

519001

ASARCO (AUSTRALIA) PTY. LTD.

OPEN FILE

PROGRESS REPORT, LAKE BARRINGTON PROSPECT  
E.L. 7/73 PARADISE  
TASMANIA

June 1975

R.G. BARKER

MICROFILMED

75-1100

001

519002

LIST OF PLANS

	<u>Plan No.</u>
<b>E.L. 7/73 Paradise, Tasmania:</b>	
Location Map	5200
<b>Lake Barrington Prospect:</b>	
Stream Sediment Sample Results	5202
Soil Sample Results, Cu	5222
" " " Pb	5223
" " " Zn	5224
" " " Cx Cu	5225
" " " Cx Zn	5226
Follow up Soil Sampling, Cu	5227
Geology (outcrop map scale 1:2000)	5228
Geology (scale 1:5000)	5230

INTRODUCTION:

Exploration License 7/73 covers an area of 429 square Km in Northern Tasmania. About half of this area is underlain by Cambrian acid volcanic and sedimentary rocks that correlate with similar rocks enclosing the copper, lead, zinc mineralization at Rosebery, and the copper mineralization of the Mt. Lyell mine at Queenstown on the west coast of Tasmania. In 1973 a reconnaissance stream sediment sample survey was carried out on areas of Cambrian outcrops within the license area. This survey (described in a previous report) defined 9 anomalies that warranted follow up, including the anomaly at Lake Barrington (see Prospect Location Map, Plan 5200).

Two adjacent creeks flowing into Lake Barrington gave copper anomalies, with lead and zinc values well below threshold. The stream sediment sample results are described in detail below.

The prospect is located on the steep forest-covered western shore of Lake Barrington, one of three artificial lakes on the Forth River that form part of the Mersey Forth hydro-electric scheme. The prospect is accessible from the Lake by boat, or from the west where a sealed road passes within 200 metres of the west of the prospect, and a firm track provides access to the area.

A total of about 6500 metres of grid lines have been cut over the prospect. These lines have been used for soil sampling and geological mapping, and are shown on the plans as a series of sampling points.

GEOLOGY:

The Lake Barrington Prospect occurs in an area of Cambrian acid volcanic rocks described as Minnow Keratophyre of the Sheffield 1:63360 geological map that covers the area. The map wrongly shows the prospect area as Gog Range greywacke, with outcrop of Minnow Keratophyre to the south of the prospect. These acid volcanic rocks have been correlated with the Mt. Read volcanics that enclose economic deposits on the west coast of Tasmania. Plan 5230 shows the geology of the Prospect at a scale of 1:5000, and plan 5228 is an outcrop map of part of the area. Cambrian outcrop in the prospect area is sparse and the rocks are generally devoid of primary features. The only bedding observed was in an outcrop of brecciated grey argillaceous siltstone on the baseline at 4475E.

The Cambrian rocks consist of poorly exposed rhyolite and fine grained tuff at the north of the grid, surrounded by boldly outcropping coarse grained tuff to the south, with an outcrop width of about 70 m. Float of tuffaceous sandstone and siltstone occurs within this belt. Further south the acid volcanic rocks consist of porphyritic rhyolite, crystal tuff and lithic tuff. These rocks crop out over an area about 300 meters wide south of the base line to about 4700N. This belt includes the main soil copper anomaly and an outcrop map at a scale of 1:2000 is included as plan 5228. Further south

003

these rocks are succeeded by very poorly outcropping fine grained acid tuff. Porphyritic trachyte float occurs on lines 4700E and 4850E between 4400N and 4550N, and the banding of the porphyritic trachyte closely follows a 200 ppm soil contour (see next section). No outcrop was seen south of here to the southern limit of the grid, and the units boundaries shown on the map are based entirely on the observation of surface float.

No intrusive rocks were seen cropping out within the grid area, but intrusive rock float was seen at two locations. A boulder of quartz micromonzonite identified by thin section was located at 4550E/4475N and weathered dolerite float occurs at 4700/4325N. Both rocks are probably minor Cambrian intrusions.

Outcrop of Ordovician siliceous boulder conglomerate occurs in the north-east of the grid. Here the conglomerate appears to be dipping beneath the Cambrian rocks and if this is the case the sequence is overturned.

There is a possibility that the Cambrian rocks are folded into a north striking anticline with an overturned eastern limb, but this cannot be confirmed because of the lack of outcrop and the massive nature of the volcanic rocks.

Ordovician sandstone and sandy grit occurs along the western side of the grid and forms a prominent cliff south of 4700N, 50 to 100 metres west of line 4550E. North of here no outcrop occurs along the top of the slope, but sparse basalt float was seen here. Tertiary basalt covers a wide area of the portion to the west of the grid, and its eastern limit appears to lie along the west of the grid between lines 4350E and 4450E.

#### STREAM SEDIMENT SAMPLING:

Stream sediment remits for reconnaissance and follow up sampling are shown on Plan 5202. The plan also shows the grid lines for the soil sampling survey which is described in the next section. The two creeks giving anomalous (greater than 50 ppm) copper values for the reconnaissance stream sediment samples are shown on the plan. The most strongly anomalous creek gave Cu value of 1300 ppm for the reconnaissance samples and follow up samples upstream gave copper values ranging from 1400 to a peak of 3550 ppm Cu. A short creek 350 metres to the north east was not sampled in the reconnaissance survey, but gave values on close spread sampling rising from 60 ppm Cu at the lake shore to 280 ppm at the head of the creek 150 metres up the slope. The other creek giving a reconnaissance stream sediment copper anomaly lies about 850 metres north west of the main anomalous creek. The reconnaissance value here was 190 ppm Cu with follow up values reaching a peak of 260 ppm Cu. Further north east the slope steepens and no well defined creeks occur until Forth Falls creek is reached about 1700 metres to the north east. This creek cuts Ordovician sandstone overlain by Tertiary basalt and lies beyond the northern limit of Cambrian outcrops.

The fourth creek that was resampled lies about 50 metres south west of the main anomalous creek, and gave very low

copper values (5 and 10 ppm Cu).

Stream sediment values for lead and zinc are generally below threshold with isolated values exceeding threshold. This pattern is consistent with the soil sample results described in the next section.

#### SOIL SAMPLE SURVEY:

Following the stream sediment sampling survey a grid was cut covering the drainage area of the main anomalous creek to enable a soil sampling survey to be carried out. Slopes within the grid area vary from about 20° to 30° on lines east of 4550E, which runs along the top of the western slope of the Forth River Valley. Slopes are much more gentle along lines 4450 and 4350 that traverse the plateau west of the valley. Despite the steep slope the soil is thick with sparse outcrop of the more resistant compact acid volcanic units. The soil consists of 10 to 20 cm of organic-rich rocky soil overlying clay-rich subsoil containing strongly weathered rock fragments. The subsoil is probably at least a metre thick over most of the area. During soil sampling an effort was made to penetrate the superficial organic-rich scree horizon and nearly all of the samples were taken from the underlying clay-rich subsoil. Because of the steep slopes and the thickness of the soil it is possible that soil anomalies are displaced a considerable distance down slope. Dense eucalypt forest with thick undergrowth covers the sloping parts of the grid area where soil anomalies were obtained.

