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PASMINCO EXPLORATION

HEAZLEWOOD EL 23/96

**ANNUAL AND FINAL REPORT
FOR THE PERIOD ENDING OCTOBER 1997**

Author: G B Weber
F C Murphy

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Submitted To: Regional Exploration Manager, Tasmania

Copies To: Tasmanian Development and Resource Industry
Safety and Mines Division, Hobart
Pasminco Exploration, Melbourne
Pasminco Exploration, Rosebery

Submitted By: 

Accepted By: 

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1. SUMMARY

During 1996 Pasminco Exploration applied for 241 square kilometres in the north west sector of the Dundas Trough in a belt stretching north east from the Meredith Granite just to the east of the Arthur lineament.

Pasminco exploration philosophy was that the area was prospective for high grade Sn-Cu or Ni - PGE - Cu mineralisation associated with buried sectors of the Meredith Granite (skarns) and/or mineralisation associated with partially dismembered mafic/ultramafic intrusive complexes which outcrop within the licence area.

During the first year of tenure Pasminco prepared a GIS review of prior exploration. During 1997 there was a review of all Pasminco Exploration tenements in Tasmania and although a decision was made to continue exploration in Tasmania, the titles around the northern edge of the Meredith Granite did not fit the new exploration philosophy and are to be relinquished.

2. INTRODUCTION

This report details exploration undertaken on the Heazlewood EL 23/93 title between October 1996 and October 1997. The licence area forms a continuous area with four other licence areas from Waratah in the east to Savage River in the west covering the northern margin of the Meredith Granite and the north west sector of the Dundas Trough which contains a sequence metasediments, metavolcanics and mafic/ ultramafic complexes.

The area has experienced a long history of small scale mining associated with both the metasedimentary and mafic/ultramafic complexes. The philosophy was to explore for Zn (+/- Pb, Ag, Au) hydrous rich skarns developed in carbonate units and mafic volcanics from proximal associations with the Meredith Granite. Zinc rich (+/- Pb, Ag, Au) veins and stockwork mineralisation in structural settings related to granite emplacement. Further exploration targets include distal hydrous tin bearing skarns developed in dolomite beds, Cu bearing vein stockwork zones within sedimentary sequences and Ni/PGE/Cu mineralisation associated with the Heazlewood ultramafic complex.

Access is provided by the Waratah Road in the south west and by the Murchison Highway in the north east area. A network of tracks helps access in these areas but the central area is only accessed by foot.

3. LAND TENURE

Heazlewood EL 23/96 covers an area of 241 square kilometres and was granted in early November 1996.

The Land Tenure (Fig 2) shows the Deep Gully RAP in the north east, the Savage River RAP in the remote central portion of the title and the Heazlewood RAP just south of the Waratah Road. The rest of the title is covered by various categories of forest lands with only approximately one square kilometre of private property in the north east corner of the licence.

4. GEOLOGY

4.1 Introduction

The geology of the Heazlewood licence area consists of a series of sedimentary and intrusive units which occur on the east side of the Arthur lineament and consists essentially of Cambrian rocks, within the northern portion of the Dundas Trough (Maher 1994). Within this portion of the Dundas Trough two distinctive mafic - ultramafic complexes occur which are the Mount Stewart and Heazlewood River Complexes.

4.2 Metasedimentary Units

The basal units of the north west Dundas Trough are considered to be metasediments. Comstaff EL 5/63 June (1982) thought these metasediments could be corelated to the Eocambrian - Cambrian metasediments of the Crimson Creek Formation and Success Creek Formation, called the Bischoff Series. Other authors have not made these divisions.

These metasediments consist of interbedded metasiltstones with more massive, thicker bedded quartzite, occasional black shale units. It is thought that basic to intermediate rocks occur within this unit and may be extrusive in nature and form portion of the unit.

On the Godkin area (Groves 1965) limestones are reported associated with metasediments, and a large mass of basic and intermediate igneous rocks occur in contact with untrabasic rocks to the west. There is also the indications of a syenitic intrusive being present.

4.3 Ultramafic Complexes

These include the Heazlewood River (HRC) and Mount Stewart Complexes (MSC) reported in Maher (1994). He referred to earlier studies by Peak and Keays (1990) on these complexes and is quoted below:

Geology of the HRC

Recent accounts of the geology of the HRC were summarised by Peck and Keays (1990) that summary is presented below.

- The largest (50sq km) and least dismembered ultramafic complex in Tasmania.
- Initially emplaced during the Middle Cambrian and subsequent re-emplaced during an episode of compressional deformation during the Devonian (Rubenack, 1973; Brown, 1986).
- Consists of 5km (max.) of layered ultramafic cumulates and cross cutting gabbroic rocks and 3km (max.) of overlying low-Ti tholeiitic basalt and boninite (Brown, 1986).

