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Copper Mines of Tasmania Pty Ltd

Exploration Licence 3/96 Lake Beatrice

Year 1 / Final Report

EL3/96 Pt1

See folio 25A

K.C. Morrison
10 April 1997

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SUMMARY

The Year 1 work program on Exploration Licence 3/96 Lake Beatrice had two components; 1) A literature review of past exploration by companies which previously held the ground, and 2), Field exploration by Copper Mines of Tasmania consisting of; gridding, reconnaissance mapping, a stream sediment survey and rock chip sampling.

The results have substantially downgraded the prospectivity for volcanic - hosted base metal/gold massive or disseminated sulphide styles of deposits, which were the primary targets and the basis for acquiring the area.

The possibility of a low sulphide gold target, distal from a major structure, and buried beneath glacial gravels in the southwest of the licence, has not been fully tested but warrants a low ranking as a consequence of the geological information acquired to date.

It is recommenced that the licence be relinquished and that the exploration effort be channelled into higher ranking prospects and leads on the Linda and Yolande River licences.

TENEMENT DETAILS

Exploration Licence 3/96 Lake Beatrice is a 6 km^2 tenement located north of the Comstock Valley in the Queenstown region western Tasmania, and adjoining the northeast corner of EL 52/94 (Figure 1).

It is the southern part of the former two part Exploration Tender Area 403, which was offered to industry by tender, due on the December 24, 1995. Copper Mines of Tasmania Pty. Ltd. successfully bid for Part 2 and was awarded EL 3/96, with licence year 1 commencing on May 17, 1996. CMT holds 100% equity in the licence.

GEOLOGICAL SETTING & PROSPECTIVITY

Approximately half the EL is underlain by Central Volcanic Complex (and possibly Eastern Sequence) and Tyndall Group rocks in a broad north, northwesterly plunging syncline (Figure 2). These target rocks outcrop on the southern slopes of the Tyndall Range plateau and the southeastern slopes of Mt. Sedgwick. Owen Conglomerate overlies the Tyndall Group and occupies the northern half of the EL. South of the outcropping Mount Read Volcanics, the Quaternary glacial and periglacial sediments of the northern Comstock Valley cover bedrock.

Prospectivity, as perceived by CMT, is based on three factors:

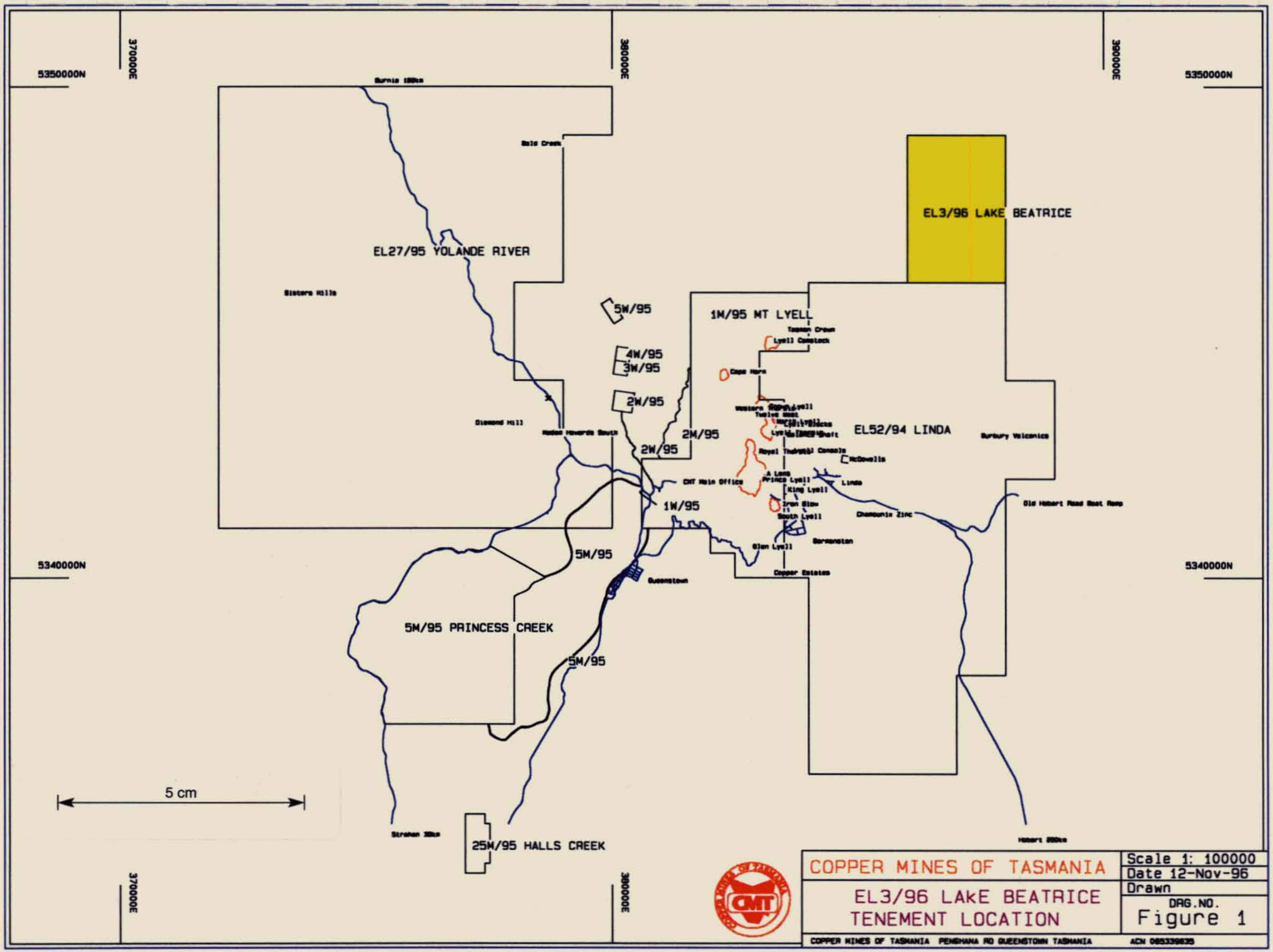
1) The contact zone of the Lower Tyndall Group and upper CVC-Eastern Sequence and its potential to host VMS, Mount Lyell or Henty style deposits.

2) The large rhyolite domal feature (the Beatrice lava dome at Keratophyre Knob) and its hematite, magnetite, quartz stockwork vein system. Anomalous base metal values from rock chips and soil have been achieved by previous explorers within the sediments and volcanics flanking the eastern side of the lava dome.

3) A CRA Exploration 1987 stream sediment gold anomaly in what is now the far northeast corner of EL 52/94 may be sourced from the Tyndall Group volcaniclastics and quartz porphyry outcropping upslope, in the southeast corner of EL 3/96.

ACCESS AND LAND TENURE

Access is limited to the Comstock Valley 4WD road, which connects at Comstock Creek to a walking track to the north-south base line of the 1989 Aberfoyle grid. This grid consists of 8 x 2000 metre east-west (AMG) lines, in addition to the base line, at 200 metre spacing (Figure 3). Therefore the southern half of the licence area, including all the rocks considered prospective, is covered by the grid. Approximately the southern 50% of the EL is Uncommitted Crown Land and the northern (less prospective) 50% is within the Southwest Conservation Area. Exploration within the Conservation Area is permitted and is common practice elsewhere in western Tasmania. Exploration is carried out under guidelines imposed by the Mineral Exploration Working Group, composed of representatives of the relevant Government agencies and chaired by the Mineral Resources Tasmania Tenement Manager.



tenemenp.pf

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QUEENSTOWN

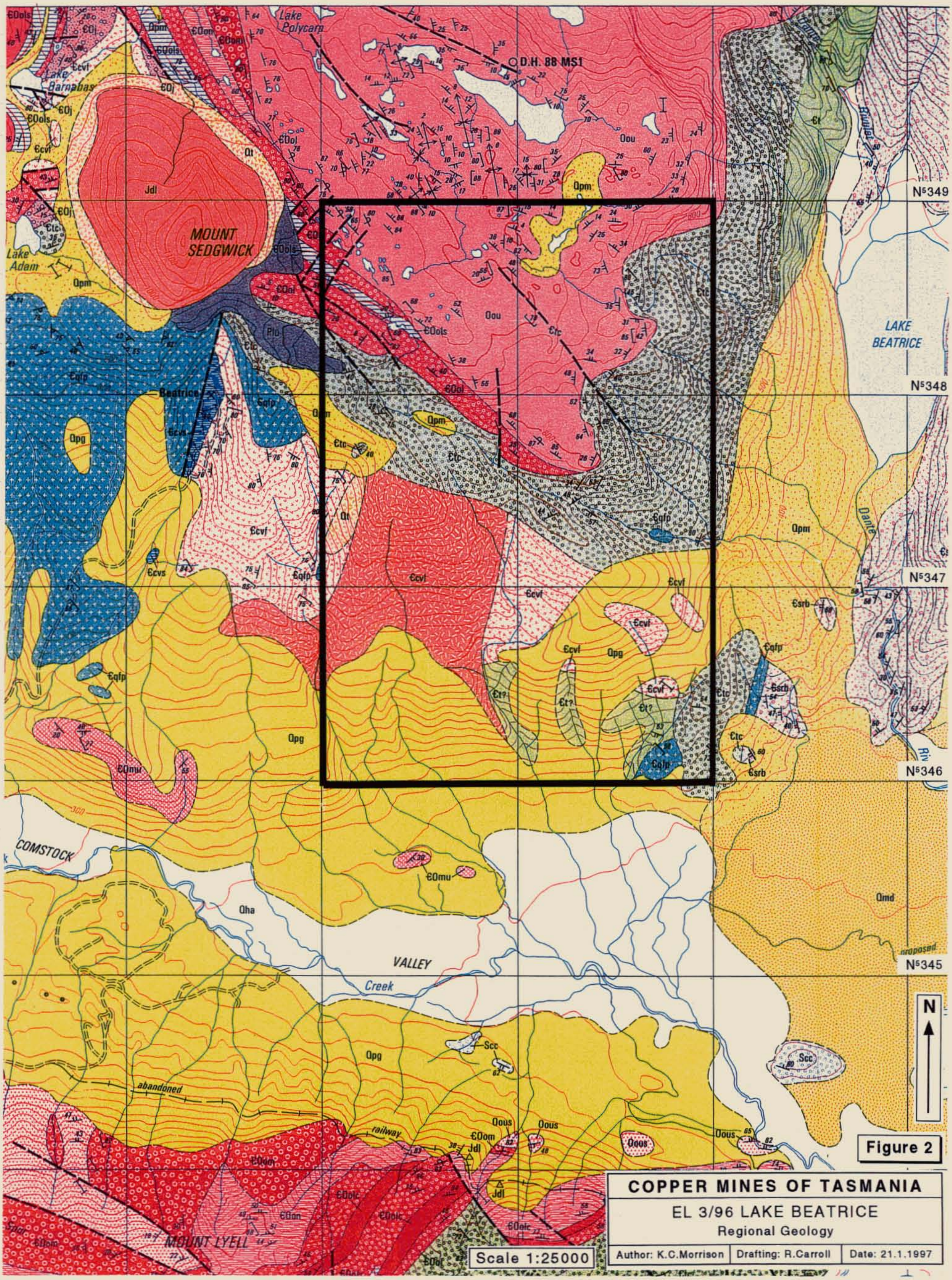


Figure 2

COPPER MINES OF TASMANIA

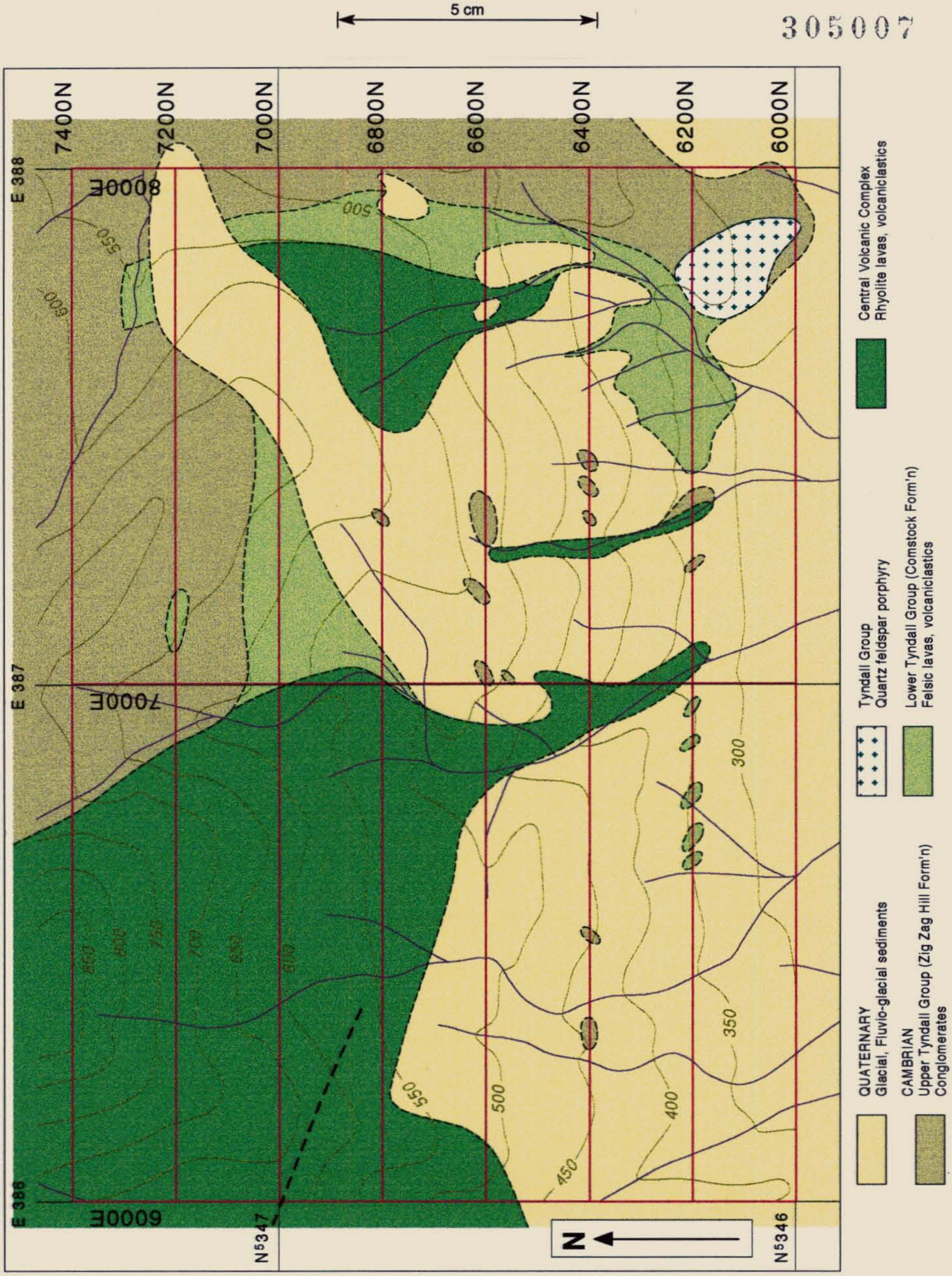
EL 3/96 LAKE BEATRICE

Regional Geology

Scale 1:25000

Author: K.C.Morrison	Drafting: R.Carroll	Date: 21.1.1997

305007



0 — 500m

SCALE 1:10,000

Figure 3

COPPER MINES OF TASMANIA		
EL 3/96 LAKE BEATRICE Interpretative Geology (from Aberfoyle 1990)		
Author: K.C.Morrison	Drafting: R.Carroll	Date: 10.3.1997

EXPLORATION HISTORY

Previous exploration in the area now covered by EL 3/96 occurred in two phases (Table 1)

1) 1970 - 1985	Goldfields Exploration Pty Ltd, EL 9/66, EL 10/69.
2) 1986 - 1993	CRA Exploration Pty Ltd, EL 5/85 (operated by Aberfoyle Resources Ltd since 1988)

EL 3/96 covers only a very small portion of the former ELs 9/66, 10/69 and 5/85. The Goldfields work was concentrated on the Beatrice prospect - Itat Creek area, west of EL 3/96, but some grid based mapping, sampling, magnetics, IP and soil geochemistry were carried out over the CVC rhyolite lava dome and flanking volcaniclastics. The Goldfields grid lines were orientated NW-SE and spaced nominally at 400 metres, with 200 metre infill over the dome area (Figure 4).

The main findings of interest were; minor lead/zinc sulphide mineralisation in volcaniclastics/epiclastics around the southeast end of line 1800 N, a series of IP responses (20 mv/sec) near the Owen Conglomerate-Mount Read Volcanics contact at the southeast end of the grid and moderate soil anomalies of 100-400 ppm Pb plus lesser Zn, again in the southeast of the grid.

Goldfields were unimpressed with these low level anomalies and by 1983 recommended future exploration only to the west of the Beatrice lava dome.

EL 5/85 was a 145 km^2 tenement granted to CRA Exploration in October 1985. Regional drainage geochemistry for gold detected an 80 ppb BLEG anomaly in a creek draining into the Comstock Valley, across both Tyndall Group volcanics and Quaternary glacial sediments. The anomaly site is now located in the far northeast corner of EL 52/94 but the possible source rocks are within the Mount Read Volcanics in the southeast corner of EL 3/96.

From April 1988, Aberfoyle, in joint venture with CRA, operated EL 3/96. The licence was reduced to 75 km^2 in October 1990, and again to 21 km^2, comprising three separate parts (Newton Creek, Dora, Beatrice), in November 1993. The Beatrice block corresponds exactly to EL 3/96 (via ETA 403).

During 1989-1990, Aberfoyle established a 20.2 line km AMG based grid in the southern half of the Beatrice block. Aberfoyle recognised the setting of a lava dome flanked by volcaniclastics and shale as being prospective for VMS style mineralisation by analogy with Red Hills, northeast of Henty.

They carried out a program of mapping, rock chip sampling, UTEM and magnetics surveys and selective soil sampling. The major findings are summarised below.

- The CVC rocks comprise dominantly aphyric felsic lava and volcaniclastics, with the Beatrice lava dome being flanked by lapilli volcaniclastics, breccias and shales. Within the felsic lavas mappable units were identified by their accessory biotite, zircon and apatite content.

Table 1

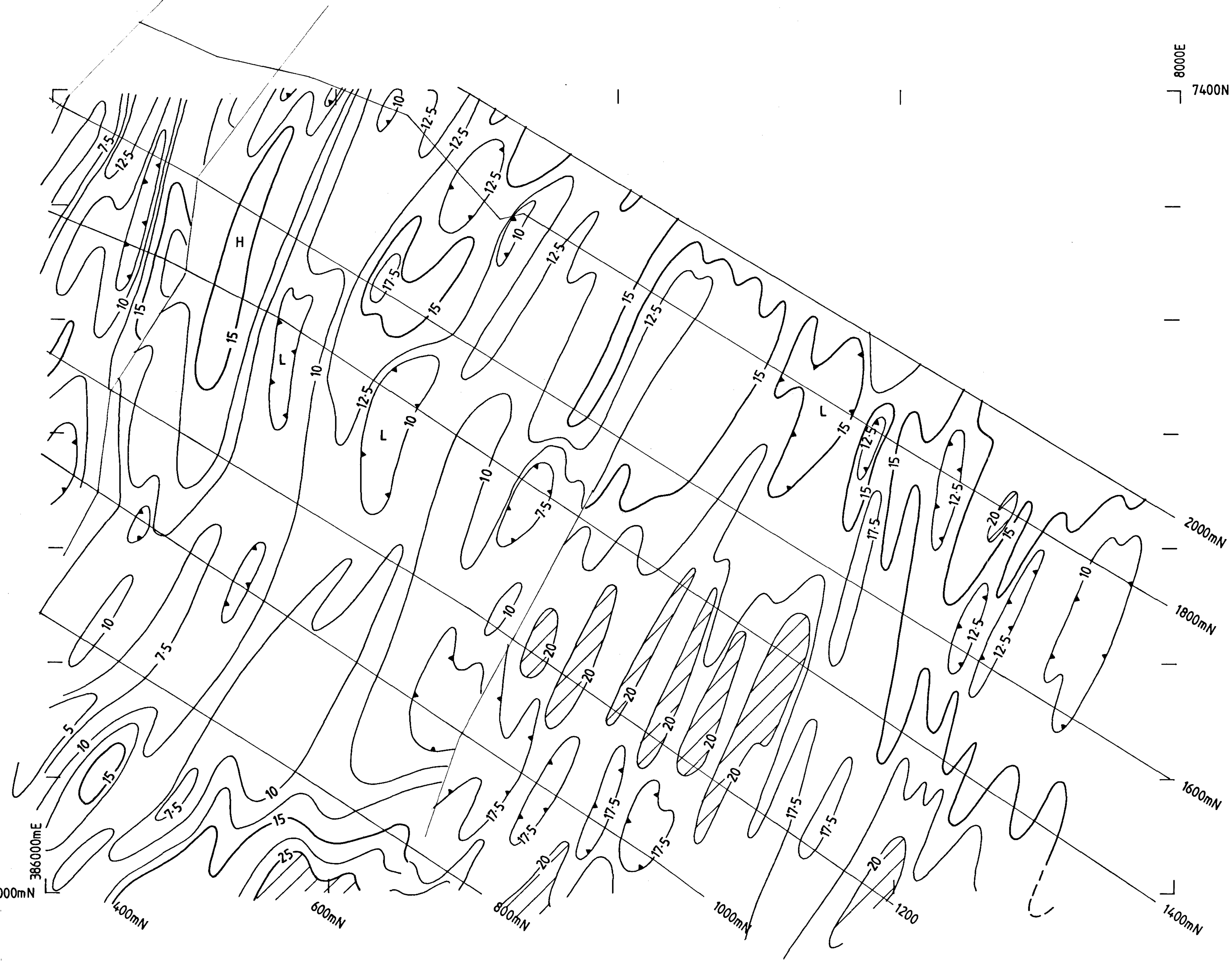
Years	EL	Company	Work	Details	Reference
1970-71	EL 10/69	Goldfields	Geology:	limited mapping	Wells 1972
1973-74	EL 10/69	Goldfields	Geology:	preliminary mapping	Wells 1974
1975-76	EL 10/69	Goldfields	Geology: Geochemistry:	mapping limited rock chip, stream sediments	Brophy 1976
1976-77	EL 10/69	Goldfields	Access: Geology: Geophysics: Geochemistry:	road construction, gridding detailed mapping, petrology gradient array IP, proton magnetics→ 6 main anomalies limited rock chips	Walter 1977
1977-78	EL 10/69	Goldfields	Access: Geology: Geochemistry:	gridding extended limited mapping, petrology detailed soil → major Pb/Zn anomaly (Mt. Sedgwick)	Hutton 1978
1979-85	EL 9/66	Goldfields	Work at Beatrice in this period focussed on the Mt Sedgwick Pb/Zn anomaly which subsequently became part of EL 102/87		
1986-87	EL 5/85	CRAE	Geology: Geochemistry:	limited mapping stream sediments	von Strokirch 1987
1988-89	EL 5/85	Aberfoyle	Access: Geology: Geochemistry:	access track established preliminary sampling limited rock chips	McNeill 1989
1989-90	EL 5/85	Aberfoyle	Access: Geology: Geophysics: Geochemistry:	20.2 line km grid established 1:2500 mapping, rock chip sampling, petrology 28 line km UTEM, ground magnetics rock chip, soil	Noonan 1990
1990-93	EL 5/85	Aberfoyle	no work during this period		

- Pervasive early phase chlorite, silica, sericite ± pyrite alteration is evident in both the CVC volcaniclastic breccias and the Tyndall Group felsic lavas and crystal volcaniclastics. Rock chemistry showed a general enrichment in K:Na and Mg:Ca which was interpreted, at best, as evidence of footwall style alteration, or at worst, being due to weathering. Cr and Ti/Zr ratios proved useful in helping distinguish mappable units and in distinguishing CVC from Tyndall Group rocks.

- Near the CVC-Tyndall Group boundary a lapilli volcaniclastic with characteristic polygonal fracturing of quartz phenocrysts is correlated with Southwell Subgroup lithologies which overlie the Hellyer deposit, north of the Henty Fault.

- The presence of sericite, goethite, tourmaline alteration, associated with microshears in one Tyndall Group sample, was interpreted as evidence for an overprint by granitic fluids.

- The lead-zinc mineralisation previously reported by Goldfields could not be relocated although rock chip values of 6000 ppm Zn and 3200 ppm Pb were achieved in the same area. Minor chalcopyrite and more abundant pyrite were observed in two samples of felsic volcanics. The extensive hematite, magnetite, quartz, pyrite vein stockwork in the Beatrice lava dome was noted to increase in prevalence towards the top of the dome.



chargeability in msecs

5 cm

30C010

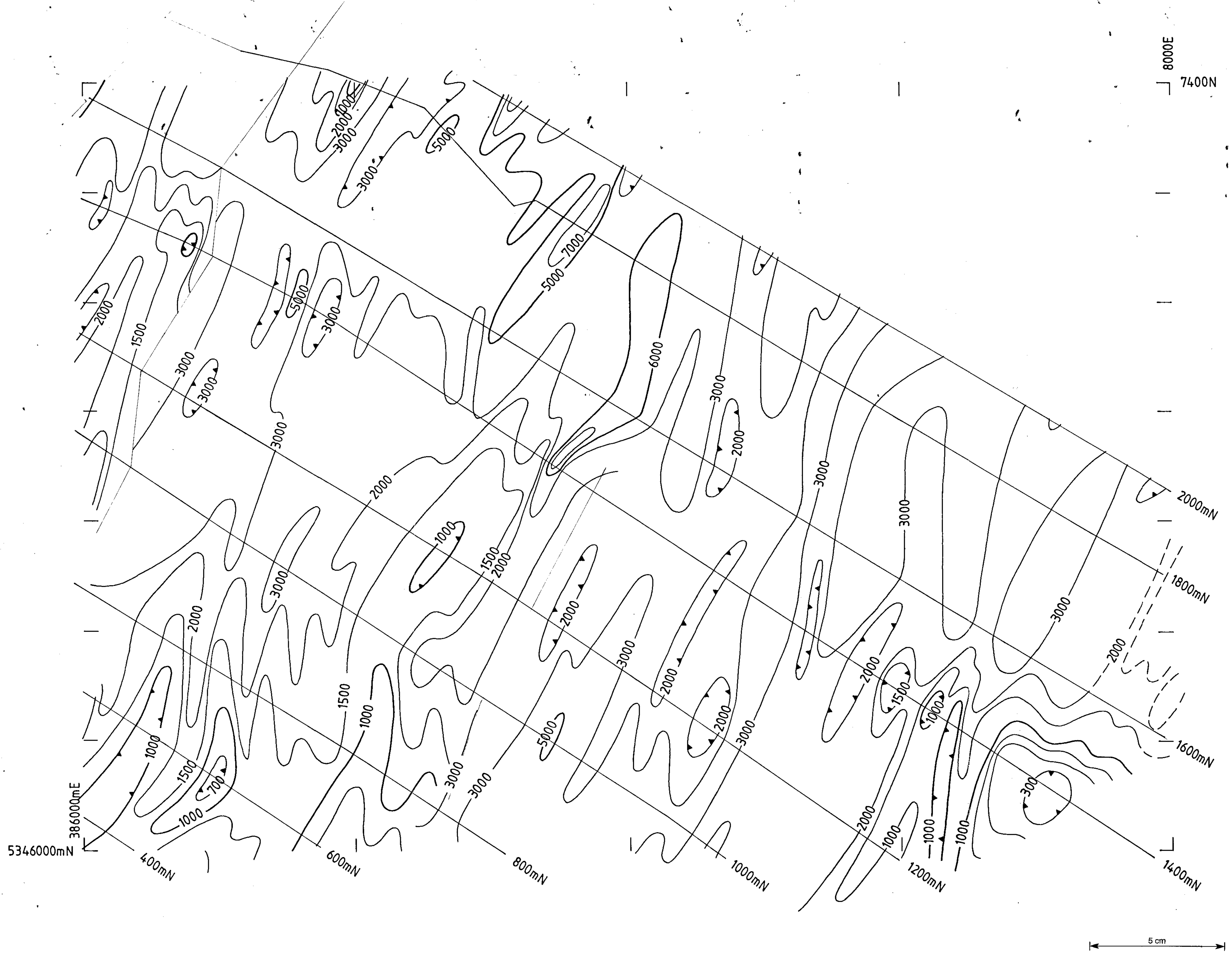
97-4000

FINAL REPORT - EL 3/96
COPPER MINES OF TAS. P/L
K C MORRISON

COPPER MINES OF TASMANIA

M.L.M. & R.C.L Gradient Array IP
Beatrice Grid Chargeability Contours

Compiled	JRB	Scale	1:5000	Survey by Scintrex, 1977
Drawn	DKH	Checked		
Date	Jan 1997	Plan No.	1	



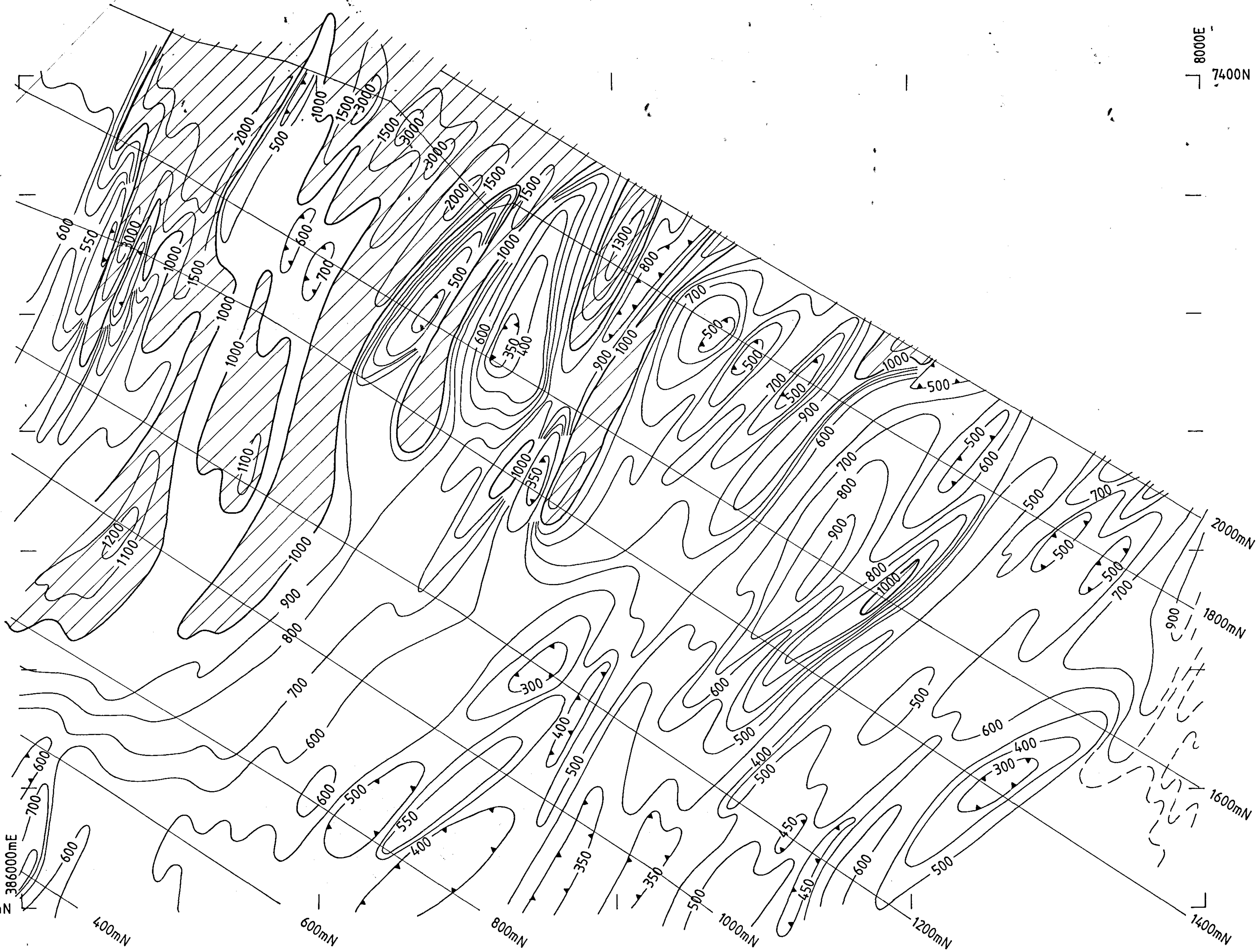
305011

97-4000

FINAL REPORT - EL 3/96
COPPER MINES OF TAS. P/L
K C MORRISON

resistivity contours in ohm-m

COPPER MINES OF TASMANIA		
M.L.M. & R.C.L Gradient Array IP Beatrice Grid Resistivity Contours		
Compiled JRB Drawn DKH Date Jan 1997	Scale 1:5000 Checked Plan No. 2	Survey by Scintrex, 1977



62000nT subtracted from each reading

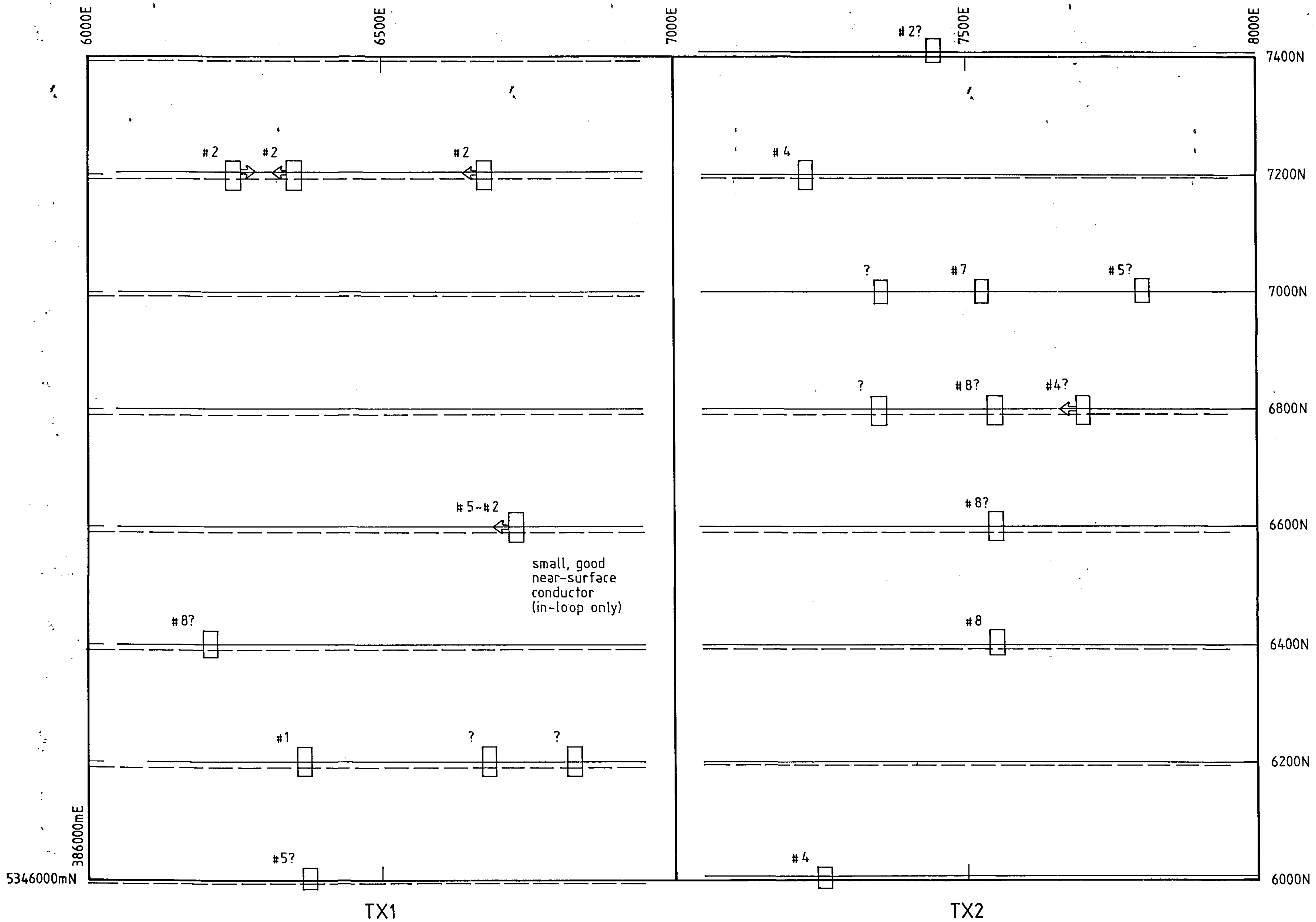
5 cm

305012

97-4000

FINAL REPORT - EL 3/96
COPPER MINES OF TAS. P/L
K C MORRISON

COPPER MINES OF TASMANIA		
M.L.M. & R.C.L Beatrice Grid Magnetic Contours		
Compiled JRB / Drawn DKH / Date Jan 1997	Scale 1:5000 / Checked / Plan No. 3	Survey by Scintrex, 1977



#2 UTEM response with latest channel number

possible migration direction

Loop 1 coverage

Loop 2 coverage

305013

97-4000

FINAL REPORT - EL 3/96
COPPER MINES OF TAS. P/L
K C MORRISON

COPPER MINES OF TASMANIA		
Reinterpretation of Aberfoyle's Lake Beatrice Grid UTEM Survey		
Compiled JRB	Scale 1:5000	Survey by Lamontagne, 1990
Drawn DKH	Checked	
Date Jan 1997	Plan No. 4	

5 cm

- A small "C" horizon soil survey (160 samples at 25 metre spacing) was conducted on 4 lines in the northeast of the grid, to follow up the anomalies reported by Goldfields in that area. A zone of anomalous Pb, Zn, (?Cu) centred at 7850E, 6900N was detected. This anomalous zone coincides with a belt of north-south striking CVC rhyodacitic volcanics with rock chip values ranging up to 1850 ppm Pb and 6000 ppm Zn (Figure 4).

