 94E/7W

OWNER/OPERATOR: SEREM LTD.

DATES WORK PERFORMED: June 16, 18, 19; August 8,
September 1, 2, 1981

DATE OF REPORT: April, 1982

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
GENERAL GEOLOGY	4
GEOLOGY AND MINERALIZATION OF THE TRENCHES:	
QUARTZ CHALCEDONY BRECCIA ZONE	4
GEOCHEMICAL SOIL AND ROCK SAMPLING	6
GEOCHEMICAL ANALYSIS	7
GEOCHEMICAL RESULTS AND INTERPRETATION ..	8
CONCLUSIONS AND RECOMMENDATIONS	9
CERTIFICATE OF QUALIFICATIONS	10
STATEMENT OF EXPENDITURES,	
GEOLOGY AND GEOCHEMISTRY	11
PHYSICAL WORK	12

LIST OF ILLUSTRATIONS

Figure 1.	Location Map - Atlas and Hercules Claims	2
Figure 2.	Claims Map - Atlas and Hercules Claims	3
Figure 3.	Location of geochemical grids, trenches; generalized geology	In Pocket
Figure 4.	Atlas Claim: 1981 trenches	"
Figure 5a.	Gold values: Hercules claim soil grid	"
Figure 5b.	Silver values: "	"
Figure 5c.	Copper values: "	"
Figure 5d.	Lead values: "	"
Figure 5e.	Zinc values: "	"
Figure 6a.	Gold values: Atlas claim, rock geo-chemical survey	"
Figure 6b.	Silver values: "	"

INTRODUCTION

The Atlas and Hercules claims are located between $57^{\circ}16'$ N and $57^{\circ}19'$ N latitude and $126^{\circ}51'$ W and $126^{\circ}57'$ W longitude in the Toodoggone River map sheet area, N.T.S. 94E/7W, Omineca Mining Division (see Figures 1 and 2). Topography is rugged on the Atlas claim: outcrop is exposed on approximately one-third of the area. The Hercules claim overlies lower slopes and valleys, and outcrop exposure is poor. Elevation ranges approximately from 1200 to 2050 metres above sea level.

Access to the property is by plane from Smithers to Sturdee airstrip, a distance of 280 kilometres and from Sturdee airstrip to the property by helicopter, a distance of about 17 kilometres.

The Atlas and Hercules claims consist of 16 units each. They are owned and operated by SEREM Ltd. and were staked on the basis of anomalous silt samples from creeks draining the area. No previous work has been reported from this area.

Work performed by SEREM Ltd. in 1981 includes soil and rock geochemical sampling, preliminary geological mapping and trenching. The purpose of work was to delineate the sources of stream anomalies. The number of samples taken on each claim are listed below:

Hercules claim: 113 soil samples; 80 analysed for Au, Ag, Cu, Pb, Zn, 33 for Au, Ag, Cu.

Atlas claim: 204 rock samples analysed for Au, Ag, 80 trench samples assayed for Au, Ag.