Soil samples were collected at 25 metre intervals along 4 lines 500 metres long and 150 metres apart. Samples were analysed for copper, lead, zinc, cold extractable copper and cold extractable zinc. The grid was later extended and the cold extractable analyses discontinued as they did not provide any additional information, and gave much the same pattern as the total element results. Contoured soil sample maps for each element are included as plans 5222 to 5226.

#### SOIL ANOMALIES:

Plan 5222 shows the soil copper results. A threshold value of 100 ppm Cu was obtained with the aid of a log probability plot and the values have been contained at 100, 200, 400 and 800 ppm levels. The 440 ppm contour defines three anomalous areas. The northern area is the largest and includes the highest values. It is 450 metres long and reaches a maximum width of 150 metres on line 4700N. The main anomalous creek flows through the anomalous zone west of 4800N, where the highest stream sediment copper values were obtained. Plan 5227 shows the results of the initial sampling, as well as the results for additional lines cut at 50 metre intervals across the anomalous zone. These additional results enable the soil values to be contained more accurately and confirms the existence of a continuous belt of high soil copper values.

The 400, 800 and 1600 ppm contours on plan 5227 include areas on both sides of the main stream sediment anomalous

005

creek, and high copper and low lead and zinc values obtained for the soils closely parallel the pattern obtained for the stream sediments. Three soil copper values exceed 1000 ppm and all three occur close to the creek. The soil thins towards the creek and outcrop exposures occur along the bed and both banks of the creek. The high values obtained here may be the result of local seepage enrichment of the soil where permeating groundwater is forced near the surface because the soil is thinner. The soil samples were collected well above creek flood level so these high soil values are not the result of stream sediment contamination. No mineralization was seen in the creek bed outcrop, but copper values of up to 2250 ppm have been obtained from float and outcrop sampled 50 to 100 metres on either side of the creek (see plan 5228). The samples giving high copper values are weathered, altered acid volcanic rocks with limonitic gossanous patterns and random narrow limonite veinlets. These rocks have not been seen <sup>cropping</sup> ~~sapping~~ out along the creek and the seepage effects resulting in high soil values along the creek are probably giving a false impression of the location of mineralization.

The 400 ppm soil contour on plan 5222 defines a narrow zone south of the anomaly described above. This zone is based on the results of only two soil samples and its continuity has not been confirmed. Further south again four consecutive samples on line 4700N exceed 400 ppm with a peak of 920 ppm. The 200 ppm contour enclosing these values closely follows the outline of an area where porphyritic trachyte float occurs.

Line 4700E was extended 875 metres north to cross the northern creek giving stream sediment copper anomalies. The line traverses Ordovician conglomerate scree, which hampered soil sampling. Seven samples gave values exceeding 100 ppm with a peak value of 260 ppm obtained from a sample close to the creek.

Lead and zinc soil values are shown on plans 5223 and 5224. Values for both elements are low over copper anomalous areas. Lead values reach a peak of 130 ppm on line 5000E at the eastern end of the main soil copper anomalous zone, and zinc values lie in the range of 20 to 50 ppm. One isolated line value of 460 ppm Pb was obtained near the southern end of line 5000E and two zones with zinc values exceeding 140 ppm over near the southern limits of lines 4550E and 4700E. It is improbable that any of these zones is caused by significant mineralization. The creek immediately to the south of here gave very low values for copper, lead and zinc. The low values are the result of stream sediment distribution by sand and silt derived from Ordovician rocks in the headwaters of the creek. However, any significant mineralization should give a weak stream sediment anomaly, despite the distribution. For this reason the soil sampling grid has not been extended further south.

The rock sample results shown on plan 5228 and 5230 are all for gossanous and limonitic veined float and outcrop. High copper values in the rocks correlate with the soil copper anomalies, and rocks sampled away from the anomalies generally

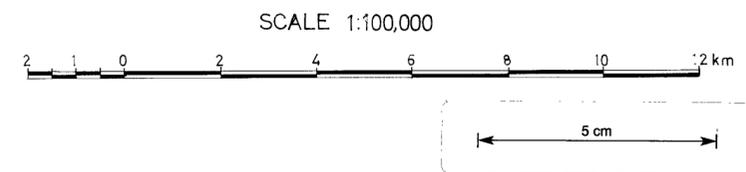
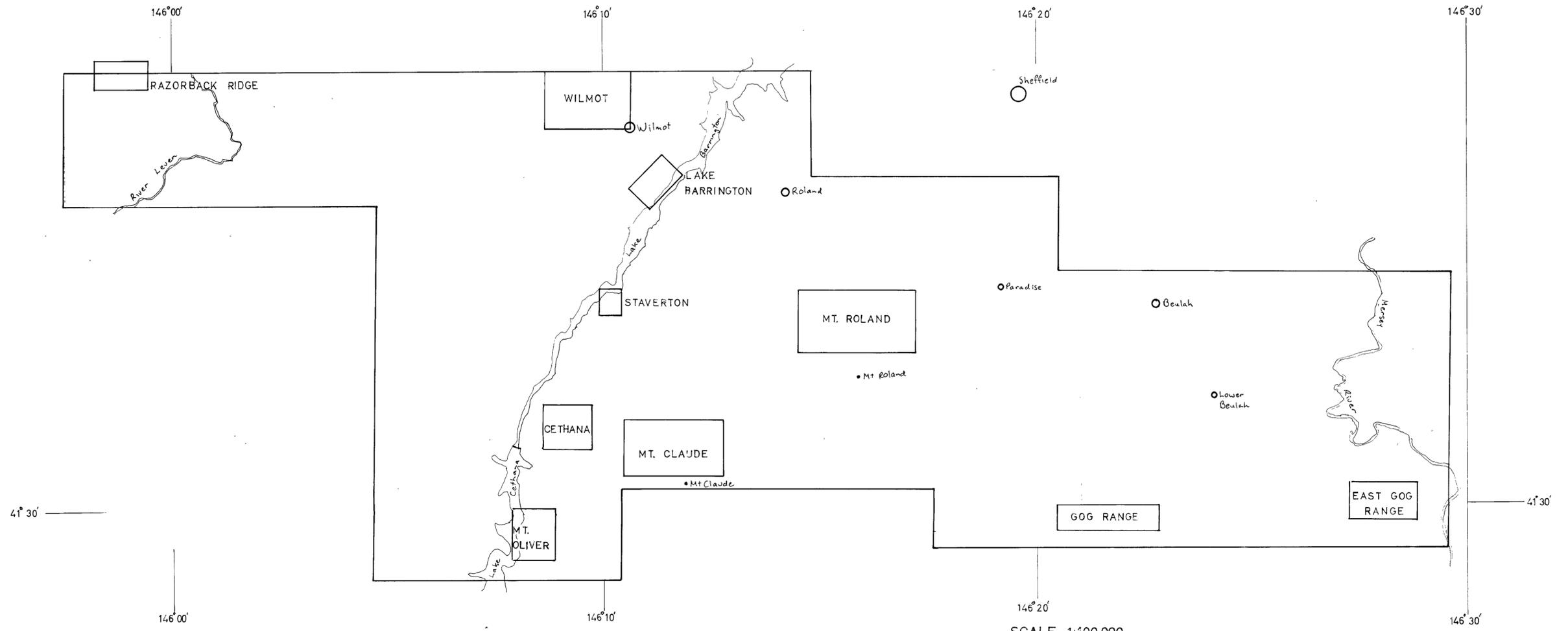
give low copper results. This effect is noticeable along the base line where several gossanous rocks were sampled. This could be due to a pyritic zone associated with the copper mineralization that is the source of the geochemical anomalies.