- A two loop, 28 line km UTEM survey over the Beatrice grid was interpreted as defining some weak intraformational conductors but no indications of mineralisation. 16 line km of ground magnetometer data were interpreted as being largely ineffective across the lava dome area, due to noise from the hematite-magnetite stockwork, but did clearly show the distribution of the upper Tyndall Group volcaniclastic conglomerate and the quartz feldspar porphyry (magnetic low) in the southeast corner of EL 3/96.

- A CSIRO lead isotope study on samples of outcropping CVC rhyolite-dacite lavas concluded that although the affinities were variable, the lead was derived from Cambrian hydrothermal fluid.

CONCLUSIONS AFTER REVIEWING PREVIOUS EXPLORATION

The geology of the southern half of the EL remains prospective for VMS base metal/gold mineralisation in two settings.

1) The CVC lava dome and its flanking volcaniclastics and shale.

2) The CVC - lower Tyndall Group contact area in the southeast corner.

Exploration by Goldfields and Aberfoyle has covered the prospective rocks with grid based mapping, chip sampling, soil geochemistry, IP, UTEM, and magnetics. Consistent low level base metal anomalies were encountered in soil and rock chips in the southeast corner of the tenement. No significant alteration zone or geophysical anomaly was recognised.

It is recommended that the Aberfoyle grid be refurbished by CMT and that Year 1 exploration on EL 3/96 concentrate on mapping, rock chip and stream sediment geochemistry along the grid lines and creeks, to follow up the previous anomalies and to more intensively explore the lava dome. South flowing drainage density is high in the southeast corner and will be accessible from the grid lines.

A review of all previous geophysics is recommended.

CMT EXPLORATION

(i) Gridding

The 20.2 line km Aberfoyle grid was recut by contractors in October-November 1996. The original 25 metre peg spacing and AMG co-ordinates were retained and pegs were replaced where necessary. Additional ropes were installed on the steepest sections of the grid.

Reconnaissance mapping and sampling along the grid lines confirmed the high degree of detail and accuracy with the Aberfoyle 1989 mapping. Four lithological domains are recognised (Figure 3); Central volcanic complex rhyolite lavas > volcaniclastics; Lower Tyndall Group felsic volcaniclastics > lava and ? intrusives, Upper Tyndall Group volcaniclastic/lithic conglomerates and Quaternary tills and fluvioglacial gravels.

(ii) Stream Sediment Survey

Fifty one drainage sites were accessed from the grid and sampled by both -80# and pan concentrate methods (Figures 5 and 6). At each site 2 litres of -2mm bed load sediment was collected and split into two equal sized samples. A pan concentrate of approximately 100 - 200 grams was produced in the field from a one litre split and the other split was dry sieved at Queenstown to produce a -80# sample of approximately 100 - 200 grams. Assay data and statistical plots are attached as Appendix 1 and the base metal and gold values are mapped on Figures 7 to 14 and summarised in Table 2. (Silver scored < 1 ppm = level of detection in all samples).

Table 2

Stream Sediment Survey - Summary Statistics

-80#	Cu ppm	Pb ppm	Zn ppm	Au ppm	Pan con	Cu ppm	Pb ppm	Zn ppm	Au ppm
max	96.00000	447.00000	202.00000	0.71400		64.00000	64.00000	146.00000	1.18800
min	3.00000	11.00000	28.00000	0.00250		1.00000	7.00000	17.00000	0.00250
mean	26.07843	109.52000	69.39216	0.04300		10.03922	31.64706	59.00000	0.07394
std.dev	16.82836	88.93801	34.50860	0.12557		9.50991	12.95658	26.32033	0.19950
median	22.00000	83.00000	61.00000	0.00250		8.00000	30.00000	52.00000	0.00250

Higher maximum and mean base metal concentrations were achieved by the -80# method, but for gold the pan concentrate values are higher (Table 2). In both -80# and pan concentrate data the median values are lower than the means for all metals, suggesting a positive skew in the distributions. Gold shows extreme discrepancy between mean and median, with the median value being below level of detection for both methods. (N.B. a score of 2.5 ppb is assigned to all < 5 ppb = level of detection assays. On Figures 10 and 14 gold values <0.005 are ppm).

The mean gold values from both methods are an order of magnitude greater than the medians suggesting a major "nugget effect" in the populations and non-conformity to normal distributions.

An indication of high value outliers from a normal distribution is obtained from the scores greater than the mean plus 3 standard deviations.

For the -80# and pan concentrate data (Appendix 1) the following samples appear anomalous.

-80#	Cu	H-1055
	Pb	H-0953, H-1053
	Zn	H-0997
	Au	H-1010, H-1026
Pan Concentrates	Cu	H-1056
	Pb	-
	Zn	H-1027
	Au	H-1023, H-1027

Two sample sites (H-1055, H-1056 for Cu and H-1026, H-1027 for Au) appear anomalous by both methods. Figures 15 and 16 show that all the gold highs and the pan concentrate zinc high (H-1027) are grouped in the southwest of the grid on Quaternary gravels which at least in part overlie Lower Tyndall Group Volcanics. The -80# zinc high occurs near the CVC-Tyndall Group contact, southeast of the Beatrice lava dome, both the copper highs and one of the -80# lead highs (H-1053) occur at sites draining the Beatrice lava dome, and the other -80# lead high (H-0953) occurs on Quaternary gravels in the southeast of the grid.

In addition to outliers defined statistically, the mapped date (Figures 7 to 14) show important patterns. The -80# zinc map (Figure 9) shows a zinc high (126 ppm) corresponding to the copper anomaly below the summit area of the Beatrice lava dome and a set of three zinc highs (137, 147, 144 ppm) in a stream southeast of the lava dome, in the area of zinc-lead anomalies discovered by previous explorers (Figure 4). The -80# lead map (Figure 8), shows strong elevation in the same creek and also shows lead highs of 387 and 256 ppm at the eastern margin of the Beatrice lava dome, near the CVC-Tyndall Group contact, suggesting either a fault on stratigraphic control to metal enrichment.

The gold data (Figures 10 and 14) show that 14/51 -80# sites scored > 5 ppb and 15/51 pan concentrate sites scored > 5 ppb. Seven sites returned gold highs with both methods; four in Quaternary gravels, three in Tyndall Group volcaniclastics and one in CVC volcanics.

Histograms and probability plots (Appendix 1) are consistent with the results in Table 2. Copper shows one strong anomaly, outside the normal curve, at the same sample site from both -80# (96 ppm) and pan concentrate (64 ppm) data. Both distributions are platykurtic and positively skewed.

Lead histograms show contrast between sampling methods. -80# data are strongly positively skewed, with two anomalous highs outside the normal curve (387 and 447 ppm), whereas the pan concentrate data fit the normal curve and appear to belong to a single population. The -80# zinc distribution is also more positively skewed than the equivalent pan concentrates and each method identifies a single but different site as an anomalous high (202 ppm for -80# and 146 ppm for pan concentrate; both from Quaternary gravels covering Tyndall Group).

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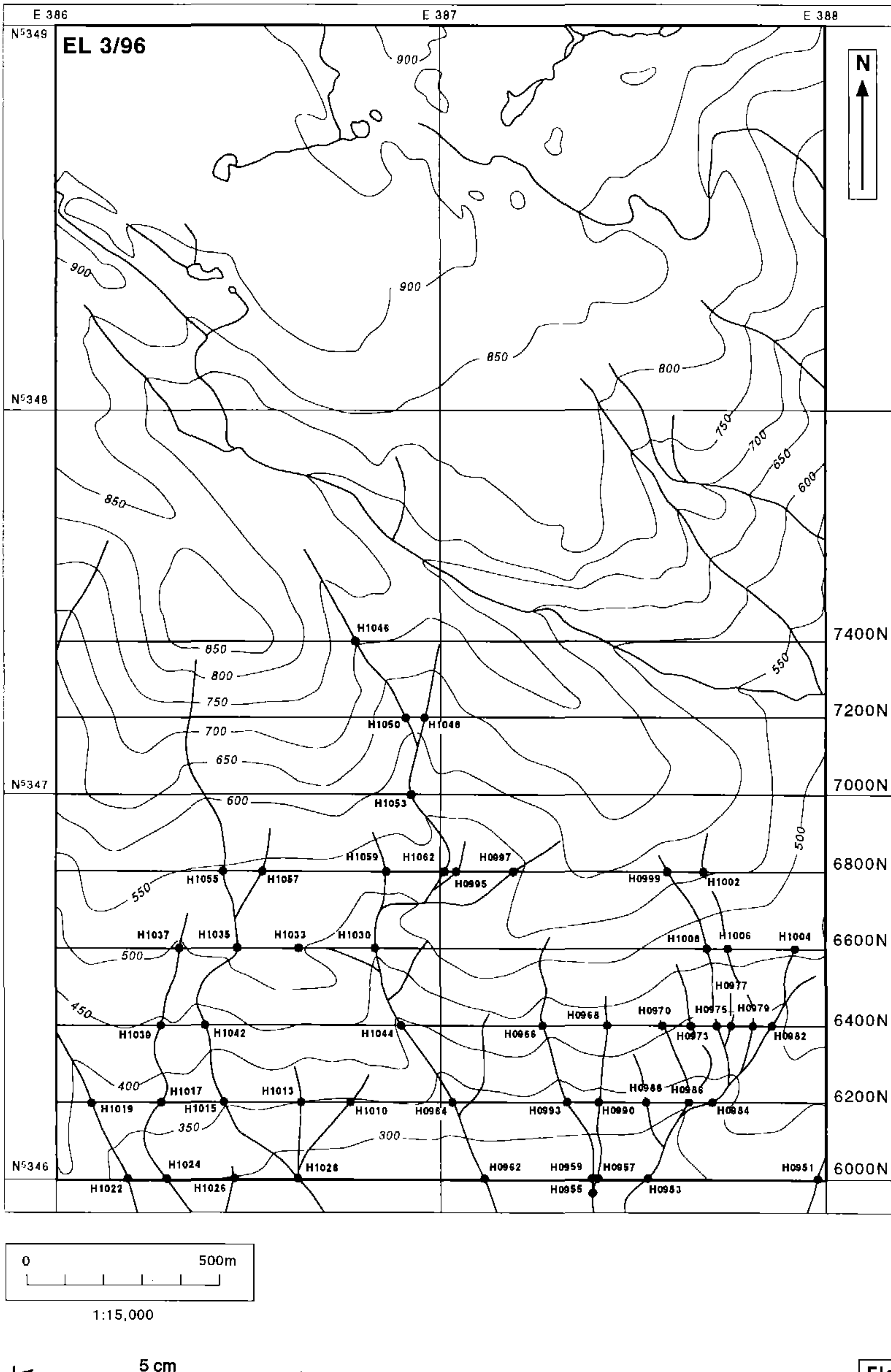


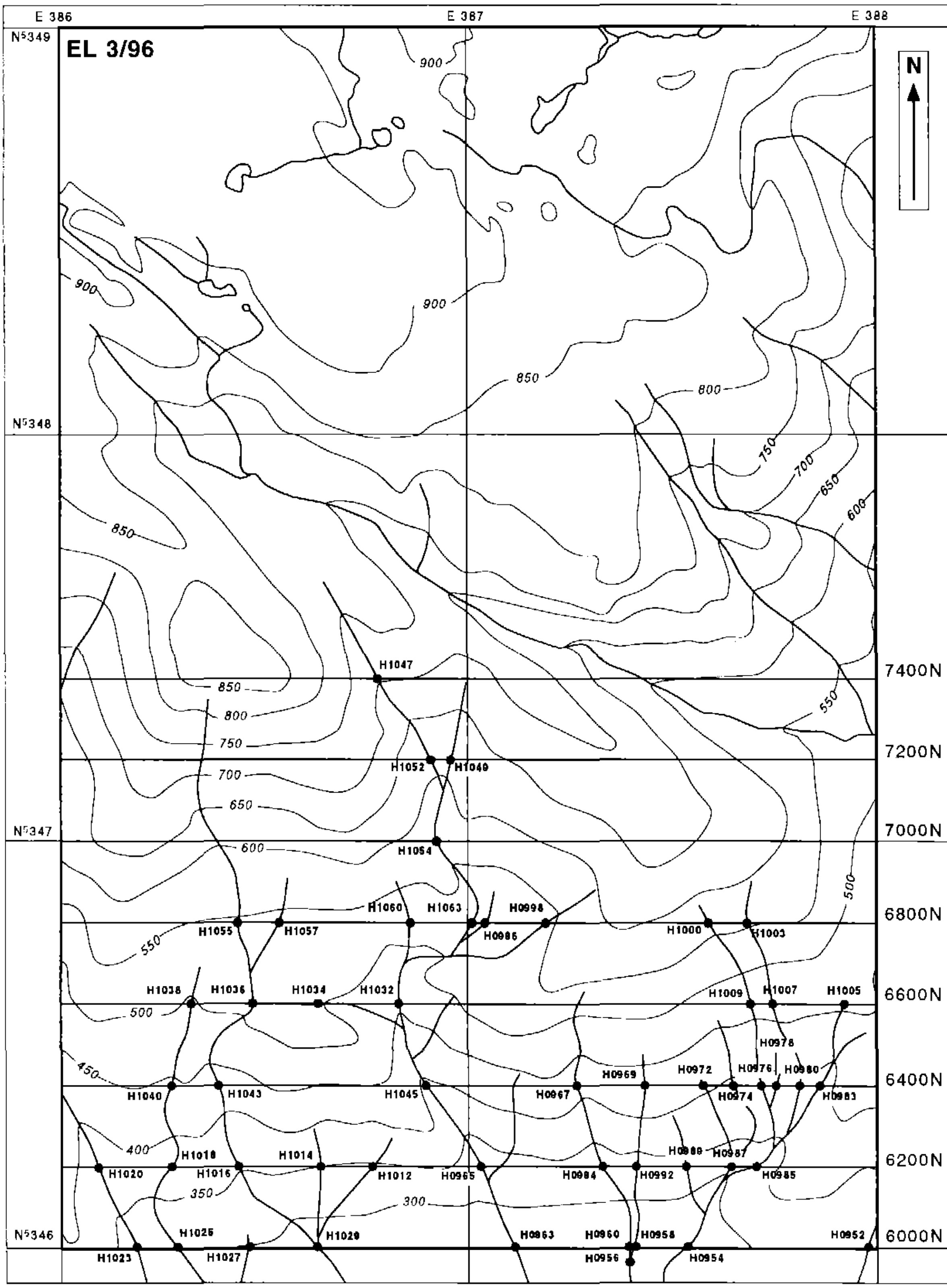
Figure 5

COPPER MINES OF TASMANIA

EL 3/96 LAKE BEATRICE
STREAM SEDIMENT SURVEY
-80 MESH - SAMPLE LOCATIONS

Author: K.C.Morrison	Drafting: R.Carroll	Date: 21.1.1997

305018



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5 cm

Figure 6

COPPER MINES OF TASMANIA

EL 3/96 LAKE BEATRICE
STREAM SEDIMENT SURVEY
PAN CON - SAMPLE LOCATIONS

Author: K.C.Morrison	Drafting: R.Carroll	Date: 21.1.1997

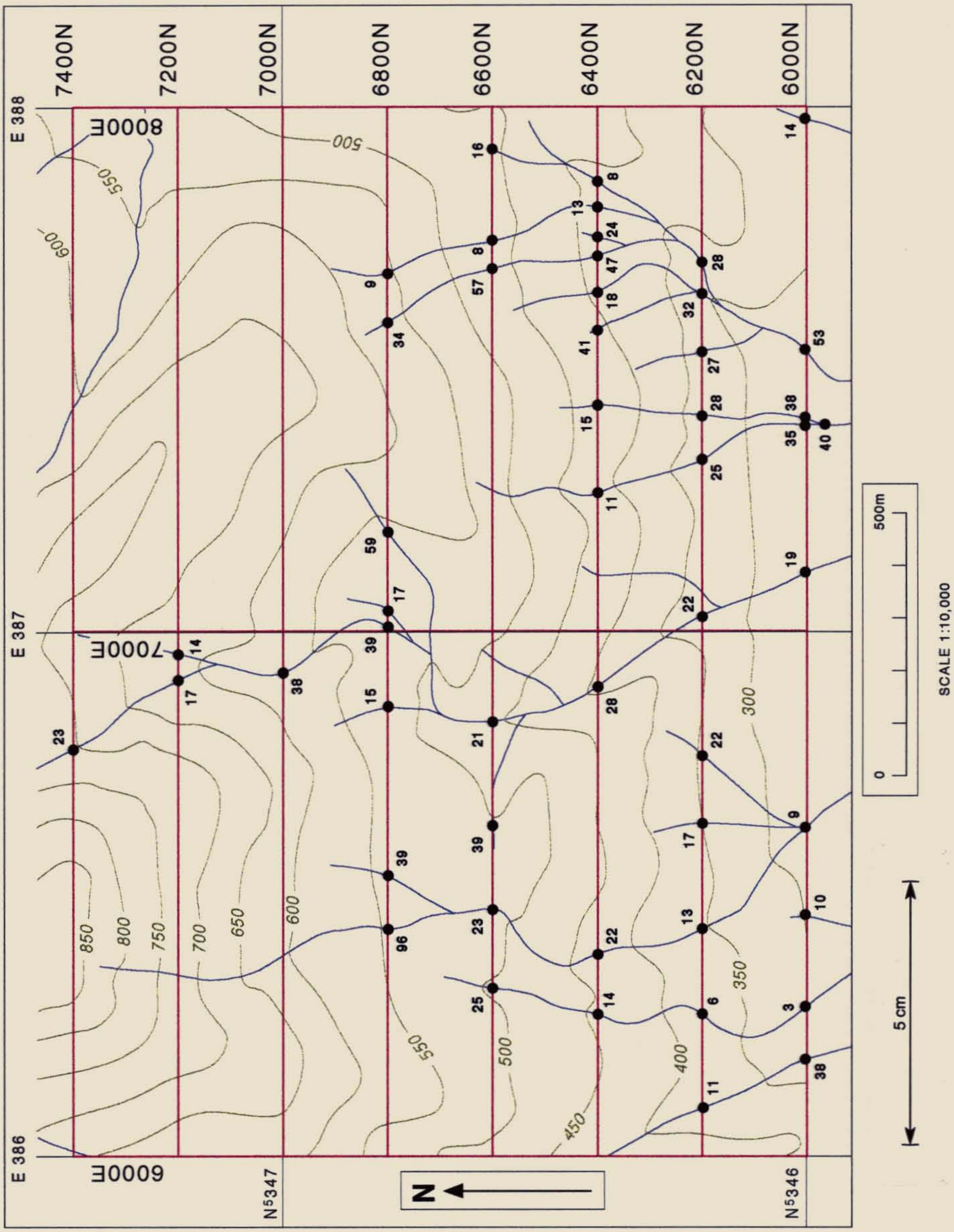

Figure 7

COPPER MINES OF TASMANIA

EL 3/96 LAKE BEATRICE
STREAM SEDIMENT SURVEY
80 MESH - Cu (ppm)

Author: K.C.Morrison	Drafting: R.Carroll	Date: 21.1.1997

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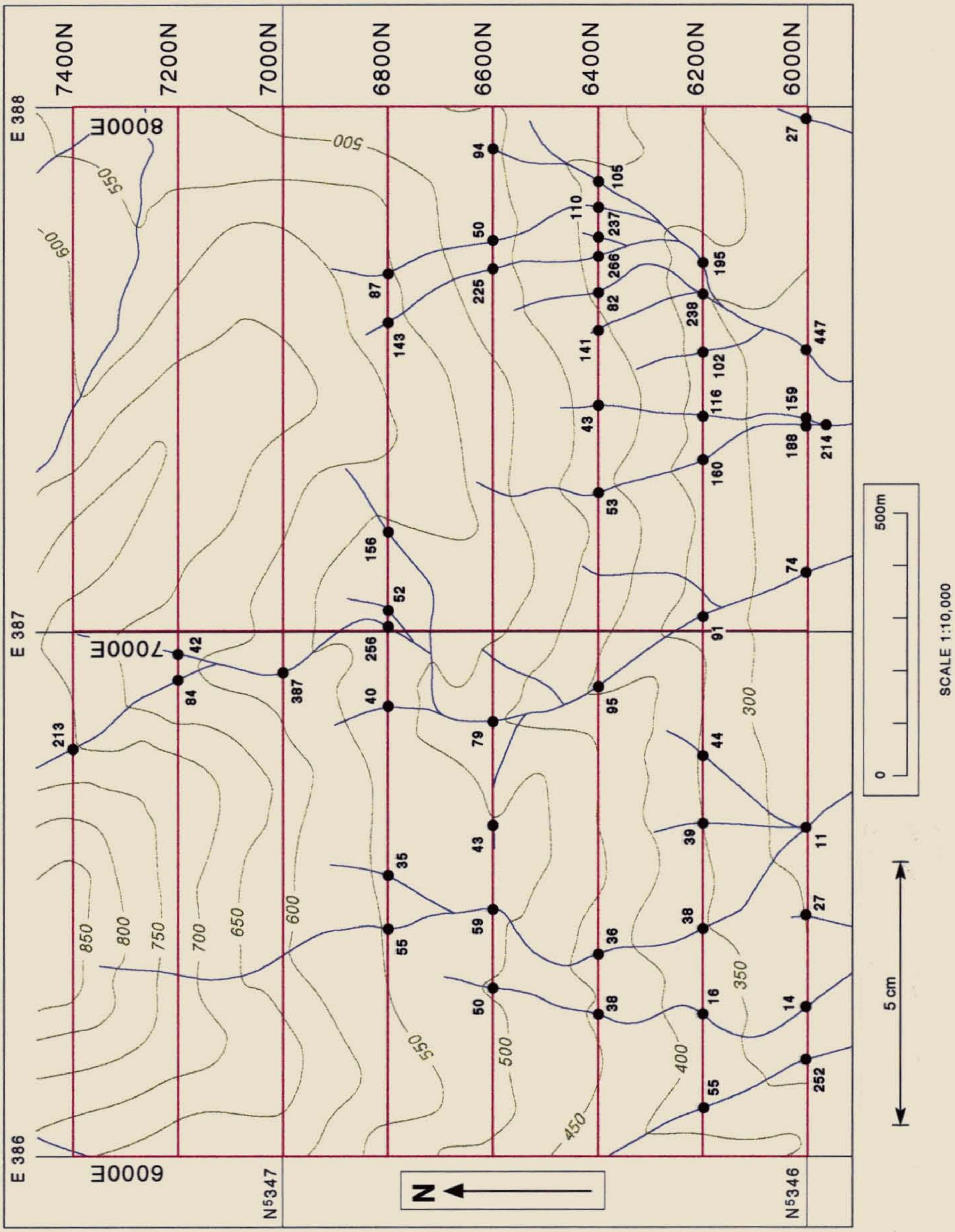

Figure 8

COPPER MINES OF TASMANIA		
EL 3/96 LAKE BEATRICE STREAM SEDIMENT SURVEY 80 MESH - Pb (ppm)		
Author: K.C.Morrison	Drafting: R.Carroll	Date: 21.1.1997

305021

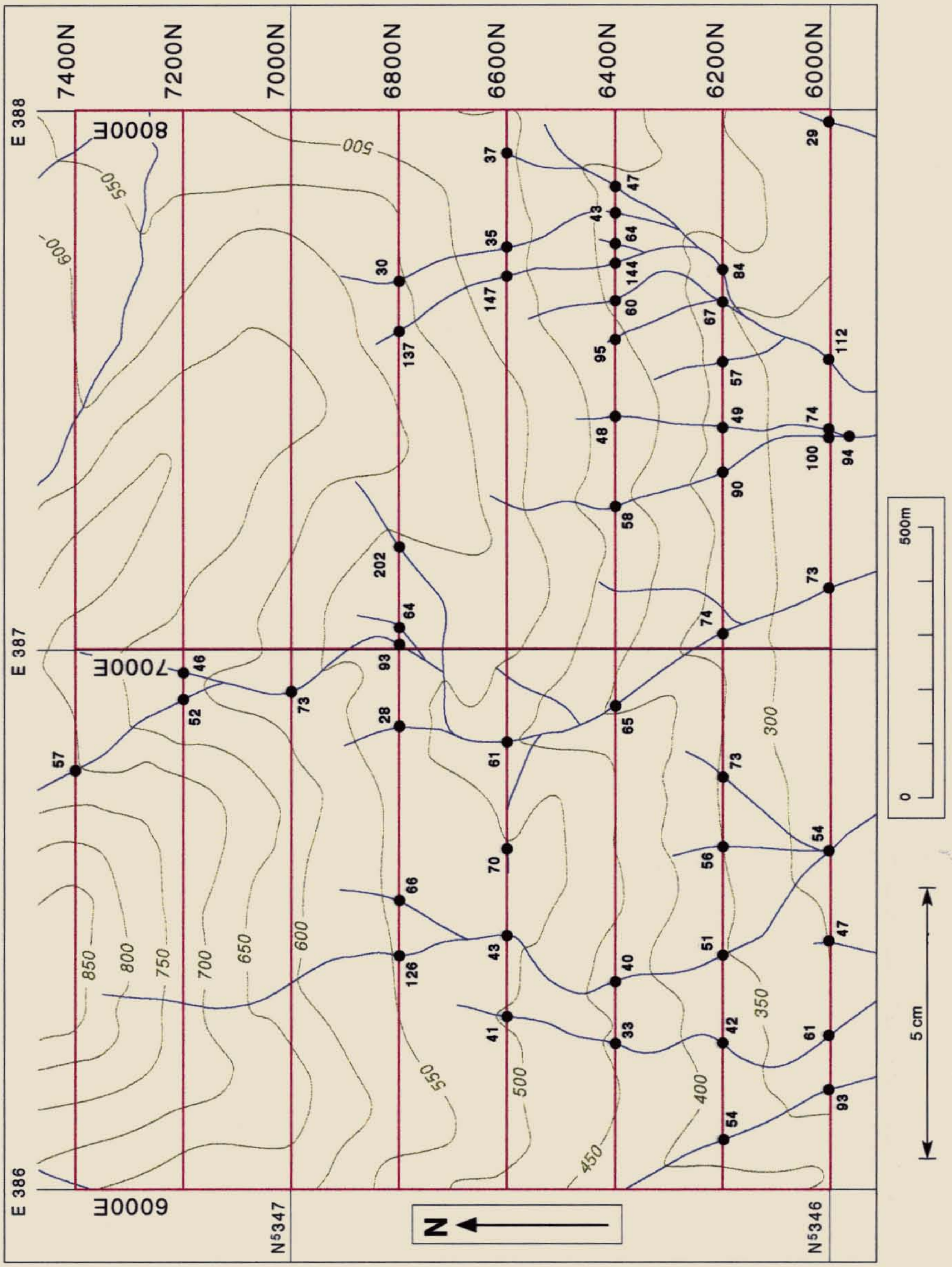

Figure 9

COPPER MINES OF TASMANIA		
EL 3/96 LAKE BEATRICE STREAM SEDIMENT SURVEY 80 MESH - Zn (ppm)		
Author: K.C.Morrison	Drafting: R.Carroll	Date: 21.1.1997