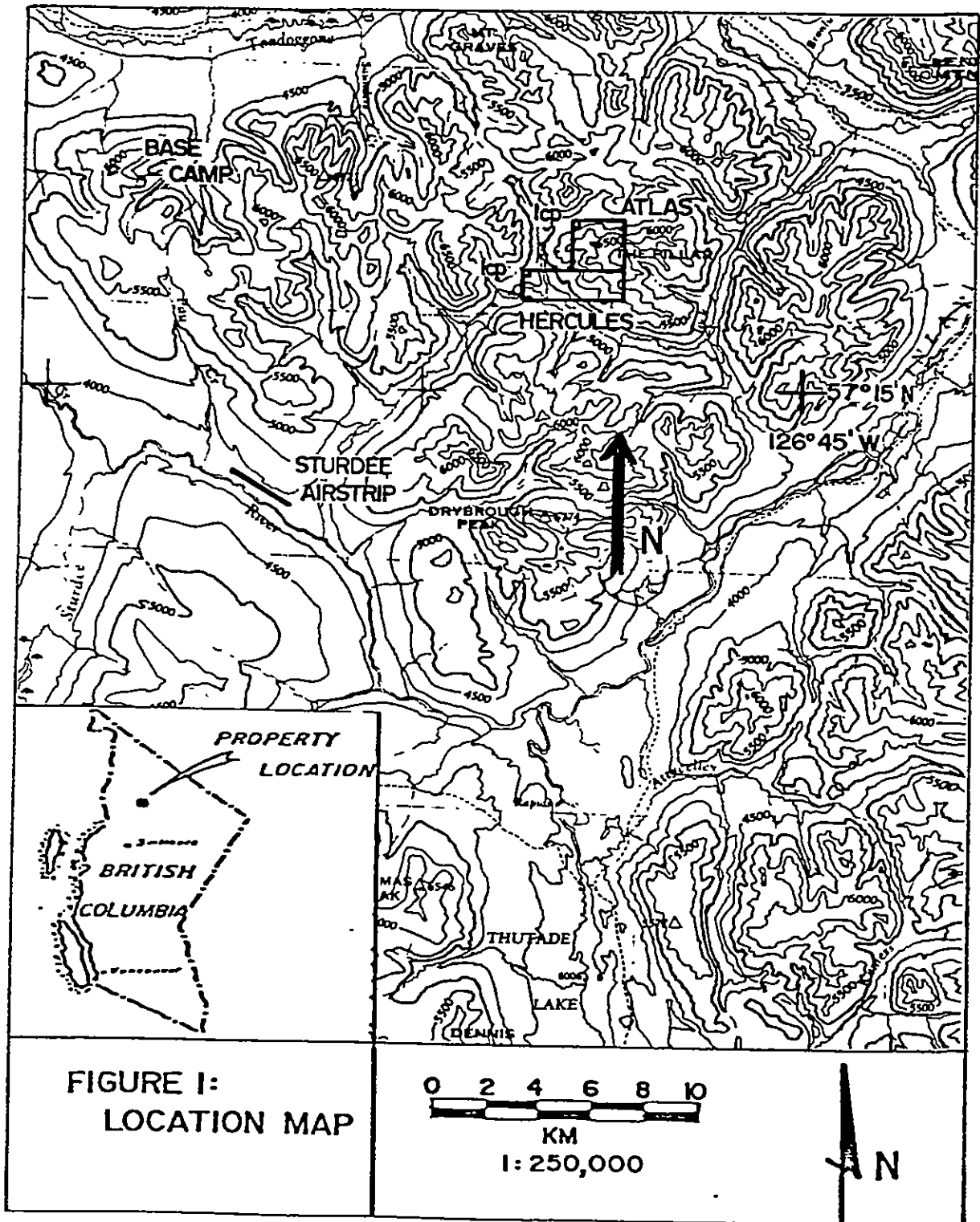


FIGURE 1:
LOCATION MAP

0 2 4 6 8 10
KM
1: 250,000



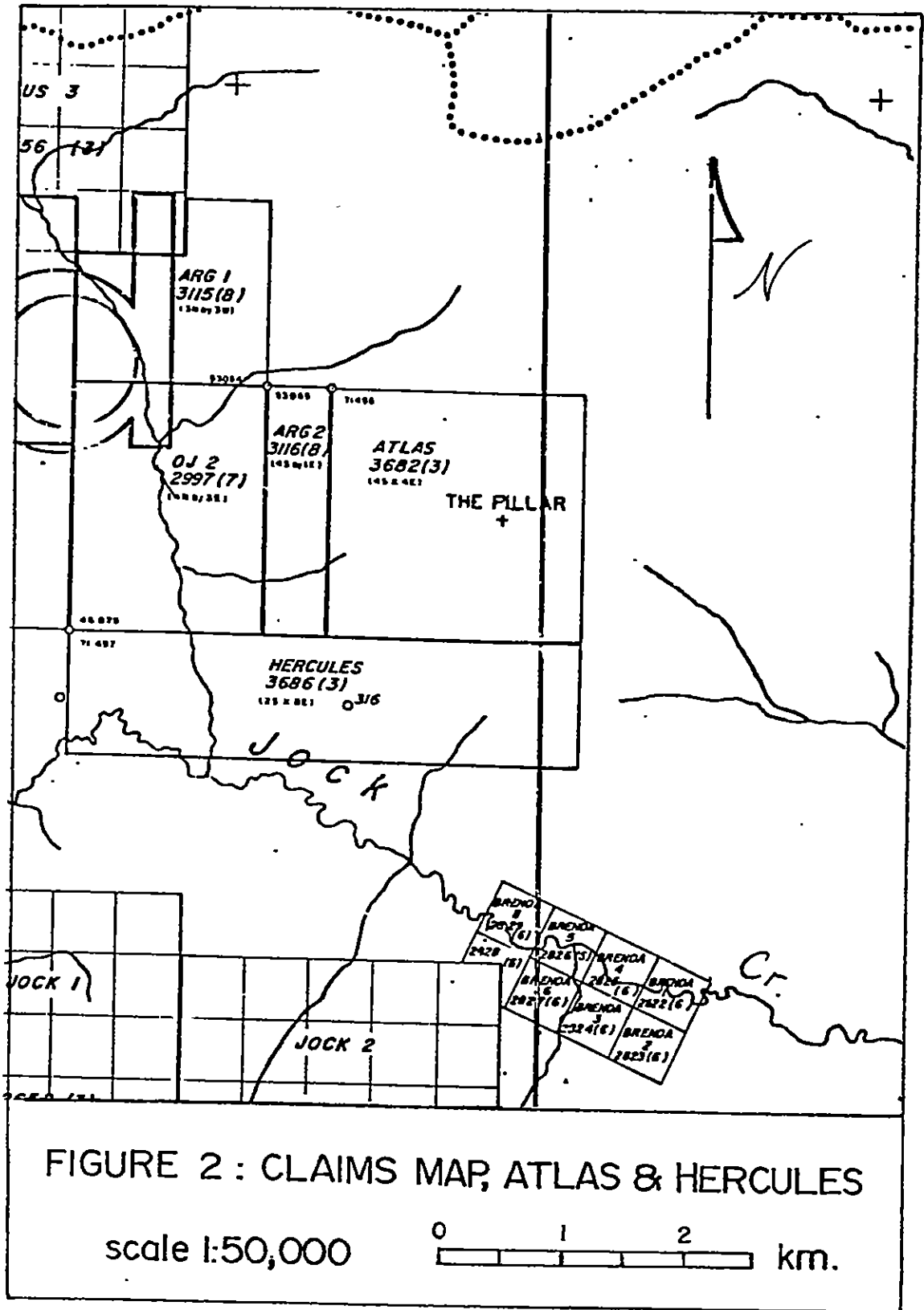
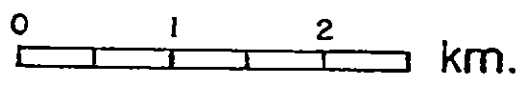


FIGURE 2 : CLAIMS MAP, ATLAS & HERCULES

scale 1:50,000



GENERAL GEOLOGY

The claims area is underlain by 'Toodoggone' volcanic rocks of Lower to Middle Jurassic age. These include crystal and lapilli tuffs, breccias, and derived sediments, intruded by porphyry dikes of similar composition. The volcanics are characterized by plagioclase and minor potassic feldspar phenocrysts. Fracture-controlled propylitic and argillic alteration are common: zones of intense argillic alteration are illustrated in Figure 3. An extensive zone of quartz and chalcedony-filled breccia is associated with anomalous gold and silver values.

GEOLOGY AND MINERALIZATION OF THE TRENCHES: QUARTZ- CHALCEDONY BRECCIA ZONE

Two trenches were blasted in the quartz-chalcedony breccia zone, across an area of anomalous gold and silver values. Both trenches were sampled over their entire lengths at one-metre intervals: chips were taken from a lengthwise channel one metre long and approximately ten centimetres wide. Samples were assayed for gold (fire assay) and silver by Min-En Laboratories in North Vancouver. Geological features and assays are plotted on Figure 4.

The host rock is a feldspar porphyritic volcanic, probably of andesitic composition. The groundmass is moderately to intensely altered to chlorite and clay minerals throughout the whole breccia zone. Feldspar phenocrysts are generally altered to sericite and other secondary minerals. In places they are bright orange, which may be a result of alteration to a zeolite, or due to the presence of hematite.

Three or more generations of veining and brecciation are visible in the trenches. Vein minerals include black chalcedony, milky white to grey chalcedony, clear to amethystine cockscomb quartz, and rare pyrite. The veins are commonly laminated. Wall rock in the breccia zones may or may not be silicified. In the last nine metres of Trench 2, the host rock is highly altered to clay minerals and is light pink. Disseminated, silver-coloured pyrite forms up to 15% of this rock, and veins in this section are predominantly composed of black chalcedony. A zone of fault gouge occurs over a ten-metre interval of Trench 1. It consists of cream, yellow, grey and black clay containing fragments of the pinkish altered host rock described above, propylitic-altered volcanic, and quartz-chalcedony breccia.

The only significant assays are from a section in Trench 2 with greater than 50% vein material. The grades average ^{21.54} 2.67 oz/ton silver over 7 metres and ^{0.82} .024 oz/ton gold over 5 metres; the best one-metre interval assays are ^{147.10} 4.29 oz/ton silver and ^{0.99} 0.029 oz/ton gold. Elsewhere, the assays indicate slightly anomalous amounts of gold and silver in the rocks.

Vein orientations are generally not well-defined: the rocks are highly brecciated and vein material occurs in most of the fractures. The dominant trend appears to be 125 to 135°, parallel to the fault zone.

GEOCHEMICAL SOIL AND ROCK SAMPLING

Soils were taken at 50-metre intervals along lines approximately 50 metres apart. Anomalous results were followed up by sampling at 25-metre intervals to better define the anomalies. Lines were run with Topofil and compass and each site was flagged with the sample number and grid location. Soil was placed in brown paper bags and characteristics such as grain size, amount of organic matter, depth of sampling and topographic features were noted. Outcrop is only exposed along the western edge of the grid. Elsewhere, soil is developed on glacial till and in places has a high clay content. Most samples are from a poorly developed B horizon.

Rock samples were taken at 25-metre intervals on lines 25 metres apart. The 0+00 W baseline and a tieline at 2+00 S from 0+00 W to 2+50 W were set with surveyors' chain and compass and picketed every 25 metres. Other lines were run with Topofil and compass, using the baseline for control. Samples are composed of chips taken from an area approximately two metres in diameter. Each sample site was flagged. The rock type and whether it was outcrop, felsenmeer or talus were noted. Most of the grid area is covered in talus. The original samples were sent for geochemical analysis and follow-up samples (lines 0+25 N, 0+50 N and lines 2+25 E and 2+50 E) were assayed by atomic absorption in the Smithers field laboratory.

GEOCHEMICAL ANALYSIS

All samples were sent to Min-En Laboratories of North Vancouver for analysis. The analytical procedures for geochemical analyses are 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.

GEOCHEMICAL RESULTS AND INTERPRETATION

Gold, silver, copper, lead and zinc in soils are plotted on Figures 5a to 5e respectively. The values are contoured. Anomalies in all five elements occur near the outcrop area; in particular, several samples ran greater than 200 ppb and as high as 570 ppb gold. Elsewhere, the anomalies are weaker and more erratic and appear to be masked by the clay-rich overburden. Silver, copper, and to a lesser extent lead, correlate well and are marginally anomalous in four areas of the grid.

Gold and silver values from the rock geochemical survey are plotted on Figures 6a and 6b. Contours are used only to point out the higher values; they do not define areal extent or trends of anomalies. Because gold and silver are only associated with vein rock in this area, the presence of an anomaly at a sample site will depend on whether or not the operator included vein material in the sample. The follow-up lines (0+25 N, 0+50 N, 2+25 E, 2+50 E), were sampled more selectively than the original grid and have much higher gold-silver values as a result. Whether sampling the rocks at random or selecting for vein material, neither method will indicate the true value of the rock: as such they are only useful as preliminary, qualitative techniques. Dispersion of talus downslope also makes it difficult to interpret trends.