CONCLUSIONS:

The strong geochemical copper anomalies at Lake Barrington are probably caused by disseminated or stockworks copper mineralization in fine grained altered acid volcanic rocks. Because the very steep slopes makes trenching the anomalies impossible, it is recommended that a geophysical survey be carried out to define drill targets in conjunction with the soil sample data. E-M methods are unsuitable because of the discontinuous nature of the mineralization and the steep slopes, but an IP survey should give meaningful results. A drilling programme could then be carried out to test targets defined by the IP and soil sample surveys.

R.G. BARKER

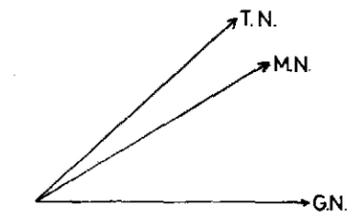
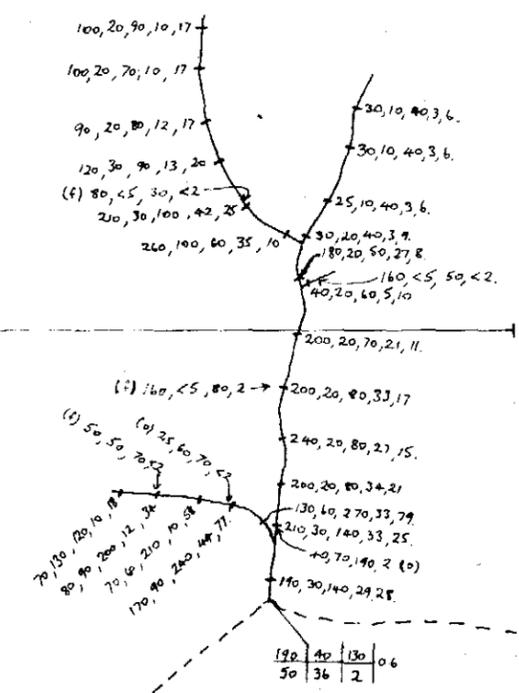
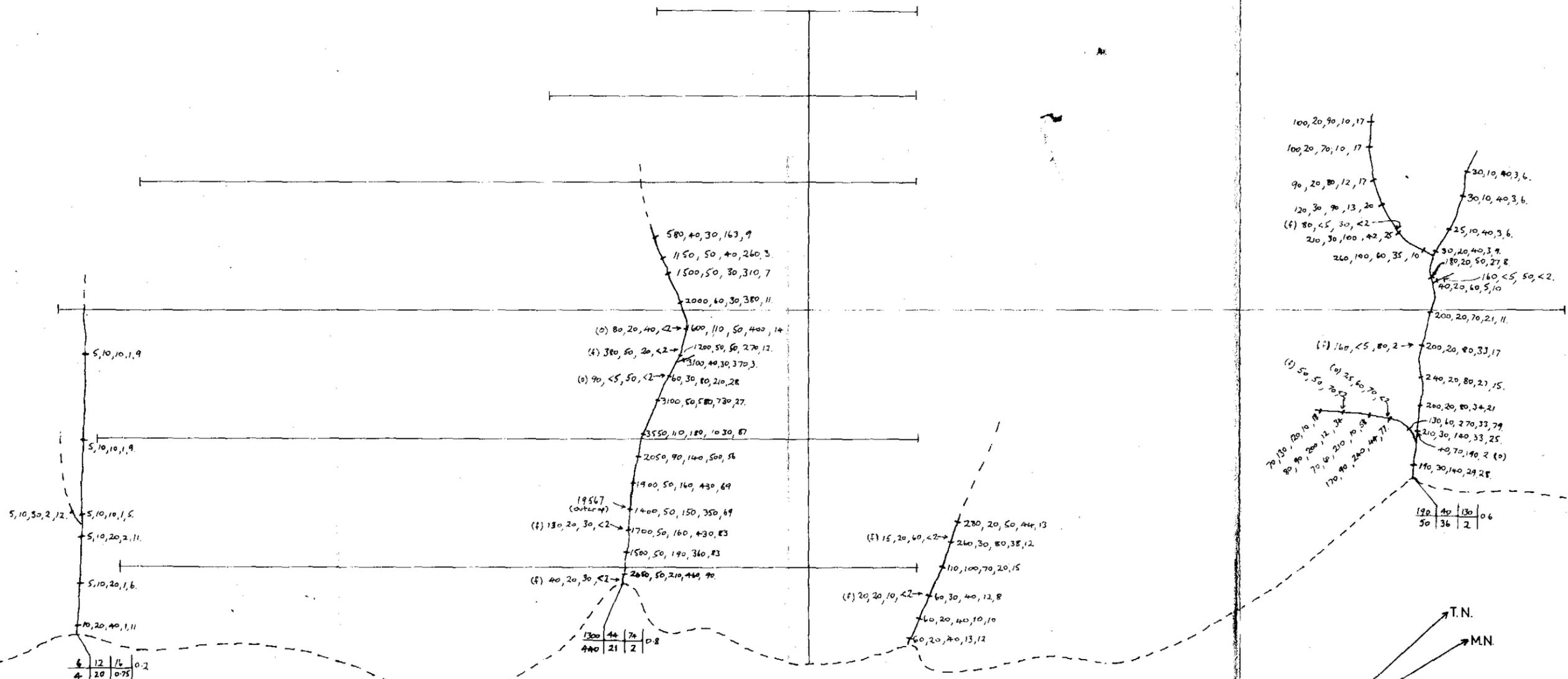
9th June 1975.