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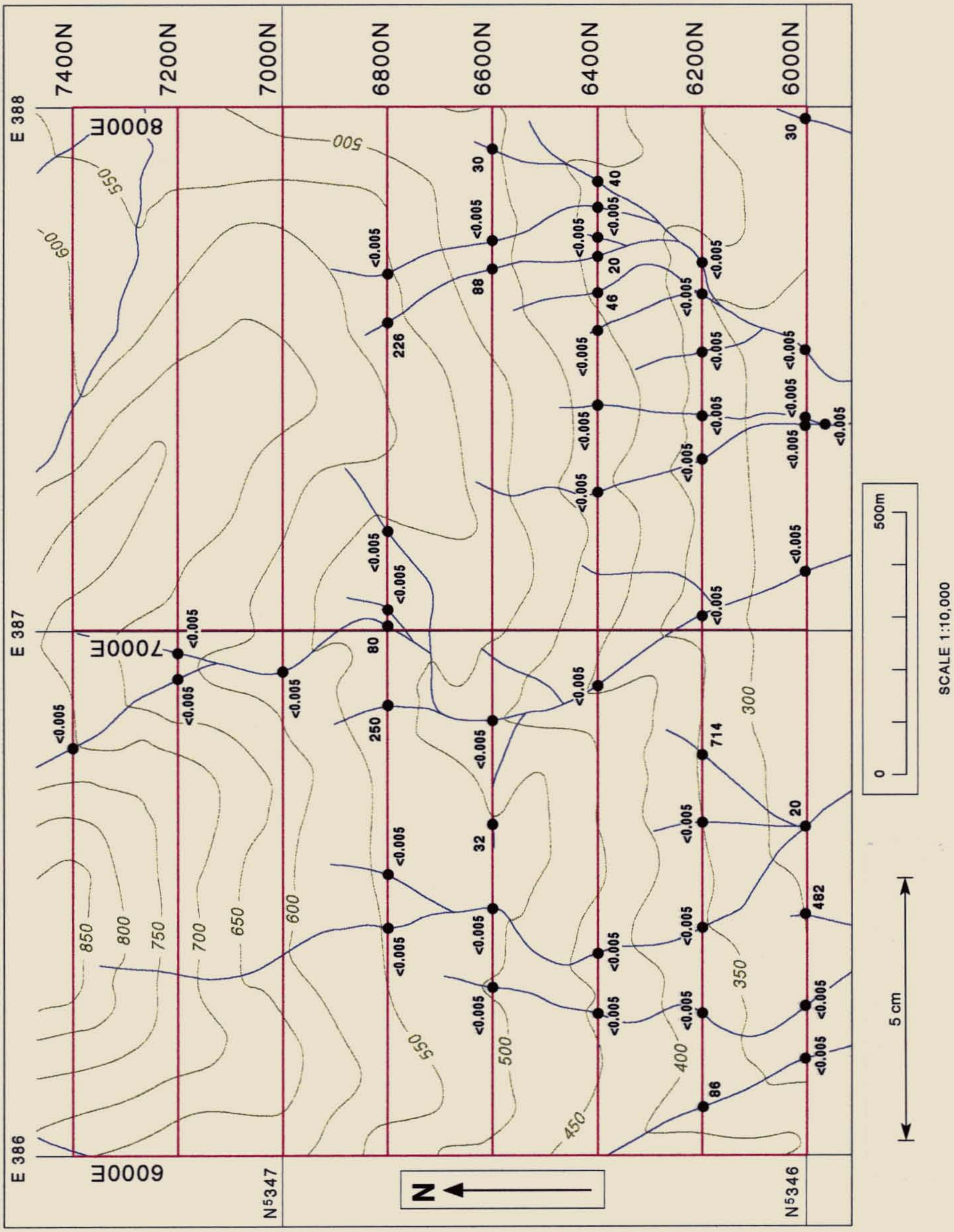

Figure 10

COPPER MINES OF TASMANIA		
EL 3/96 LAKE BEATRICE STREAM SEDIMENT SURVEY 80 MESH - Au (ppb)		
Author: K.C.Morrison	Drafting: R.Carroll	Date: 21.1.1997

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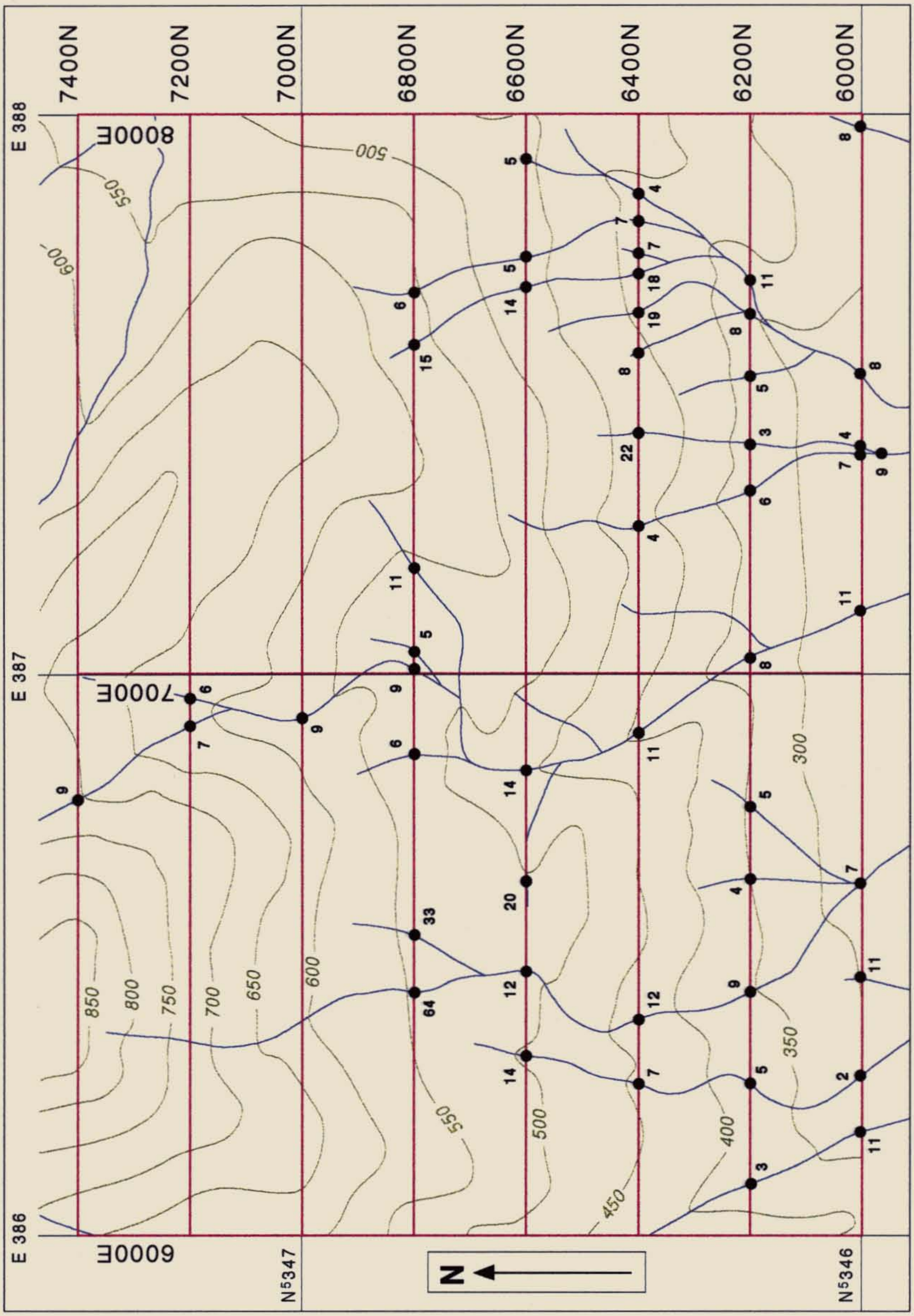


Figure 11

COPPER MINES OF TASMANIA		
EL 3/96 LAKE BEATRICE STREAM SEDIMENT SURVEY PAN CON - Cu (ppm)		
Author: K.C.Morrison	Drafting: R.Carroll	Date: 21.1.1997

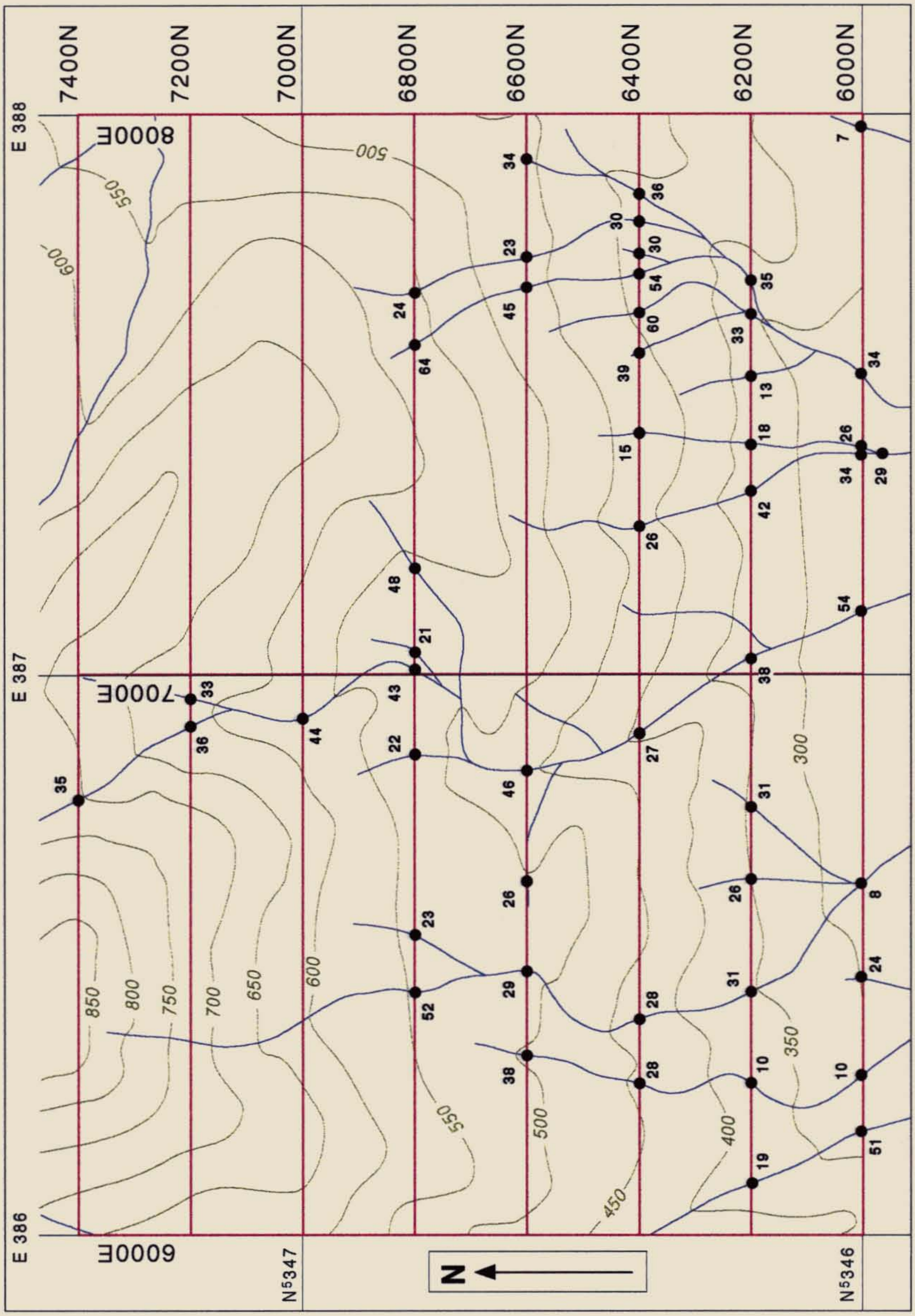


Figure 12

COPPER MINES OF TASMANIA		
EL 3/96 LAKE BEATRICE STREAM SEDIMENT SURVEY PAN CON - Pb (ppm)		
Author: K.C.Morrison	Drafting: R.Carroll	Date: 21.1.1997

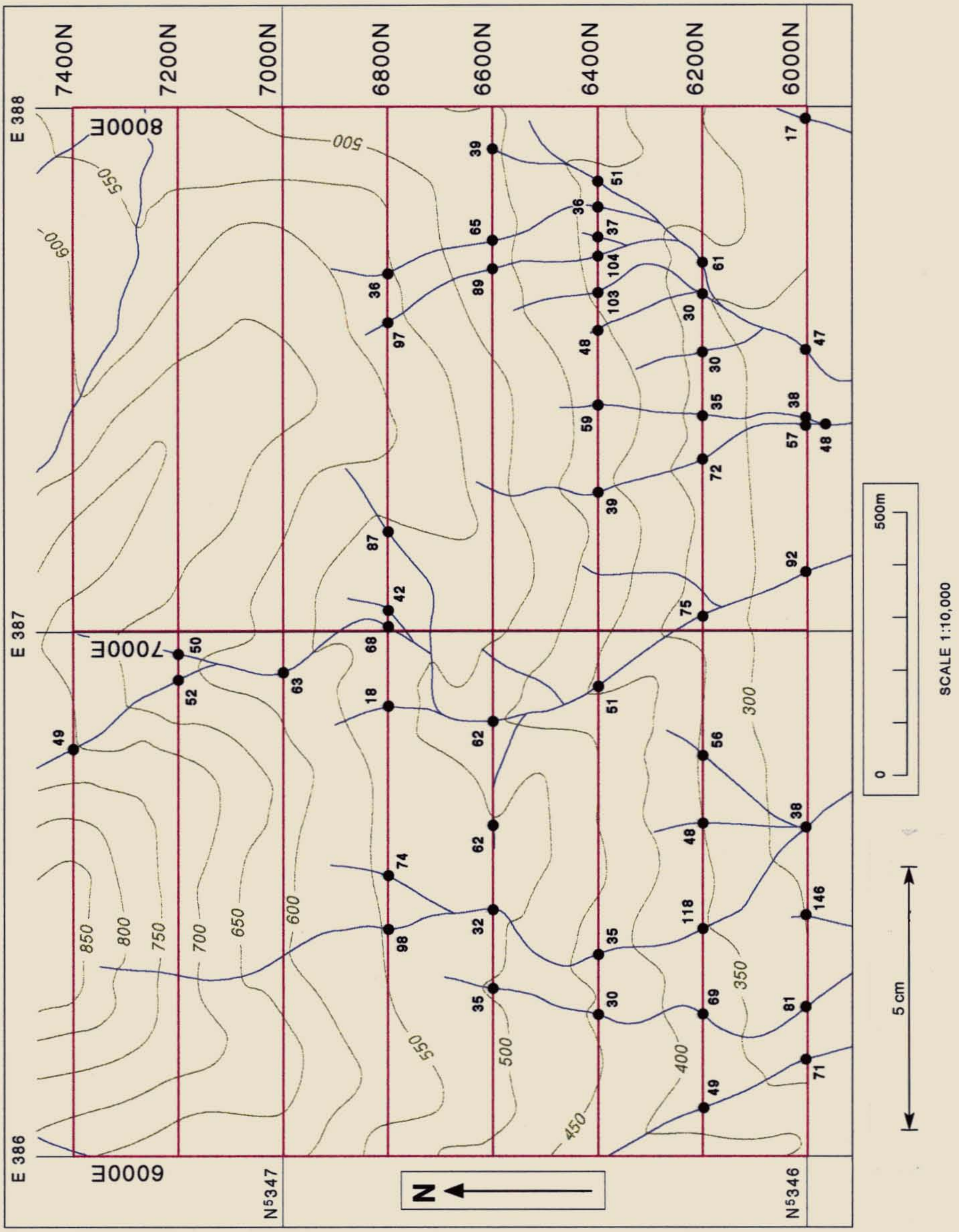


Figure 13

COPPER MINES OF TASMANIA

EL 3/96 LAKE BEATRICE
STREAM SEDIMENT SURVEY
PAN CON - Zn (ppm)

Author: K.C.Morrison	Drafting: R.Carroll	Date: 21.1.1997

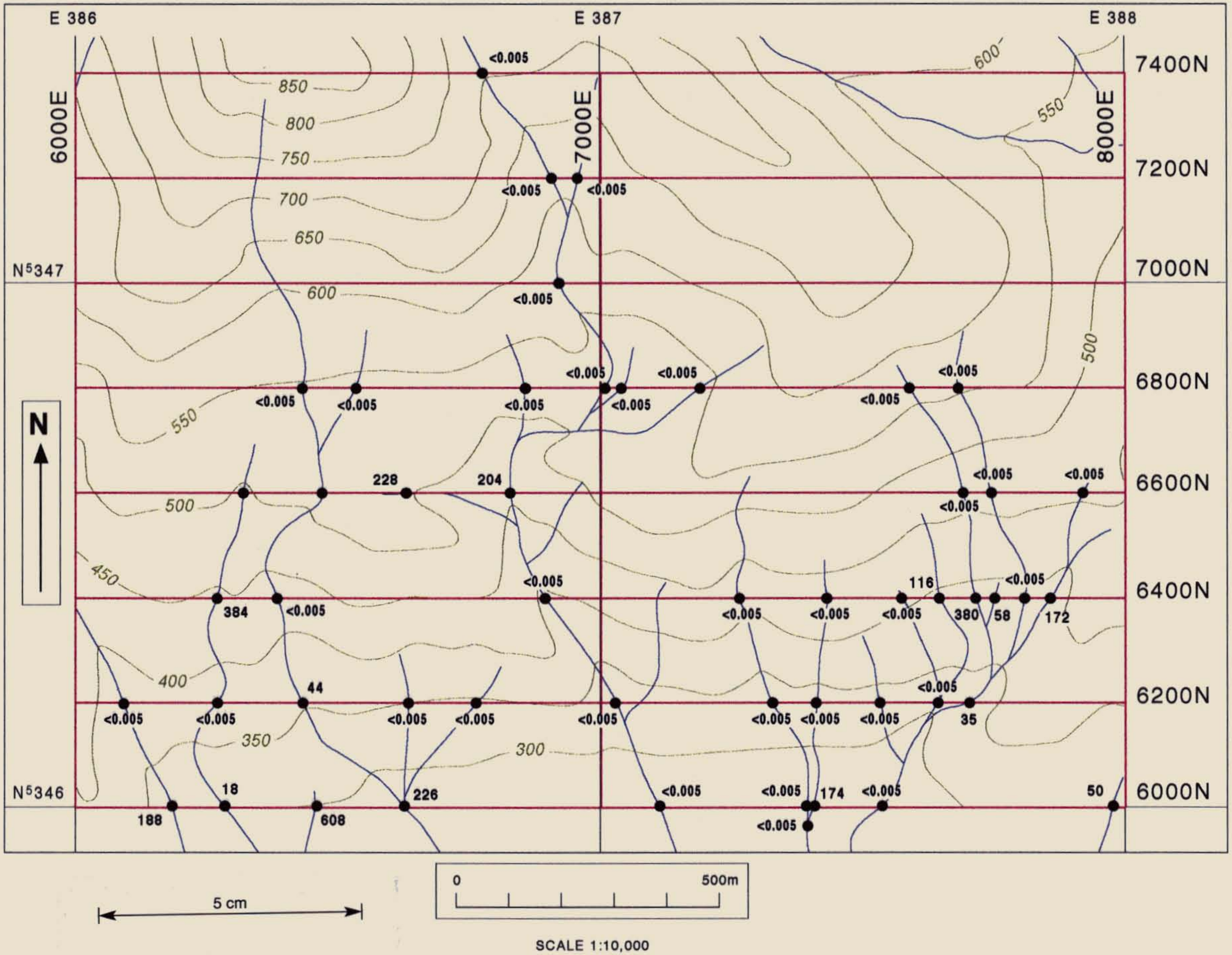
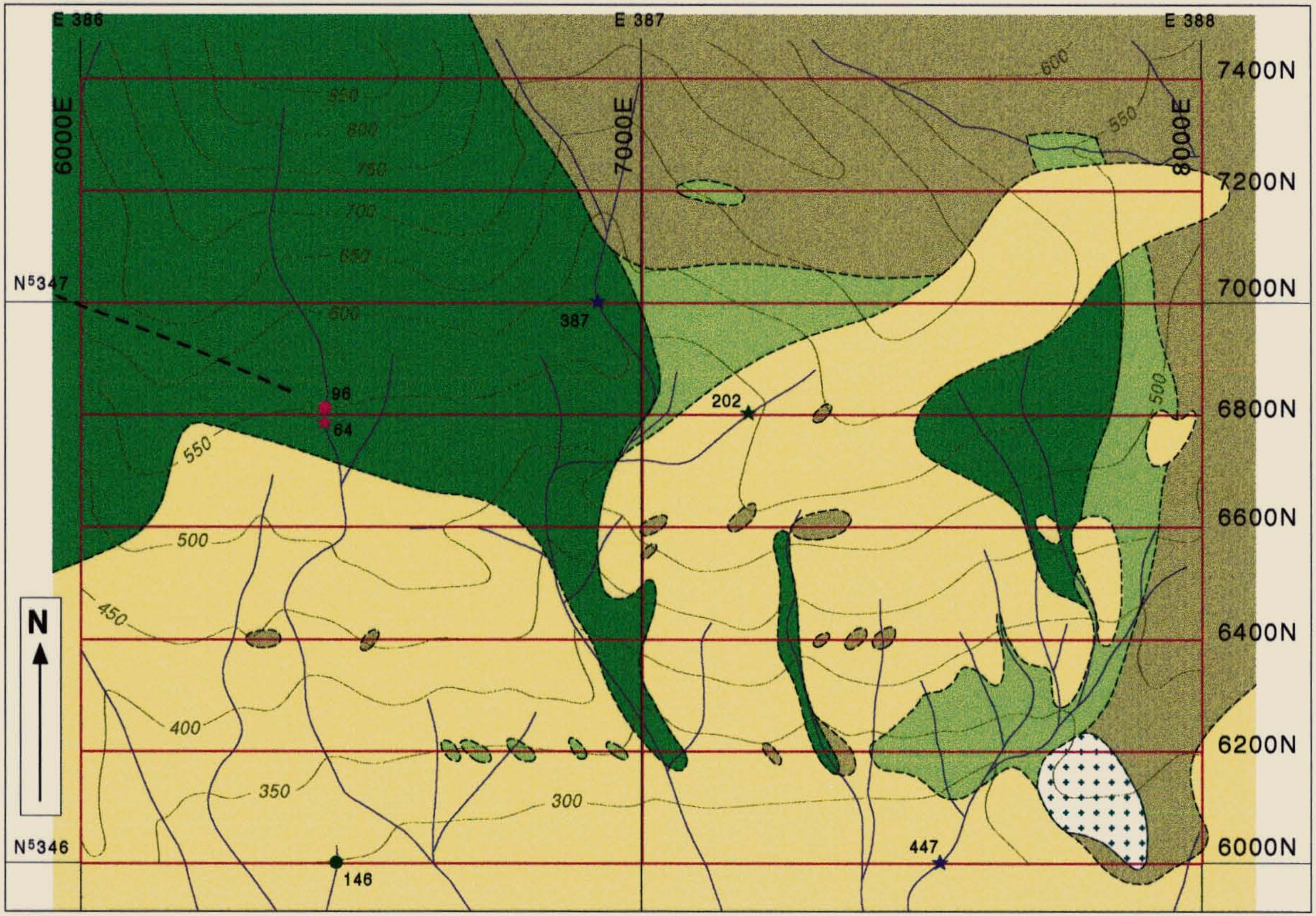


Figure 14

COPPER MINES OF TASMANIA
EL 3/96 LAKE BEATRICE
STREAM SEDIMENT SURVEY
PAN CON - Au (ppb)

Author: K.C.Morrison	Drafting: R.Carroll	Date: 21.1.1997



QUATERNARY
Glacial, Fluvio-glacial sediments

CAMBRIAN
Upper Tyndall Group (Zig Zag Hill Form'n)
Conglomerates

Tyndall Group
Quartz feldspar porphyry

Lower Tyndall Group (Comstock Form'n)
Felsic lavas, volcaniclastics

Central Volcanic Complex
Rhyolite lavas, volcaniclastics

★ - 80# (Cu ppm) ★ - 80# (Pb ppm) ★ - 80# (Zn ppm)

● Pan Con (Cu ppm) ● Pan Con (Pb ppm) ● Pan Con (Zn ppm)

0 500m

SCALE 1:10,000

Figure 15

COPPER MINES OF TASMANIA

EL 3/96 LAKE BEATRICE

Stream Sediment Anomalies - Base Metals

Author: K.C.Morrison	Drafting: R.Carroll	Date: 6.4.1997

305028

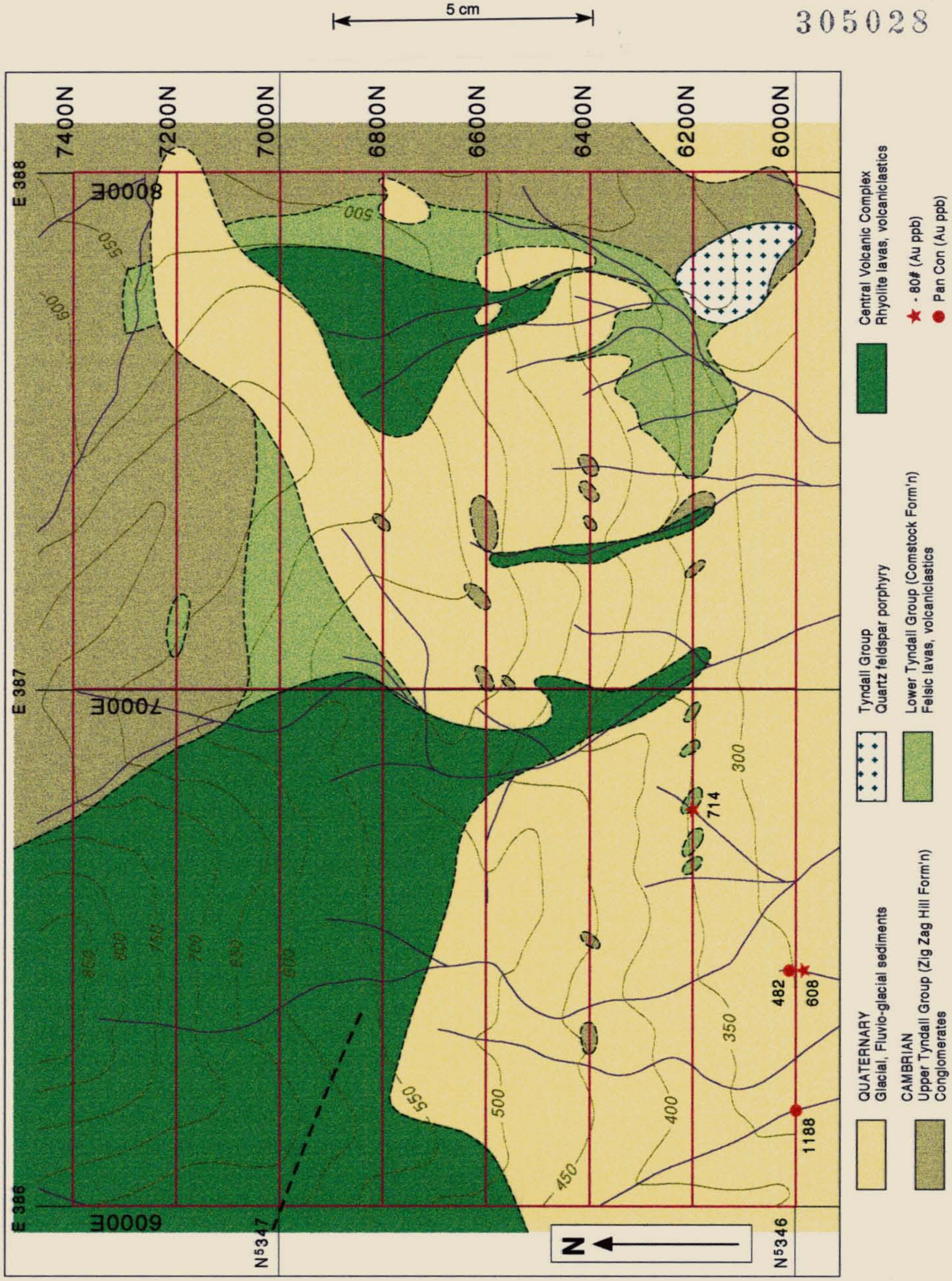


Figure 16

0 500m

SCALE 1:10,000

COPPER MINES OF TASMANIA

EL 3/96 LAKE BEATRICE
Stream Sediment Anomalies - Gold

Author: K.C.Morrison	Drafting: R.Carroll	Date: 6.4.1997

Gold histograms for both methods indicate that most samples assayed below level of detection (5 ppb) and the others are spread over a wide range, with no semblance to a normally distributed population.

In comparing the two sampling methods for the base metals, -80# distributions are highly unimodal and tend towards positive skewness, whereas the pan concentrate histograms are more tightly centred about the mean, with distributions ranging from platykurtic in the case of zinc to polymodal in the case of lead. Gold shows essentially random distribution for both methods.

Correlation between methods varies substantially for the four metals (Table 3). Copper correlates reasonably will (R = 0.70) but lead and zinc show weak correlations (R = 0.42 and 0.45 respectively). Gold shows essentially no correlation between methods (R = 0.13).

Table 3

-80# / Pan concentrate correlation coefficients

Cu	Pb	Zn	Au
0.70545	0.42430	0.45206	0.13381

For the base metals at least, the method based on particle size rather than that based on hydraulic equivalence, appears to give more coherent distributions, which more clearly isolate anomalous highs. A positive sign in the gold data is that screening to -80# has only marginally reduced variance, as evidenced by the standard deviations in Table 2. This suggests the coarse detrital gold may not be the only source for the highs encountered.

Correlation between metals (Appendix 1) shows that -80# copper correlates reasonably well with zinc (R = 0.76) and modestly with lead (R = 0.55). In contrast, pan concentrate copper has weak correlations with zinc and lead (R = 0.34 and 0.43 respectively). The zinc/lead correlation is weak for both methods (R = 0.43 for -80# and R = 0.36 for pan concentrate). Gold shows no tendency to correlate with any other metal, regardless of method.

(iii) Rock Chip Sampling

40 chip samples were taken from sites showing evidence of possible alteration and/or the presence of sulphide. Most of the sample sites are clustered in the zone of magnetite/hematite veining near the summit of Keratophyre Knob (Figure 17). Rock descriptions and analytical data are attached in Appendix 2 and the base metal and gold results are mapping on Figures 18 to 21.. No convincing anomalies were encountered, with highest base metal values of the order of 10 x average crustal abundance. In general the highest copper values (550 - 600 ppm) occur sporadically within the Beatrice lava dome magnetite veining, whereas the highest zinc values (400 - 450 ppm) occur near the eastern margin of the lava dome and the shales and volcaniclastics southeast of the dome. The highest lead values (400 - 600 ppm) are all within the southeastern volcaniclastic domain. 16 samples contained gold concentrations above the detection limit of 5 ppb but the highest value (H-1082, in the lava dome magnetite) was only 94 ppb. Values ranging from 10 to 94 ppb are spread across all lithologies sampled.