- Hosts a tonalite complex and probable tectonic melanges (Creenaune, 1980).
- Cumulate layering is well developed in many parts of the complex and trends north east with near vertical dips (young to the east).
- Variably serpentinised.
- Cut by many faults and shear zones which trend north west, north and north east (parallel to layering).
- A major north south fault divides the complex into western and eastern sections (Peck & Keays, 1990).

Western Cumulates

The western section represents the product of two major cycles. The earliest cycle produced a sequence:

Nineteen Mile Creek dunite

Fenton's Spur peridotite

Cawdry's Hill pyroxenite

The subsequent cycle produced:

Gabbro Hill Plagioclase pyroxenite

Both cycles show an upward (easterly) increase in orthopyroxene at the expense of olivine. Dunite and harzburgite are the predominant rock types at the base of the succession. Orthopyroxenite and plagioclase websterite are most common at intermediate levels, and postcumulus clinopyroxene and plagioclase occur at the top of both successions.

A strong Fe enrichment trend in spinel composition over the lowermost 3km of the system suggests that the western section has evolved as a closed system. On a finer scale, sharp reversals in spinel composition, and well developed rhythmic layering is consistent with several periods of magma addition.

Eastern Cumulates

By contrast, the large numbers of compositional reversals and absence of protracted fractional trends in spinel composition suggests the eastern succession evolved as an open system.

The nature of the contacts between the Nineteen Mile Creek dunite sequence and Bronzite Hill orthopyroxenite sequence with the Purcell's Plain Iherzolite sequence is unclear. The Bronzite Hill sequence is correlated with the orthopyroxenite-rich parts of the Nineteen Mile Creek sequence. However, neither the Purcell's Plain sequence nor the Brassey Hill harzburgite sequence can be correlated with the cumulate successions of the western section.

The Purcell's Plain Iherzolite comprises a basal dunite-harzburgite succession and an overlying rhythmically layering plagioclase dunite-plagioclase peridotite succession. It is conformably overlaid by the Brassey Hill sequence which is made

up of several cyclic units comprising dunite (base), poikilitic harzburgite, olivine orthopyroxenite, and orthopyroxenite (top).

Mafic Dykes

Three suites of dykes are recognised within the cumulate sequences:

1. fine grained gabbro
2. medium grained leucogabbro & anorthosite
3. coarse grained & pagmetitic gabbro and plagioclase pyroxenite

Dykes are generally less than one metre thick and tabular (type i - up to 200m thick). Dykes are common in the eastern section and intrude the Gabbro Hill, Caudry's Hill, and Brassey Hill sequences in the western sector.

Volcanics

Two distinctive volcanic suites within the HRC have been identified including:

Low Ti tholiitic basalt; and

High Mg andesite - analogous to modern boninite lava.

Contacts between the volcanic rocks and cumulate sequences are assumed to be faulted - although most contacts are not well exposed, and most faults are inferred.

5. PROSPECTIVITY REVIEW

5.1 Background

Pasminco Exploration undertook a prospectivity assessment of its ground holdings in Western Tasmania during the past 12 months (Murphy 1997). The review employed a GIS (Mapinfo) analysis of exploration data which for the Heazlewood EL, was sourced from open file data and an existing Pasminco database held in Access. Both data sets required substantial effort to validate and were then combined with the open file compilation. The integration of the various data sets formed the basis for largely geochemically-oriented metallogenic modelling and target area definition. Analysis was performed on Cu, Pb and Zn distributions as these elements provide the most coherent regional coverage. In essence, this identifies existing anomalies and significant gaps in coverage to date on the Heazlewood tenement. Layers incorporated in the GIS are:

- Modified 1:25,000 geology and mineral occurrences (Fig 3). The geology was coded according to lithotypes eg. DGE = Dundas Group Equivalent, CVC = Central Volcanic Sequence.
- Stream sediment sampling and drainage (Fig 4).
- Extant grids and access (Fig 5).
- Soil sampling and grids (Fig 6).
- Rock chip sampling and drill collars (Fig 7).

5.2 Point Data Analysis

- The stream sediment sample points invariably plot off stream lines (Fig 4) so catchment analysis was not deemed appropriate. In any case, where there is a high sample density the points approximate to small catchment areas. The data points were standardised and leveled accordingly to the underlying 1:25,000 geology polygon that contains them. Analysis was then made of the lithotype populations (eg. All CVC hosted samples) with statistical analysis performed on the log distributions and z-scores ($(x - \text{mean}(x)) / \text{st dev}(x)$) calculated for each point. The data was subsequently imaged using a search radius of 500m and grid cell size of 50m.
- The soil samples were standardised and leveled according to soil profile (A, B, C and 'unknown') and to major lithotype code of the underlying geology polygon, using the same statistical manipulations as with the stream data. The data was then imaged using a search radius of 100m and a grid cell size of 50m.
- The rock chip data was gridded in the same way as the soil data.

