C.R.A. EXPLORATION PTY. LIMITED

FINAL REPORT
ANNABURROO EAST E.L. 1469
PINE CREEK BASIN, N.T..

Author : K.J. Wills

Submitted to : D.R. Kennedy

Copy to : N.T. Mines Branch

Date : June 1978

1. SUMMARY

Title to the Annaburroo East E.L. 1469 was granted on 25th July 1977. Exploration during the first year consisted of 1:25,000 scale geological mapping and subsequent soil sampling of prospective strata. Geochemical results for lead, zinc and copper were low. Four statistical anomalies have been delineated but they are not thought to represent base-metal mineralisation.

2. RECOMMENDATIONS

Our interest in the Annaburroo East E.L. 1469 should be terminated.

3. INTRODUCTION

C.R.A. Exploration applied for an Exploration Licence of 20.6 square miles in the Mt. Bundey vicinity of the Darwin 1:250,000 map sheet SD52-4 on 7th December, 1976. Location is shown on Plan NTd 755. Title was granted by the N.T. Administration on 25th July, 1977. Exploration activities up to 30th May, 1978 are described in this report.

4. MAPPING AND STRATIGRAPHY

E.L. 1469 was applied for after recognition of prospective pyritic shale horizons during a regional appraisal of the Pine Creek Basin in 1975 and 1976 (Wills, 1976).

Initial fieldwork consisted of 1:25,000 scale geological mapping. A geological map of the E.L. is shown in Plan NTd 756. With minor exceptions, our mapping agreed closely with that shown on the B.M.R. 1:63,000 Mt. Bundey sheet (D52 4 48) described by Dow and Pritchard (1958).

The stratigraphy established during C.R.A. Exploration's work is given below:-

CONTENTS

Formation		Symbol	Lithology
Finniss River Group	(Burrell Creek	Plfb	Greywacke, siltstone & shale
	(Mary River Beds	Plfm	Greywacke, siltstone, shale, chert and dolutite.
Golden Dyke Group	(Douglas Creek	Pldd	White-coated, silicified dolutite and chert.
	(Koolpin	Pldk	Pyritic shale with chert layers, lenses and nodules.
Masson Group	(George Creek	Plmg	Shale, siltstone, fine quartz sandstone, fine greywacke.
	(Mt. Masson Grit	Plmm	Shale, siltstone, quartz sandstone, grit and conglomerate.

Changes to the B.M.R. stratigraphy described by Walpole and Others, 1968 are:-

1. Recognition of a regional unconformity at the base of the Golden Dyke group. Evidence for this is present in E.L. 1469 where the contact between the Mt. Masson Grit and the George Creek Formation is transgressed by basal Golden Dyke Group sediments (Plan NTd 756).

2. Elevation of the Craig Creek Member (Dow and Pritchard, 1958) to formational status. This formation correlates with the Koolpin Formation of the South Alligator Valley and has been widely traced over the Pine Creek Basin.

The 1:25,000 geological mapping confirmed the presence of pyritic carbonaceous shale horizons in the Koolpin Formation. This is regarded as a potential host lithology for base metal deposits. The recognition of Acid tuff horizons higher in the Golden Dyke Group sequence (B.M.R. personal communication) suggests that the Douglas Creek Formation also has some base-metal potential. Accordingly, these two formations were chosen for follow up soil sampling.

5. SOIL SAMPLING

Soil sampling over prospective horizons was carried out during October 1977. Lines at an average of 1 kilometre spacing were chosen over areas of best outcrop. Minus 80 mesh, 'A' horizon soil samples were collected at 50 metre intervals along these lines. Results for lead, zinc and copper are plotted on Plan NTd 719.

Statistical analysis of results by the G.A.S. computer programme gave background concentrations for Pb, Zn and Cu of 20, 18 and 22 p.p.m. respectively. Considering the rugged topography and reasonable exposure, results for Pb, Zn and Cu do not suggest the presence of any mineralisation. Maximum assays for Pb, Zn and Cu are 76, 32 and 92 p.p.m. respectively.

Four statistical anomalies have been outlined and are shown on Plan NTd 719A. They are listed below:-

Number	Line	--- ppm --- Maximum Assay Pb	Zn	Cu	Length	Width
19.1	412	49	23	28	1 km	50m
19.2	413	47	14	28	1 km	50m
19.3	424	76	19	40	1 km	100m
19.4	425	76	32	92	8-9 km	200m

Orientation work over known occurrences in the Pine Creek Basin has shown that in areas covered by skeletal and scree slope soils, concentrations greater than 500 ppm lead over at least 50 metres are present over base metal mineralisation. With a maximum lead assay of 76 p.p.m. in this E.L., the chances of discovering economic mineralisation are remote.