305030

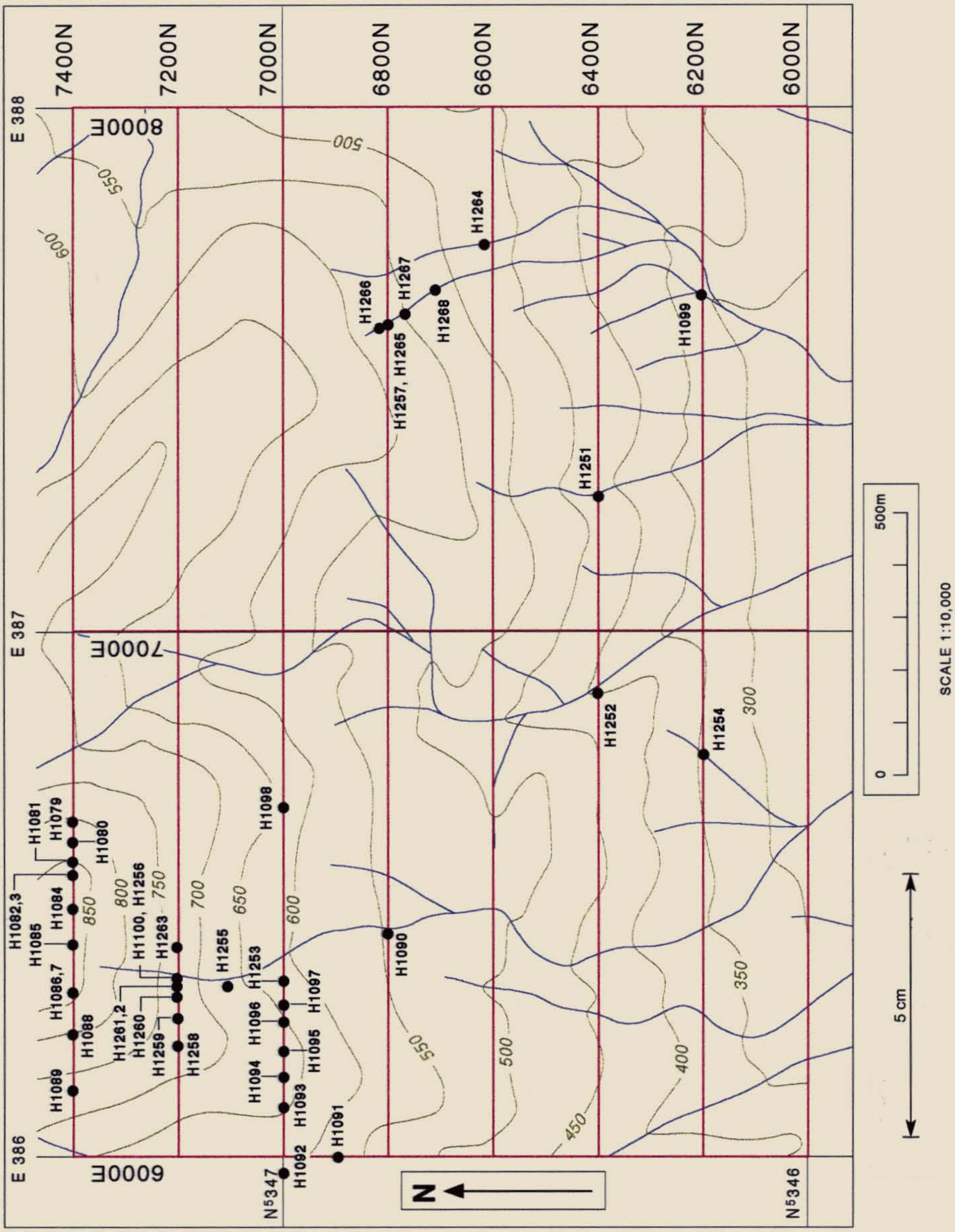


Figure 17

COPPER MINES OF TASMANIA		
EL 3/96 LAKE BEATRICE Rock Chip Sampling Location Plan		
Author: K.C.Morrison	Drafting: R.Carroll	Date: 20.2.1997

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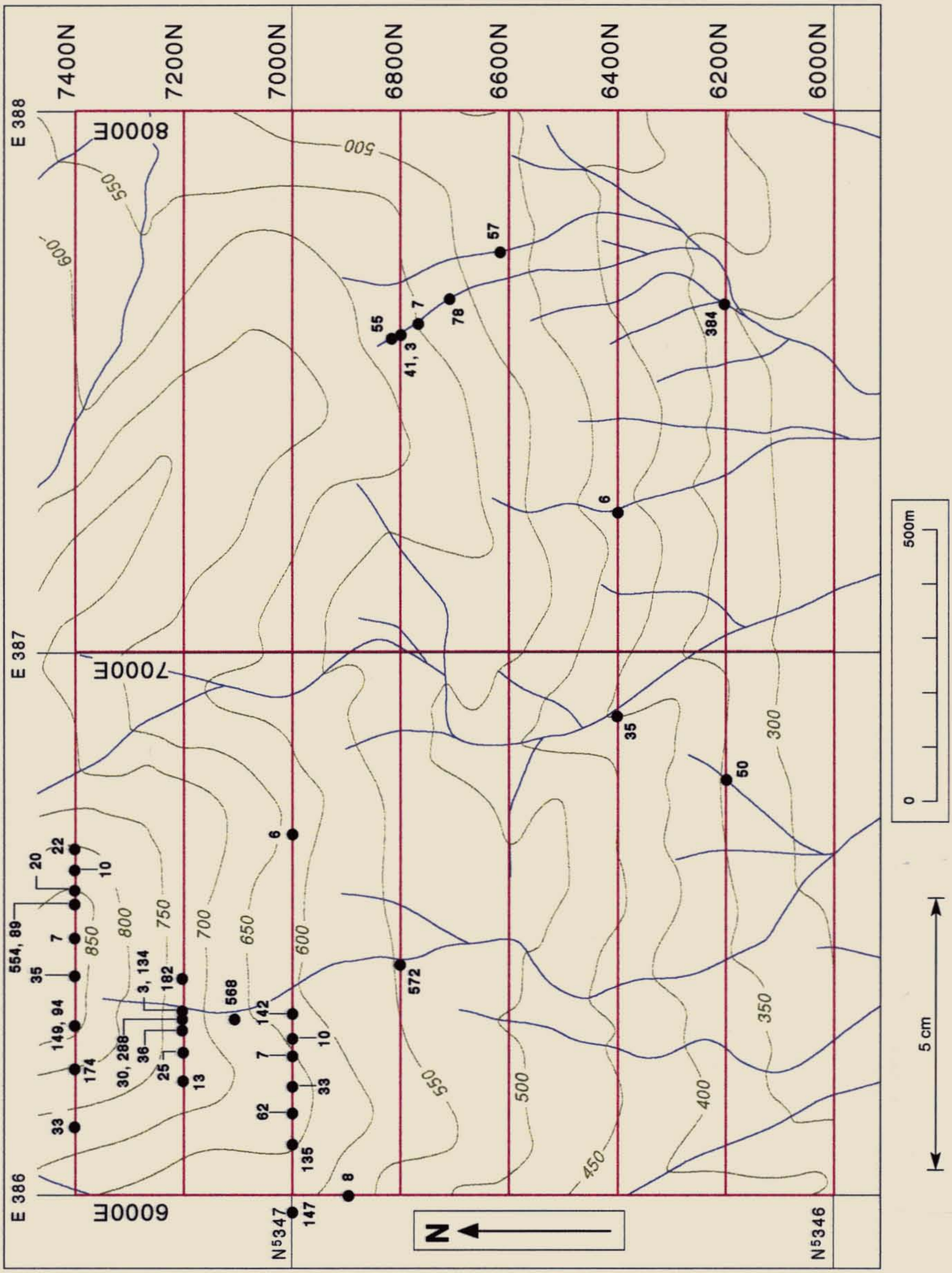

Figure 18

COPPER MINES OF TASMANIA		
EL 3/96 LAKE BEATRICE Rock Chip Sampling Cu (ppm)		
Author: K.C.Morrison	Drafting: R.Carroll	Date: 12.3.1997

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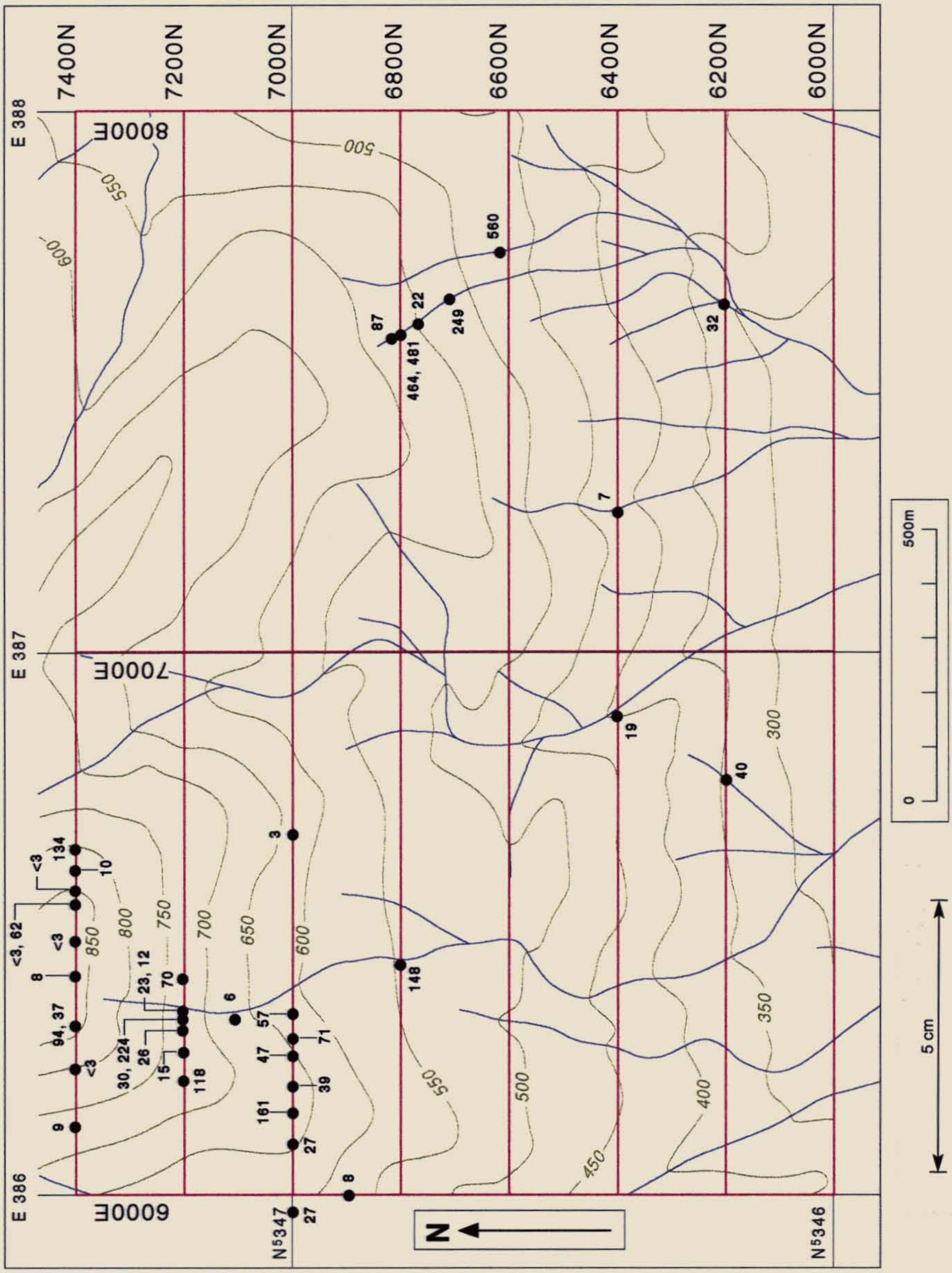

Figure 19

COPPER MINES OF TASMANIA

EL 3/96 LAKE BEATRICE
Rock Chip Sampling
Pb (ppm)

Author: K.C.Morrison	Drafting: R.Carroll	Date: 12.3.1997

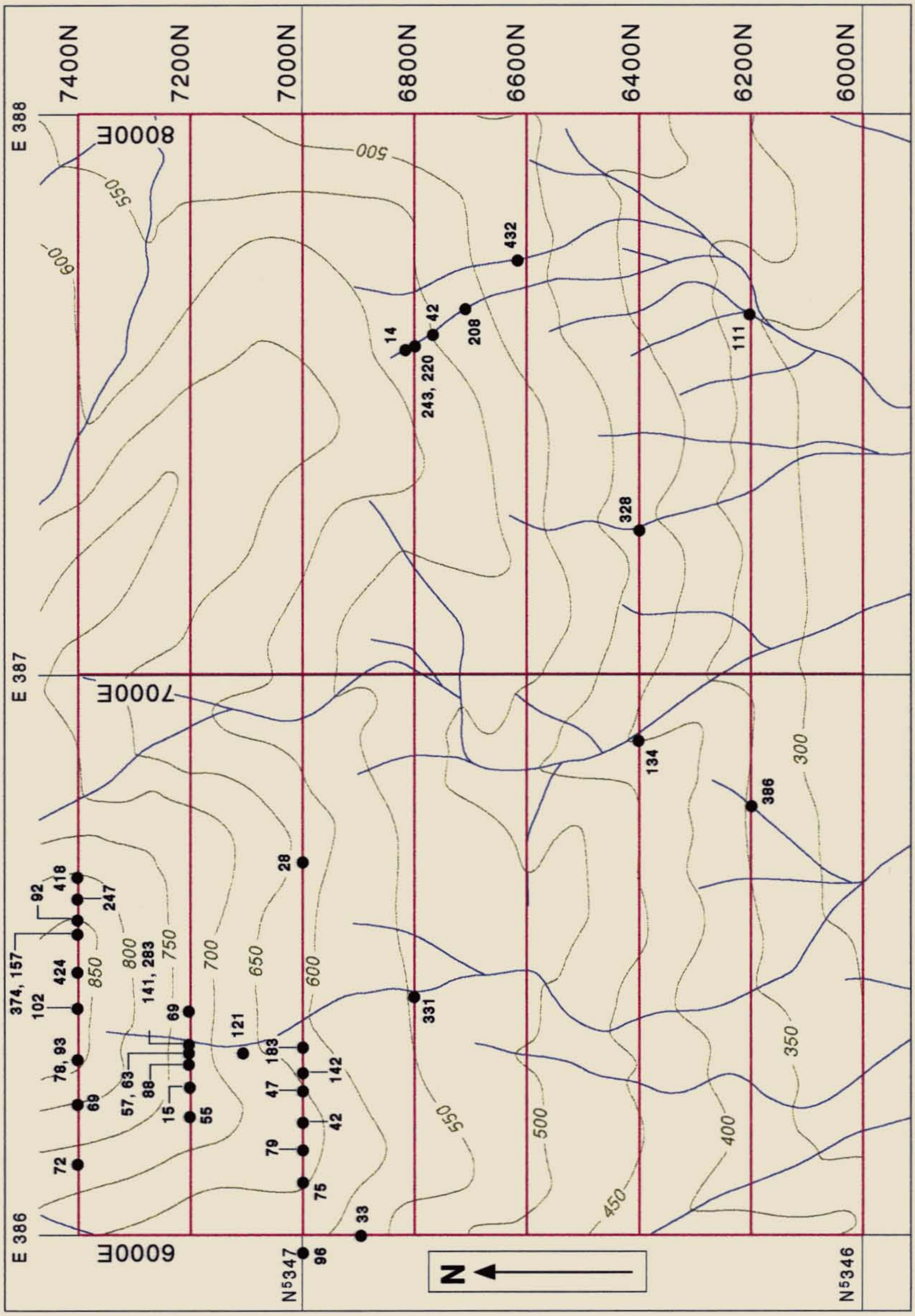

Figure 20

COPPER MINES OF TASMANIA		
EL 3/96 LAKE BEATRICE Rock Chip Sampling Zn (ppm)		
Author: K.C.Morrison	Drafting: R.Carroll	Date: 12.3.1997

305034

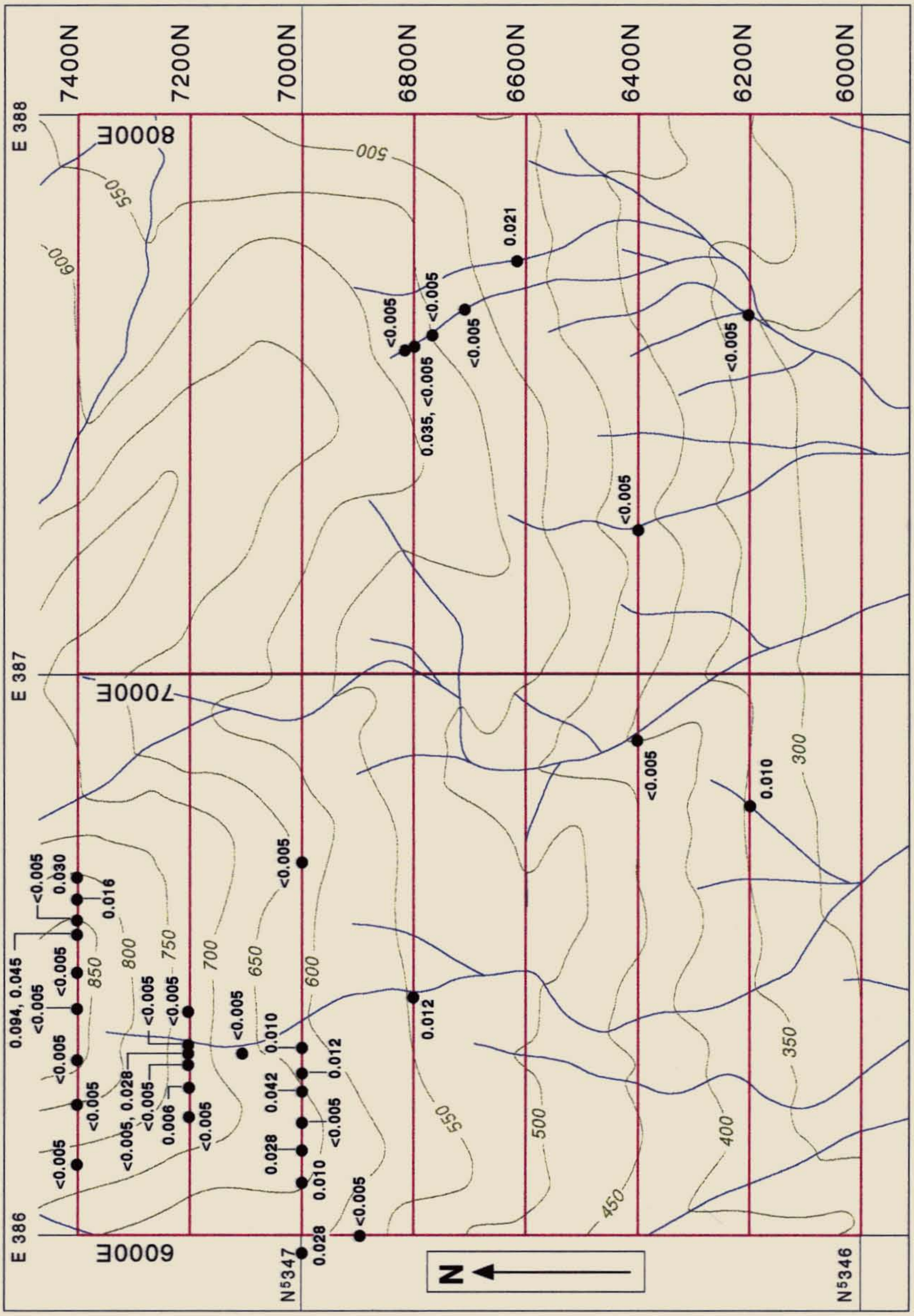

Figure 21

COPPER MINES OF TASMANIA		
EL 3/96 LAKE BEATRICE Rock Chip Sampling Au (ppm)		
Author: K.C.Morrison	Drafting: R.Carroll	Date: 12.3.1997

(iv) Review of Previous Geophysics

Consultant geophysicist John Bishop of Mitre Geophysics reviewed the data from the IP ground magnetics and EM surveys conducted by Goldfields Exploration (MLM & RCL) in 1977 and Aberfoyle Resources in 1990 (Appendix 3)

The review concluded that no evidence of a target structure had been detected and that the previous electrical surveys had effectively explored at least the top 200 metres for massive sulphide style mineralisation, without detecting any anomalies requiring follow-up investigations. Conceptually, a narrow, steeply dipping, low sulphide body, with high angle attitude relative to a line connecting the IP transmitting electrodes, could have avoided detection by all surveys, but no evidence was obtained from the field exploration to support that style of mineralisation. Magnetics, as expected, shows the magnetite bearing veining in the Beatrice lava dome.

CONCLUSIONS

The weak zinc-lead anomalies detected to the southeast of the Beatrice lava dome by previous explorers have been reproduced by stream sediment and rock chip sampling.

A review of existing IP and EM data concluded that no VMS deposits, in at least the upper 200 metres, should have escaped detection. Conceptually, no other style of zinc deposit represents a worthwhile target within the licence area.

Samples of magnetite-hematite-quartz veining on the Beatrice lava dome showed no convincing evidence of copper ± gold mineralisation and the geophysics showed no evidence of a structure capable of focussing high grade mineralisation undetected by the surface sampling.

Despite complications in interpreting the distribution of high gold values, due mainly to the input from the glacial gravels, the prevalence of the highest gold values in a restricted zone, in the southwest corner of the licence area, has not been fully explained and is considered to be a low ranking lead which could warrant further exploration.

Given the nature of the felsic volcanic rocks and their structural setting, the only reasonable conceptual target not substantially downgraded by work done to date is a low sulphide gold deposit, not proximally related to a major structure and covered by Quaternary gravels, in the southwest of the licence.

As a consequence of the Year 1 results and judgment on the chance of such a deposit existing it is concluded that the exploration effort should be used more effectively on higher ranking or untested targets and consequently EL3/96 should be relinquished.

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Appendix 1

Stream Sediment Data

set	samp_id	samp_type	reg_north	reg_east	reg_grid_i	ref_north	ref_east	ref_grid_id	ref_accura	Cu_ppm	Au_ppm	Ag_ppm	Pb_ppm	Zn_ppm	AuR_ppm	date_sam	tenement	batch_no	description
BE	H0951	STREAM	5346000	387975	AMG66_5	5346000	387975	AMG66_56	SCGD	14	0.03	-1	27	29		8/11/96	EL3/96	C0533	80 MESH
BE	H0953	STREAM	5346000	387540	AMG66_5	5346000	387540	AMG66_56	SCGD	53	-0.005	-1	447	112		8/11/96	EL3/96	C0533	80 MESH
BE	H0955	STREAM	5345970	387410	AMG66_5	5345970	387410	AMG66_56	SCGD	40	-0.005	-1	214	94		8/11/96	EL3/96	C0533	80 MESH
BE	H0957	STREAM	5346010	387410	AMG66_5	5346010	387410	AMG66_56	SCGD	38	-0.005	-1	159	74		8/11/96	EL3/96	C0533	80 MESH
BE	H0959	STREAM	5346015	387400	AMG66_5	5346015	387400	AMG66_56	SCGD	35	-0.005	-1	188	100		8/11/96	EL3/96	C0533	80 MESH
BE	H0962	STREAM	5346000	387105	AMG66_5	5346000	387105	AMG66_56	SCGD	19	-0.005	-1	74	73	-0.005	8/11/96	EL3/96	C0533	80 MESH
BE	H0964	STREAM	5346220	387025	AMG66_5	5346220	387025	AMG66_56	SCGD	22	-0.005	-1	91	74		8/11/96	EL3/96	C0533	80 MESH
BE	H0966	STREAM	5346410	387250	AMG66_5	5346410	387250	AMG66_56	SCGD	11	-0.005	-1	53	58		9/11/96	EL3/96	C0533	80 MESH
BE	H0968	STREAM	5346410	387435	AMG66_5	5346410	387435	AMG66_56	SCGD	15	-0.005	-1	43	48		9/11/96	EL3/96	C0533	80 MESH
BE	H0970	STREAM	5346410	387570	AMG66_5	5346410	387570	AMG66_56	SCGD	41	-0.005	-1	141	95		9/11/96	EL3/96	C0533	80 MESH
BE	H0973	STREAM	5346400	387660	AMG66_5	5346400	387660	AMG66_56	SCGD	18	-0.005	-1	82	60		9/11/96	EL3/96	C0533	80 MESH
BE	H0975	STREAM	5346400	387720	AMG66_5	5346400	387720	AMG66_56	SCGD	47	0.02	-1	266	144		9/11/96	EL3/96	C0533	80 MESH
BE	H0977	STREAM	5346400	387750	AMG66_5	5346400	387750	AMG66_56	SCGD	34	-0.005	-1	237	64		9/11/96	EL3/96	C0533	80 MESH
BE	H0979	STREAM	5346400	387815	AMG66_5	5346400	387815	AMG66_56	SCGD	13	-0.005	-1	110	43		9/11/96	EL3/96	C0533	80 MESH
BE	H0982	STREAM	5346400	387865	AMG66_5	5346400	387865	AMG66_56	SCGD	8	0.04	-1	105	47		9/11/96	EL3/96	C0533	80 MESH
BE	H0984	STREAM	5346200	387670	AMG66_5	5346200	387670	AMG66_56	SCGD	28	-0.005	-1	195	84		10/11/96	EL3/96	C0533	80 MESH
BE	H0986	STREAM	5346200	387645	AMG66_5	5346200	387645	AMG66_56	SCGD	32	-0.005	-1	238	67		10/11/96	EL3/96	C0533	80 MESH
BE	H0988	STREAM	5346200	387540	AMG66_5	5346200	387540	AMG66_56	SCGD	27	-0.005	-1	102	57		10/11/96	EL3/96	C0533	80 MESH
BE	H0990	STREAM	5346200	387420	AMG66_5	5346200	387420	AMG66_56	SCGD	28	-0.005	-1	116	49		10/11/96	EL3/96	C0533	80 MESH
BE	H0993	STREAM	5346200	387325	AMG66_5	5346200	387325	AMG66_56	SCGD	25	-0.005	-1	160	90		10/11/96	EL3/96	C0533	80 MESH
BE	H0995	STREAM	5346800	387040	AMG66_5	5346800	387040	AMG66_56	SCGD	17	-0.005	-1	52	64		13/11/96	EL3/96	C0533	80 MESH
BE	H0997	STREAM	5346800	387180	AMG66_5	5346800	387180	AMG66_56	SCGD	59	-0.005	-1	156	202	-0.005	13/11/96	EL3/96	C0533	80 MESH
BE	H0999	STREAM	5346800	387590	AMG66_5	5346800	387590	AMG66_56	SCGD	34	0.226	-1	143	137		13/11/96	EL3/96	C0533	80 MESH
BE	H1002	STREAM	5346800	387685	AMG66_5	5346800	387685	AMG66_56	SCGD	9	-0.005	-1	87	30		13/11/96	EL3/96	C0533	80 MESH
BE	H1004	STREAM	5346600	387900	AMG66_5	5346600	387900	AMG66_56	SCGD	16	0.03	-1	94	37		13/11/96	EL3/96	C0533	80 MESH
BE	H1006	STREAM	5346600	387750	AMG66_5	5346600	387750	AMG66_56	SCGD	8	-0.005	-1	50	35		13/11/96	EL3/96	C0533	80 MESH
BE	H1008	STREAM	5346600	387700	AMG66_5	5346600	387700	AMG66_56	SCGD	57	0.088	-1	225	147		13/11/96	EL3/96	C0533	80 MESH
BE	H1010	STREAM	5346200	386765	AMG66_5	5346200	386765	AMG66_56	SCGD	22	0.714	-1	44	73		14/11/96	EL3/96	C0533	80 MESH
BE	H1013	STREAM	5346200	386650	AMG66_5	5346200	386650	AMG66_56	SCGD	17	-0.005	-1	39	56		14/11/96	EL3/96	C0533	80 MESH
BE	H1015	STREAM	5346200	386400	AMG66_5	5346200	386400	AMG66_56	SCGD	13	-0.005	-1	38	51		14/11/96	EL3/96	C0533	80 MESH
BE	H1017	STREAM	5346200	386260	AMG66_5	5346200	386260	AMG66_56	SCGD	6	-0.005	-1	16	42		14/11/96	EL3/96	C0533	80 MESH
BE	H1019	STREAM	5346200	386075	AMG66_5	5346200	386075	AMG66_56	SCGD	11	0.086	-1	55	54		14/11/96	EL3/96	C0533	80 MESH
BE	H1022	STREAM	5346000	386165	AMG66_5	5346000	386165	AMG66_56	SCGD	38	-0.005	-1	252	93	-0.005	14/11/96	EL3/96	C0533	80 MESH
BE	H1024	STREAM	5346000	386235	AMG66_5	5346000	386235	AMG66_56	SCGD	3	-0.005	-1	14	61		14/11/96	EL3/96	C0533	80 MESH
BE	H1026	STREAM	5346000	386460	AMG66_5	5346000	386460	AMG66_56	SCGD	10	0.482	-1	27	47		14/11/96	EL3/96	C0533	80 MESH
BE	H1028	STREAM	5346000	386610	AMG66_5	5346000	386610	AMG66_56	SCGD	9	0.02	-1	11	54		14/11/96	EL3/96	C0533	80 MESH
BE	H1030	STREAM	5346600	386815	AMG66_5	5346600	386815	AMG66_56	SCGD	21	-0.005	-1	79	61		16/11/96	EL3/96	C0533	80 MESH
BE	H1033	STREAM	5346600	386610	AMG66_5	5346600	386610	AMG66_56	SCGD	39	0.032	-1	43	70		16/11/96	EL3/96	C0533	80 MESH
BE	H1035	STREAM	5346600	386500	AMG66_5	5346600	386500	AMG66_56	SCGD	23	-0.005	-1	59	43		16/11/96	EL3/96	C0533	80 MESH
BE	H1037	STREAM	5346600	386315	AMG66_5	5346600	386315	AMG66_56	SCGD	25	-0.005	-1	50	41	-0.005	16/11/96	EL3/96	C0533	80 MESH
BE	H1039	STREAM	5346400	386270	AMG66_5	5346400	386270	AMG66_56	SCGD	14	-0.005	-1	38	33		16/11/96	EL3/96	C0533	80 MESH
BE	H1042	STREAM	5346400	386355	AMG66_5	5346400	386355	AMG66_56	SCGD	22	-0.005	-1	36	40		16/11/96	EL3/96	C0533	80 MESH
BE	H1044	STREAM	5346400	386875	AMG66_5	5346400	386875	AMG66_56	SCGD	28	-0.005	-1	95	65		16/11/96	EL3/96	C0533	80 MESH
BE	H1046	STREAM	5347400	386730	AMG66_5	5347400	386730	AMG66_56	SCGD	23	-0.005	-1	213	57		17/11/96	EL3/96	C0533	80 MESH
BE	H1048	STREAM	5347200	386930	AMG66_5	5347200	386930	AMG66_56	SCGD	14	-0.005	-1	42	46		17/11/96	EL3/96	C0533	80 MESH
BE	H1050	STREAM	5347200	386855	AMG66_5	5347200	386855	AMG66_56	SCGD	17	-0.005	-1	84	52		17/11/96	EL3/96	C0533	80 MESH
BE	H1053	STREAM	5347000	386900	AMG66_5	5347000	386900	AMG66_56	SCGD	38	-0.005	-1	387	73		17/11/96	EL3/96	C0533	80 MESH
BE	H1055	STREAM	5346800	386425	AMG66_5	5346800	386425	AMG66_56	SCGD	96	-0.005	-1	55	126		17/11/96	EL3/96	C0533	80 MESH
BE	H1057	STREAM	5346800	386550	AMG66_5	5346800	386550	AMG66_56	SCGD	39	-0.005	-1	35	66		17/11/96	EL3/96	C0533	80 MESH
BE	H1059	STREAM	5346800	386870	AMG66_5	5346800	386870	AMG66_56	SCGD	15	0.25	-1	40	28		17/11/96	EL3/96	C0533	80 MESH
BE	H1062	STREAM	5346815	387000	AMG66_5	5346815	387000	AMG66_56	SCGD	39	0.08	-1	256	93		17/11/96	EL3/96	C0533	80 MESH
BE	H0961	STREAM								15	-0.005	-1	5	39		8/11/96	EL3/96	C0533	BLANK
BE	H0971	STREAM								15	-0.005	-1	8	40		9/11/96	EL3/96	C0533	BLANK
BE	H0981	STREAM								11	-0.005	-1	7	36		9/11/96	EL3/96	C0533	BLANK
BE	H0991	STREAM								13	-0.005	-1	5	37		10/11/96	EL3/96	C0533	BLANK