- Each of the 'surface' data sets (stream, soil and rock ship) were imaged for each of the three elements and displayed as percentile RGB images. The images are 'hot to cold' colour coded according to the 99th, 98th, 95th, 90th, 80th, 60th and 40th percentile of the z-score distribution.
- The high z-scores values for each element were threshold as a composite RGB image to show levels of coincident anomalies. These are colour coded according to Red=Pb, Green=Cu, Blue=Zn, Yellow=Pb+Cu, Cyan=Zn+Cu, Magneta=Pb+Zn, White=Cu+Pb+Zn.

5.3 Multi-element Distributions

Preliminary observations can only be made at this stage, ie. Qualitative statements that require quantitative analysis of the nature and robustness of the anomalies. They provide pointers for future work programs. The following observations are drawn from the data:

Stream Sediment Images (Figs 8, 9, 10, 11)

- There is very little coverage by stream sediment sampling.
- It is only in the south eastern segment of the licence that any stream sediment anomalies occur and these may be associated with the ultramafic complexes. However, it is in the area of the Whyte River, Bells Reward and Godkin Prospect area.
- There is little to be seen from this data.

Soil Images (Figs 12, 13, 14, 15)

- only three of seven small grids have had the data located and have been put into the GIS system.
- This has meant only a very small area of the licence is covered.
- Only very small anomalous zones are present.
- No interpretation can be made.

Rock Chip Images (Figs 16, 17, 18, 19)

- Only scattered rock results are available in the GIS concentrated in the south western sector.
- Only copper shows anomalous values which may be associated with the ultramafic complexes.
- The data does not highlight any trends.

Metallogenic Modelling (Fig 20)

The geochemical data does not allow an evaluation by this technique, as there is clearly an inadequate data base.

6. RECOMMENDATIONS & CONCLUSIONS

The GIS study has shown that there is little prior exploration data over this licence area and it has been unable to delineate any prospective trends.

Because of the change of focus in exploration by Pasminco Tasmania it is recommended that this area is relinquished.

7. EXPENDITURE STATEMENT

Total expenditure for all work undertaken by Pasminco Exploration within Heazlewood EL 23/96 for the twelve month period to the end of September 1997 was \$13,965. A detailed expenditure statement is given below.

Personnel	2,526
Travel and Accommodation	
Geological Consultants	
Geochemical Consultants & Assays	
Geophysical Surveys & Consultants	
Other Consultants	
Drilling	
Stores & Supplies	
Vehicles Plant & Equipment	
Land	4,308
Computing	
Office	5,862
Administration Fee 10%	1,269
Total Tenement Expenditure	\$13,965

8. REFERENCES

Burnett C.F., & Martin E.L., 1989 Geology and Mineral Resources of Tasmania. Special Publication No 15, Geological Society of Australia Incorporated.

Groves D.I., 1965 Tasmanian Department of Mines. Technical Report No 10, Heazlewood Area.

Jones C.M., 1982 Constaff Pty Ltd. Interim Report on EL 5/63 Area One Arthur River, Tasmanian Mines Department File No 83-1902

Maher S., 1994 EL 36/92 Heazlewood, Tasmania Annual Report for the Period Ending 5 March 1994. CRA Exploration Pty Ltd Report No19566.

Peek D.C., & Keays R.R., 1990 Geology, Geochemistry and Origin of Platinum - Group Element - Chrome Occurrences in the Heazlewood River Complex, Tasmania Economic Geology V85 pp 765-793.