The highest values obtained from this survey are .05 oz/ton gold and 7.6 oz/ton silver. Trench 1 was located in this area.

CONCLUSIONS AND RECOMMENDATIONS

Intense fracture-controlled alteration and veining occur in the volcanics. Some of the veins carry silver and gold values, but no economic grade mineralization has been discovered to date. In the soil grid area, anomalies occur where the overburden is thin but are weak and erratic elsewhere. It is recommended that systematic prospecting and detailed mapping be carried out on both claims. Further trenching or diamond drilling would depend on the results of this work.

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 EXPENDITURESGEOLOGY - GEOCHEMISTRYAnalyses

160 rocks analysed for Au, Ag	@ \$ 9.25	\$1,480.00	
44 rocks assayed (Smithers Field Lab) for Au, Ag	@ \$15.00	660.00	
80 rocks assayed (fire assay) for Au, Ag	@ \$18.25	1,460.00	
80 soils analysed for Au, Ag, Cu, Pb, Zn	@ \$10.55	844.00	
33 soils analysed for Au, Ag, Cu	@ \$ 8.75	288.75	
Sample shipment from Smithers to Vancouver Laboratory	353 sample @ \$.30	<u>105.90</u>	
		\$4,838.65	\$4,839

Wages: June 16, 18, 19, August 8, Sept. 1, 2, 1981,

Rock geochemical survey:

C. Chisholm	3 days @ \$ 58	\$ 174
G. Dawson	2 days @ \$ 58	116
C. Greig	2 days @ \$ 50	100

Soil geochemical survey:

B. Lane	1 day @ \$ 56	56
C. Greig	1 day @ \$ 50	50
C. Lormand	1 day @ \$ 50	50

Trench sampling:

C. Greig	1½ days @ \$ 50	75
----------	-----------------	----

Supervision, trench mapping, property evaluation:

S. Crawford	3 days @ \$ 92	276
-------------	----------------	-----

Report writing and map preparation:

S. Crawford	2 days @ \$115	230
-------------	----------------	-----

Drafting:

C. Greig	3 days @ \$ 72	<u>216</u>
----------	----------------	------------

\$1,343

Board, Lodging and Field Expenses

14½ man-days @ \$52/day	\$ 754
-------------------------	--------

Transportation

Helicopter: 2 hours 45 minutes @ \$475/hour	\$1,306
---	---------

Topographic Map - 1:10,000 20-metre contours

Burnett Resources	<u>\$ 384</u>
-------------------	---------------

TOTAL	<u>\$8,626</u>
-------	----------------

STATEMENT OF EXPENDITURESPHYSICAL WORK (Trenching)

August 26 to 31 inclusive, September 3, 1981:

Contract payment (BEMA Industries):

Labour	\$3,760.50	
Disbursements	2,345.23	
BEMA-supplied equipment	<u>363.00</u>	
	\$6,468.73	\$6,469

Board, Lodging and Field Expenses:

(at SEREM field camp)

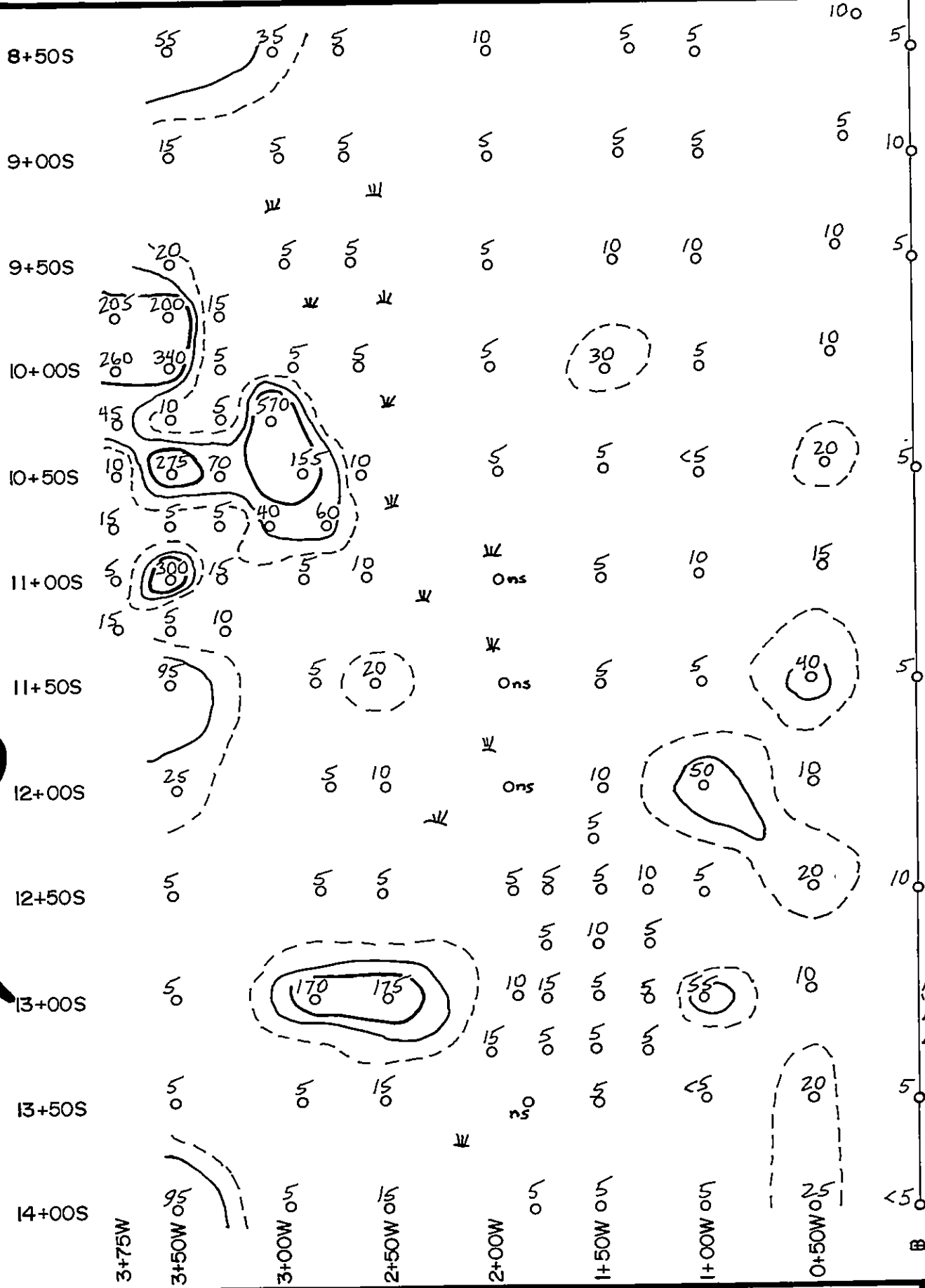
21 man-days (3-man crew) @ \$52/day		\$1,092
-------------------------------------	--	---------

Transportation:

Helicopter: 2 hours 55 minutes @ \$475/hour (including fuel)		<u>\$1,385</u>
---	--	----------------