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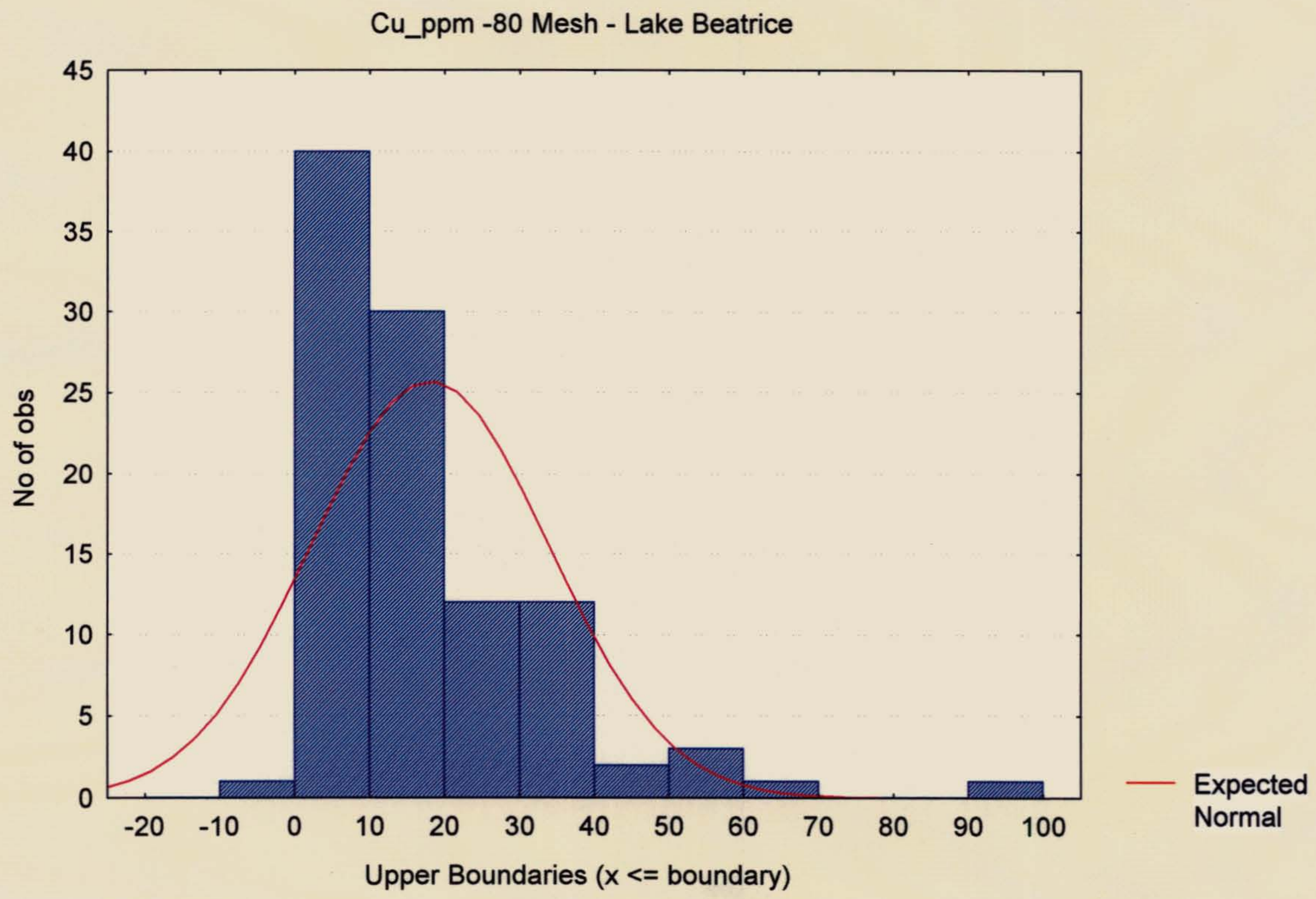
BE	H1001	STREAM								15	-0.005	-1	5	30		13/11/96	EL3/96	C0533	BLANK
BE	H1011	STREAM								14	-0.005	-1	6	30		14/11/96	EL3/96	C0533	BLANK
BE	H1021	STREAM								14	-0.005	-1	7	34		14/11/96	EL3/96	C0533	BLANK
BE	H1031	STREAM								18	-0.005	-1	7	30		16/11/96	EL3/96	C0533	BLANK
BE	H1041	STREAM								14	-0.005	-1	18	27		16/11/96	EL3/96	C0533	BLANK
BE	H1051	STREAM								14	-0.005	-1	5	37		17/11/96	EL3/96	C0533	BLANK
BE	H1061	STREAM								10	-0.005	-1	5	32		17/11/96	EL3/96	C0533	BLANK
BE	H0952	STREAM	5346000	387975	AMG66_5	5346000	387975	AMG66_56	SCGD	8	0.05	-1	7	17		8/11/96	EL3/96	C0533	PAN CON
BE	H0954	STREAM	5346000	387540	AMG66_5	5346000	387540	AMG66_56	SCGD	8	-0.005	-1	34	47		8/11/96	EL3/96	C0533	PAN CON
BE	H0956	STREAM	5345970	387410	AMG66_5	5345970	387410	AMG66_56	SCGD	9	-0.005	-1	29	48		8/11/96	EL3/96	C0533	PAN CON
BE	H0958	STREAM	5346010	387410	AMG66_5	5346010	387410	AMG66_56	SCGD	4	-0.005	-1	26	38		8/11/96	EL3/96	C0533	PAN CON
BE	H0960	STREAM	5346015	387400	AMG66_5	5346015	387400	AMG66_56	SCGD	7	-0.005	-1	34	57		8/11/96	EL3/96	C0533	PAN CON
BE	H0963	STREAM	5346000	387105	AMG66_5	5346000	387105	AMG66_56	SCGD	11	-0.005	-1	54	92		8/11/96	EL3/96	C0533	PAN CON
BE	H0965	STREAM	5346220	387025	AMG66_5	5346220	387025	AMG66_56	SCGD	8	-0.005	-1	38	75		8/11/96	EL3/96	C0533	PAN CON
BE	H0967	STREAM	5346400	387250	AMG66_5	5346400	387250	AMG66_56	SCGD	4	-0.005	-1	26	39		9/11/96	EL3/96	C0533	PAN CON
BE	H0969	STREAM	5346410	387435	AMG66_5	5346410	387435	AMG66_56	SCGD	-2	-0.005	-1	15	59		9/11/96	EL3/96	C0533	PAN CON
BE	H0972	STREAM	5346410	387570	AMG66_5	5346410	387570	AMG66_56	SCGD	8	-0.005	-1	29	48	-0.005	9/11/96	EL3/96	C0533	PAN CON
BE	H0974	STREAM	5346400	387660	AMG66_5	5346400	387660	AMG66_56	SCGD	19	0.116	-1	60	103		9/11/96	EL3/96	C0533	PAN CON
BE	H0976	STREAM	5346400	387720	AMG66_5	5346400	387720	AMG66_56	SCGD	18	0.38	-1	54	104		9/11/96	EL3/96	C0533	PAN CON
BE	H0978	STREAM	5346400	387750	AMG66_5	5346400	387750	AMG66_56	SCGD	7	0.058	-1	30	37		9/11/96	EL3/96	C0533	PAN CON
BE	H0980	STREAM	5346400	387815	AMG66_5	5346400	387815	AMG66_56	SCGD	7	-0.005	-1	30	36		9/11/96	EL3/96	C0533	PAN CON
BE	H0983	STREAM	5346400	387865	AMG66_5	5346400	387865	AMG66_56	SCGD	4	0.172	-1	36	51		9/11/96	EL3/96	C0533	PAN CON
BE	H0985	STREAM	5346200	387670	AMG66_5	5346200	387670	AMG66_56	SCGD	11	-0.005	-1	35	61		10/11/96	EL3/96	C0533	PAN CON
BE	H0987	STREAM	5346200	387645	AMG66_5	5346200	387645	AMG66_56	SCGD	8	-0.005	-1	33	30	-0.005	10/11/96	EL3/96	C0533	PAN CON
BE	H0989	STREAM	5346200	387540	AMG66_5	5346200	387540	AMG66_56	SCGD	5	-0.005	-1	13	30		10/11/96	EL3/96	C0533	PAN CON
BE	H0992	STREAM	5346200	387420	AMG66_5	5346200	387420	AMG66_56	SCGD	3	-0.005	-1	18	35		10/11/96	EL3/96	C0533	PAN CON
BE	H0994	STREAM	5346200	387325	AMG66_5	5346200	387325	AMG66_56	SCGD	6	-0.005	-1	42	72		10/11/96	EL3/96	C0533	PAN CON
BE	H0996	STREAM	5346800	387040	AMG66_5	5346800	387040	AMG66_56	SCGD	5	-0.005	-1	21	42		13/11/96	EL3/96	C0533	PAN CON
BE	H0998	STREAM	5346800	387180	AMG66_5	5346800	387180	AMG66_56	SCGD	11	-0.005	-1	40	87		13/11/96	EL3/96	C0533	PAN CON
BE	H1000	STREAM	5346800	387590	AMG66_5	5346800	387590	AMG66_56	SCGD	15	-0.005	-1	64	97		13/11/96	EL3/96	C0533	PAN CON
BE	H1003	STREAM	5346800	387685	AMG66_5	5346800	387685	AMG66_56	SCGD	6	-0.005	-1	24	36		13/11/96	EL3/96	C0533	PAN CON
BE	H1005	STREAM	5346600	387900	AMG66_5	5346600	387900	AMG66_56	SCGD	5	-0.005	-1	34	39		13/11/96	EL3/96	C0533	PAN CON
BE	H1007	STREAM	5346600	387750	AMG66_5	5346600	387750	AMG66_56	SCGD	5	-0.005	-1	23	65		13/11/96	EL3/96	C0533	PAN CON
BE	H1009	STREAM	5346600	387700	AMG66_5	5346600	387700	AMG66_56	SCGD	19	-0.005	-1	45	89		13/11/96	EL3/96	C0533	PAN CON
BE	H1012	STREAM	5346200	386765	AMG66_5	5346200	386765	AMG66_56	SCGD	5	-0.005	-1	31	56	-0.005	14/11/96	EL3/96	C0533	PAN CON
BE	H1014	STREAM	5346200	386650	AMG66_5	5346200	386650	AMG66_56	SCGD	4	-0.005	-1	26	48		14/11/96	EL3/96	C0533	PAN CON
BE	H1016	STREAM	5346200	386400	AMG66_5	5346200	386400	AMG66_56	SCGD	9	0.044	-1	31	118		14/11/96	EL3/96	C0533	PAN CON
BE	H1018	STREAM	5346200	386260	AMG66_5	5346200	386260	AMG66_56	SCGD	5	-0.005	-1	10	69		14/11/96	EL3/96	C0533	PAN CON
BE	H1020	STREAM	5346200	386075	AMG66_5	5346200	386075	AMG66_56	SCGD	3	-0.005	-1	19	49		14/11/96	EL3/96	C0533	PAN CON
BE	H1023	STREAM	5346000	386165	AMG66_5	5346000	386165	AMG66_56	SCGD	11	1.188	-1	51	71		14/11/96	EL3/96	C0533	PAN CON
BE	H1025	STREAM	5346000	386235	AMG66_5	5346000	386235	AMG66_56	SCGD	2	0.018	-1	10	81		14/11/96	EL3/96	C0533	PAN CON
BE	H1027	STREAM	5346000	386460	AMG66_5	5346000	386460	AMG66_56	SCGD	11	0.608	-1	24	146		14/11/96	EL3/96	C0533	PAN CON
BE	H1029	STREAM	5346000	386610	AMG66_5	5346000	386610	AMG66_56	SCGD	7	0.226	-1	8	38		14/11/96	EL3/96	C0533	PAN CON
BE	H1032	STREAM	5346600	386815	AMG66_5	5346600	386815	AMG66_56	SCGD	14	0.204	-1	46	62		16/11/96	EL3/96	C0533	PAN CON
BE	H1034	STREAM	5346600	386610	AMG66_5	5346600	386610	AMG66_56	SCGD	20	0.228	-1	26	62		16/11/96	EL3/96	C0533	PAN CON
BE	H1036	STREAM	5346600	386500	AMG66_5	5346600	386500	AMG66_56	SCGD	12	-0.005	-1	29	32		16/11/96	EL3/96	C0533	PAN CON
BE	H1038	STREAM	5346600	386315	AMG66_5	5346600	386315	AMG66_56	SCGD	14	-0.005	-1	38	35		16/11/96	EL3/96	C0533	PAN CON
BE	H1040	STREAM	5346400	386270	AMG66_5	5346400	386270	AMG66_56	SCGD	7	0.384	-1	28	30		16/11/96	EL3/96	C0533	PAN CON
BE	H1043	STREAM	5346400	386355	AMG66_5	5346400	386355	AMG66_56	SCGD	12	-0.005	-1	28	55		16/11/96	EL3/96	C0533	PAN CON
BE	H1045	STREAM	5346400	386875	AMG66_5	5346400	386875	AMG66_56	SCGD	11	-0.005	-1	27	51		16/11/96	EL3/96	C0533	PAN CON
BE	H1047	STREAM	5347400	386730	AMG66_5	5347400	386730	AMG66_56	SCGD	9	-0.005	-1	35	49	-0.005	17/11/96	EL3/96	C0533	PAN CON
BE	H1049	STREAM	5347200	386930	AMG66_5	5347200	386930	AMG66_56	SCGD	6	-0.005	-1	33	50		17/11/96	EL3/96	C0533	PAN CON
BE	H1052	STREAM	5347200	386855	AMG66_5	5347200	386855	AMG66_56	SCGD	7	-0.005	-1	36	52		17/11/96	EL3/96	C0533	PAN CON
BE	H1054	STREAM	5347000	386900	AMG66_5	5347000	386900	AMG66_56	SCGD	9	-0.005	-1	44	63		17/11/96	EL3/96	C0533	PAN CON
BE	H1056	STREAM	5346800	386425	AMG66_5	5346800	386425	AMG66_56	SCGD	64	-0.005	-1	52	98		17/11/96	EL3/96	C0533	PAN CON
BE	H1058	STREAM	5346800	386550	AMG66_5	5346800	386550	AMG66_56	SCGD	33	-0.005	-1	23	74		17/11/96	EL3/96	C0533	PAN CON

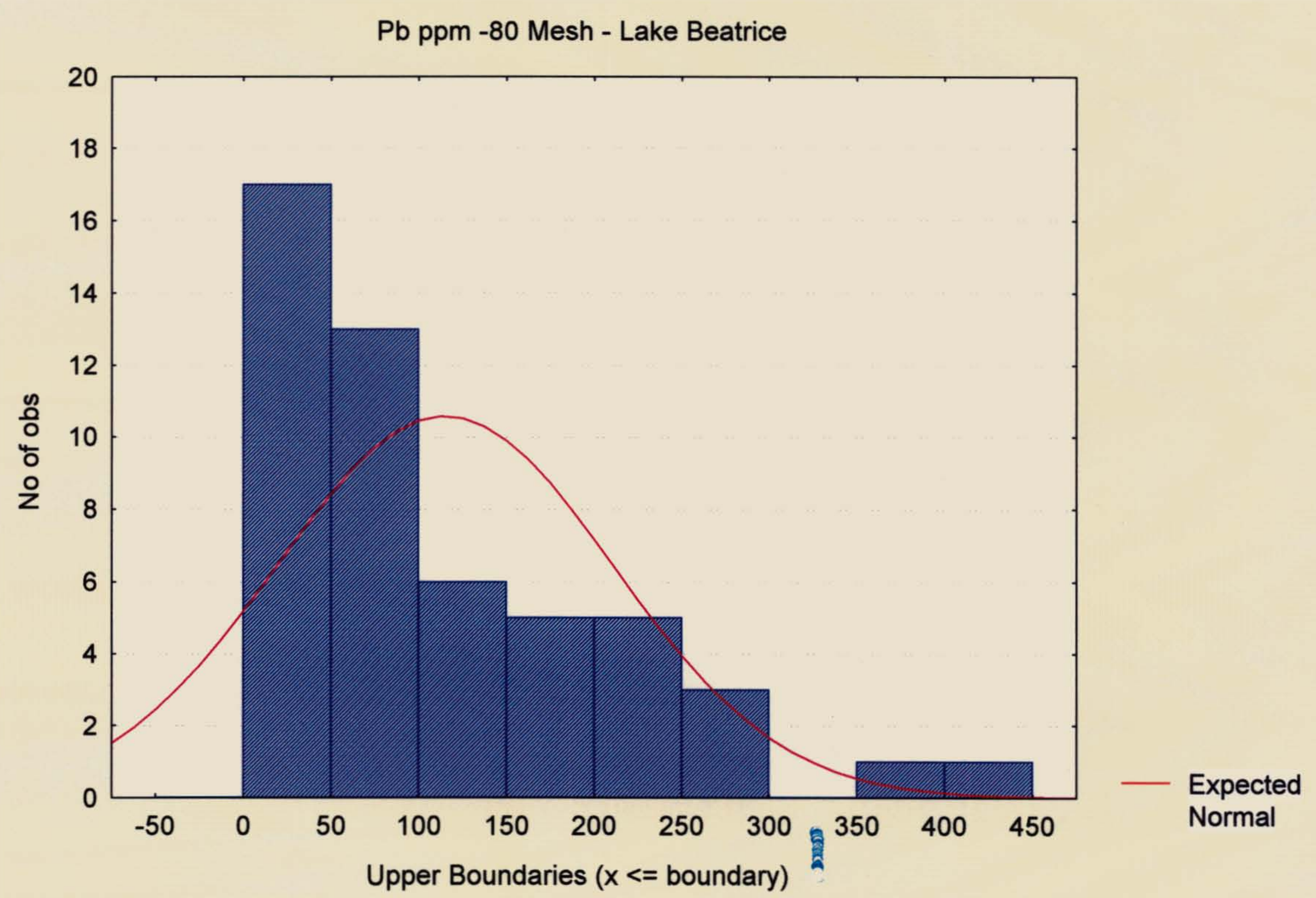
305039

BE	H1060	STREAM	5346800	386870	AMG66_5	5346800	386870	AMG66_56	SCGD	6	-0.005	-1	22	18		17/11/96	EL3/96	C0533	PAN CON
BE	H1063	STREAM	5346815	387000	AMG66_5	5346815	387000	AMG66_56	SCGD	9	-0.005	-1	43	68		17/11/96	EL3/96	C0533	PAN CON

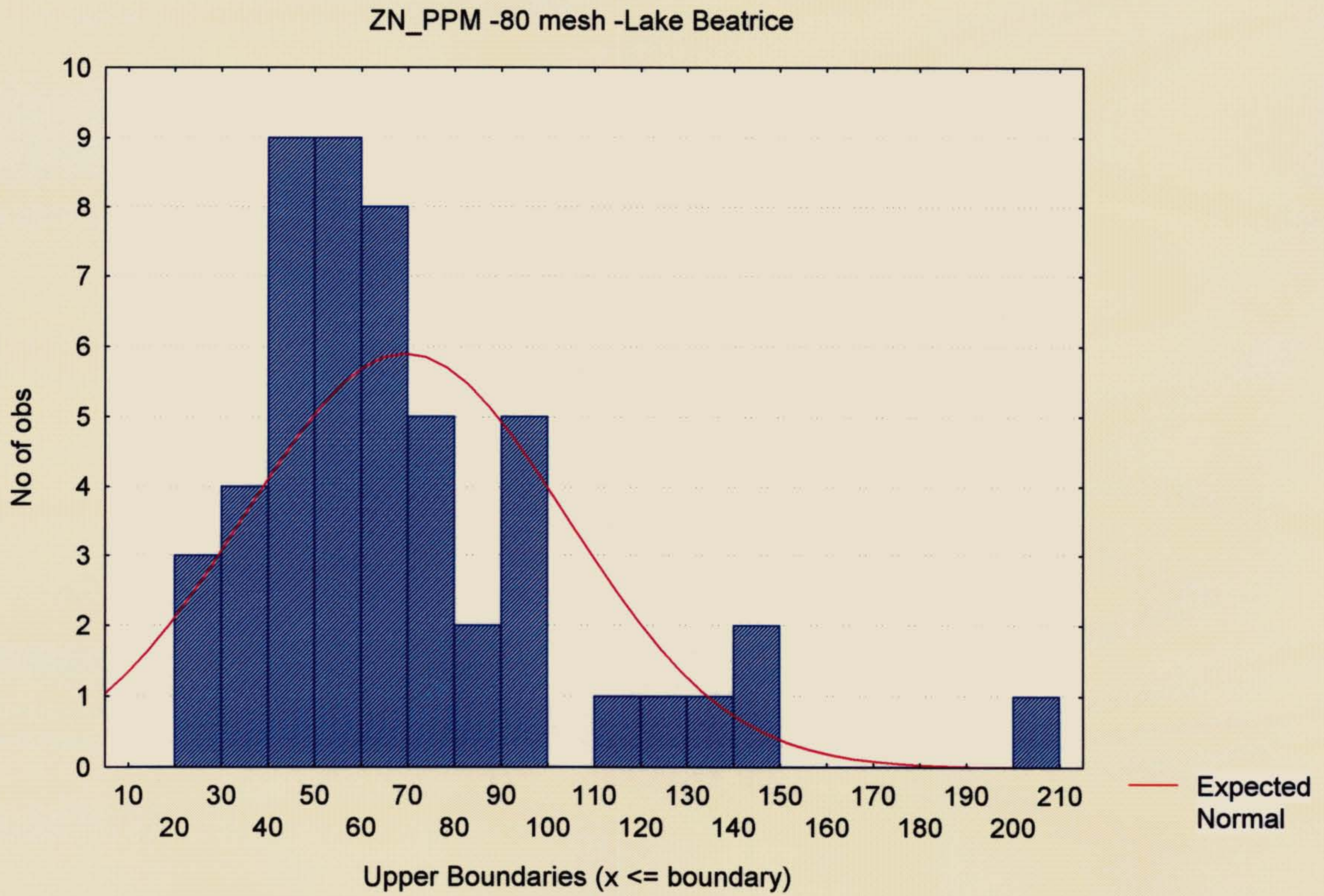


Cu_ppm -80 Mesh - Lake Beatrice
No of obs
0
5
10
15
20
25
30
35
40
45
-20
-10
0
10
20
30
40
50
60
70
80
90
100
Upper Boundaries (x <= boundary)
Expected Normal

305041

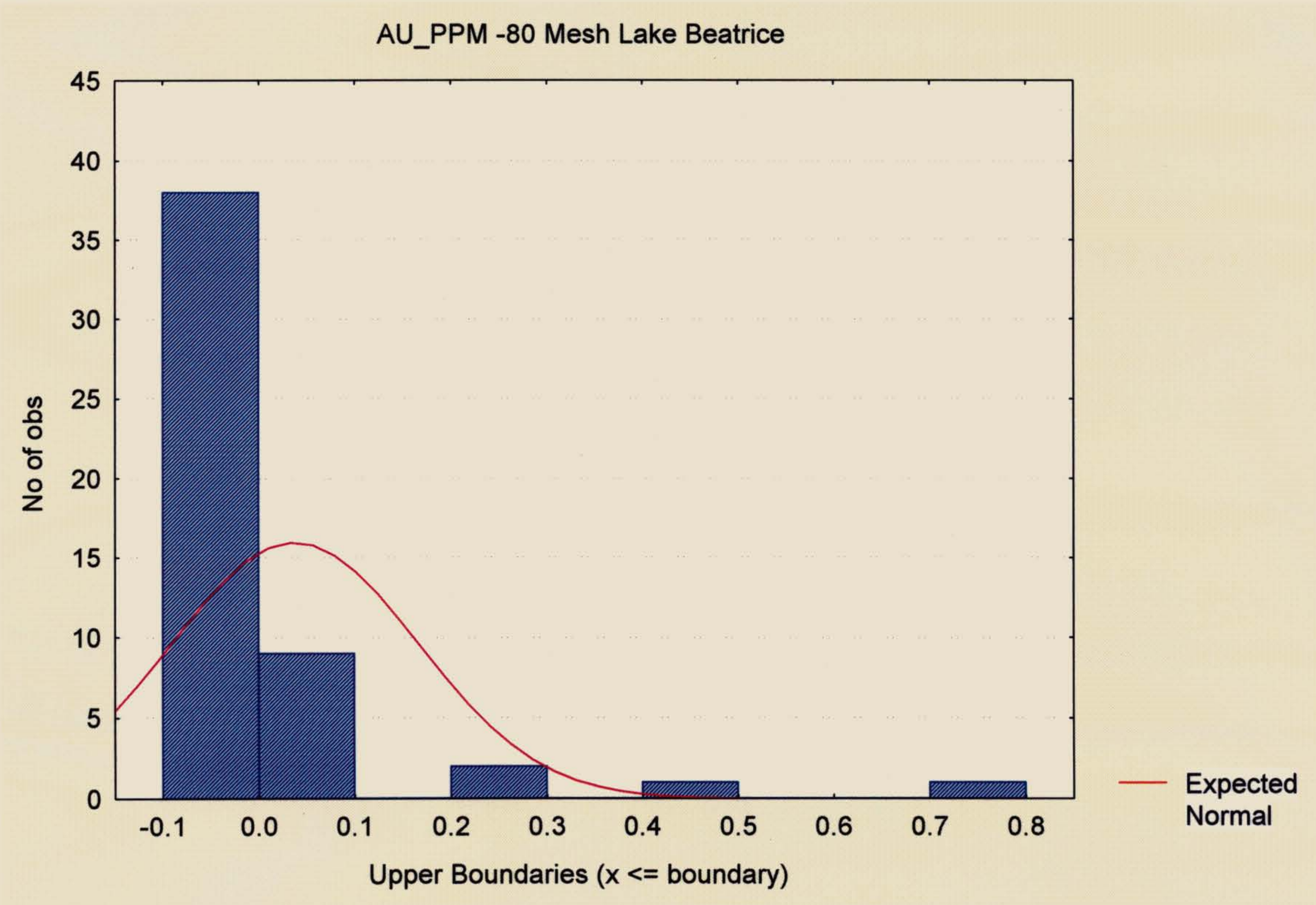

Pb ppm -80 Mesh - Lake Beatrice
No of obs
20
18
16
14
12
10
8
6
4
2
0
-50
0
50
100
150
200
250
300
350
400
450
Upper Boundaries (x <= boundary)
Expected Normal

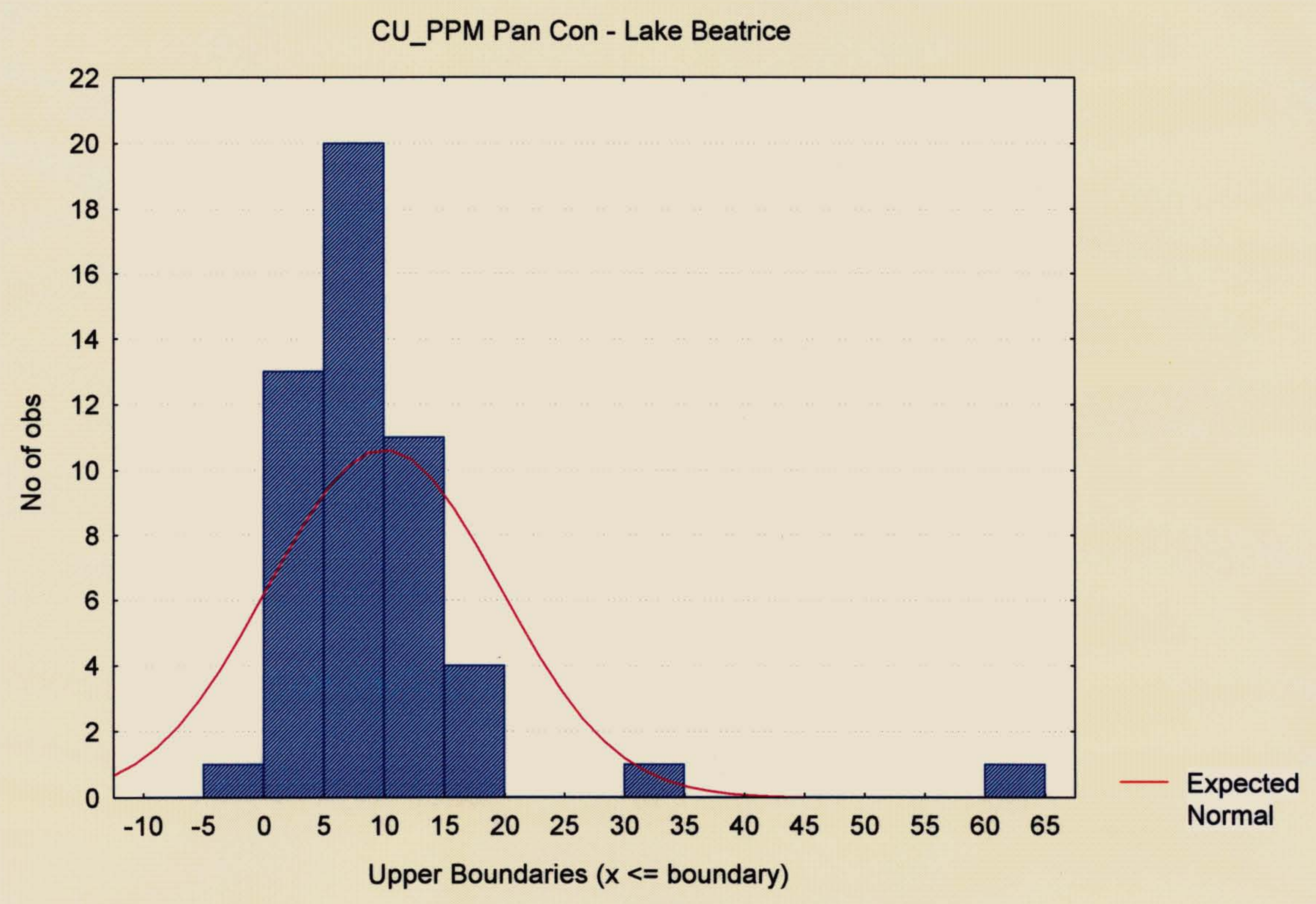
305042



ZN_PPM -80 mesh -Lake Beatrice
No of obs
0
1
2
3
4
5
6
7
8
9
10
10 30 50 70 90 110 130 150 170 190 210
20 40 60 80 100 120 140 160 180 200
Upper Boundaries (x <= boundary)
Expected Normal

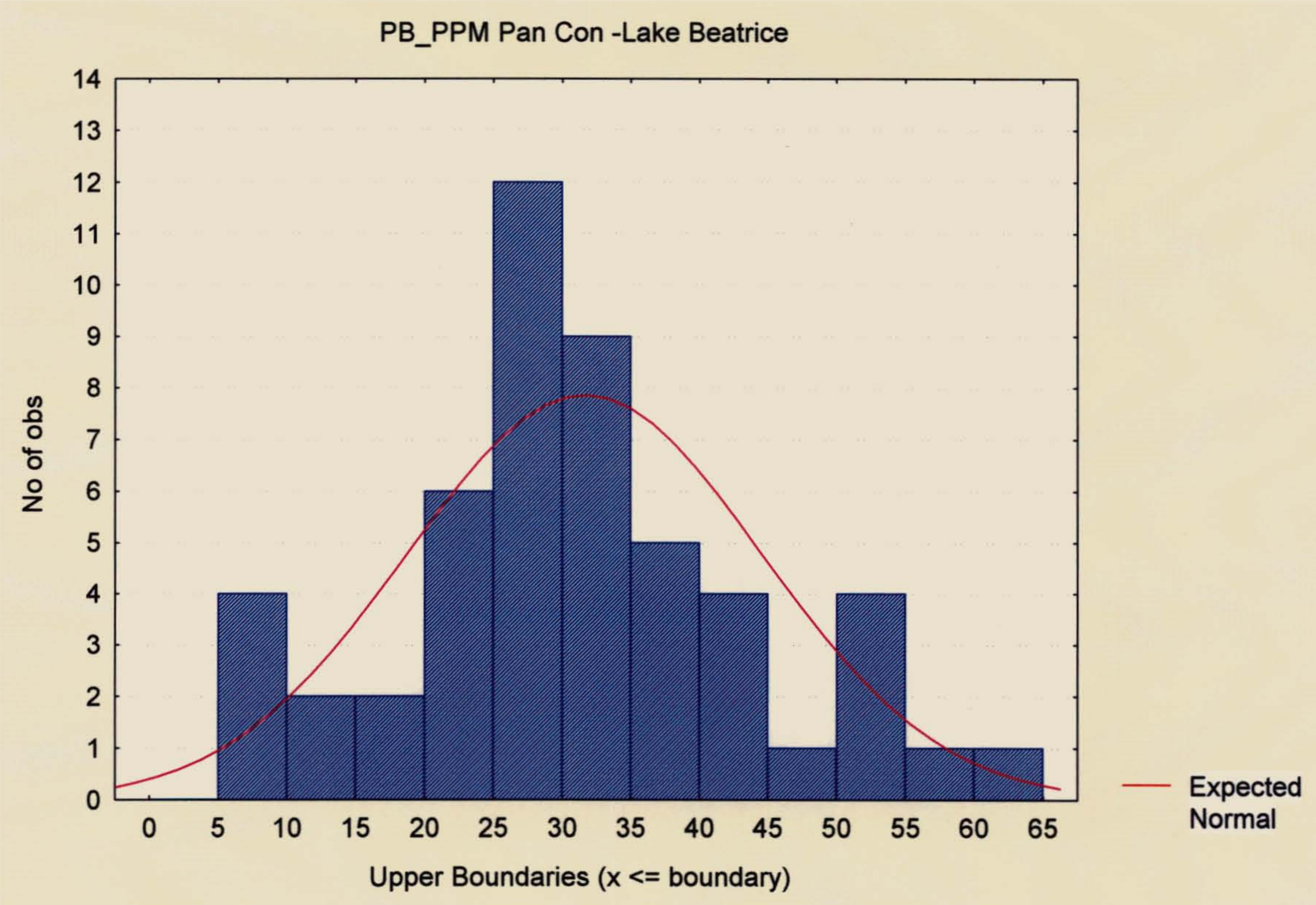
305043

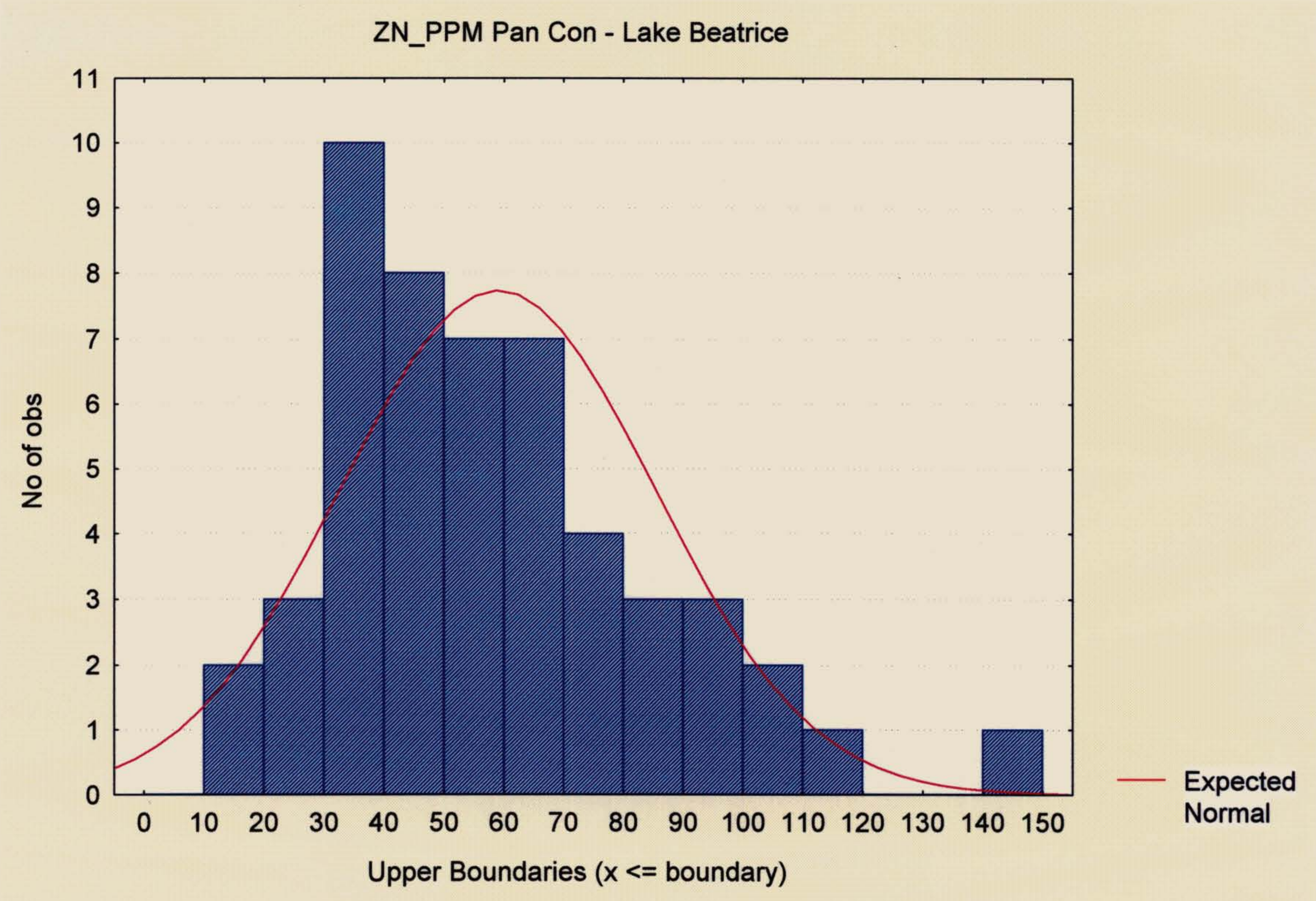

AU_PPM -80 Mesh Lake Beatrice
No of obs
45
40
35
30
25
20
15
10
5
0
-0.1
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
Upper Boundaries (x <= boundary)
Expected Normal