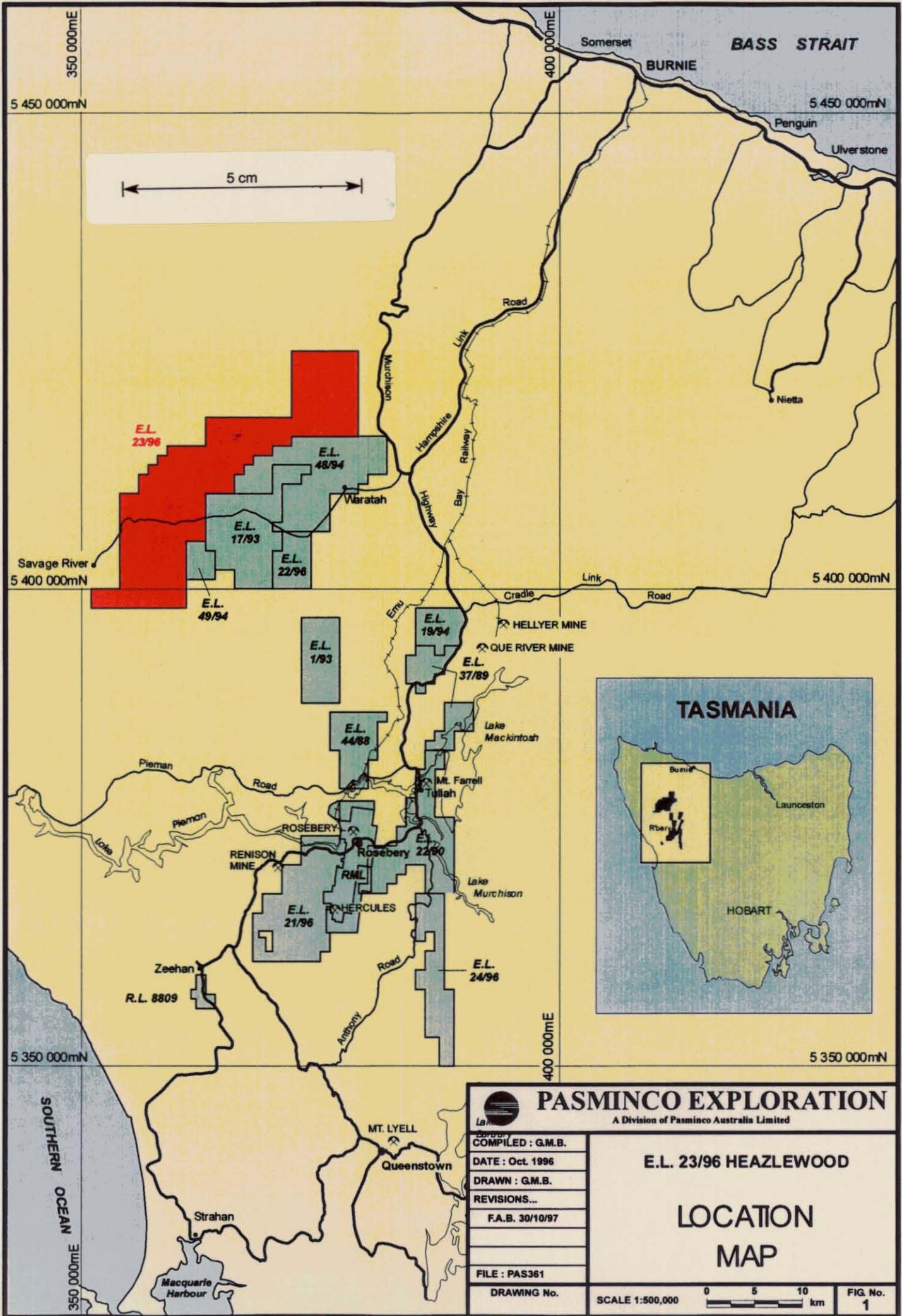
9. KEYWORDS & LOCALITY**KEYWORDS**

ZINC, LEAD, COPPER, PGE, TIN, ULTRAMAFIC, STRUCTURE, SLARN,
GEOCHEMISTRY, GRANITE, GIS, DUNDAS TROUGH

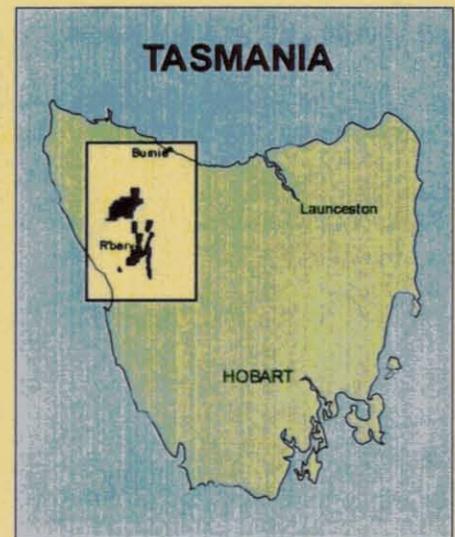
LOCATION

BURNIE SK 55-3

SAVAGE RIVER, LUTNA, MEREDITH GRANITE, ARTHUR LINEAMENT



 PASMINCO EXPLORATION A Division of Pasmenco Australia Limited	
COMPILERS : G.M.B. DATE : Oct. 1996 DRAWN : G.M.B. REVISIONS... F.A.B. 30/10/97	