REFERENCE

- Exploration Licence Boundary
- Prospect Location

ASARCO (AUSTRALIA) PTY. LTD.		
75-1100		
EL 773 PARADISE TASMANIA		
PROSPECT LOCATIONS		
COMPILED RGB	FILE	PLAN NO
DRAFTED RGB	DATE March 1975	5200
CHECKED		



LAKE BARRINGTON

RESULTS

Reconnaissance stream sediment sample result

Cu, Pb, Zn, Ag (ppm)  
Co, Al, Fe, Mn

Follow-up stream sediment sample result

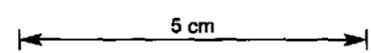
Cu, Pb, Zn, Co, Al, Fe, Mn (ppm)

Creek bed rock sample  
Cu, Pb, Zn, Ag (ppm)

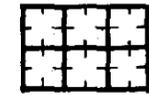
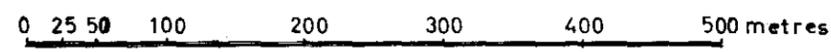
19567: Petrographic sample

(o) outcrop

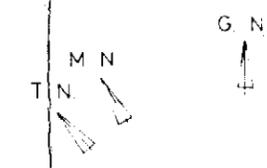
(f) float



SCALE 1:5000



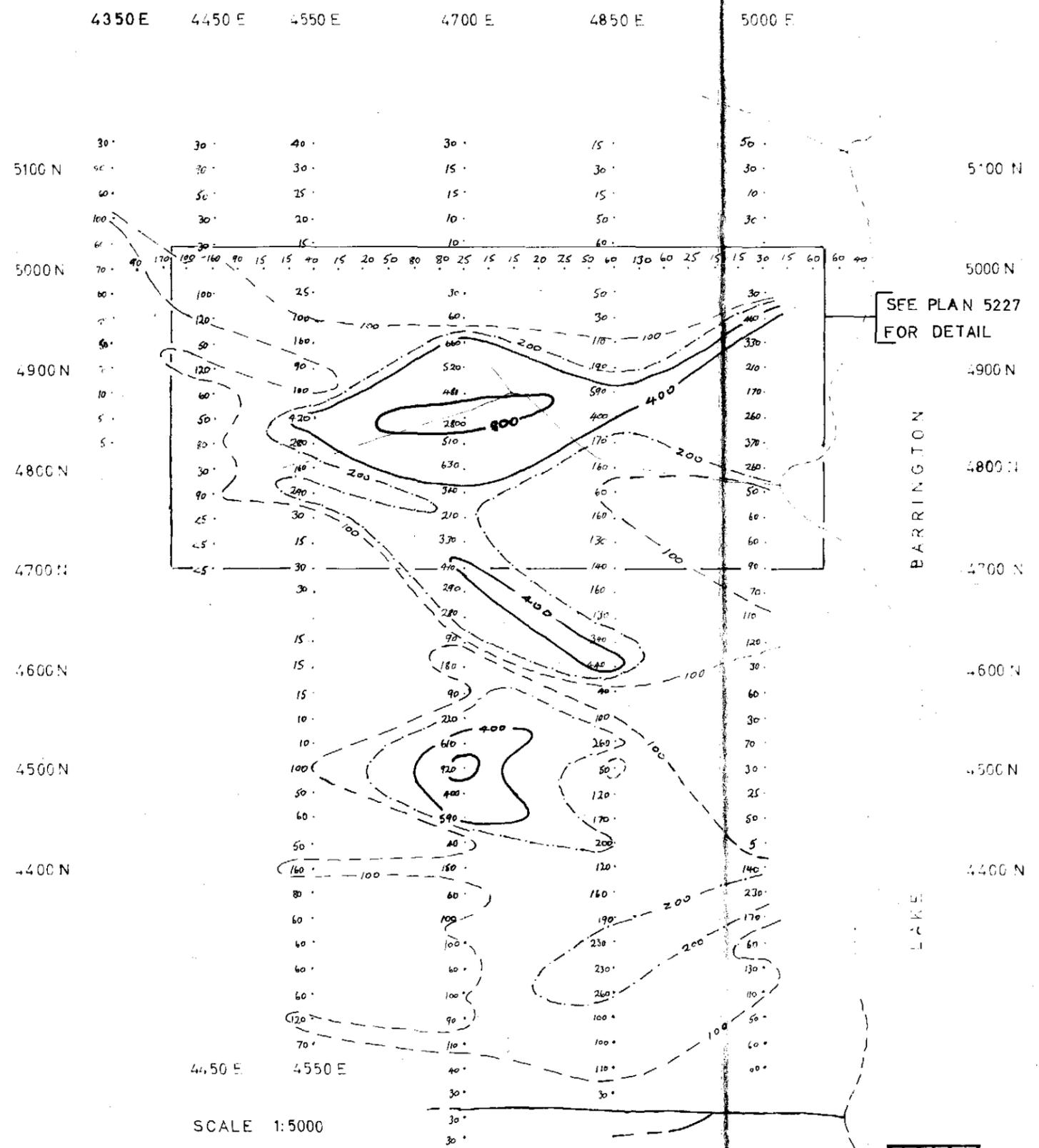
<b>ASARCO (AUSTRALIA) PTY. LTD.</b>		
75-1100		
E-7/73, PARADISE, TASMANIA: LAKE BARRINGTON PROSPECT		
STREAM SEDIMENT SAMPLE RESULTS		
<b>025</b>		
COMPILED: RSB	FILE:	PLAN NO
DRAFTED:	DATE: May 1975	5202
CHECKED:		



REFERENCE

NORTHERN  
EXTENSION  
LINE 4700 E

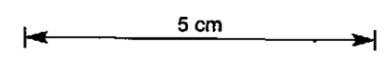
- 15
- 20
- 100
- 190
- 180
- 150
- 360
- 290
- 120
- 50
- 50
- 60
- 10
- 15
- 25
- 30
- 10
- 5
- 5
- 5
- 5
- 10
- 5
- 30
- 10
- 30
- 90
- 30
- 25
- 30
- 5000 N
- 4700 E



SEE PLAN 5227  
FOR DETAIL

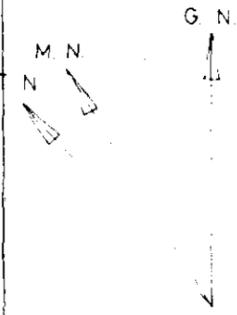
BARRINGTON

LAKE



ASARCO (AUSTRALIA) PTY. LTD.		
75-1100		
E.L. 7/73, PARADISE TASMANIA, LAKE BARRINGTON PROSPECT		
SOIL SAMPLE RESULTS		
COPPER		026
COMPILED: RSB	FILE:	PLAN NO
DRAFTED:	DATE: March 1975	5222
CHECKED:		





REFERENCE

**NORTHERN EXTENSION LINE 4700 E**

20.  
20.  
30.  
40.  
30.  
40.  
50.

5800 N

60.  
40.  
40.  
40.  
30.  
30.  
30.  
30.  
20.  
20.  
20.  
20.  
30.  
30.  
20.  
40.  
40.  
40.  
40.  
40.