Anomaly 19.4 represents a large area, but it corresponds exactly with the outcrop position of the Koolpin Formation, and is caused by background lithological differences rather than the presence of mineralisation. This anomaly illustrates the subtlety of the techniques employed; and is further evidence of the lack of any mineralisation in this E.L.

6. CONCLUSIONS

Although prospective host lithologies have been delineated in E.L. 1469, soil sampling over areas of rugged topography has shown that the chances of discovering economic base-metal mineralisation are very low.

K.J. WILLS

REFERENCES

Dow,D.B. and Pritchard, P.W.	1958	The geology of the Woolwonga, Mt. Bundey and Marrakai East areas, N.T. B.M.R. Record 1958/22.
Walpole, B.P. and Others	1968	Geology of the Katherine - Darwin Region, N.T. B.M.R. Bulletin No. 82.
Wills, K.J.	1976	Regional mapping of the Pine Creek Basin. Preliminary report C.R.A.E. Report 8709.

KEYWORDS

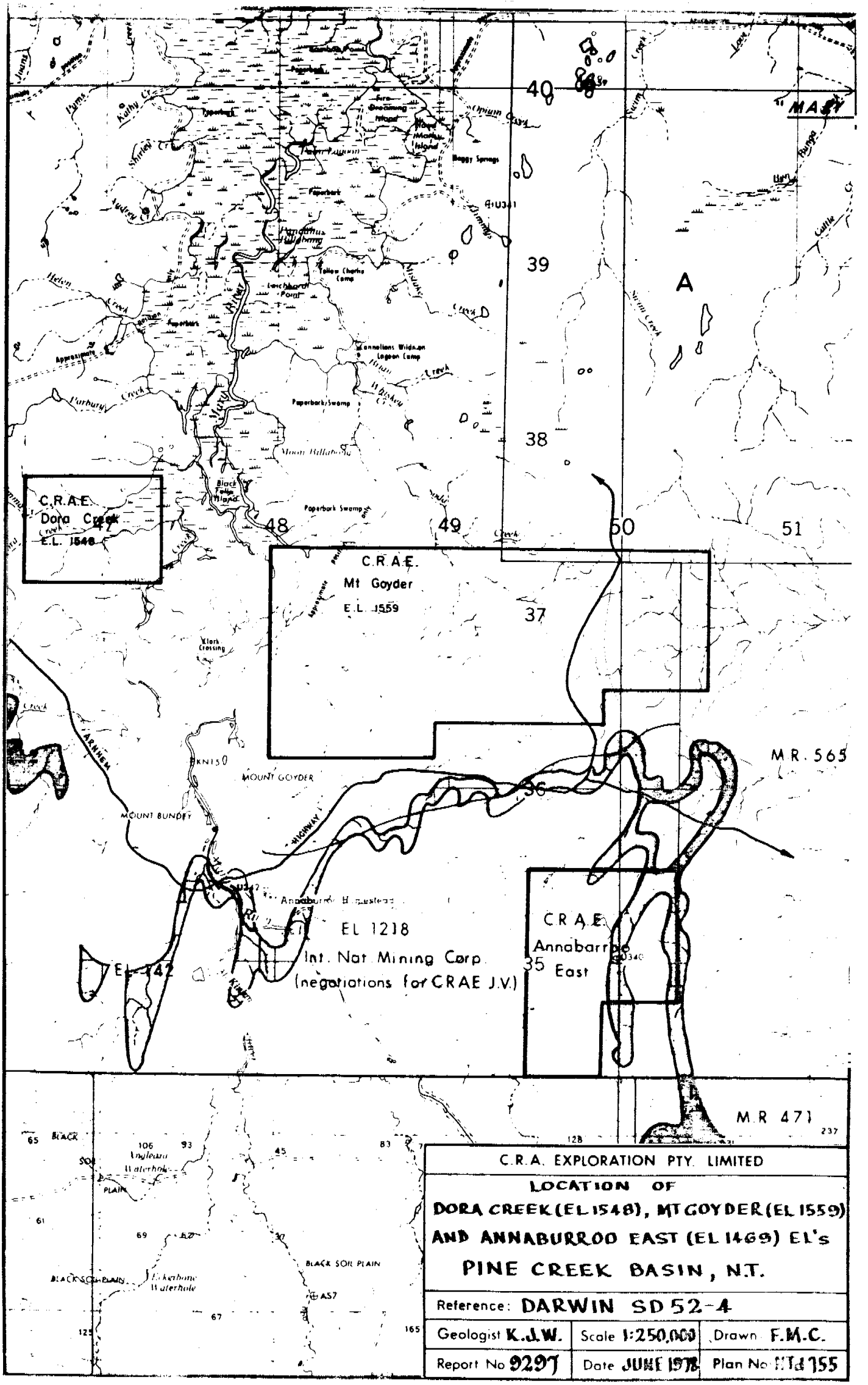
Lead, zinc, copper, regional mapping, soil sampling, Pine Creek Geosyncline.