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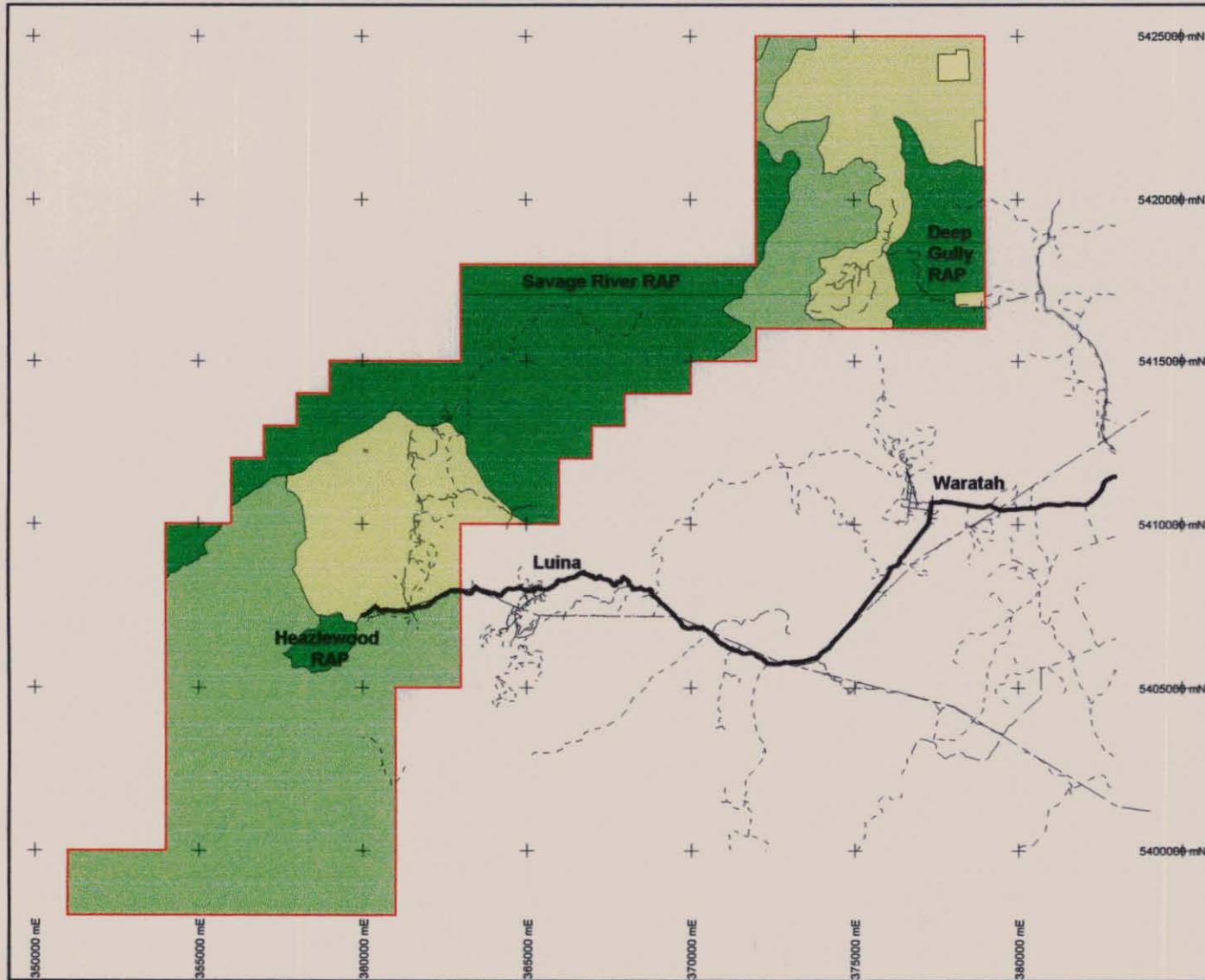
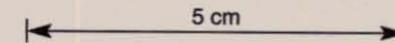




PAMINCO EXPLORATION

**Figure 2:
EL 23/96 - Heazlewood,
Land Tenure Map.**

Scale = 1:200,000



LAND TENURE

-  EL 22/96 - Wombat Flat
-  State Forest - Multiple Use Forest Land
-  Crown Land - Deferred Forest Land
-  Recommended Area for Protection
-  Mining Leases.
-  Private Property