5600 N

5400 N

5200 N

5000 N

4800 N

4700 N

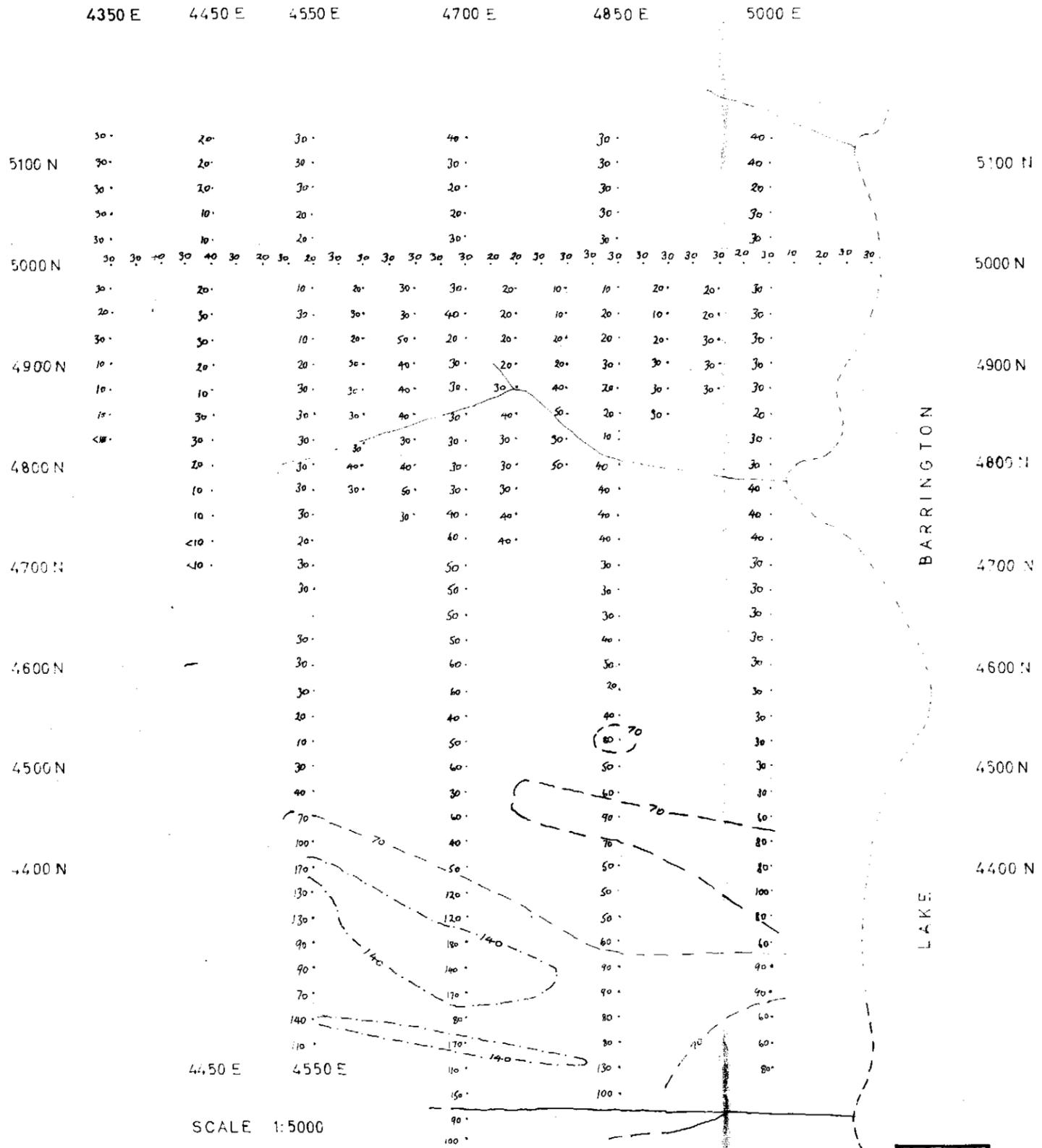
4600 N

4500 N

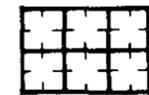
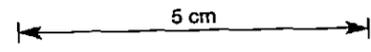
4400 N

5000 N

4700 E



BARRINGTON  
LAKE



**ASARCO (AUSTRALIA) PTY. LTD.**

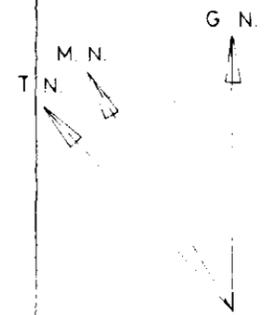
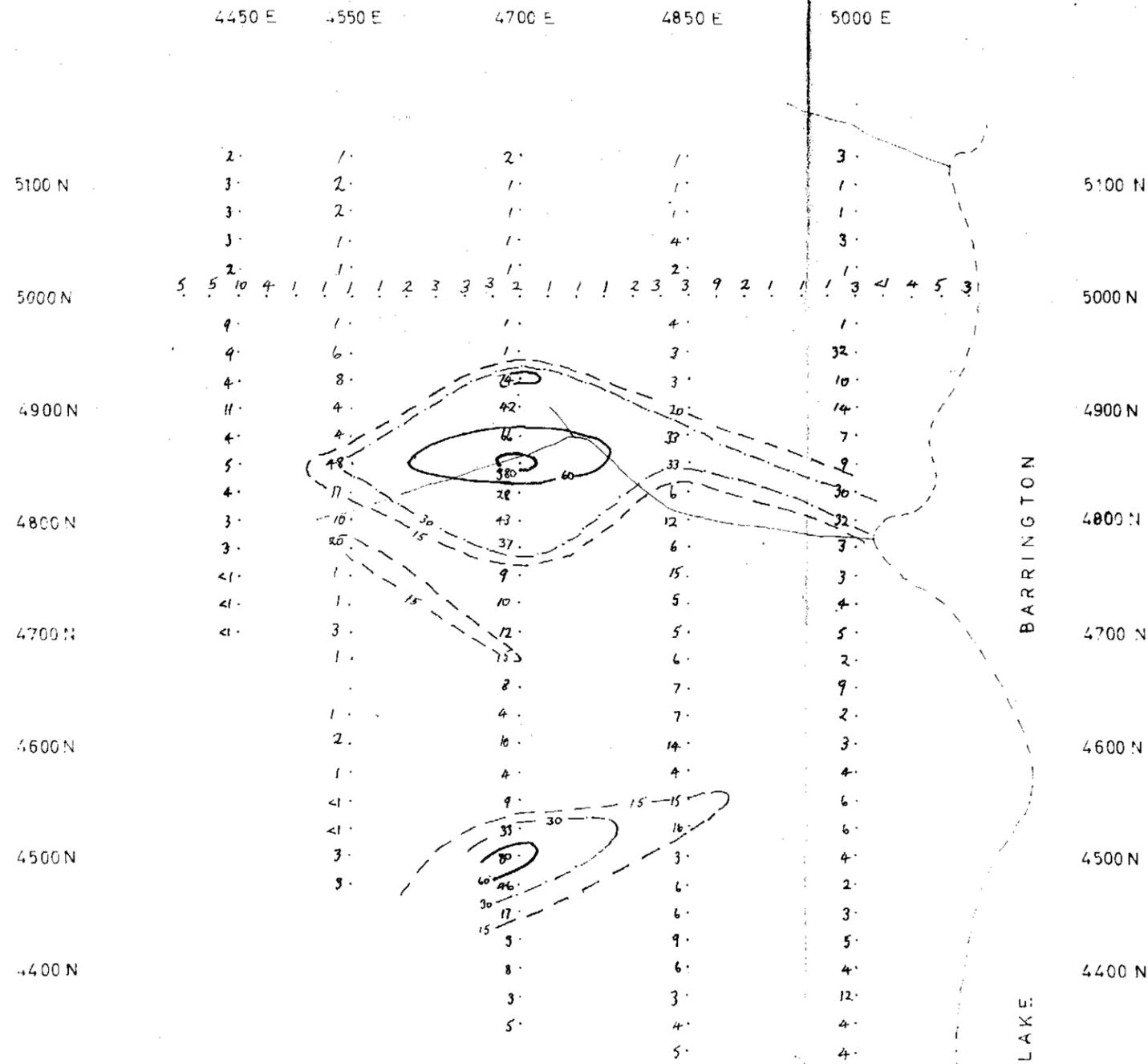
75-1100