LOCATION

Darwin	SD52-4	1:250,000 Map Sheet.

LIST OF PLANS

Plan No.	Title	Scale
NTd 755	Location of Dora Creek (EL 1548) Mt. Goyder (EL 1559) and Annaburroo East (EL 1469) E.L.'s, Pine Creek Basin, N.T.	1:250,000
NTd 756	Geological Map, Annaburroo East E.L. 1469, Pine Creek Basin, N.T.	1:25,000
NTd 719	Soil Geochemical Map 19, Annaburroo East Area, Pine Creek Basin, N.T.	1:25,000
NTd 719A	Location of Anomalies Annaburroo East E.L. 1469 Pine Creek Basin, N.T.	1:25,000



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LOCATION OF

DORA CREEK (EL 1548), MT GOYDER (EL 1559) AND ANNABURROO EAST (EL 1469) EL's

PINE CREEK BASIN, N.T.

Reference: DARWIN SD 52-4		
Geologist K.J.W.	Scale 1:250,000	Drawn F.M.C.
Report No 9297	Date JUNE 1978	Plan No [illegible]155

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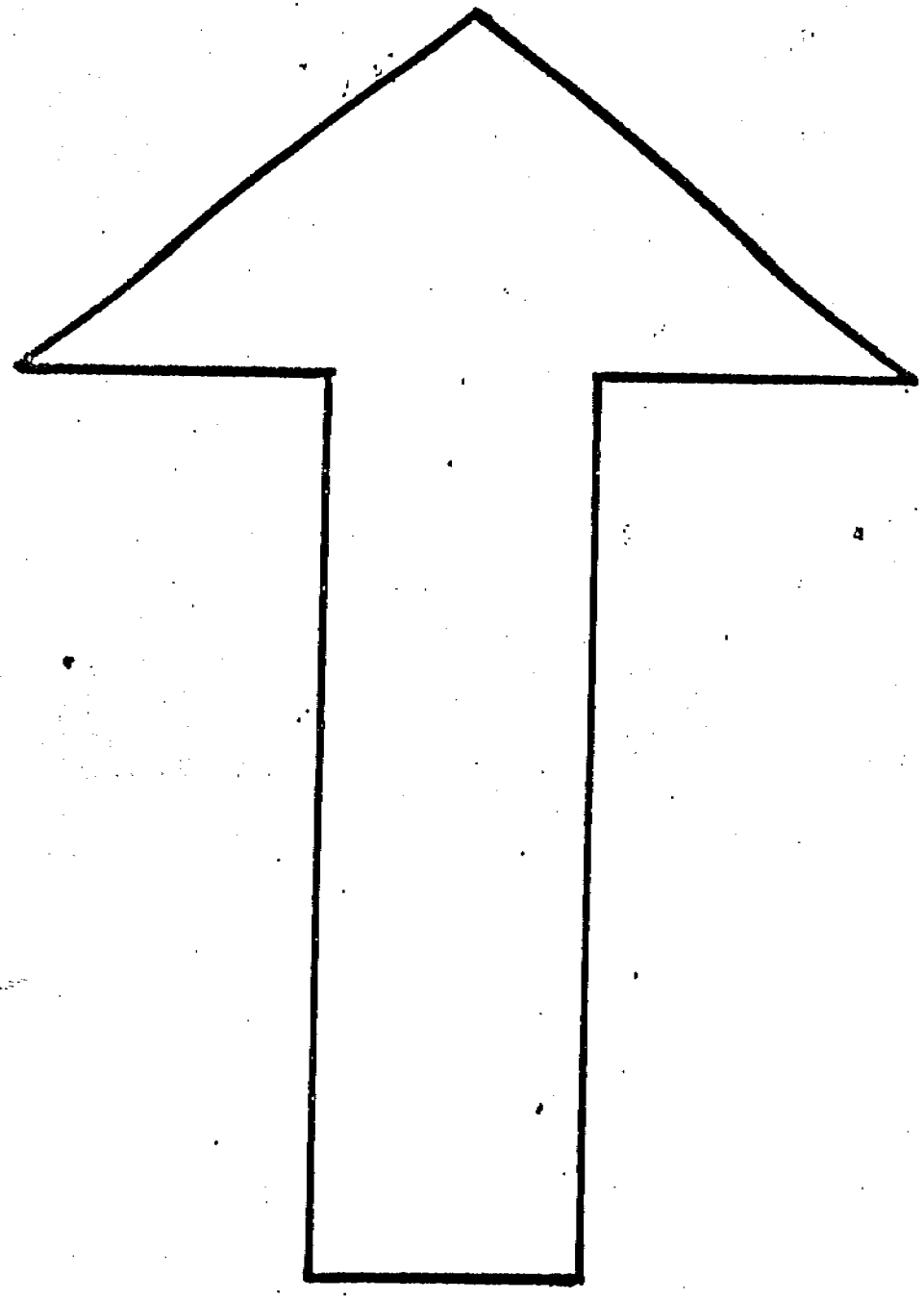
CONT. ON MICRO. NO. 2