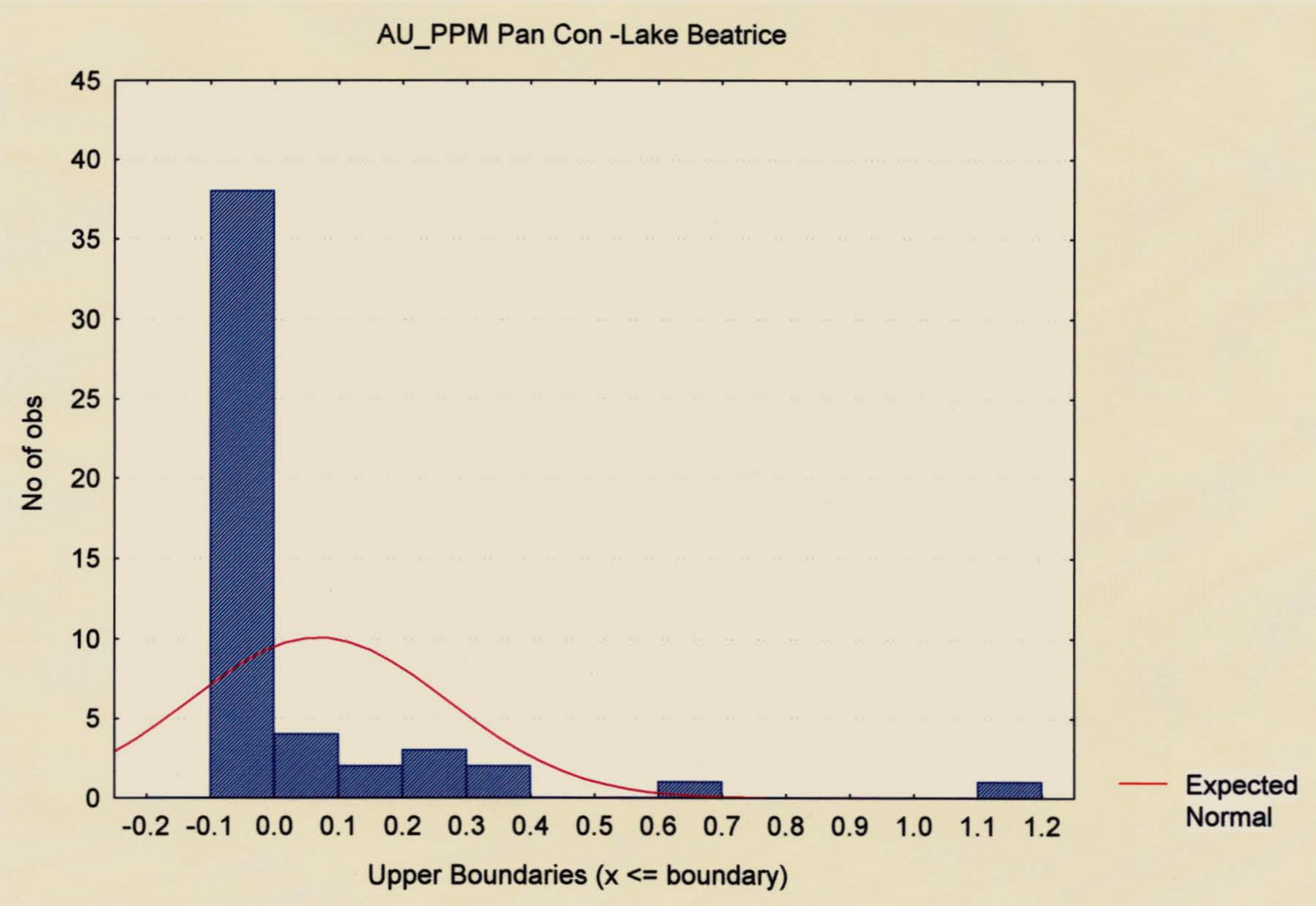
CU_PPM Pan Con - Lake Beatrice
No of obs
22
20
18
16
14
12
10
8
6
4
2
0
-10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65
Upper Boundaries (x <= boundary)
Expected Normal

305045

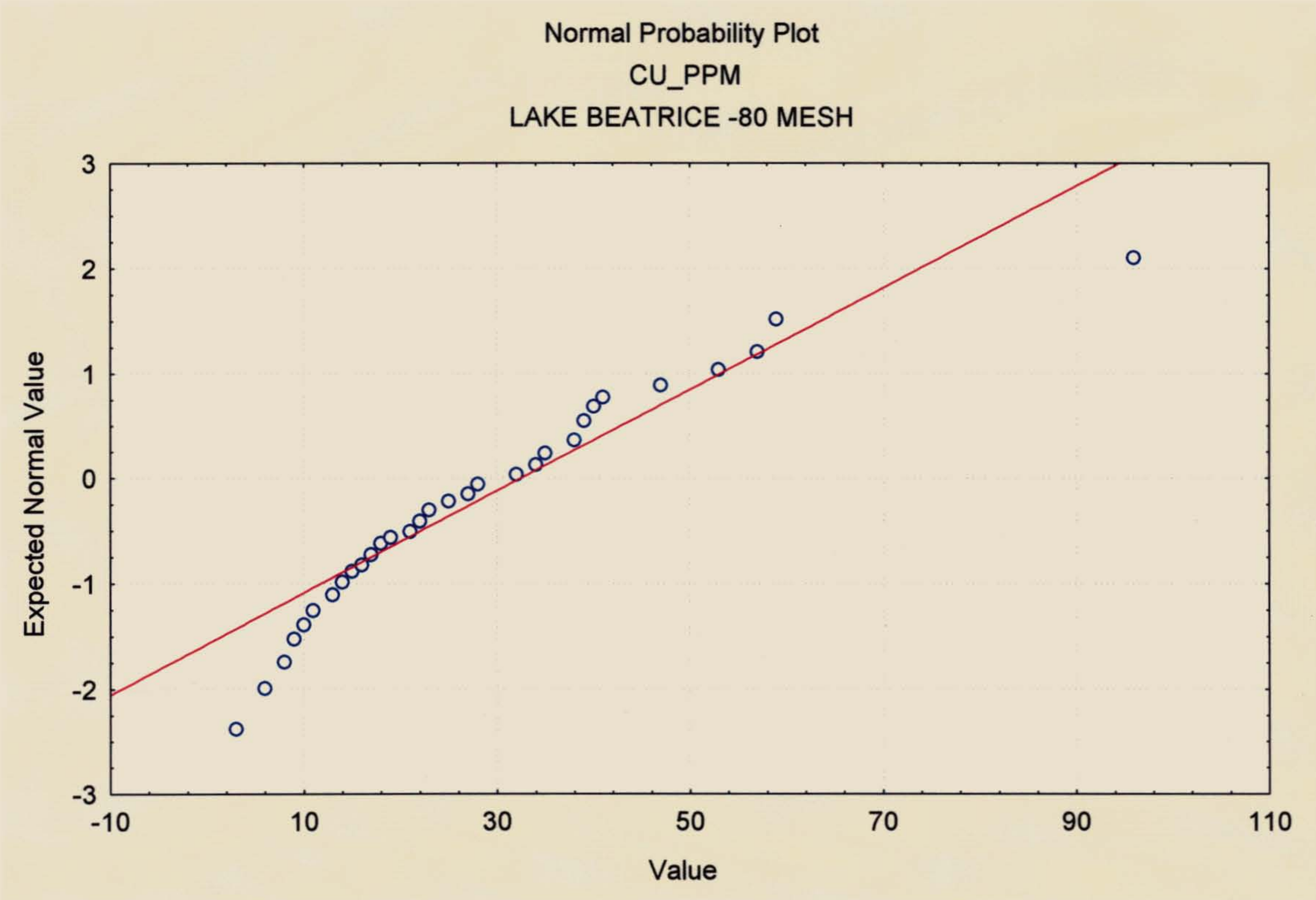

PB_PPM Pan Con -Lake Beatrice
No of obs
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
0 5 10 15 20 25 30 35 40 45 50 55 60 65
Upper Boundaries (x <= boundary)
Expected Normal


ZN_PPM Pan Con - Lake Beatrice
No of obs
0
1
2
3
4
5
6
7
8
9
10
11
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
Upper Boundaries (x <= boundary)
Expected Normal

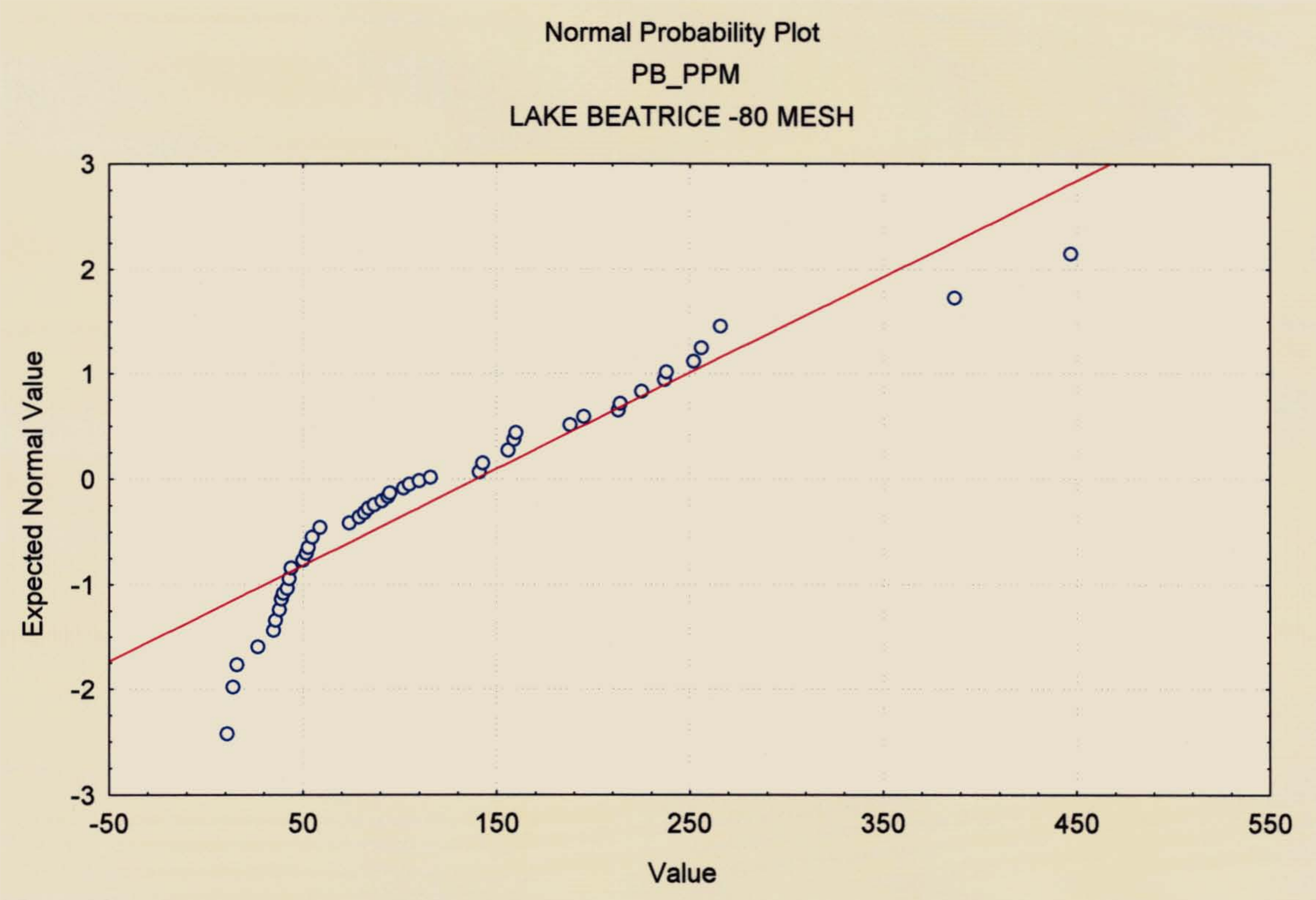
305047


AU_PPM Pan Con -Lake Beatrice
No of obs
0
5
10
15
20
25
30
35
40
45
-0.2 -0.1 0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2
Upper Boundaries (x <= boundary)
Expected Normal

305048

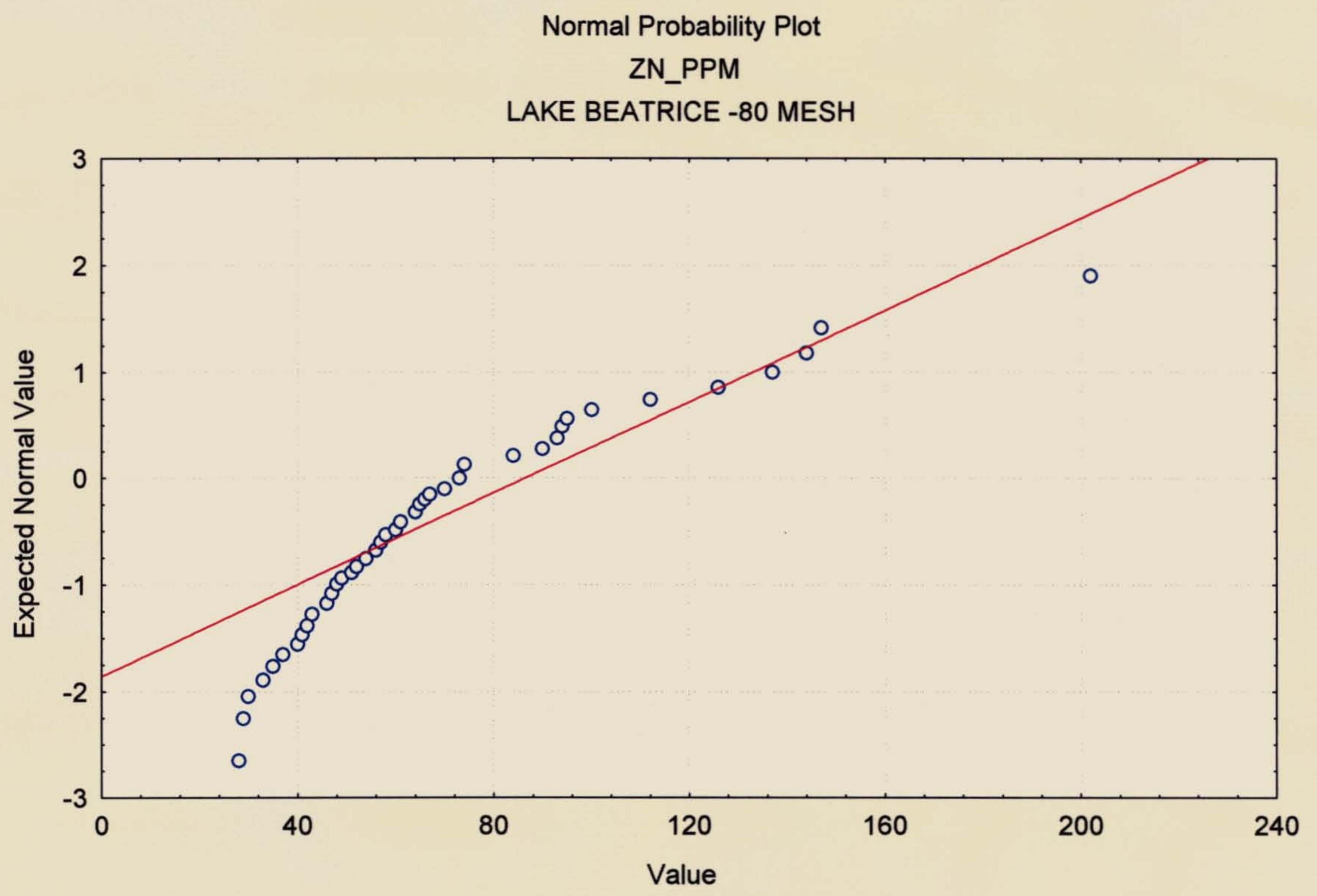

Normal Probability Plot
CU_PPM
LAKE BEATRICE -80 MESH
Expected Normal Value
3
2
1
0
-1
-2
-3
-10
10
30
50
70
90
110
Value

305049

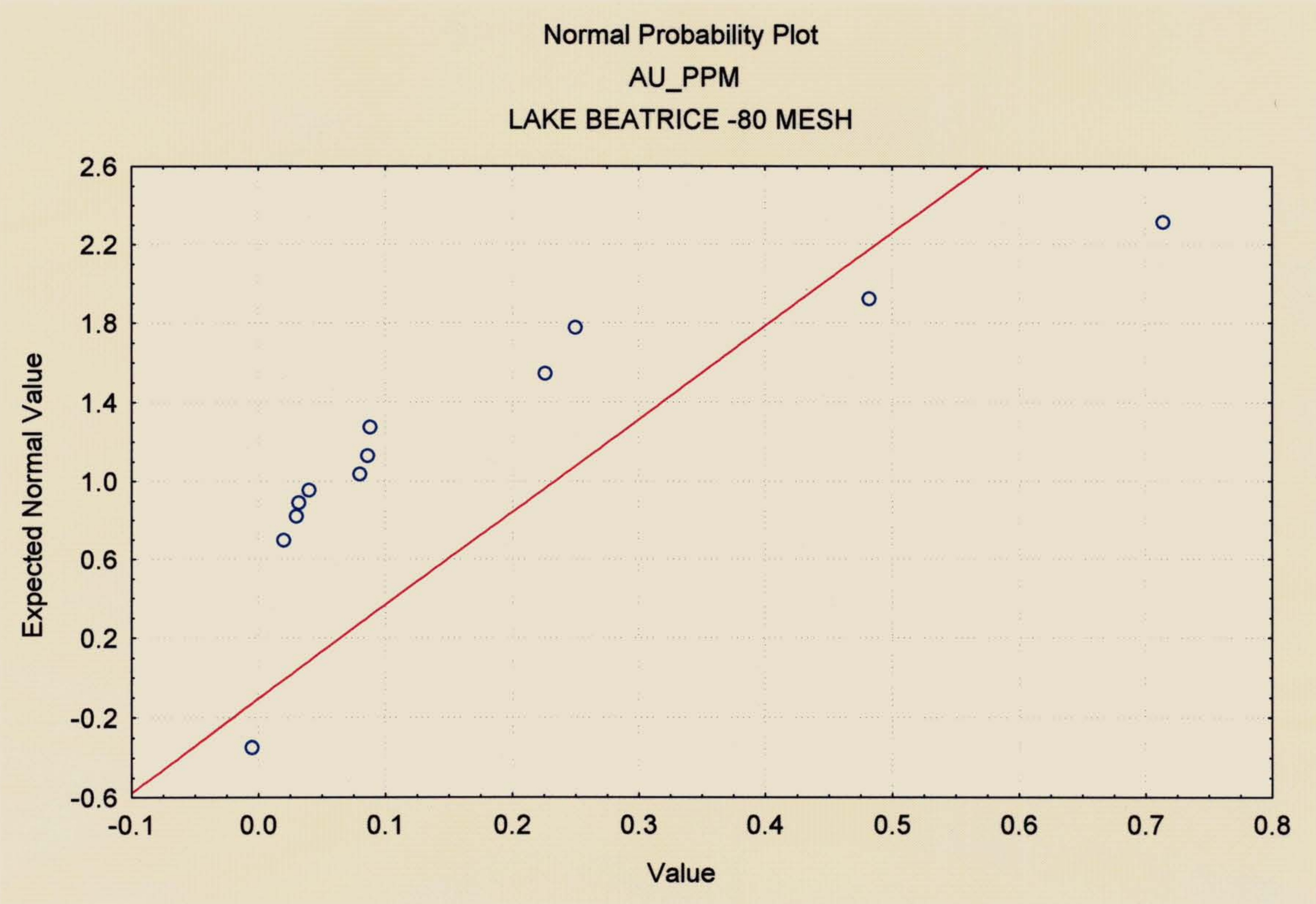


Normal Probability Plot
PB_PPM
LAKE BEATRICE -80 MESH
Expected Normal Value
3
2
1
0
-1
-2
-3
-50
50
150
250
350
450
550
Value

30505


Normal Probability Plot
ZN_PPM
LAKE BEATRICE -80 MESH
Expected Normal Value
3
2
1
0
-1
-2
-3
0
40
80
120
160
200
240
Value

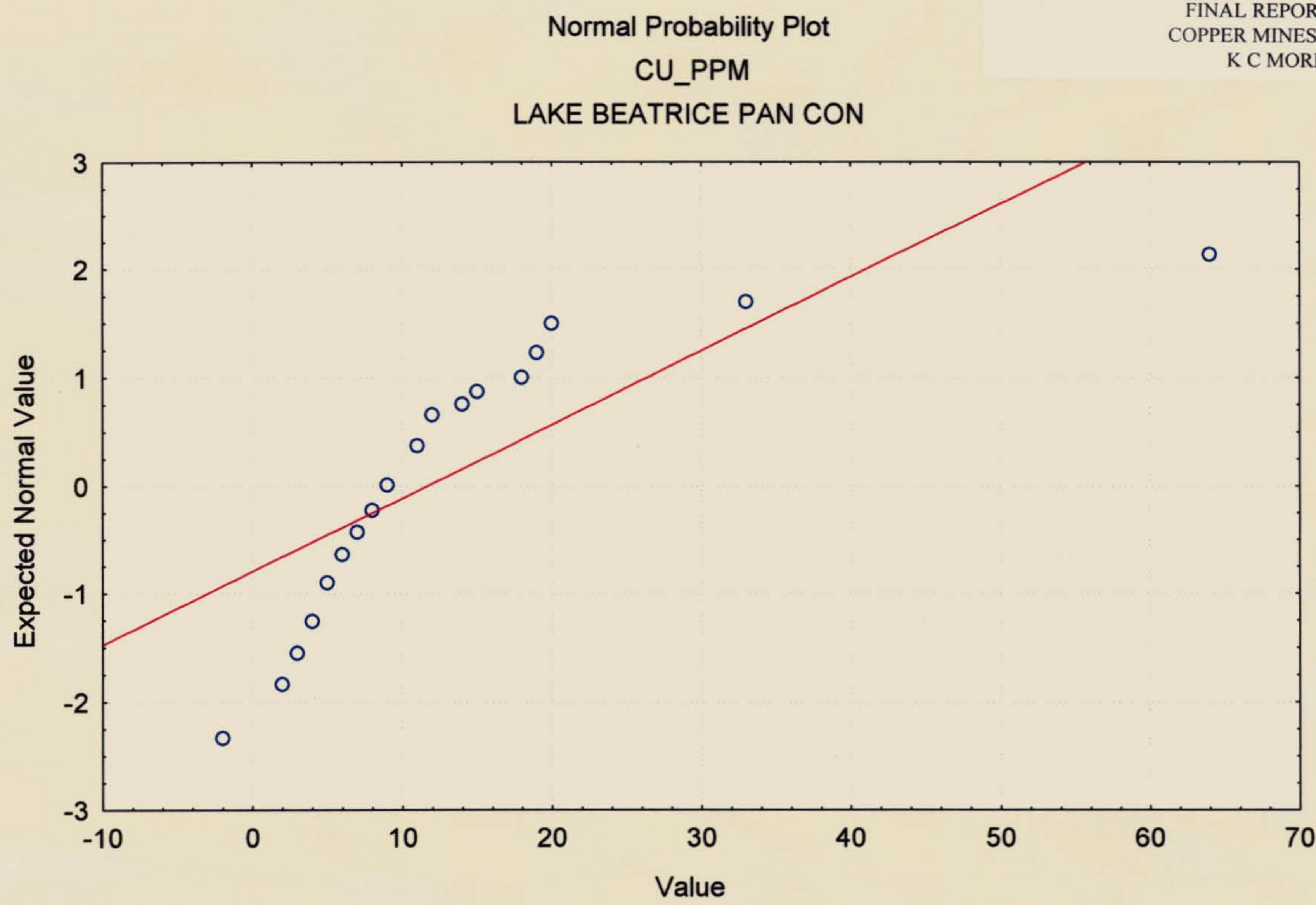
30505 1


Normal Probability Plot
AU_PPM
LAKE BEATRICE -80 MESH
Expected Normal Value
Value
2.6
2.2
1.8
1.4
1.0
0.6
0.2
-0.2
-0.6
-0.1
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8

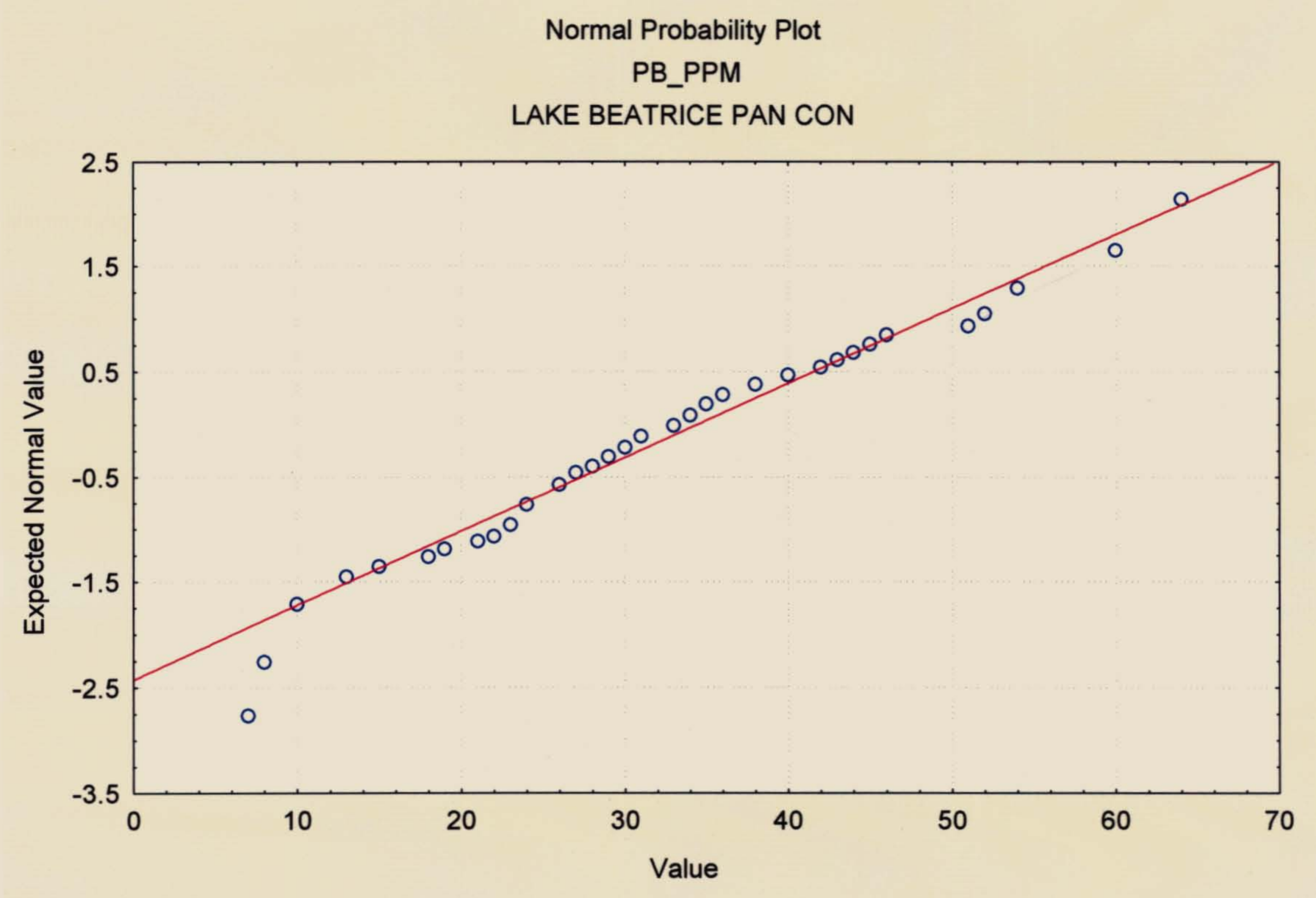
30552

97-4000

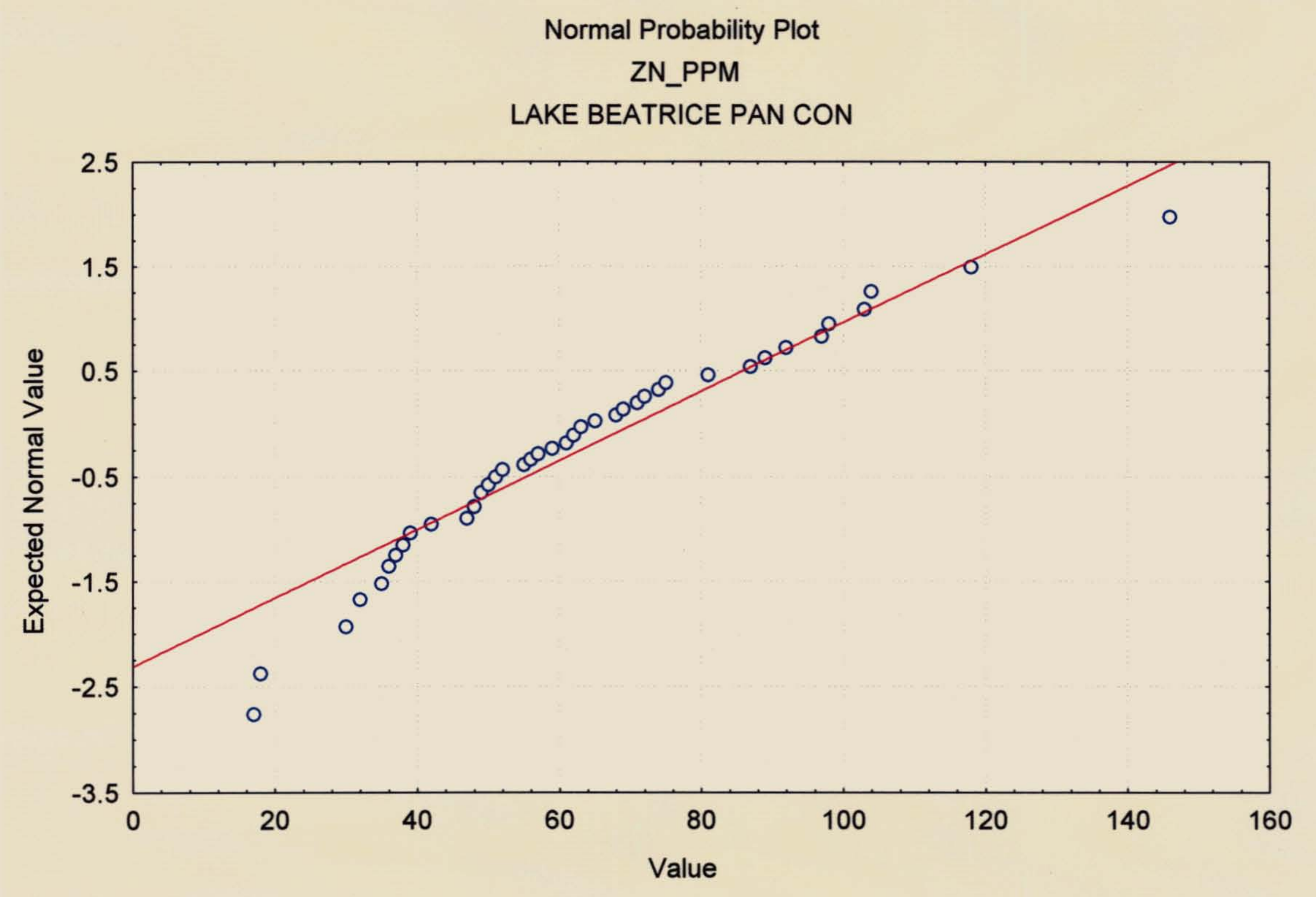
FINAL REPORT - EL 3/96
COPPER MINES OF TAS. P/L
K C MORRISON



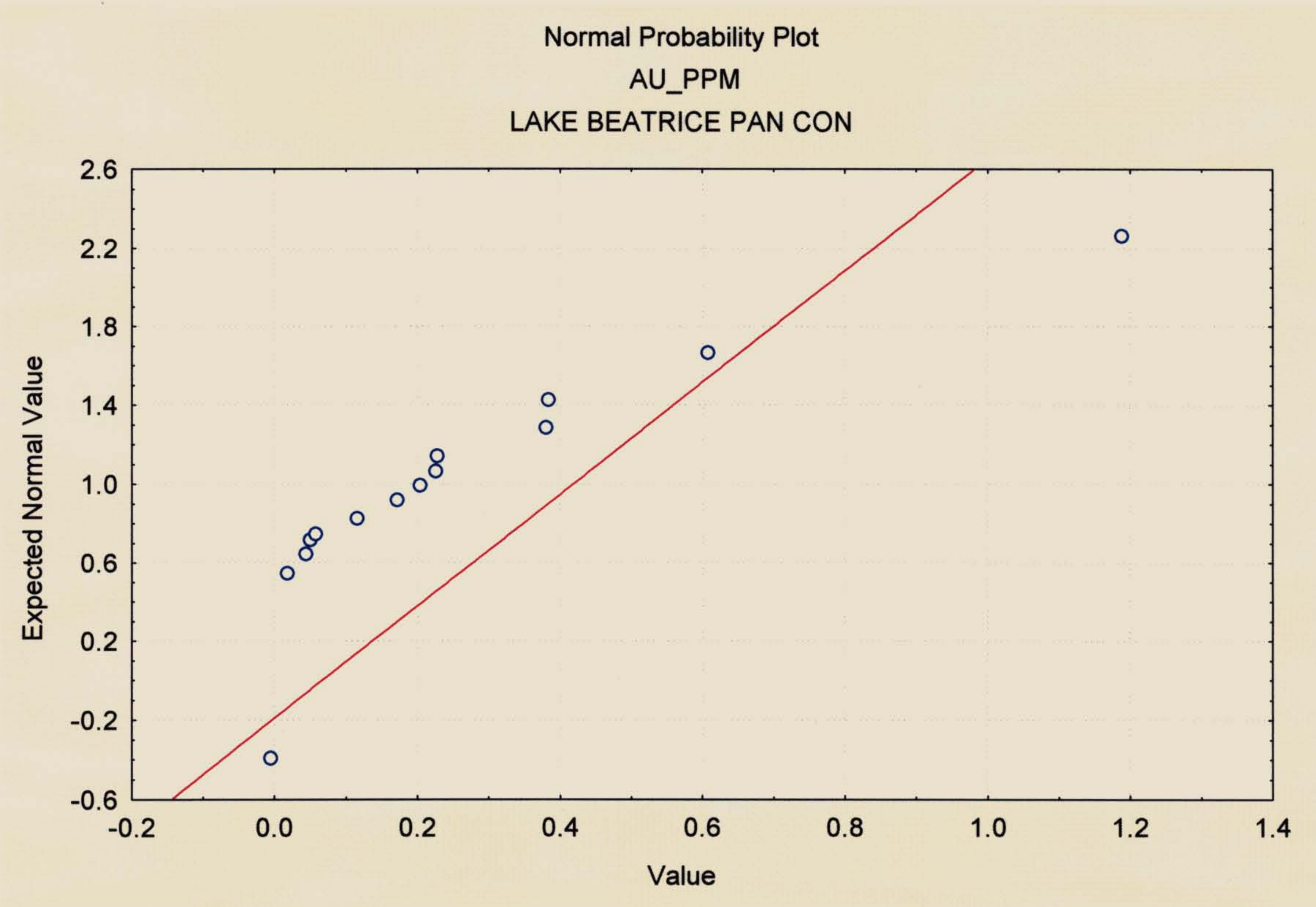
30053


Normal Probability Plot
PB_PPM
LAKE BEATRICE PAN CON
Expected Normal Value
2.5
1.5
0.5
-0.5
-1.5
-2.5
-3.5
0
10
20
30
40
50
60
70
Value