TOTAL		<u><u>\$8,946</u></u>
-------	--	-----------------------

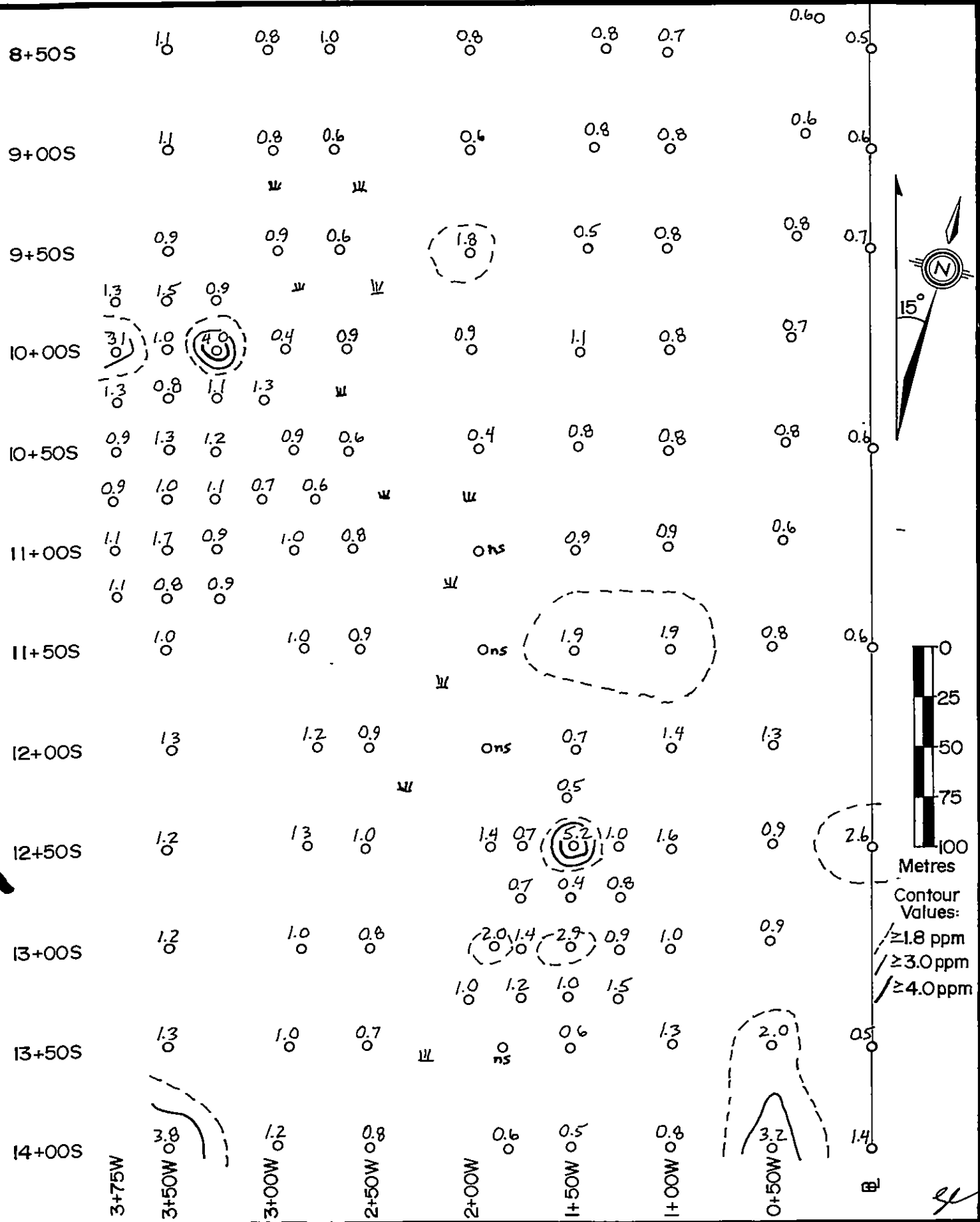
10326



ATLAS-HERCULES CLAIMS, SOIL GRID:
GOLD VALUES

FIGURE:
5a

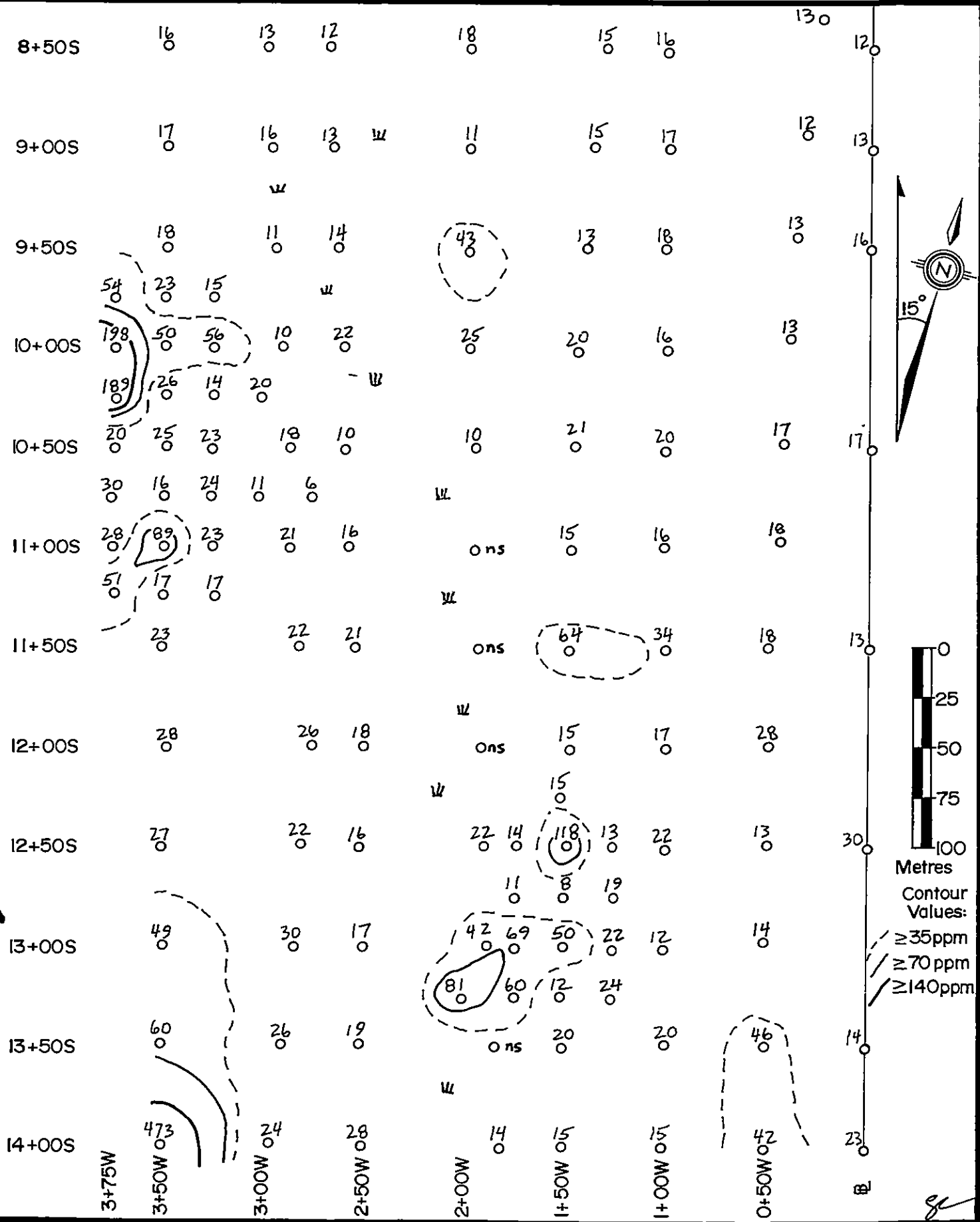
10326



ATLAS-HERCULES CLAIMS, SOIL GRID:
SILVER VALUES

FIGURE:
5b

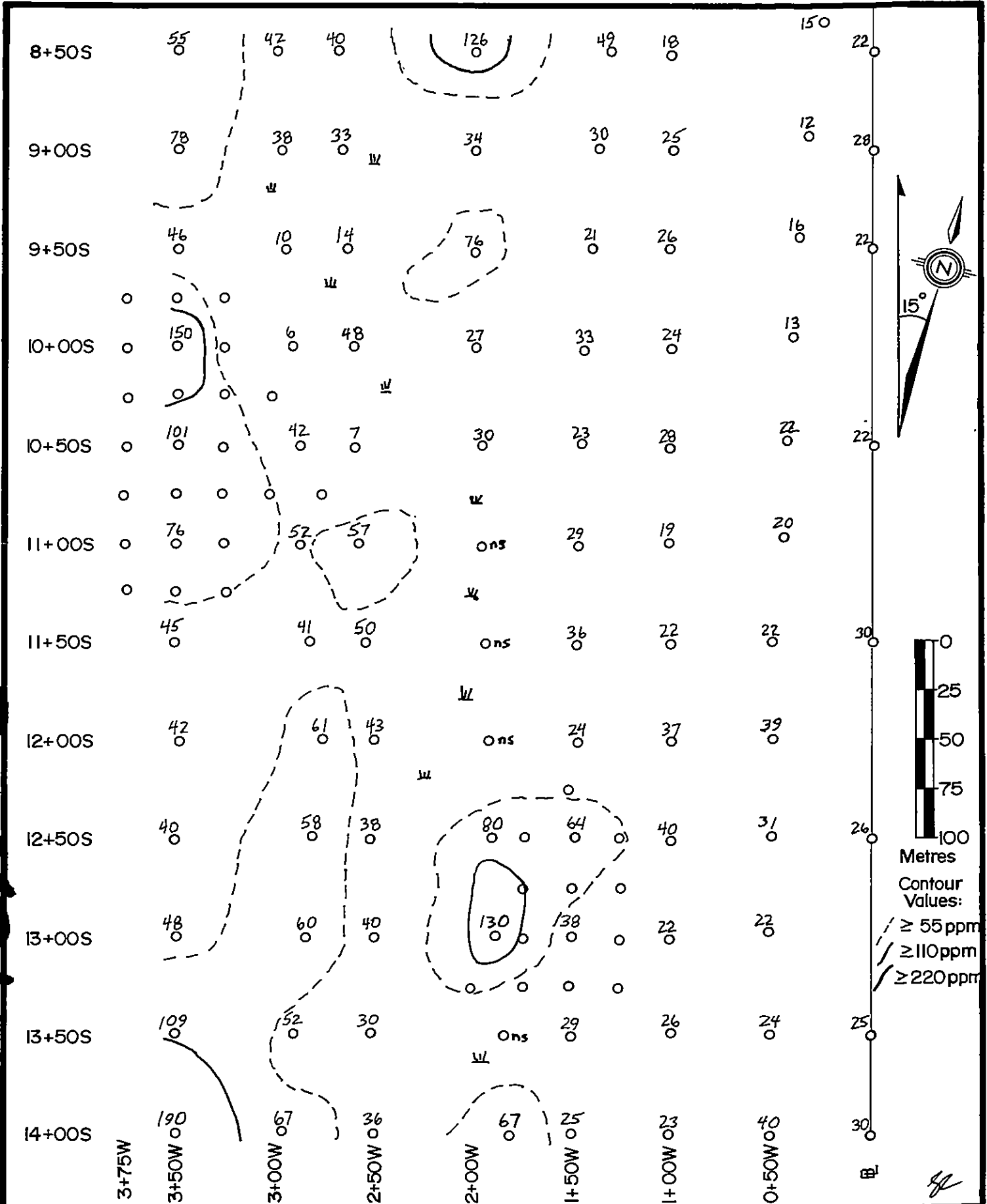
10,326



ATLAS-HERCULES CLAIMS, SOIL GRID:
COPPER VALUES

FIGURE:
5c

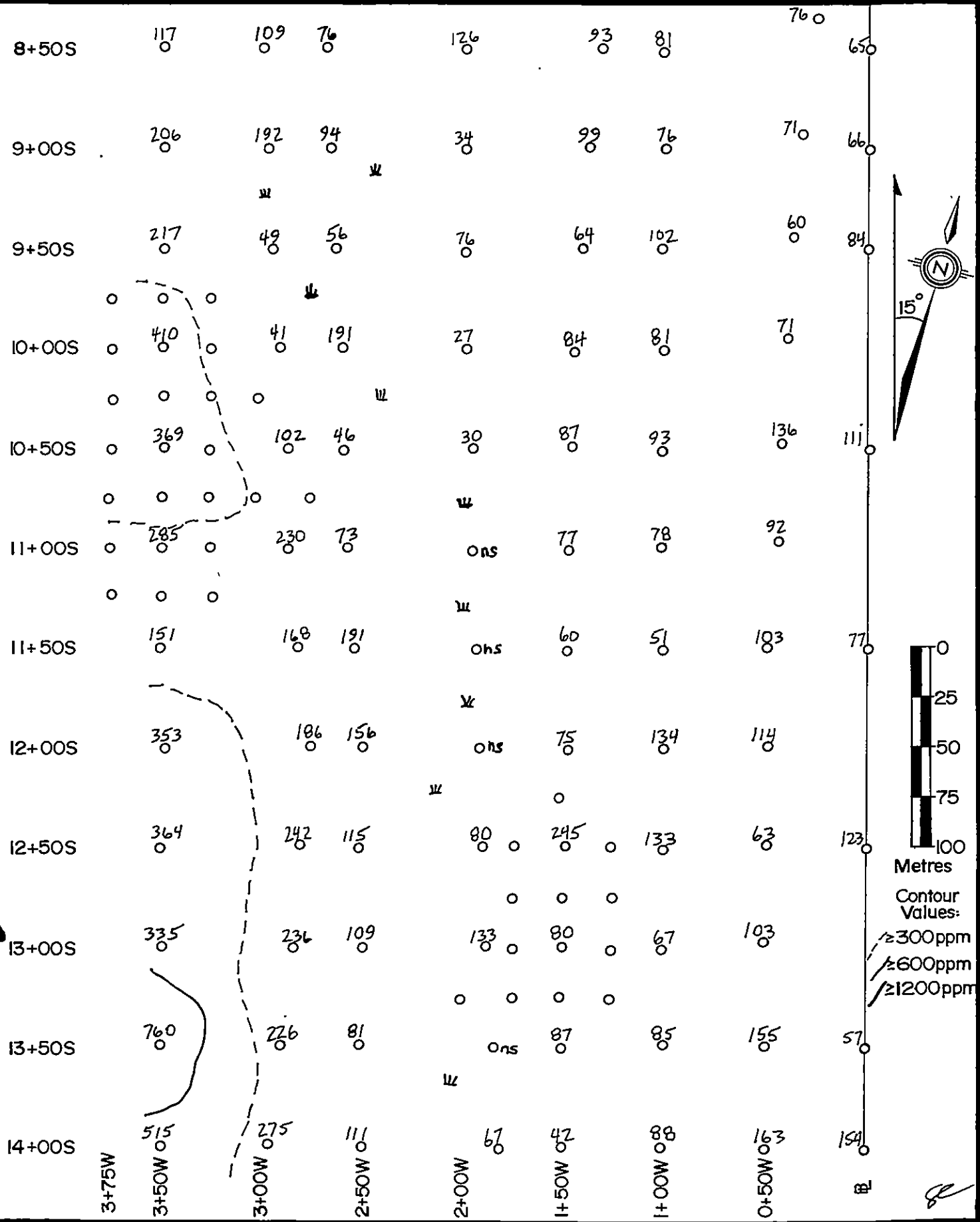
10,326