PLAN NO. N.T.D. 756, 719A, 719.



12°55'

131°49'

131°53'

12°58'

13°00'

SCALE 1: 25.000

0 2 Km.

GEOLOGICAL INDEX

SYMBOL	FORMATION	LITHOLOGY
Plfm	MARY RIVER BEDS	GREYWACKE, SILTSTONE, CHERT, DOLUTITE.
Pldd	DOUGLAS CK.	WHITE-COATED SILICIFIED DOLUTITE, CHERT.
Pldk	KOOLPIN	PYRITIC SHALE WITH CHERT LAYERS, LENSES AND NODULES.
Plmg	GEORGE CK.	SHALE, SILTSTONE, FINE QUARTZ SANDSTONE, FINE GREYWACKE.
Plmm	MT MASSON GRIT	SHALE, SILTSTONE, QUARTZ SANDSTONE, GRIT & CONGLOMERATE.

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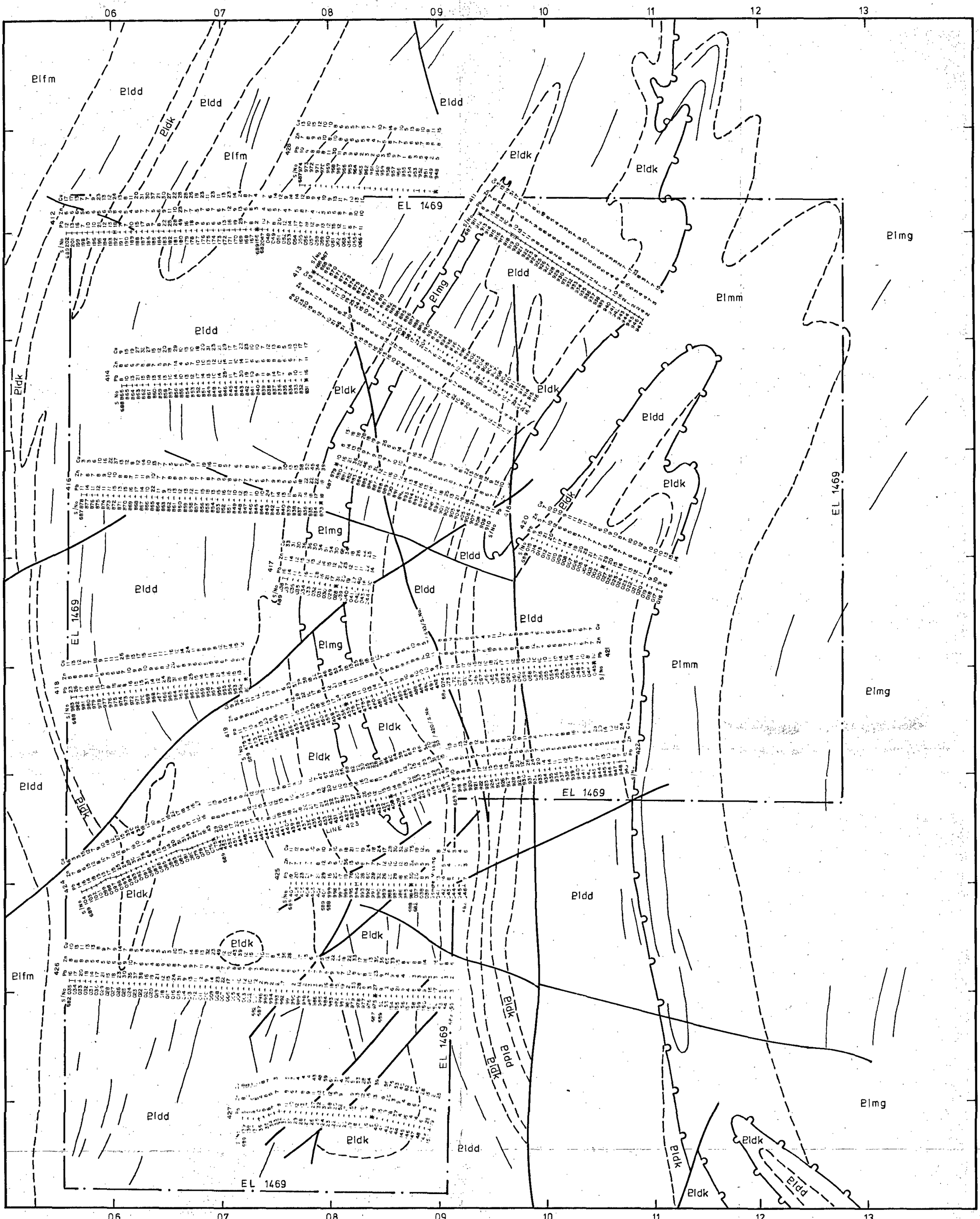
GEOLOGICAL MAP
ANNABURROO EAST EL 1469
PINE CREEK BASIN, N.T.