30504


Normal Probability Plot
ZN_PPM
LAKE BEATRICE PAN CON
Expected Normal Value
Value
2.5
1.5
0.5
-0.5
-1.5
-2.5
-3.5
0
20
40
60
80
100
120
140
160

305055


Normal Probability Plot
AU_PPM
LAKE BEATRICE PAN CON
Expected Normal Value
2.6
2.2
1.8
1.4
1.0
0.6
0.2
-0.2
-0.6
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
Value

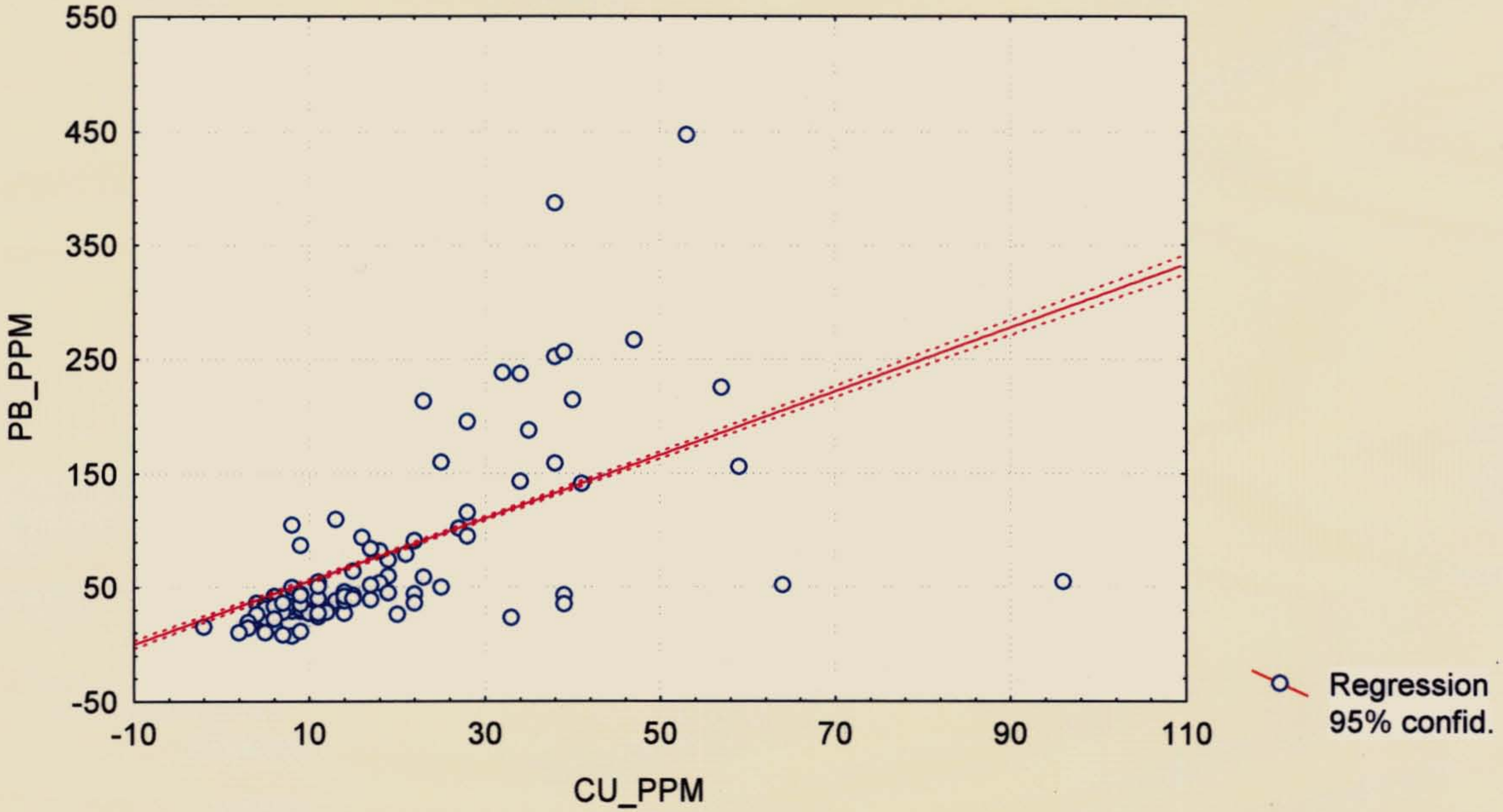
305056

CU_PPM vs. PB_PPM

PB_PPM = 27.600 + 2.7758 * CU_PPM

Correlation: r = .58010

LAKE BEATRICE - -80 MESH

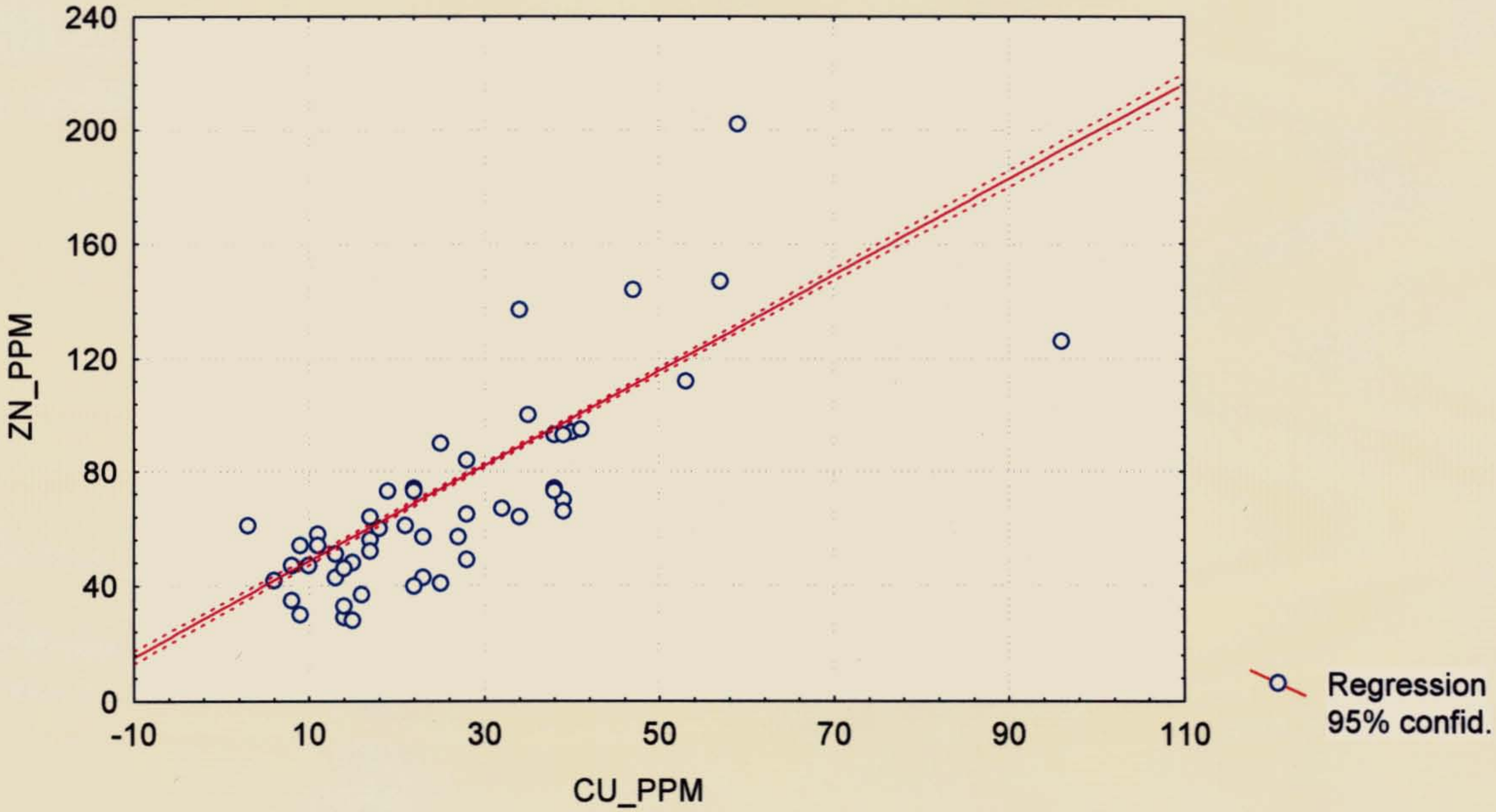


CU_PPM vs. ZN_PPM

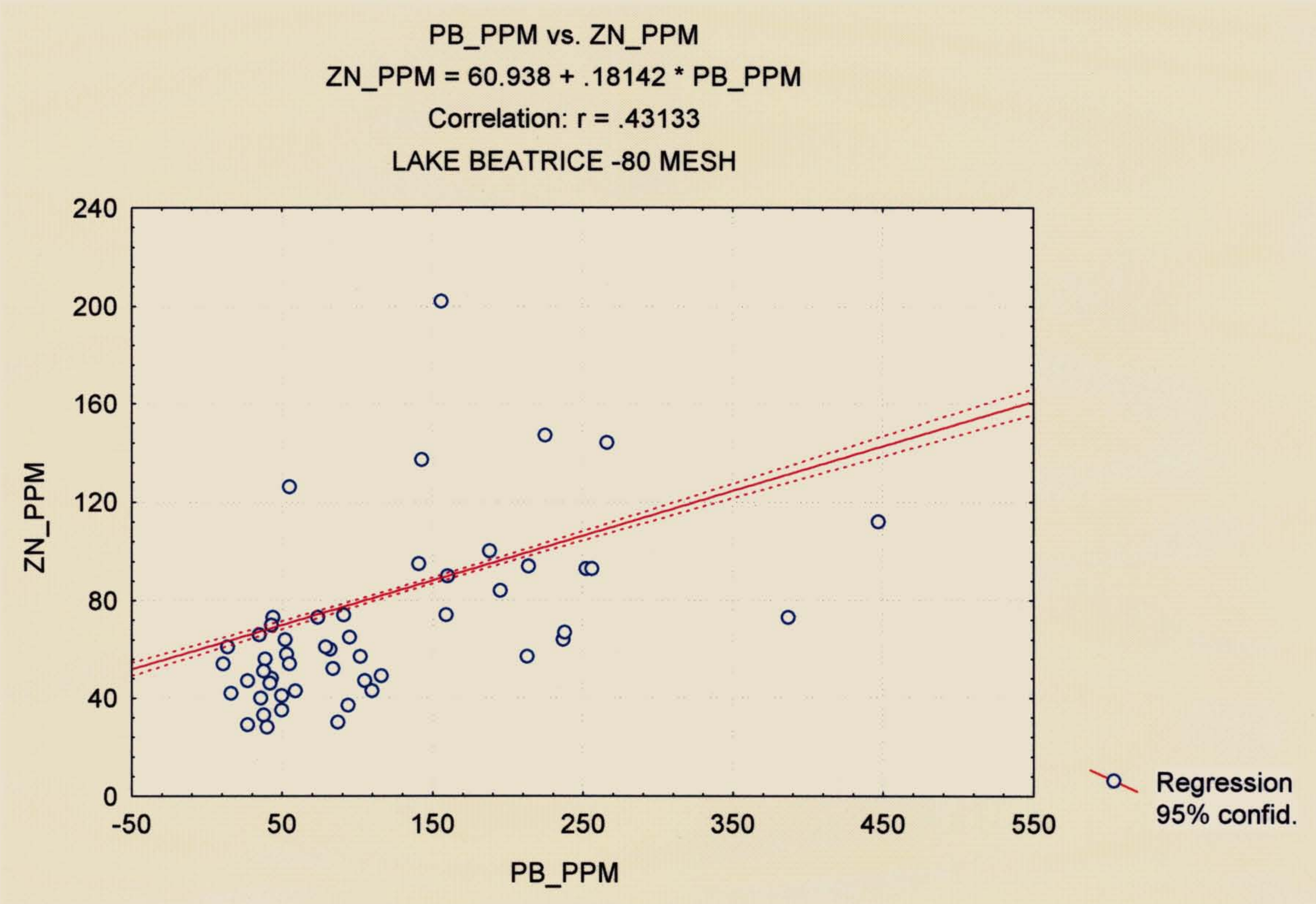
ZN_PPM = 31.876 + 1.6761 * CU_PPM

Correlation: r = .75617

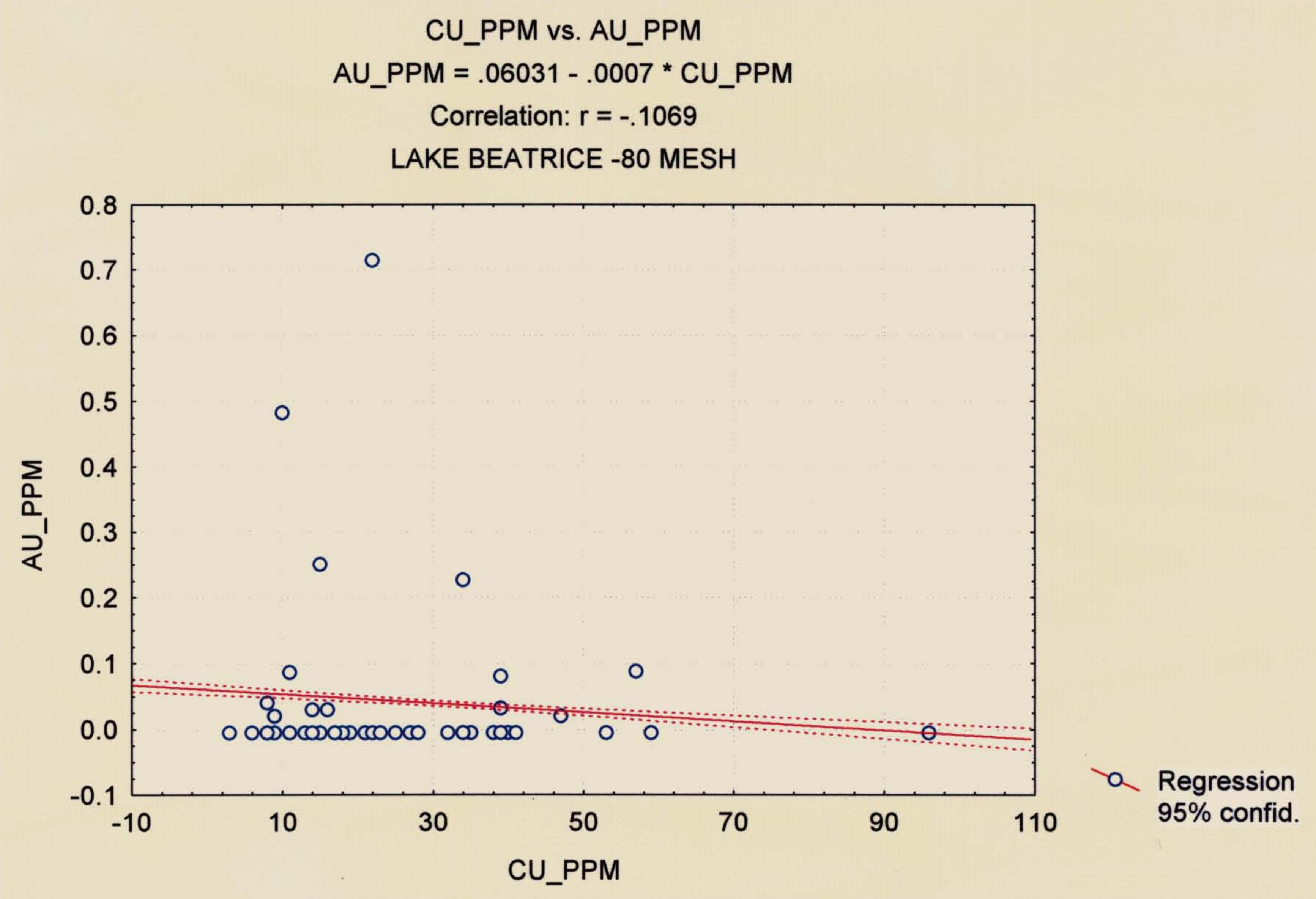
LAKE BEATRICE -80 MESH

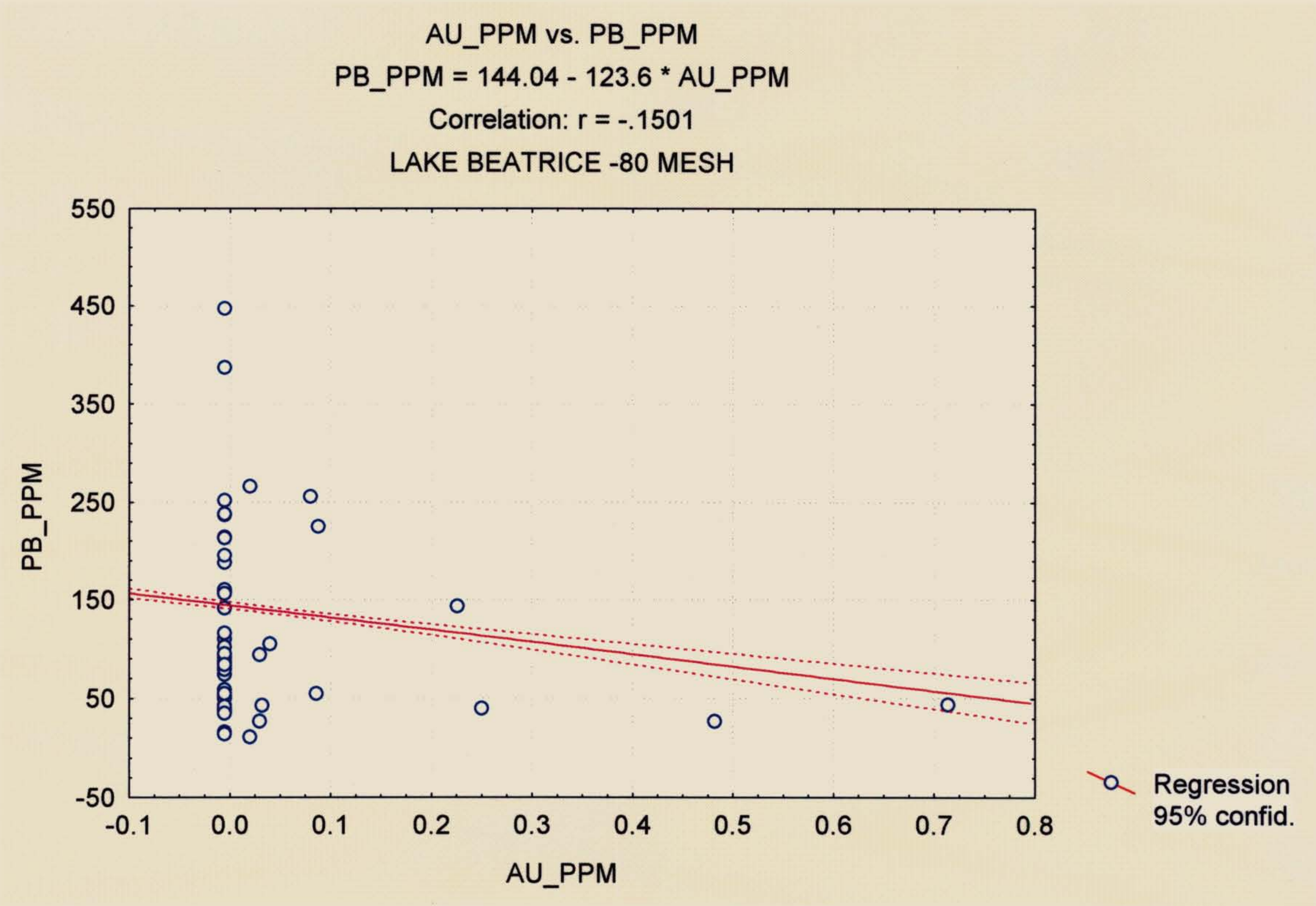


3 0 5 0 5 8

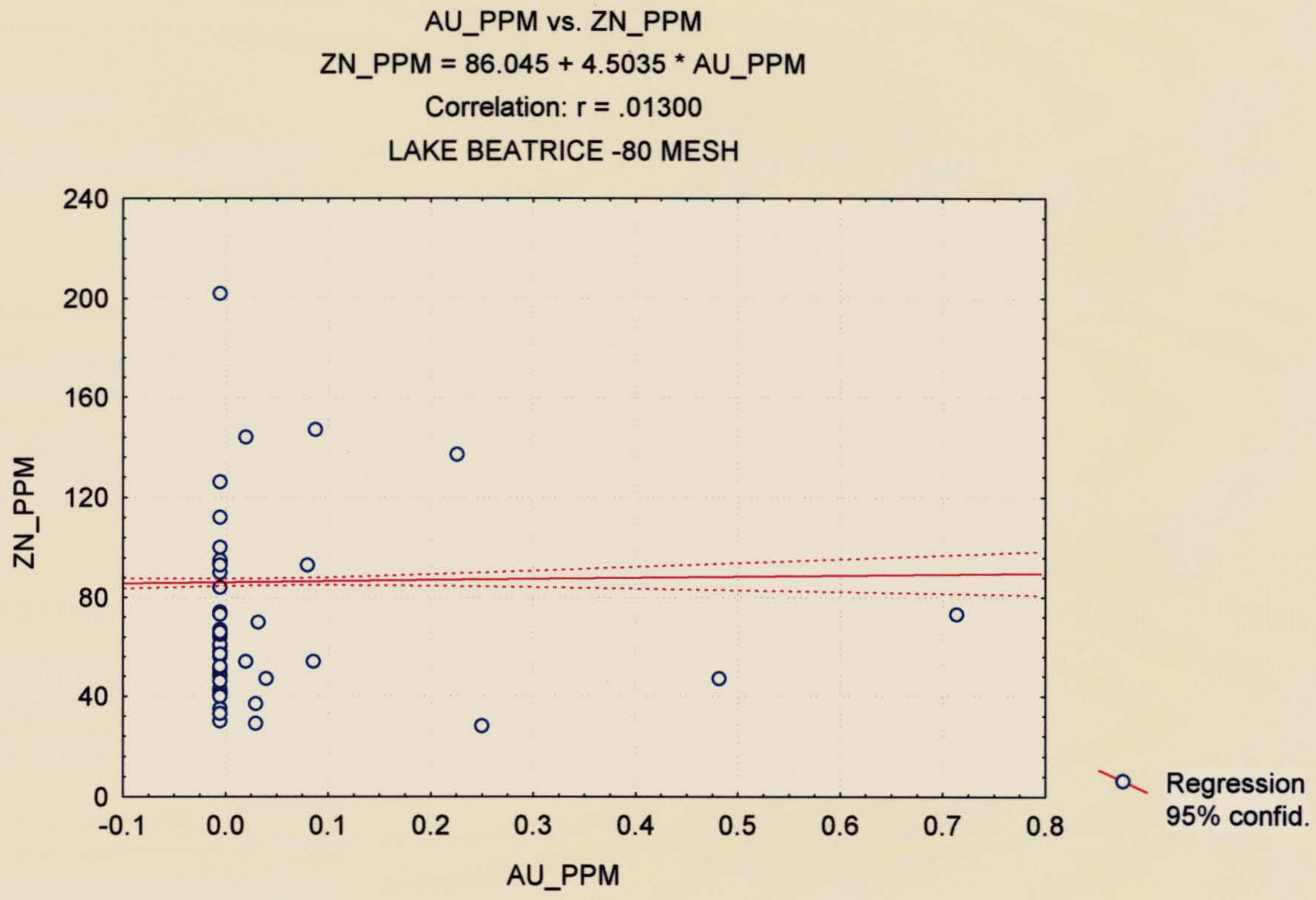

PB_PPM vs. ZN_PPM
ZN_PPM = 60.938 + .18142 * PB_PPM
Correlation: r = .43133
LAKE BEATRICE -80 MESH
ZN_PPM
240
200
160
120
80
40
0
-50
50
150
250
350
450
550
PB_PPM
Regression
95% confid.

305059

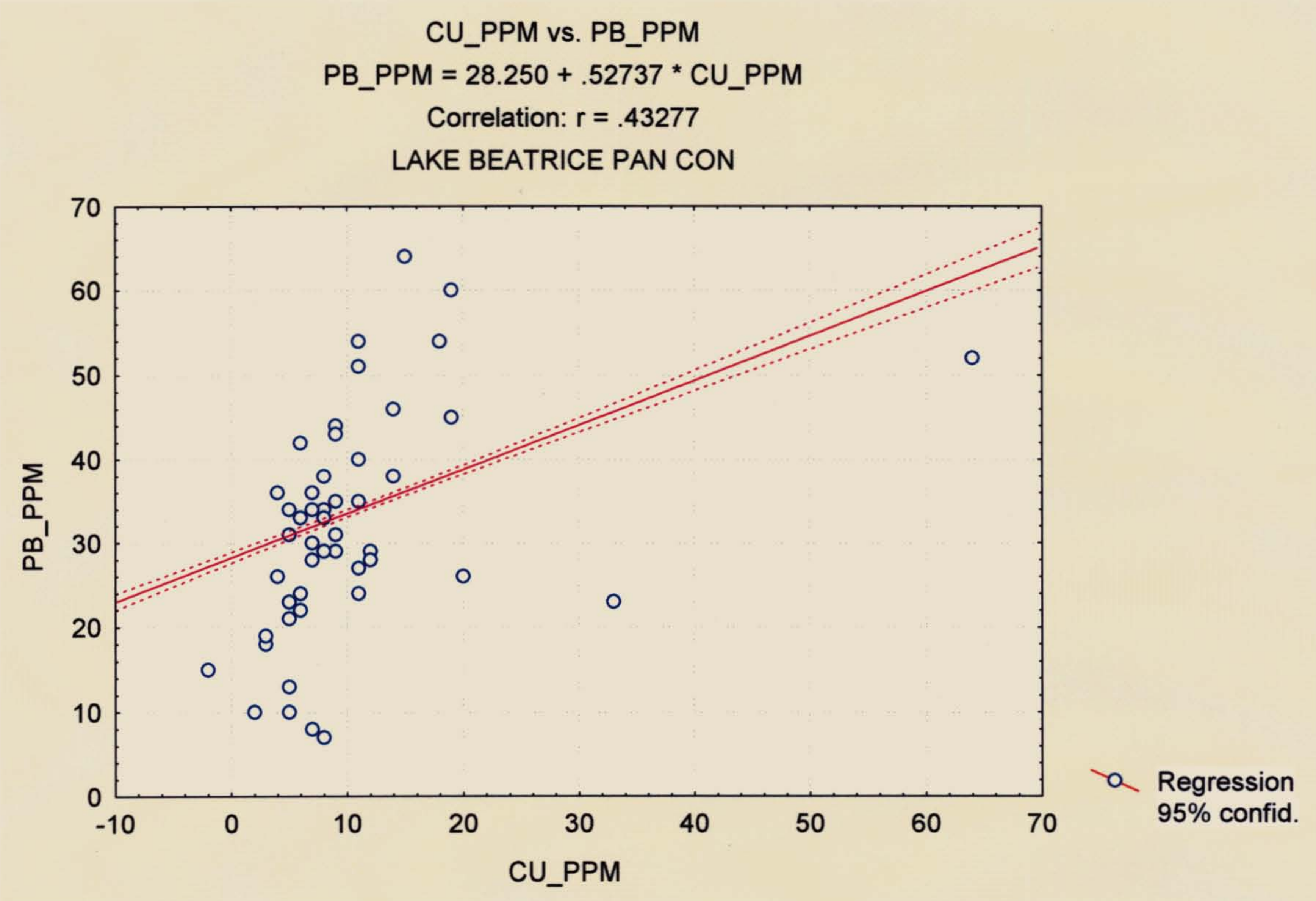

CU_PPM vs. AU_PPM
AU_PPM = .06031 - .0007 * CU_PPM
Correlation: r = -.1069
LAKE BEATRICE -80 MESH
AU_PPM
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-10
10
30
50
70
90
110
CU_PPM
Regression
95% confid.

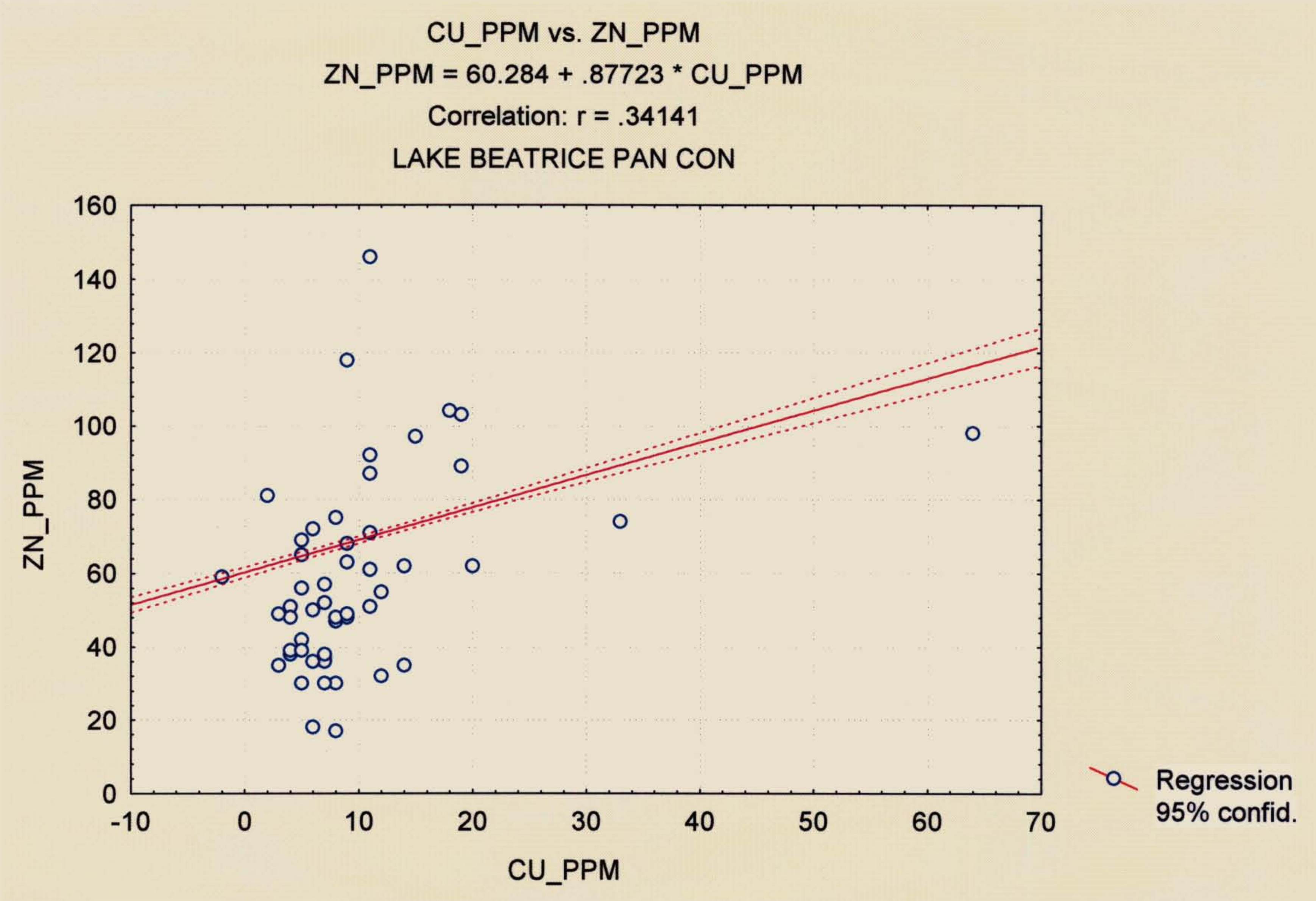

AU_PPM vs. PB_PPM
PB_PPM = 144.04 - 123.6 * AU_PPM
Correlation: r = -.1501
LAKE BEATRICE -80 MESH
PB_PPM
550
450
350
250
150
50
-50
-0.1
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
AU_PPM
Regression
95% confid.