E/L 7/73, PARADISE TASMANIA: LAKE BARRINGTON PROSPECT

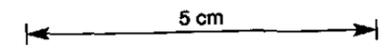
SOIL SAMPLE RESULTS

**ZINC** **028**

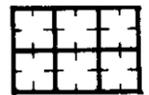
COMPILED: <i>lgb</i>	FILE:	PLAN NO
DRAFTED:		5224
CHECKED:	DATE: <i>March 1975</i>	

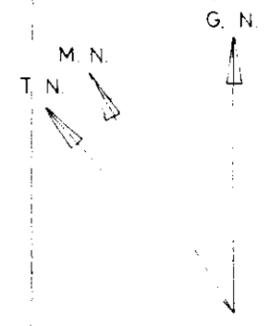
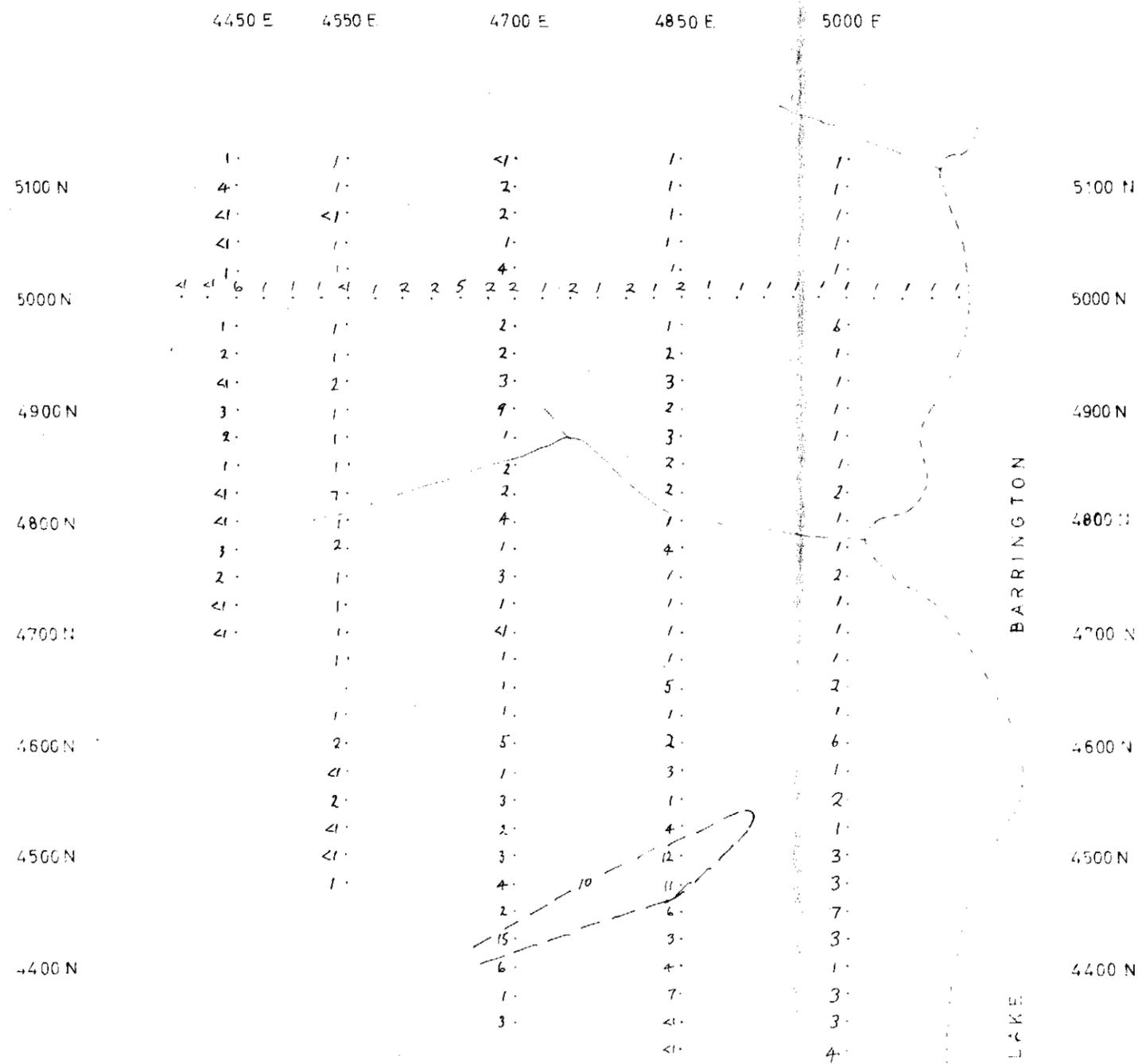


REFERENCE

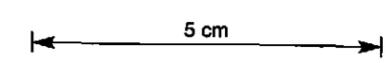


<b>ASARCO (AUSTRALIA) PTY. LTD.</b>		
75-1100		
E.L. 7/73, PARADISE TASMANIA: LAKE BARRINGTON PROSPECT		
SOIL SAMPLE RESULTS		
CX COPPER		029
COMPILED: Rgb	FILE:	PLAN NO 5225
DRAFTED:	DATE: March 1975	
CHECKED:		