ATLAS-HERCULES CLAIMS, SOIL GRID:
LEAD VALUES

FIGURE:
5d

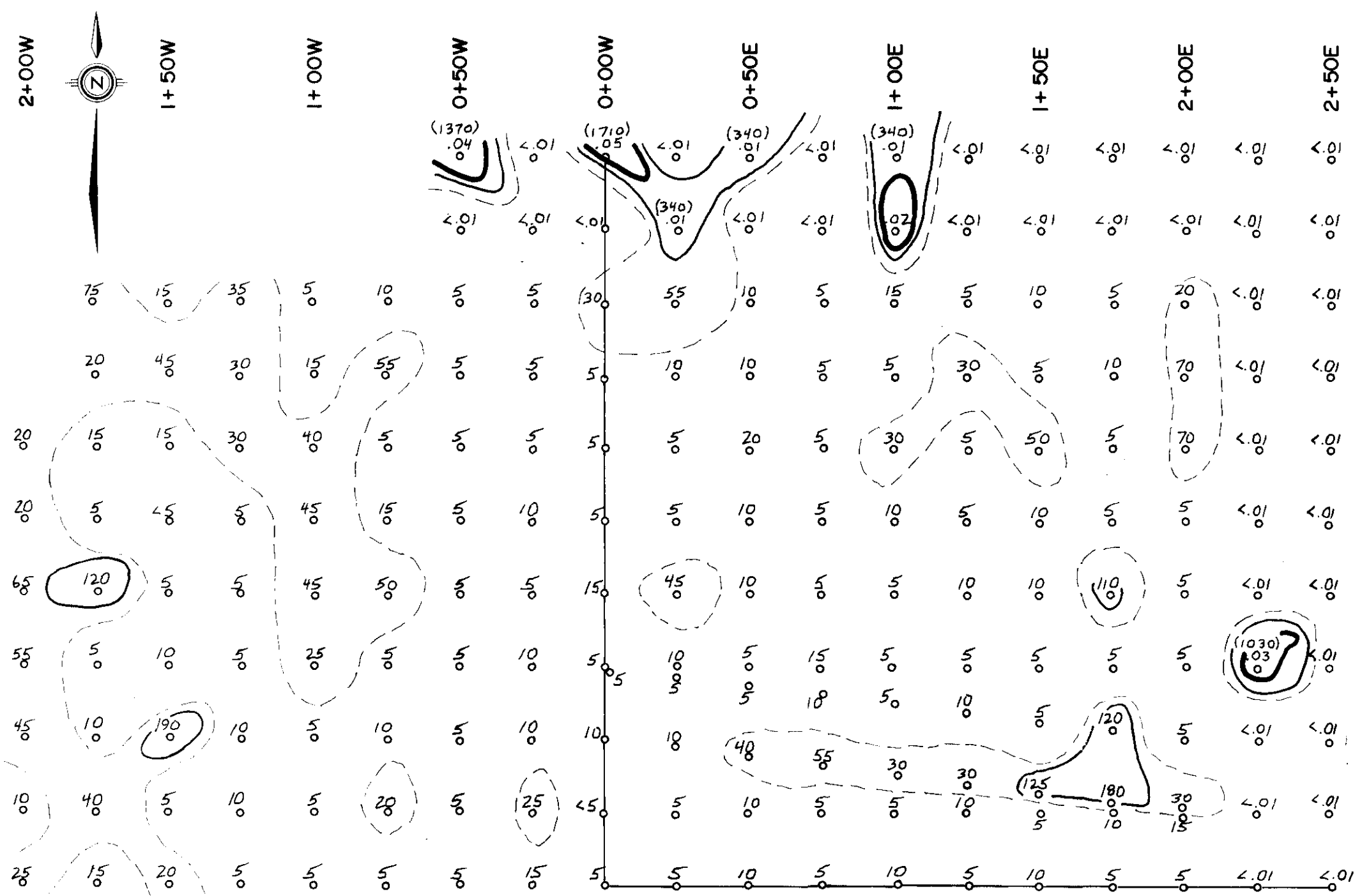
10,326



ATLAS-HERCULES CLAIMS, SOIL GRID:
ZINC VALUES

FIGURE:

5e



LEGEND

- Sample site, geochemical analysis, ppb gold.
- Sample site, assay, oz/ton Au, ppb equivalent in brackets.
<.01 oz/ton =< 340 ppb Au.
- ≥20 ppb Au.
- ≥100 ppb Au.
- ≥500 ppb Au.

Picketed baseline and trieline.

10326

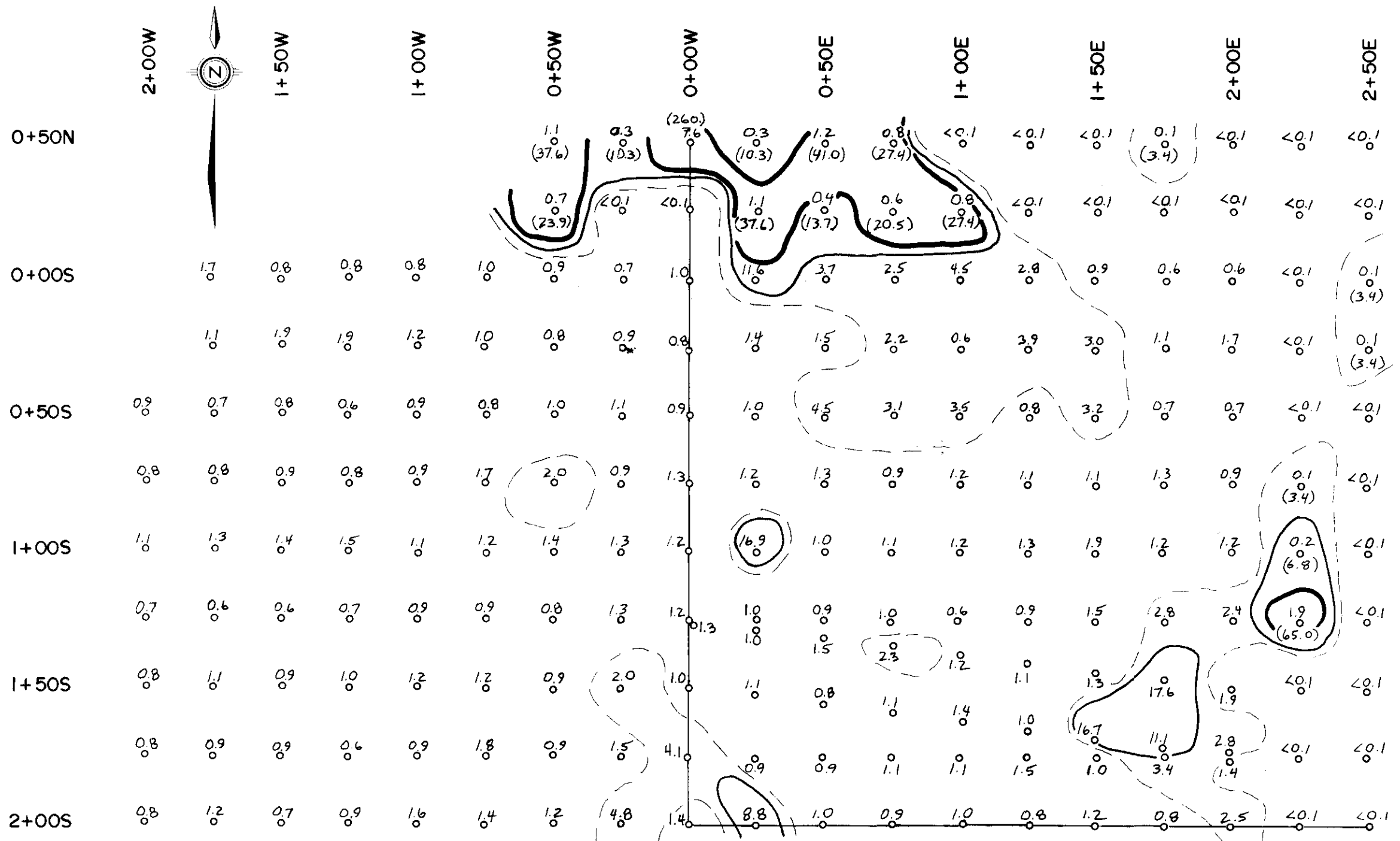
SEREM LTD.

TOODOGGONE PROJECT






**-GOLD VALUES-
ROCK GEOCHEMICAL SURVEY
ATLAS CLAIM**

DATE: MARCH 1982	DATA: S.C.	FIGURE: 6a
N.T.S.: 94E/7E	DRAWN: C.G.	
SCALE: 1:2,000	CHECKED: <i>SC</i>	

40 20 0 25 50 Metres



LEGEND

- 
 Sample site, geochemical analysis, ppm silver.
- 
 Sample site, assay, oz ton Ag, ppm equivalent in brackets.
- 
 ≥ 2.0 ppm Ag.
- 
 ≥ 5.0 ppm Ag.
- 
 ≥ 20.0 ppm Ag.


 Picketed baseline and tie-line.

10326

SEREM LTD.