200018

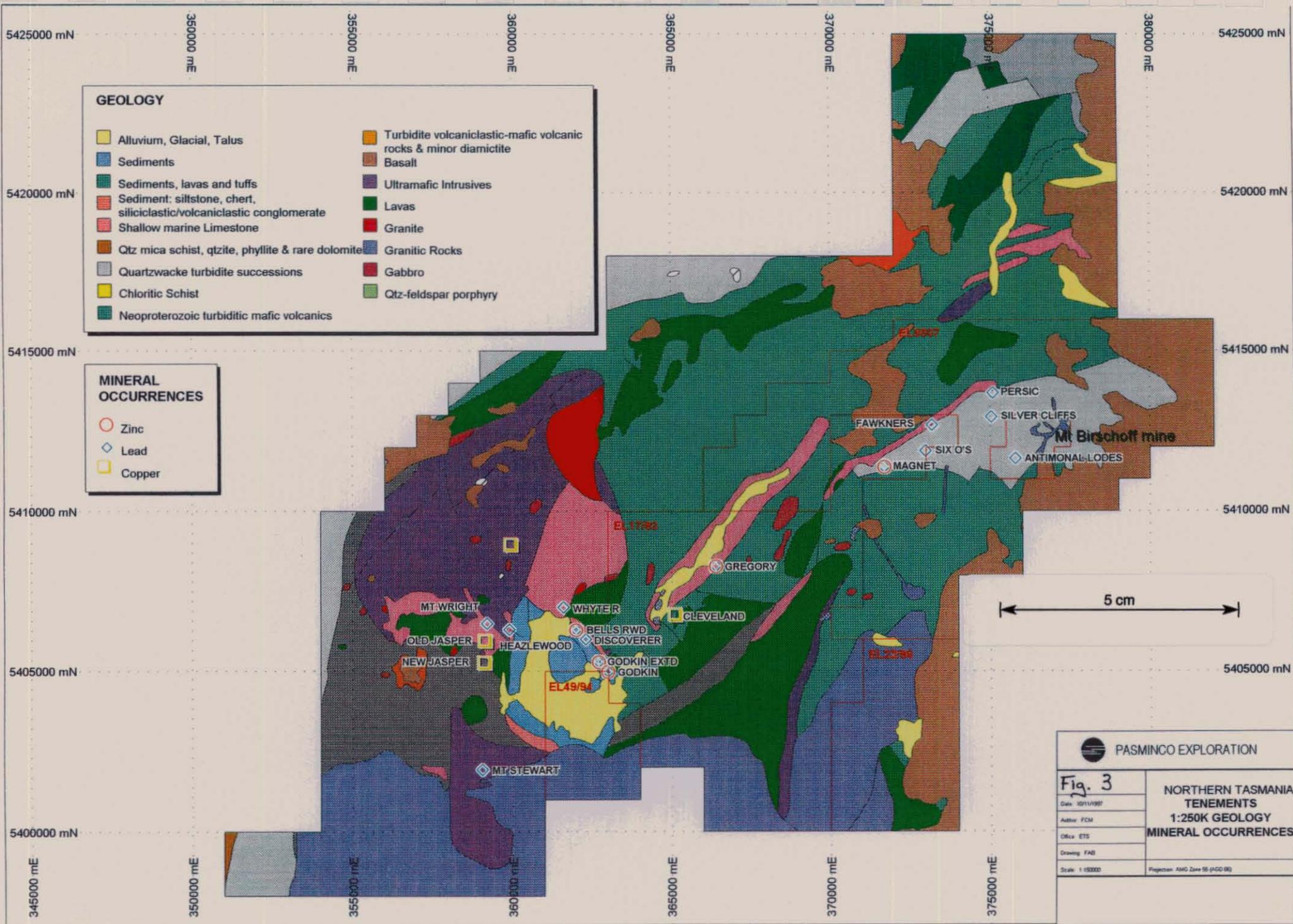
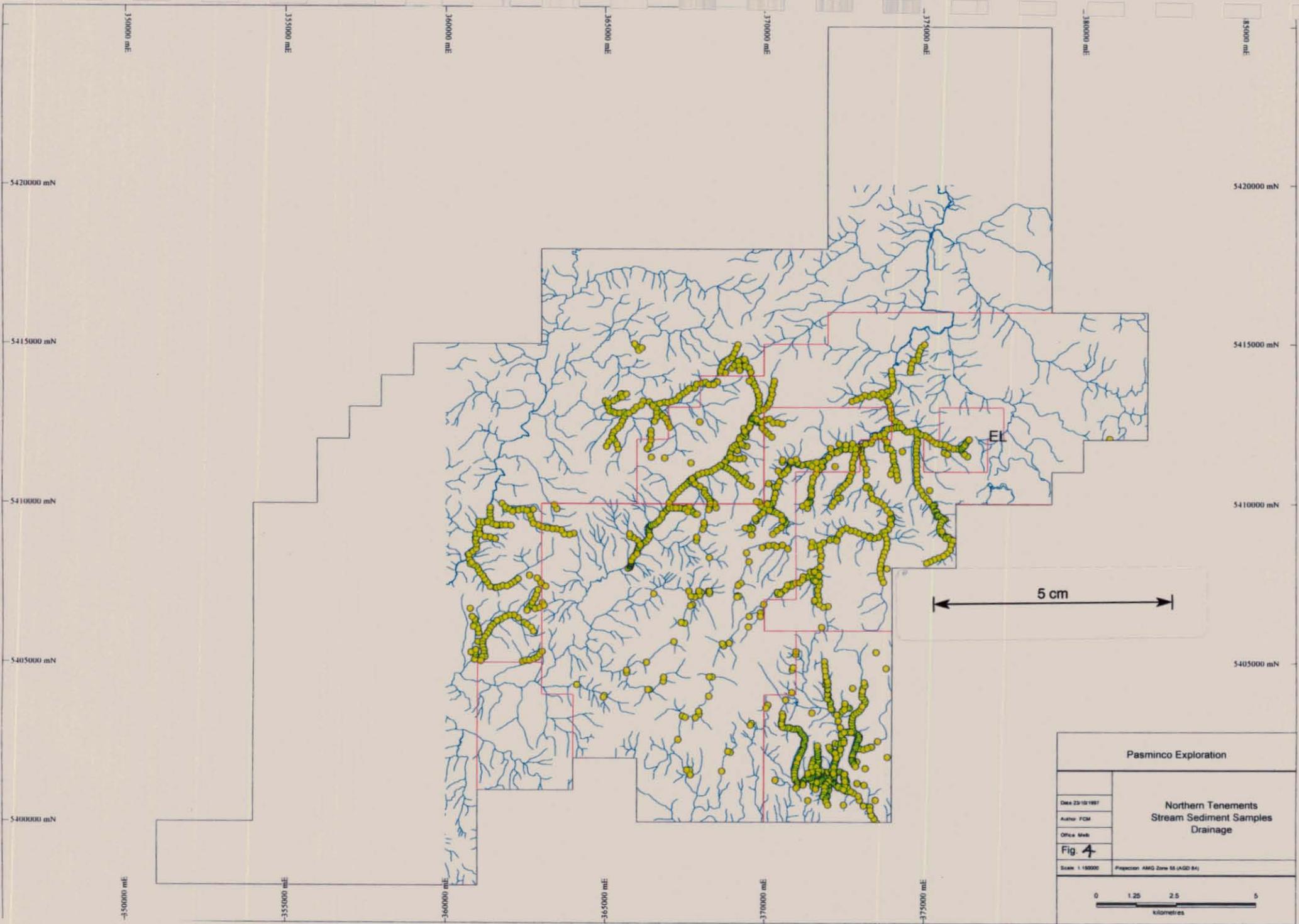