REFERENCE : MARY RIVER 1:100,000

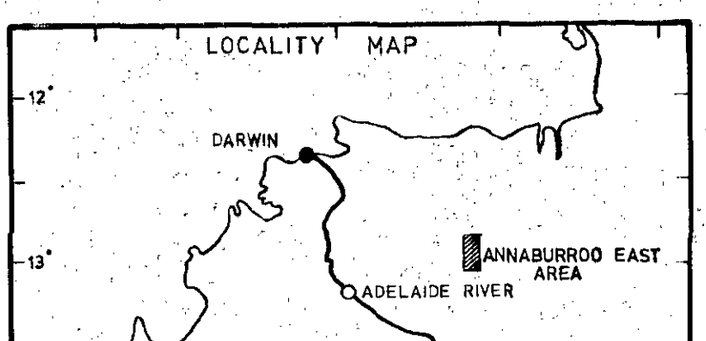
Geologist K. WILLS	Scale 1:25,000	Drawn W.S.P.
Report No 9297	Date JUNE, 1978	PLAN No. N.T.d. 756



SCALE 1 : 25000

0 1 2 3 Kilometres

LOCALITY MAP



NOTE :
THIS MAP FALLS WITHIN THE MARY RIVER & McKINLAY RIVER 1:100 000 NATIONAL MAPPING SHEET / SHEETS

GEOLOGICAL BOUNDARY
UNCONFORMITY
FAULT
BEDDING PLANE TRACE

COLOUR CODE FOR GEOCHEMICAL DATA

COLOUR DERWENT REE		PERCENTILE DIVISION	INTERVALS IN PPM Pb	Zn	Cu
45		0 - 16	0 - 12	0 - 8	0 - 10
38		16 - 50	13 - 20	9 - 18	11 - 22
27		50 - 86	21 - 40	19 - 60	23 - 54
25		86 - 93	41 - 60	61 - 100	55 - 75
15		93 - 97·5	61 - 120	101 - 200	76 - 110
9		97·5 - 100	>120	>200	>110

GEOLOGICAL INDEX

Pidk	Koolpin Formation	Pu-K	Cover Rocks - Carpentarian - Cretaceous
Pimg	George Creek Formation	Pig	Pine Creek Granites
Pimc	Maude Creek Formation	Pio	Zamu Complex Dolerites
Pimm	Mount Masson Grit	Plfb	Burrell Creek Formation
Pimn	Namoona Formation	Plfm	Mary River Beds
Pimh	Halfway Peak Formation	Pidd	Douglas Creek Formation

TRAVERSE DETAILS

- LINE DATUM POINT - STAR PICKET IN POSITION.
- SOIL SAMPLE SITE.
- ALLUVIAL SOIL SAMPLE SITE
- AUGER SAMPLES ARE INDICATED ON THE LINE.