TOODOGGONE PROJECT

**-SILVER VALUES-
ROCK GEOCHEMICAL SURVEY
ATLAS CLAIM**

DATE: MARCH 1982	DATA: S.C.
N.T.S.: 94E/7E	DRAWN: C.G.
SCALE: 1:2,000	CHECKED: 

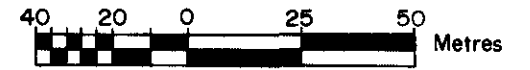
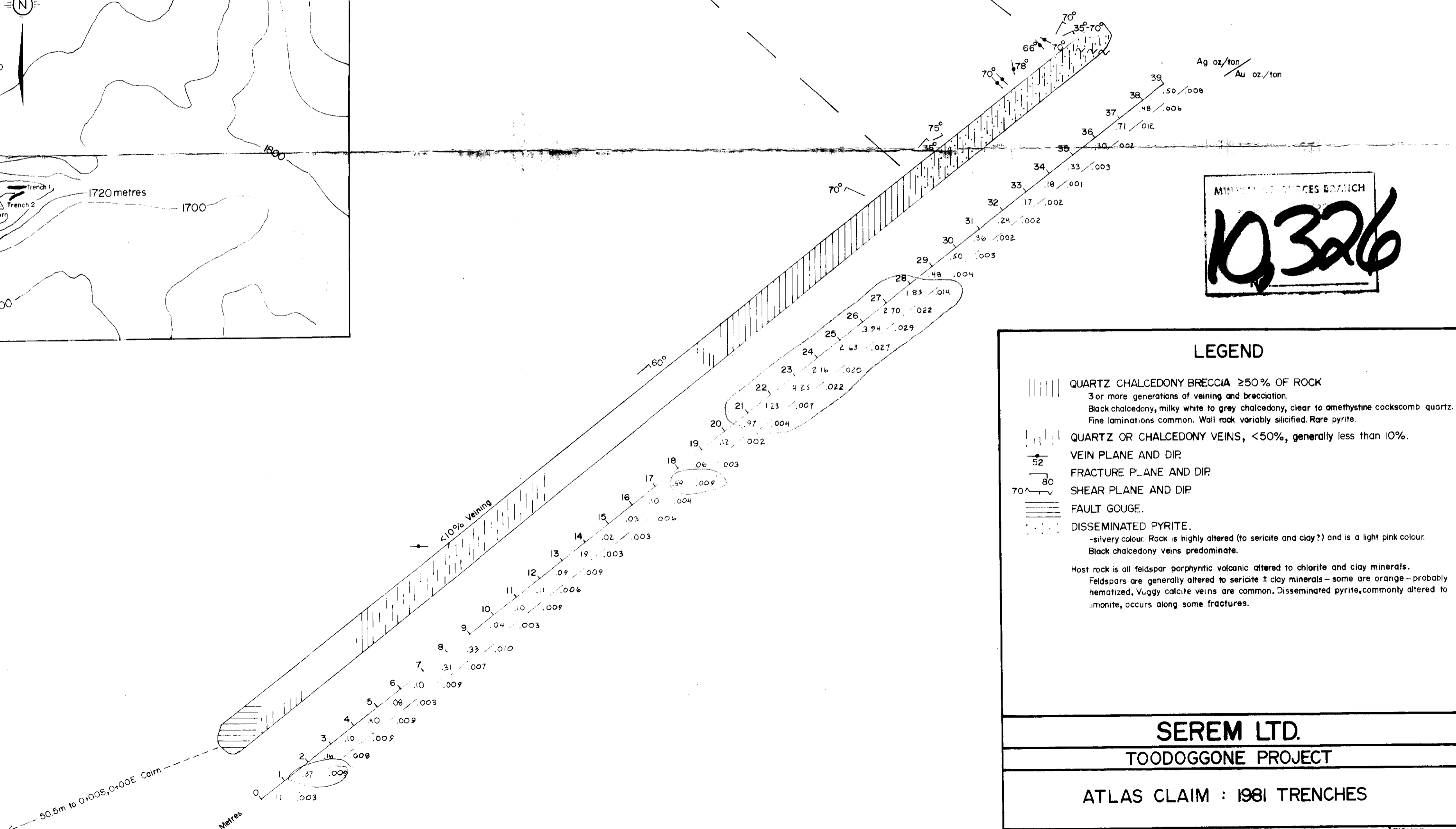
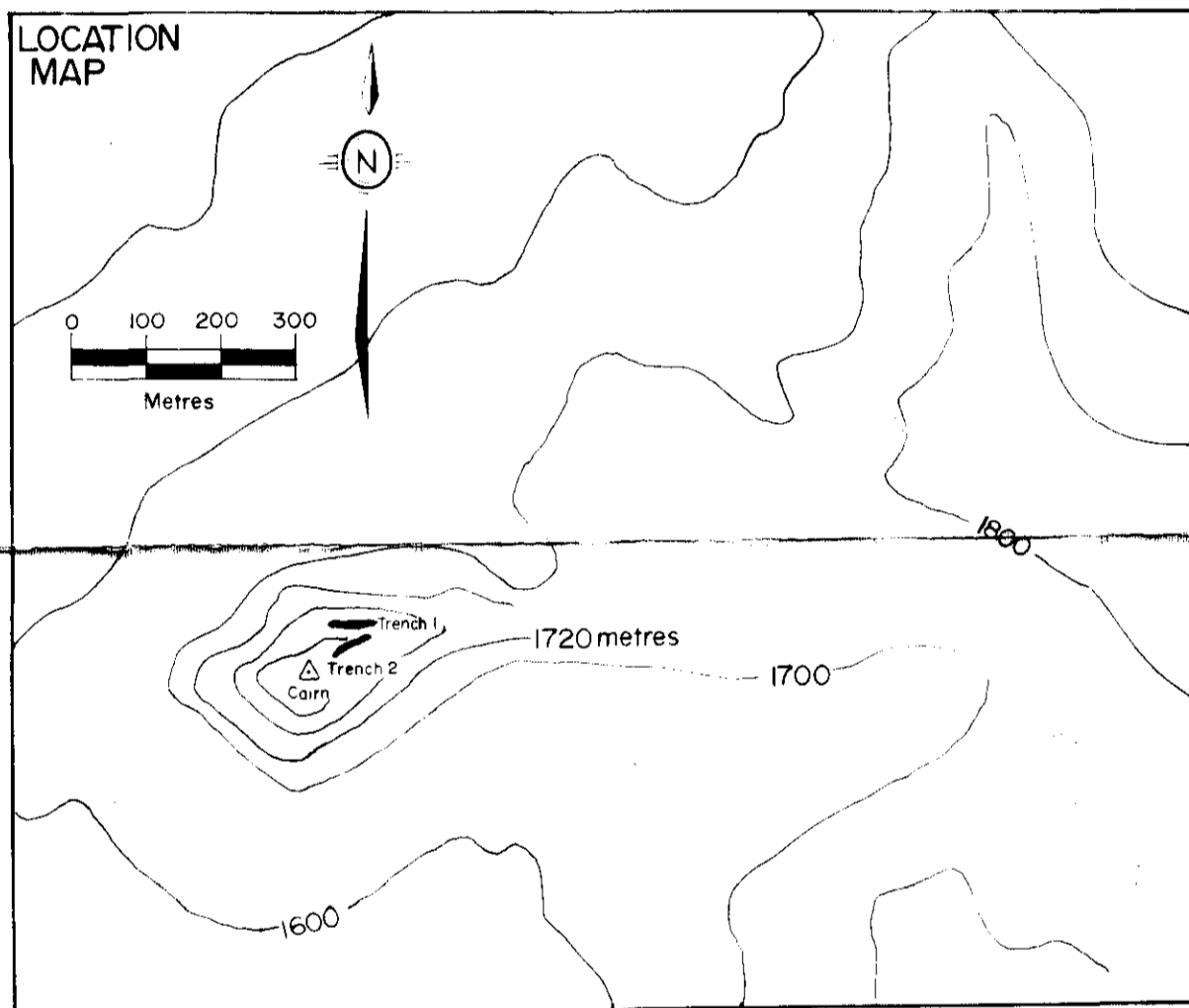
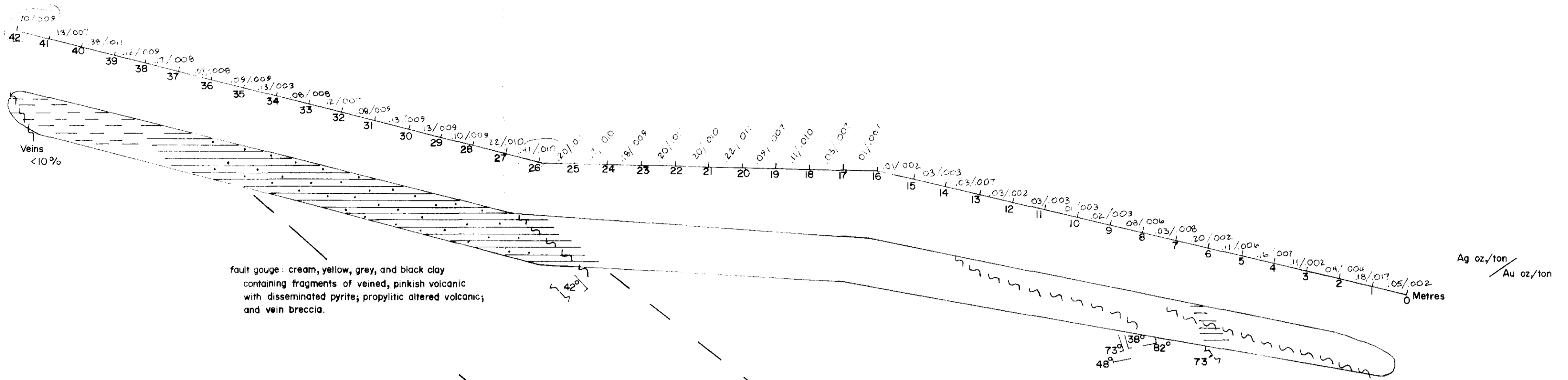
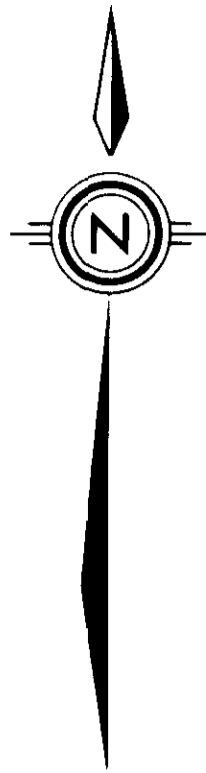