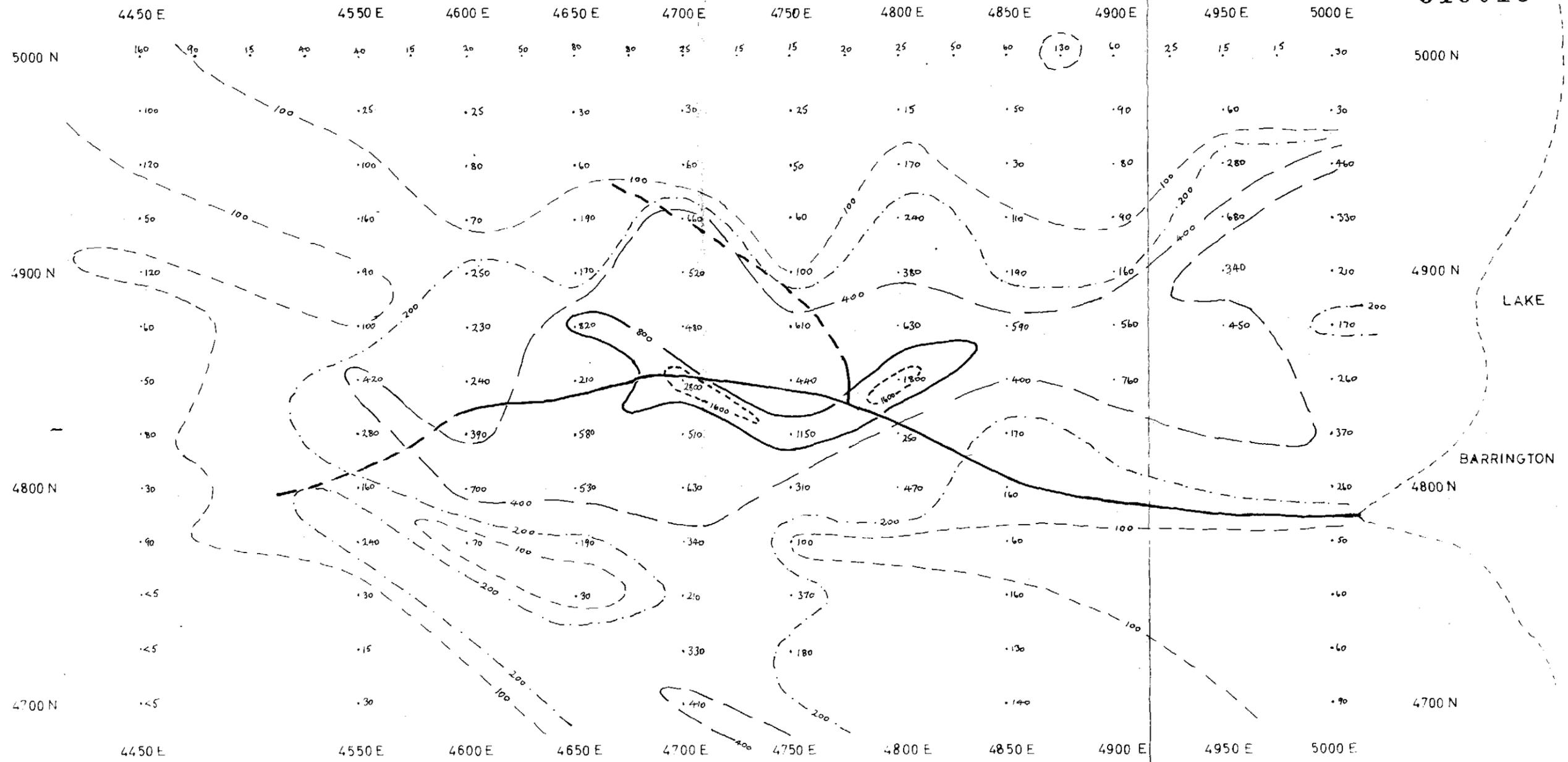
REFERENCE



ASARCO (AUSTRALIA) PTY. LTD.		
75-1100		
E L 7/73, PARADISE TASMANIA, LAKE BARRINGTON PROSPECT		
SOIL SAMPLE RESULTS		
CX ZINC		030
COMPILED: Rgb	FILE:	PLAN NO
DRAFTED:	DATE: March 1975	5226
CHECKED:		

4450 E 4550 E 4700 E 4850 E 5000 E  
SCALE 1:5000

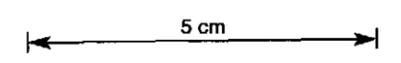
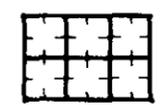
519015



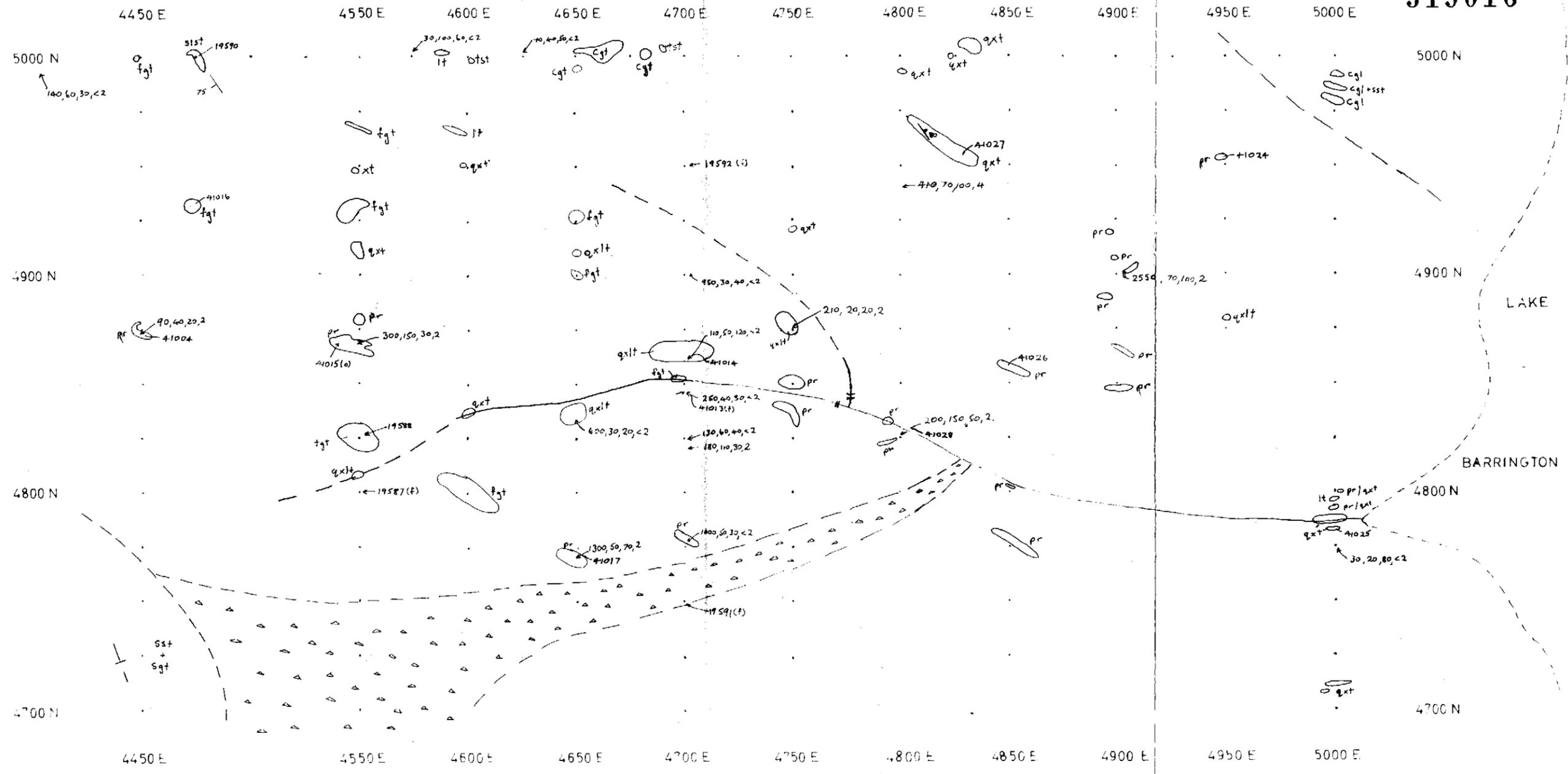
LAKE  
BARRINGTON



SCALE 1:2000



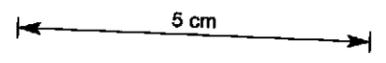
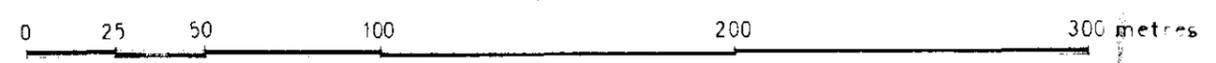
ASARCO (AUSTRALIA) PTY. LTD.		
75-1100		
EL 773 PARADISE TASMANIA LAKE BARRINGTON PROSPECT		
FOLLOW-UP SOIL SAMPLE RESULTS		
COPPER		031
COMPILED: [ ]	FILE: [ ]	PLAN NO
DRAFTED: [ ]	DATE: May 75	5227
CHECKED: [ ]		