Six digit Sample numbers : The last 3 digits are indicated at each sample site; The first 3 digits are indicated period -ically along the line.

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SOIL GEOCHEMICAL MAP 19

ANNABURROO EAST AREA

PINE CREEK BASIN

Geologist KW & IM	Scale 1:25 000	Drawn CROUCHER
Report No. 9297	Date APRIL 1978	Plan No N.T.d. 719

12°55'

13°00

EL 1469

19·1

19·2

19·3

19·4

Elfm

Eldd

Eldk

Elmg

Elmm

SCALE 1:25000

0 1 2 3 Kilometres

TRAVERSE DETAILS

* LINE DATUM POINT - STAR PICKET IN POSITION

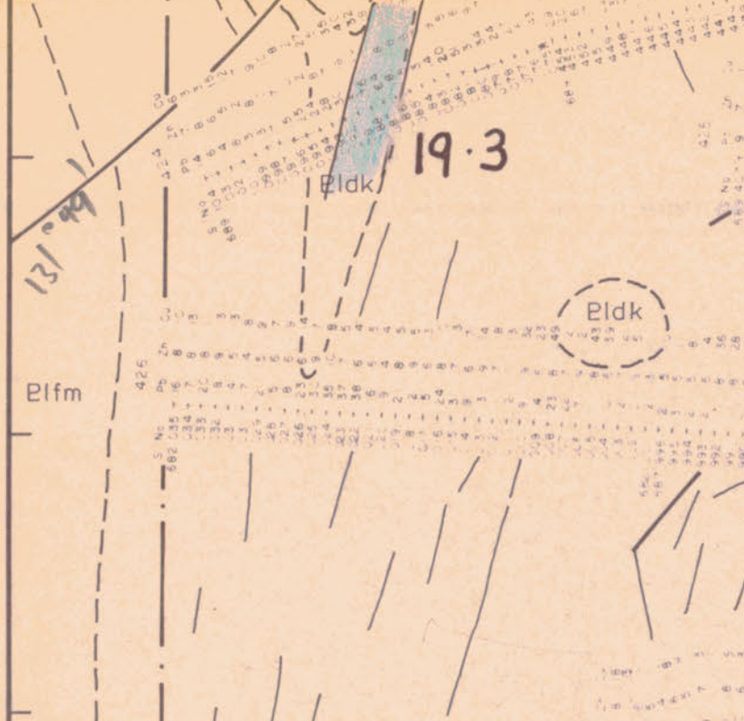
† SOIL SAMPLE SITE

HH ALLUVIAL SOIL SAMPLE SITE

AUGER SAMPLES ARE INDICATED ON THE LINE

Six digit Sample numbers. The last 3 digits are indicated at each sample site; the first 3 digits are indicated periodically along the line

LOCALITY MAP



THIS MAP FALLS WITHIN THE MARY RIVER & McKINLAY RIVER 1:100 000 NATIONAL MAPPING SHEET, SHEET

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38	15 - 50	13 - 20	9 - 18	11 - 22
27	50 - 85	21 - 40	19 - 60	23 - 54
25	86 - 93	41 - 60	61 - 100	55 - 75
15	93 - 97.5	61 - 120	101 - 200	76 - 110
9	97.5 - 100	>120	>200	>110

GEOLOGICAL INDEX

Eldk Koolpin Formation
Elmg George Creek Formation
Elmc Maude Creek Formation
Elmm Mount Masson Grit
Elmr Namoona Formation
Elmt Hotang Beds Formation
Pu-K Cover Rocks - Carpentarian - Cretaceous
Pig Pine Creek Granites
Plo Zamu Complex Dolerites
Elfb Burrell Creek Formation
Elfm Mary River Beds
Eldd Douglas Creek Formation

GEOLOGICAL BOUNDARY
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BEDDING PLANE TRACE

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SOIL GEOCHEMICAL MAP 19

ANNABURROO EAST AREA

PINE CREEK BASIN

Geologist KW & IM	Scale 1:25 000	Drawn CROUCHER
Report No 9297	Date APRIL 1978	Plan No N.T.d. 719A