305061


AU_PPM vs. ZN_PPM
ZN_PPM = 86.045 + 4.5035 * AU_PPM
Correlation: r = .01300
LAKE BEATRICE -80 MESH
240
200
160
120
80
40
0
ZN_PPM
-0.1
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
AU_PPM
Regression
95% confid.

3 0 5 0 6 2


CU_PPM vs. PB_PPM
PB_PPM = 28.250 + .52737 * CU_PPM
Correlation: r = .43277
LAKE BEATRICE PAN CON
PB_PPM
0
10
20
30
40
50
60
70
-10
0
10
20
30
40
50
60
70
CU_PPM
Regression
95% confid.


CU_PPM vs. ZN_PPM
ZN_PPM = 60.284 + .87723 * CU_PPM
Correlation: r = .34141
LAKE BEATRICE PAN CON
ZN_PPM
160
140
120
100
80
60
40
20
0
-10
0
10
20
30
40
50
60
70
CU_PPM
Regression
95% confid.

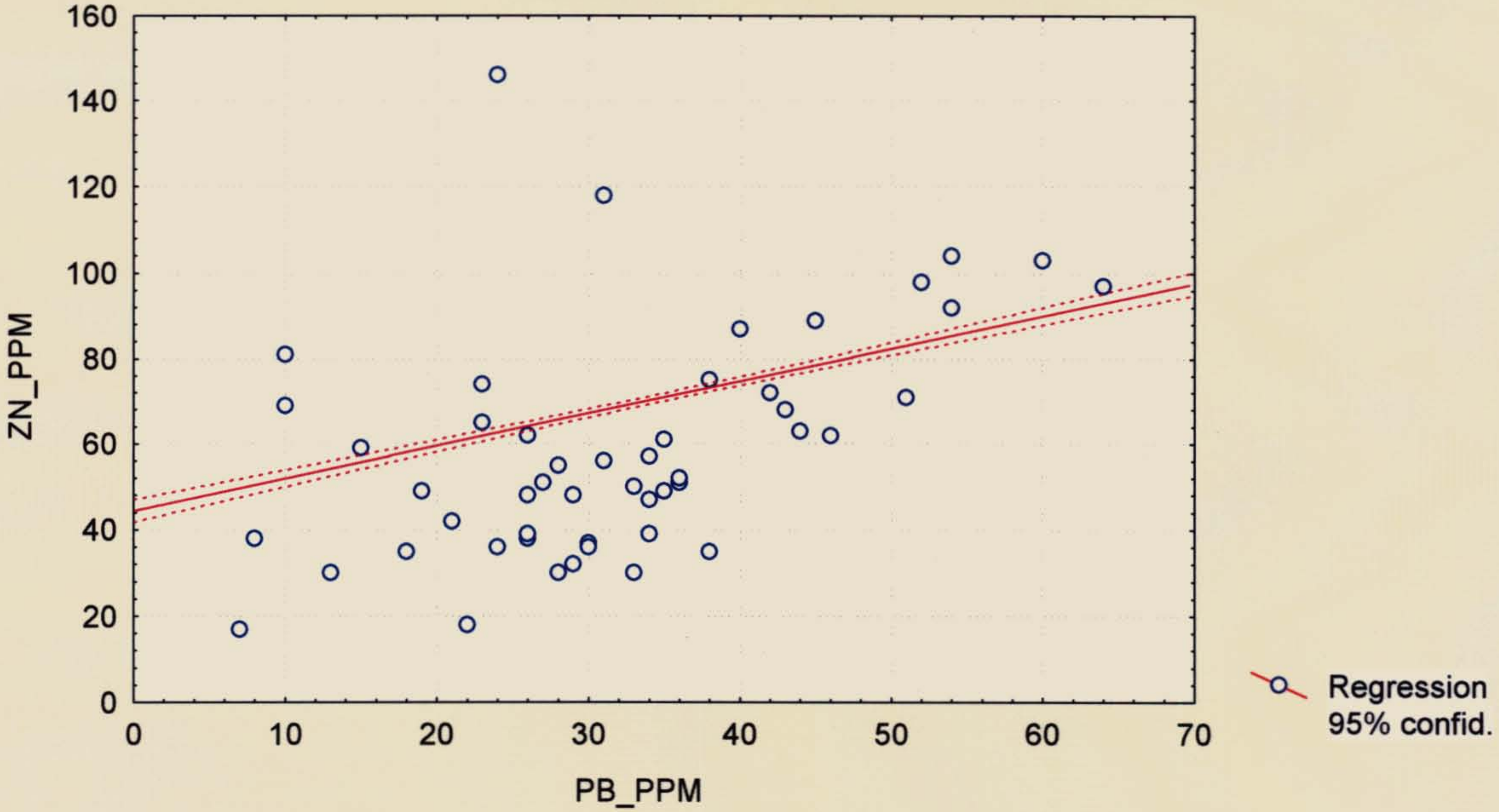
305064

PB_PPM vs. ZN_PPM

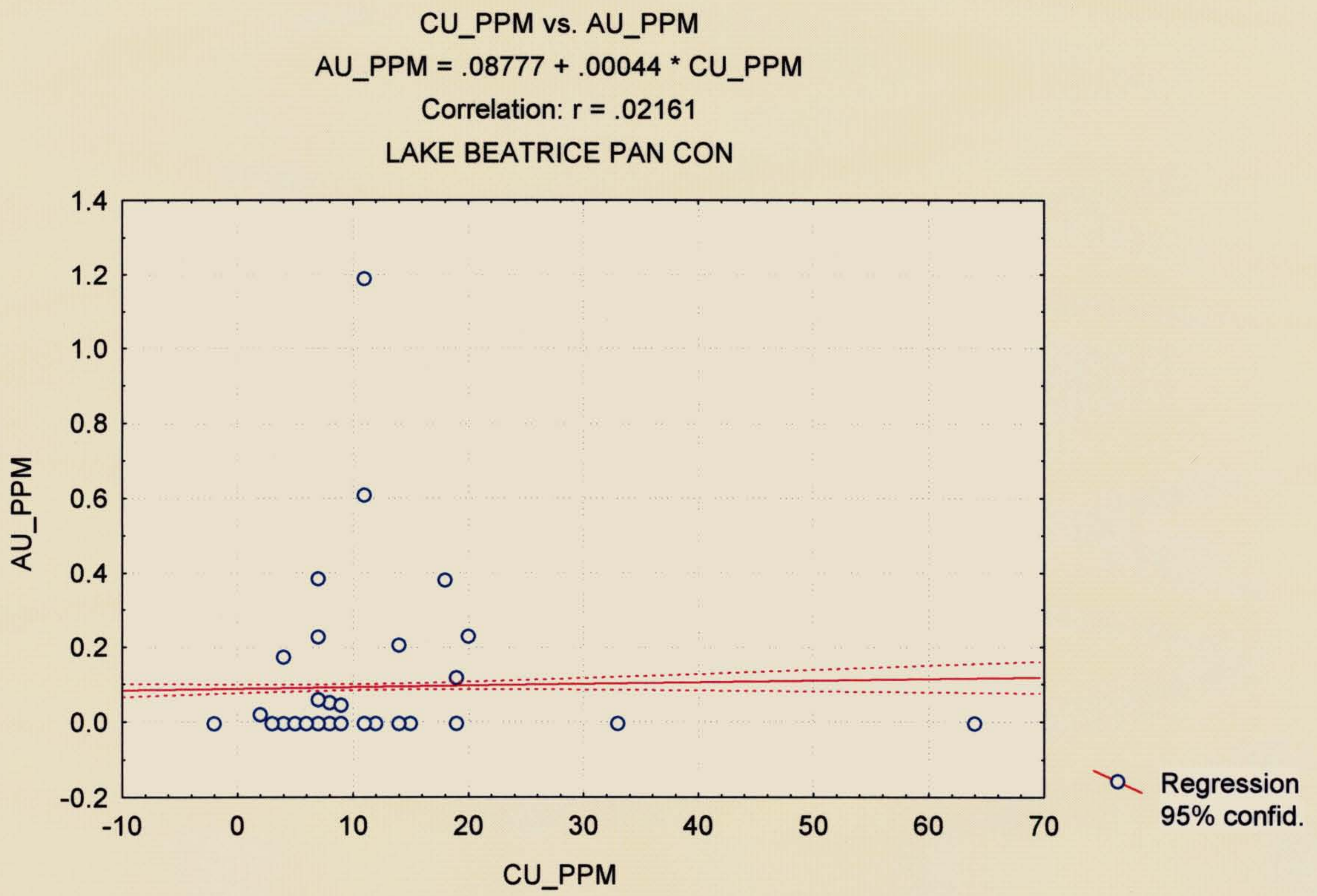
ZN_PPM = 44.349 + .76058 * PB_PPM

Correlation: r = .36071

LAKE BEATRICE PAN CON



305065


CU_PPM vs. AU_PPM
AU_PPM = .08777 + .00044 * CU_PPM
Correlation: r = .02161
LAKE BEATRICE PAN CON
AU_PPM
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-10
0
10
20
30
40
50
60
70
CU_PPM
Regression
95% confid.

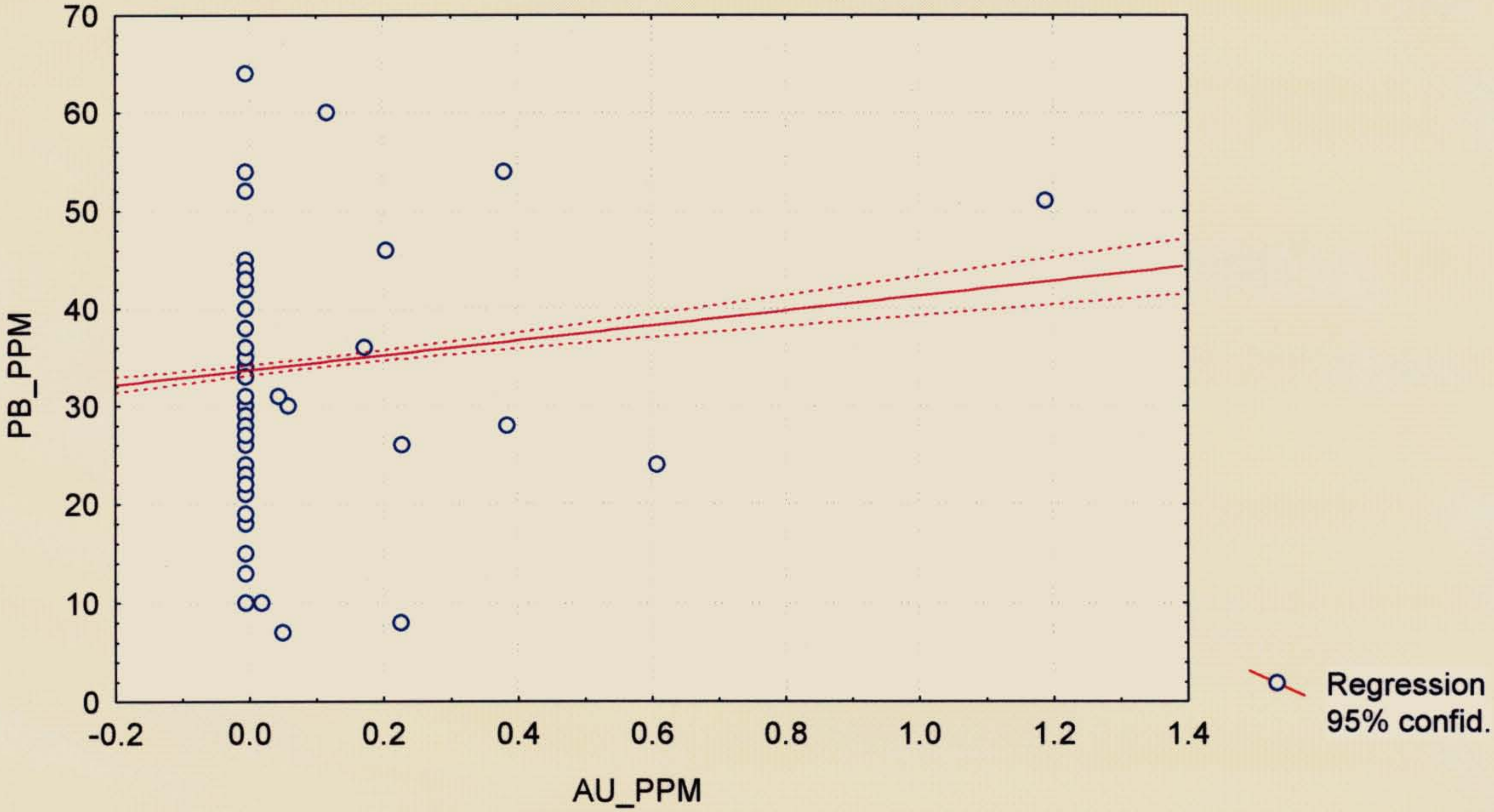
305066

AU_PPM vs. PB_PPM

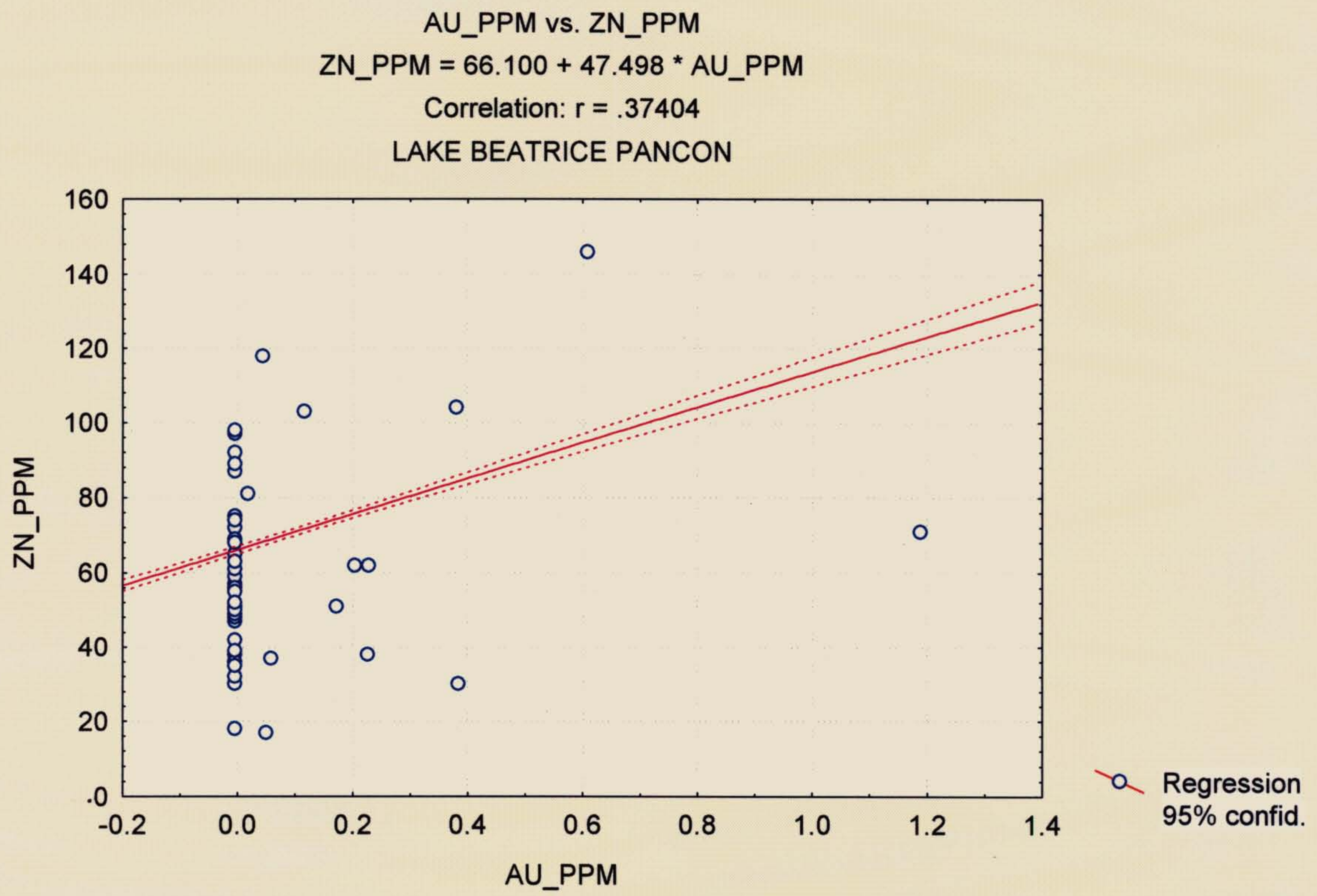
PB_PPM = 33.687 + 7.6570 * AU_PPM

Correlation: r = .12714

LAKE BEATRICE PAN CON



305067



AU_PPM vs. ZN_PPM
ZN_PPM = 66.100 + 47.498 * AU_PPM
Correlation: r = .37404
LAKE BEATRICE PANCON
ZN_PPM
160
140
120
100
80
60
40
20
.0
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
AU_PPM
Regression
95% confid.

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Appendix 2

Rock Chip Data

EL 3/96 - Lake Beatrice

Rock Chip Sample Descriptions

(All samples are outcrop except where otherwise stated)

H-1079	Rhyolite lava with quartz, minor magnetite veining, clots chlorite, muscovite, pits with hematite, limonite, manganese oxide.
H-1080	Rhyolite lava with magnetite quartz veining, albitic, chloritic alteration, limonitic pits.
H-1081	Rhyolite lava with intense magnetite/quartz veining, brecciation, Chlorite alteration associated with magnetite, albite alteration in breccia zones. Porous, low density rock.
H-1082	Quartz magnetite breccia. Dense rock with cavities containing iron, manganese oxides.
H-1083	Altered rhyolite lava. Abundant albite, quartz, chlorite, minor magnetite, ? epidote. In part fragmental, brecciated texture.
H-1084	Magnetite quartz breccia in rhyolite lava. Albite, chlorite alteration, brecciated texture.
H-1085	Veins of magnetite quartz breccia in rhyolite. Magnetite partly oxidised.
H-1086	Massive magnetite > quartz in N-S vein system at top of Beatrice lava dome. Area of heaviest magnetite development. Brecciated texture with albite altered wall rock rhyolite.
H-1087	A/A
H-1088	Crystalline magnetite > quartz in NE-SW vein set. Minor albitic rhyolite, brecciated wall rock.
H-1089	Magnetite quartz veining at margin of lava dome. Albite, chlorite, epidote alteration.
H-1090	Creek float. Mixture of 1) massive magnetite with minor brecciated vein quartz, wall rock rhyolite. 2) White, pink rhyolite lava with minor blebs magnetite and pitted limonite on fracture planes.
H-1091	Float. Magnetite with iridescent colours (possible tarnished sulphide). No sulphide observed on break surfaces.
H-1092	Massive crystalline magnetite with breccia texture in part. Veins with rhyolite lava
H-1093	Magnetite with minor quartz rock fragments
H-1094	Stockwork of magnetite veins and lenses, partly oxidised to hematite. Hosted in fine network fractured chloritic rhyolite with associated quartz veins, pods.
H-1095	Magnetite quartz, wall rock breccia. Minor limonitic pits on fractures.
H-1096	Magnetite quartz breccia. Massive pods and veinlets, hosted in rhyolite lava.
H-1097	Magnetite, quartz vein in albite>chlorite altered rhyolite lava. Hematite weathering on surface. Fractures with limonitic pits.
H-1098	Veins of magnetite, quartz, wall rock breccia in bleached, low density acid volcanic host.
H-1099	Quartz vein with sheared chlorite, magnetite, pyrite, limonitic pits on surfaces.
H-1100	Quartz veining in fragmented felsic volcanic host. Chlorite, albite, minor pyrite alteration. Common limonitic pits on quartz.

H-1251	Quartz veining in deformed chlorite, magnetite altered felsic volcanic with fragmented texture. Float.
H-1252	Corroded, part oxidised magnetite, quartz veining in chloritic volcanic rock with common limonite on surface.
H-1253	Massive magnetite veining with brecciated vein quartz, wall rock. Hosted in pink albitic rhyolite lava with stockwork of fine quartz veins.
H-1254	Volcanic, lithic fragment conglomerate with green chloritic matrix, trace pyrite (Upper Tyndall Group)
H-1255	Oxidised magnetite with broken vein quartz, common pits, limonitic surfaces.
H-1256	Magnetite, quartz breccia in veins
H-1257	Brecciated grey, green, white quartz with trace pyrite, in fissile cleaved rhyolitic volcanics.
H-1258	Thin veins of magnetite, quartz in rhyolite lava
H-1259	Quartz vein in rhyolite lava. Vein in part fibrous, vuggy, deformed.
H-1260	Vein quartz with chlorite, albite, magnetite. Partly brecciated, with some pits and limonite, hematite.
H-1261	Quartz veining with minor magnetite, chlorite, feldspar in brecciated texture. Hosted in rhyolite lava.
H-1262	Magnetite quartz, chlorite, minor sericite veining hosted in rhyolite lava.
H-1263	Stockwork veining of magnetite quartz, chlorite with limonite on surfaces.
H-1264	Grey, green, fine, weakly cleaved siliceous ?tuff with trace pyrite, galena.
H-1265	Vein quartz in sheared brecciated chloritic wall rock. Quartz in part fibrous. Probable fault zone
H-1266	A/A, wall rock shaley, chloritic
H-1267	A/A
H-1268	Green grey fine cherty ?tuff with blocky jointing.

Appendix 3

Geophysics

MEMORANDUM

to: P. Benjamin, Copper Mines of Tasmania

from: John Bishop, Mitre Geophysics

date: 18th February, 1997

Subject: **Evaluation of Previous Geophysical Surveys, E.L. 3/96.**

Introduction

Copper Mines of Tasmania (CMT) have recently gained tenure over E.L. 3/96, 'Lake Beatrice', which lies some 8kms to the north-east of Queenstown. The area has been previously explored by Goldfields (1970-85), CRAE (1986-87) and Aberfoyle (1988-1993).

The Mt Lyell Mining and Railway Co. Ltd (MLM&RCL) carried out IP and ground magnetic surveys in the 1970s and Aberfoyle carried out an EM survey in 1990. Ken Morrison, acting for CMT, has requested that I review this data.

This memorandum evalutes the disappointing results from both of the electrical surveys. It supercedes a memo to P.B. dated 29/10/96 which discussed the Utem only.

Survey Details

The Mt Lyell and Aberfoyle surveys were carried out on different, but overlapping, grids. The IP and magnetics were on the 'Beatrice' Grid which consisted of irregular, SE-NW trending lines, 150-250m apart. The EM used the 'Lake Beatrice' Grid, which is an idealised(?) grid using AMG east-west lines, 200m apart.

Gradient Array IP

This survey was carried out by Scintrex for the MLM&RCL in 1977 (Howland - Rose, 1977). The survey appears to have been properly executed and the data looks valid. Contour plans of apparent resistivity and chargeability were produced at 1:6,000 scale.

The sections of the chargeability and resistivity covering EL3/96 have been excised and enlarged to 1:5000 scale and included in this memorandum as Figures 1 and 2.

Ground Magnetics

This survey was carried out at the same time as the IP (Howland-Rose, 1977). The total field was measured with a proton precession magnetometer along the IP lines. Again, like the IP, the Scintrex plan has been enlarged to 1:5,000 scale (Figure 3).

Fixed Loop EM

Lamontagne Geophysics carried out a 26Hz Utem survey in January, 1990. Eight east-west lines, 2000ms long and 200m apart, were surveyed from two loops, recording the vertical component with a 50m station spacing. The loops were 1400m x 1000m with a common edge and readings were taken both inside and outside of the loop (i.e., each loop survey covered the area inside that loop plus the area covered by the adjacent loop).

The data was apparently plotted by Aberfoyle (and presumably also reduced by them -rather than by the contractor) with 1:5000 scale continuously normalised and point normalised profiles produced (Walker, 1990).

Interpretation.

Gradient Array IP

Minor chargeability highs, mostly to 20 msecs, were recorded within (what is now) E.L. 3/96 (Figure 1). One small section went to 25 msec (up to a maximum of ~33msec on the southern side of the lease boundary).

Howland-Rose rated these highs of "secondary priority" (area C 1), but he also considered them to be "formational". I would agree with the latter, but would not give them any consideration for follow up. The responses are neither high enough, nor consistent enough in shape and area to be of interest.

Resistivities were high (mostly >1000 ohm-m), as is to be expected over relatively unaltered Mt Read Volcanics (Figure 2). There was generally little correlation between the EM and resistivity lows, although a <1000 ohm-m low on line 1200mN does coincide with one clear EM response.

To summarise: nothing of interest was defined by the IP survey.

Ground Magnetics

The results show a series of mostly narrow highs (Figure 3). These have been correlated from line to line, but it is likely that the data has been under - sampled; ie, I expect that a closer line spacing would show a more 'poddy' nature to the magnetic highs. Nevertheless, there is sufficient information to help map the area and Howland-Rose has used the data, together with the IP and resistivity,to produce an interpretation plan (not included here).

The highs are mostly confined to the northern half of the grid and may reflect narrow veins within the Central Volcanics. The amplitudes, of a few hundreds of nanoteslas, do not signify large amounts of (what is presumably) magnetite.

The magnetics survey was probably originally carried out to assist the mapping rather than as a direct target detector. However, with the increased awareness of the region's potential for gold, these magnetic zones may have gained in significance. Since only shallow sources are indicated, some associated geochemical response would be required before further work was warranted.

Fixed loop EM

Aberfoyle's design of a two-loop survey with in-loop and out-of-loop readings means that the area has probably been effectively covered (except for any vertical near surface conductors of limited depth extent close to the centre of each loop). However I do not agree with Walker's (1990) assertion that the survey was capable of detecting a "Hellyer-sized target to depths of approximately 600m". Indeed, it would be surprising if it was capable of detecting a 20Mt orebody at half that depth, especially one like Hellyer with a limited cross-sectional area in longitudinal section or plan.

Figure 4 shows my interpretation of the Utem data. A number of small, weak responses were noted. These probably reflect rock-type boundaries and have been entered on to the plan as a possible aid to mapping. They are not considered to be prospective.

One possibly good conductor, at 6600N / 6725E, was picked from the loop 1 in-loop data, but was not confirmed by the loop 2 out-of-loop survey. Since a westerly dip was indicated in the loop 1 'response', this should have been easily detected with loop 2. It is presumed to be a spurious response, probably noise, but if genuine, a relatively shallow source, perhaps 50m, is indicated. (The IP gave no response here, although the resistivity gave a relative low of ~1000 ohm-m.)

My interpretation is somewhat different from Aberfoyle's. They interpreted a number of north-south trending, broad, late-time (ie, to channel #3 or #2) sinuous conductors extending across the survey area. Walker (1990) has suggested that these conductors reflect "formational or conductive masses contained within stratigraphic units".

However, I consider that these are noise rather than genuine conductors, despite the line to line continuity. These 'conductors' arise from plotting the generally low noise data at too-sensitive a scale (some of the late time in - loop channels are at 1cm = ~0.15% !) and the resulting peaks and troughs have been interpreted as conductors. (Formational features are commonly defined by surveys such as this. However they are invariably poor conductors, detectable only in the early time channels (e.g., #9 to ~#7). This survey is unusual in that few contacts or faults have been defined (in my re - evaluation).

Despite the differences in interpretation, I agree with Walker (1990) that no prospective conductors have been detected by the survey.

Conclusions and Recommendations

Neither the gradient array IP nor the Utem have produced any responses which could be attributed to massive sulphides. Any drilling for a massive sulphide deposit within the surveyed area (based on other exploration criteria or concepts) should assume that the IP and EM have effectively explored at least the top 200m, perhaps deeper.

Similarly, there is no good evidence for any mineralised structure such as the Henty-style gold deposit. However, it is possible that a narrow, steeply dipping dyke-like structure could have been missed by the gradient array IP survey, if the structure lay at a high angle to the imaginery line joining the two transmitting electrodes *. Similarly, it might well be unresponsive to an EM survey.

The magnetics indicates the presence of several relatively narrow veins of magnetite, which may have some potential(?) for associated gold mineralisation.

It is interesting to note that, with the two grids at ~30 degrees to each other, so too are the interpreted trends in the lithologies.

JRB

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* This would normally be the case; ie, gradient array transmitting electrodes are normally laid out at right angles to strike. However this geometry is most unsuitable for detecting thin, steeply bodies parallel to strike. Magnetic IP (MIP), where the electrodes are laid out parallel to strike, is more appropriate for this type of target.

References

Howland-Rose, A.W., 1977. A report on the gradient array reconnaissance electrical induced polarisation and total field magnetometer surveys over the Beatrice Grid, E.L. 10/69. Scintrex report Tas-035D for the MLM&RCL.

Walker, G.B., 1990. Utem survey, Lake Beatrice (EL 5/85). Aberfoyle technical report.

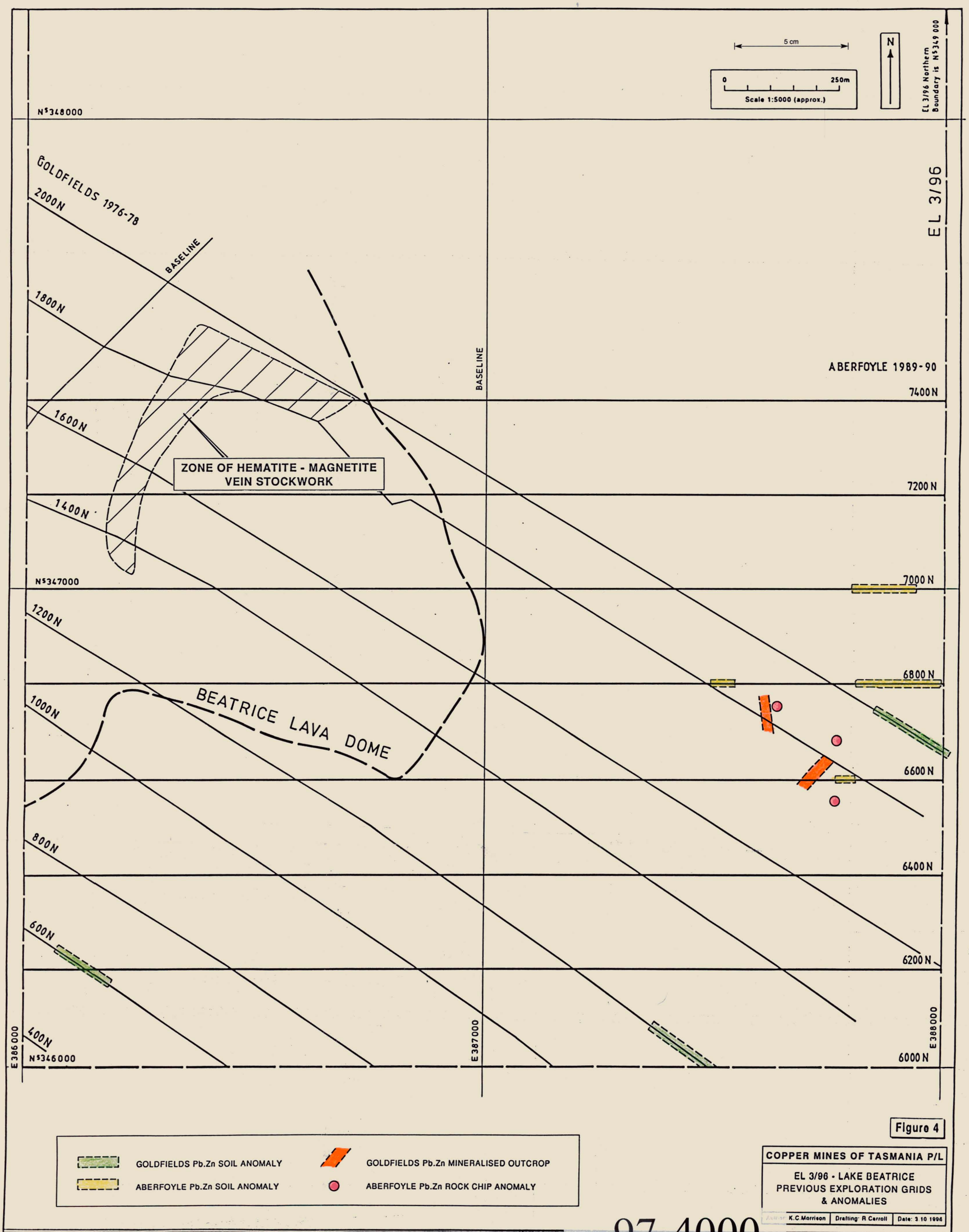
Attachments:

Figure 1. Scintrex gradient array IP survey of the Beatrice grid: Chargeability contours overlapping E.L. 3/96.

Figure 2. Scintrex gradient array IP survey of the Beatrice grid: Resistivity contours overlapping E.L. 3/96.

Figure 3. Scintrex total field ground magnetic survey of the Beatrice grid: contours overlapping E.L. 3/96.

Figure 4. Re-interpretation of the Utem survey over the Lake Beatrice grid, E.L. 5/85.



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