FIGURE:
6b



MINERAL RESOURCES BRANCH

10326

LEGEND

- ||||| QUARTZ CHALCEDONY BRECCIA ≥50% OF ROCK
3 or more generations of veining and brecciation.
Black chalcedony, milky white to grey chalcedony, clear to amethystine cockscomb quartz. Fine laminations common. Wall rock variably silicified. Rare pyrite.
- ||| QUARTZ OR CHALCEDONY VEINS, <50%, generally less than 10%.
- VEIN PLANE AND DIP
- FRACTURE PLANE AND DIP
- SHEAR PLANE AND DIP
- ==== FAULT GOUGE.
- ... DISSEMINATED PYRITE.
-silvery colour. Rock is highly altered (to sericite and clay?) and is a light pink colour.
Black chalcedony veins predominate.






Host rock is all feldspar porphyritic volcanic altered to chlorite and clay minerals.
Feldspars are generally altered to sericite ± clay minerals - some are orange - probably hematized. Vuggy calcite veins are common. Disseminated pyrite, commonly altered to limonite, occurs along some fractures.

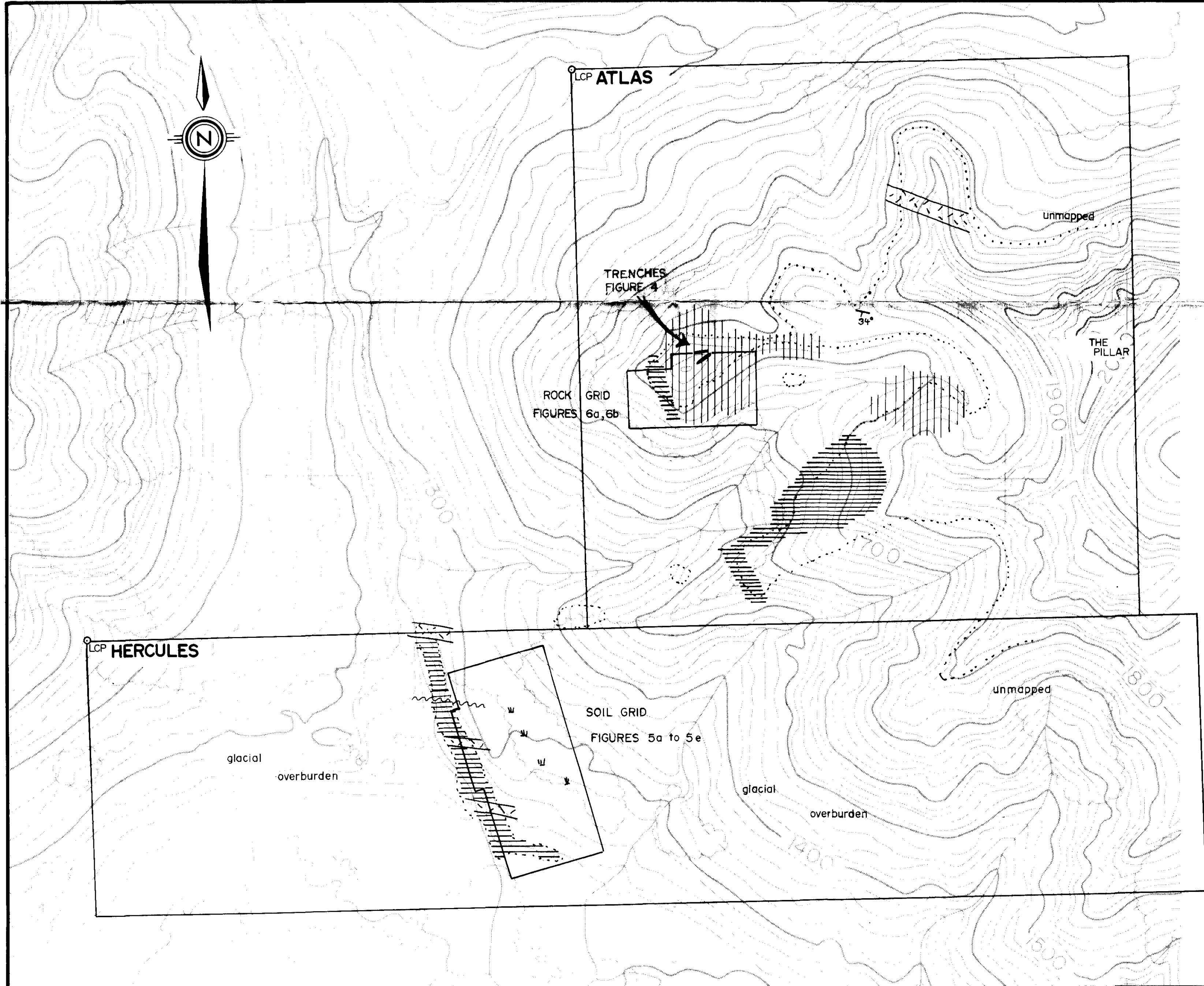
SEREM LTD.

TOODOGONE PROJECT

ATLAS CLAIM : 1981 TRENCHES


LEGEND

-  Toodoggone volcanics
-  feldspar porphyry dikes
-  intense argillic alteration
-  quartz - chalcedony vein breccia
-  area of outcrop or felsenmeer



MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
10,326
 NO.

SEREM LTD.
TOODOGGONE PROJECT
 LOCATION OF GEOCHEMICAL GRIDS,
 TRENCHES; GENERALIZED GEOLOGY
ATLAS-HERCULES CLAIMS

DATE: MARCH 82	DATA: S.C.
N.T.S.: 94E/7E	DRAWN: C.G.
SCALE: 1:10,000	CHECKED: 

200 100 0 100 200 300 400 500 Metres

FIGURE: **3**