REFERENCE

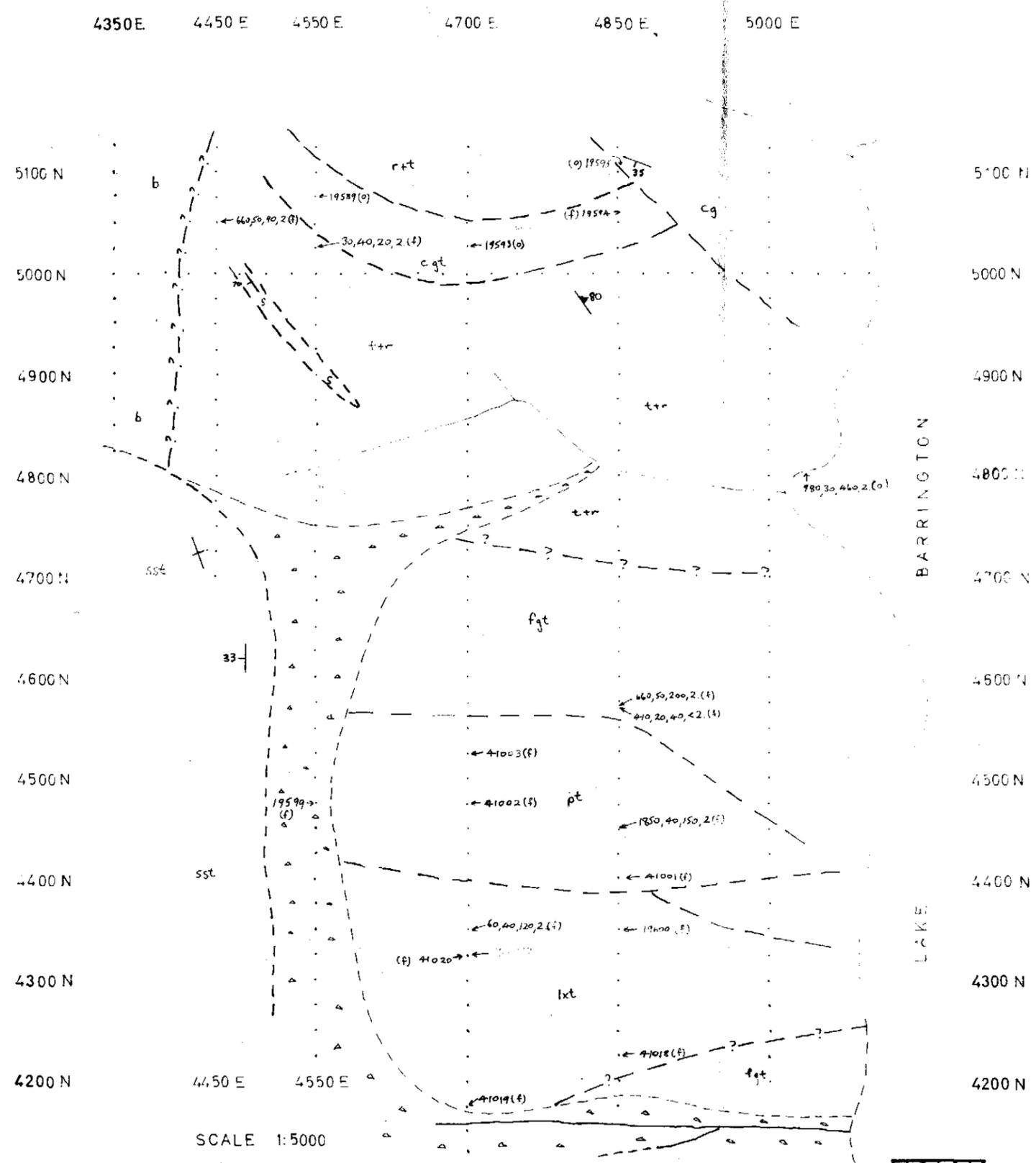
- Rock sample result
  - Cu, Pb, Zn, Ag (ppm)
  - Petrographic sample
  - 19587
  - (f) - float.
  - bedding
  - foliation
- |  |   |
|--|---|
|  | Sandstone talus                                       |
|  | indurated sandstone, sandy grit.                      |
|  | massive siliceous conglomerate                        |
|  | fine grained rhyolitic tuff                           |
|  | quartz crystal lithic tuff.                           |
|  | lithic tuff   |
|  | argillaceous siltstone                                |
|  | porphyritic rhyolite                                  |
|  | rhyolitic tuff-lava, ignimbrite, porphyritic rhyolite |
|  | tuffaceous sandstone                                  |
|  | tuffaceous grit.                                      |
|  | coarse grained tuff, indurated tuffaceous sandstone   |

SCALE 1:2000



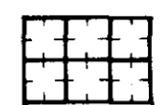
ASARCO (AUSTRALIA) PTY. LTD.		
75-100		
EL 7/73 PARADISE TASMANIA LAKE BARRINGTON PROSPECT		
FOLLOW-UP SOIL SAMPLE SURVEY		
GEOLOGY		032
COMPILED: . . .	FILE:	PLAN NO
DRAFTED:	DATE: May 1975	5228
CHECKED:		





- REFERENCE
- ▲▲ sandstone talus
  - b basalt
  - sst indurated sandstone, sandy grit
  - cgt massive siliceous conglomerate
  - fgt fine grained rhyolitic tuff
  - lxt lithic crystal tuff
  - pt porphyritic trachyte
  - fgt fine grained acid tuff
  - t+r lithic tuff, qtz crystal tuff, porphyritic rhyolite, rhyolitic tuff lava, tuffaceous grit
  - s argillaceous siltstone
  - cgt coarse grained tuff, indurated tuffaceous sandstone, siltstone
  - rtt Porphyritic rhyolite, fine grained acid tuff.

/ bedding  
 ▲ foliation  
 Rock sample results  
 ← Cu, Pb, Zn, Ag (ppm)  
 ← 19594 Petrographic sample location  
 (s) = outcrop (f) = float



<b>ASARCO (AUSTRALIA) PTY. LTD.</b>		
75-1100		
E L 7/73, PARADISE TASMANIA LAKE BARRINGTON PROSPECT		
GEOLOGY		033
COMPILED: RGS	FILE:	PLAN NO
DRAFTED:	DATE: June 1975	5230
CHECKED:		