Fig. 3	
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Office: ETS	MINERAL OCCURRENCES
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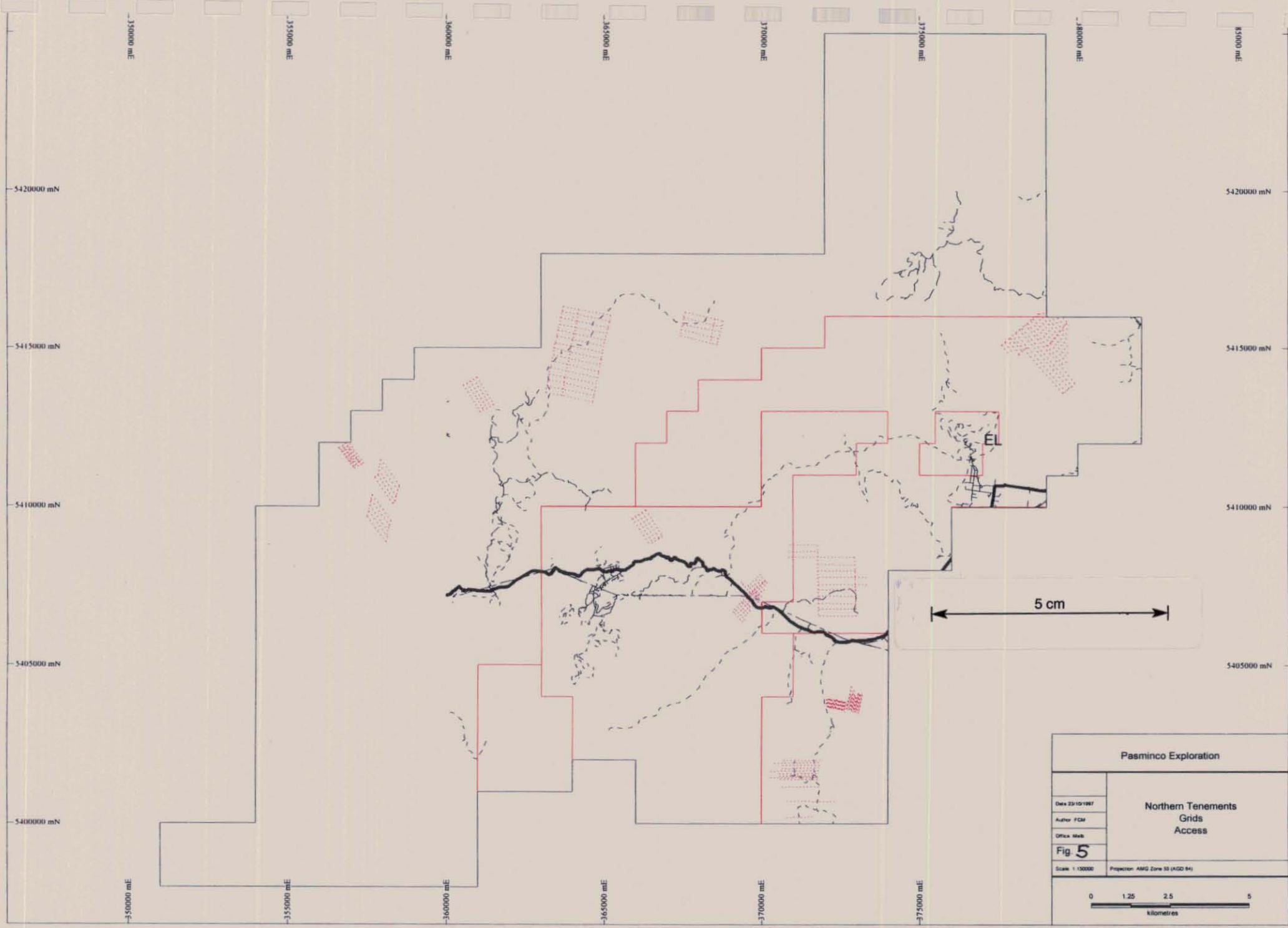
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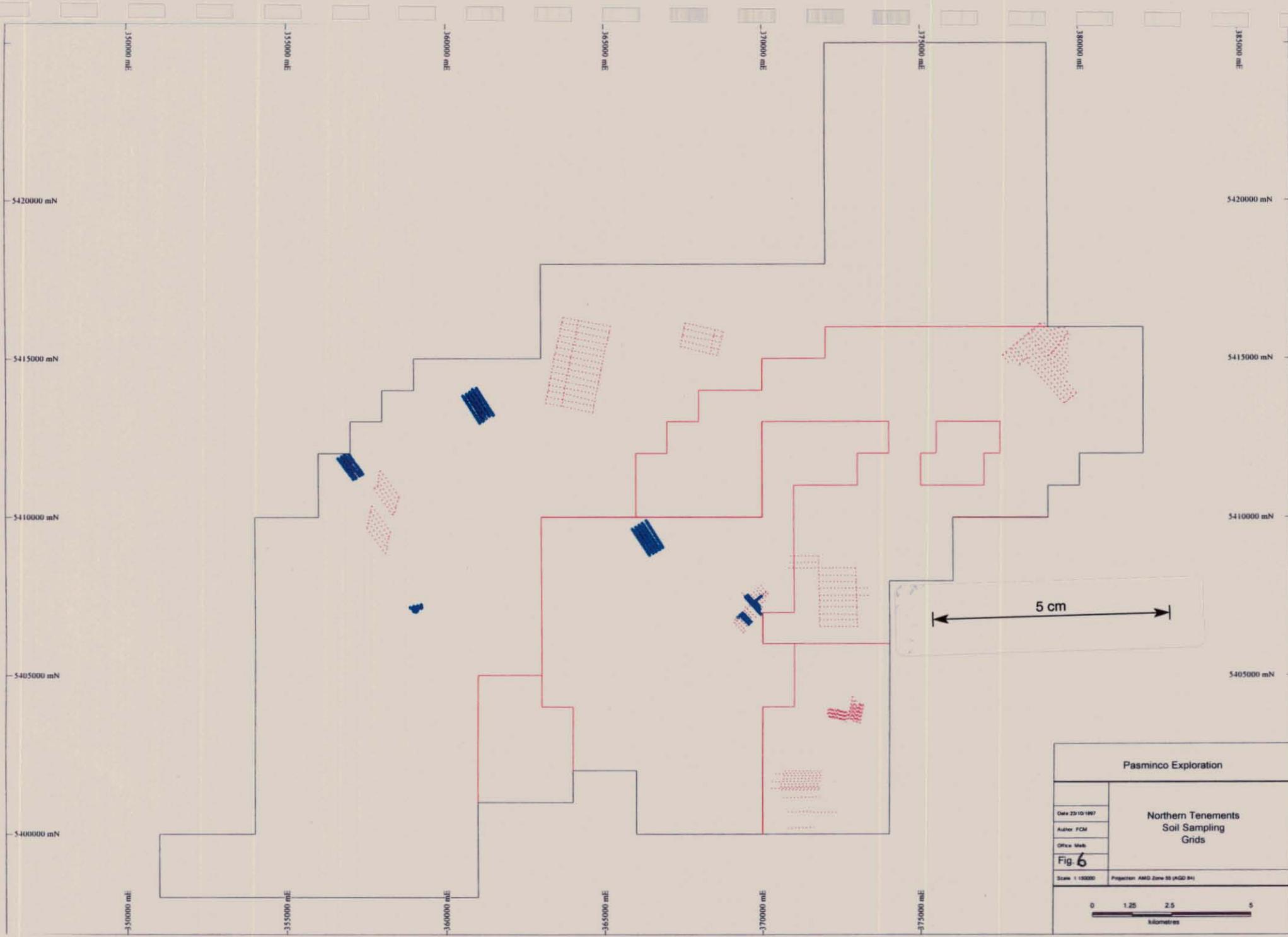
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Date 23/10/1997	Northern Tenements Stream Sediment Samples Drainage
Author FCM	
Office 616	
Scale 1:15000	Projection AMG Zone 55 (AGD 84)

269020

Fig. 4

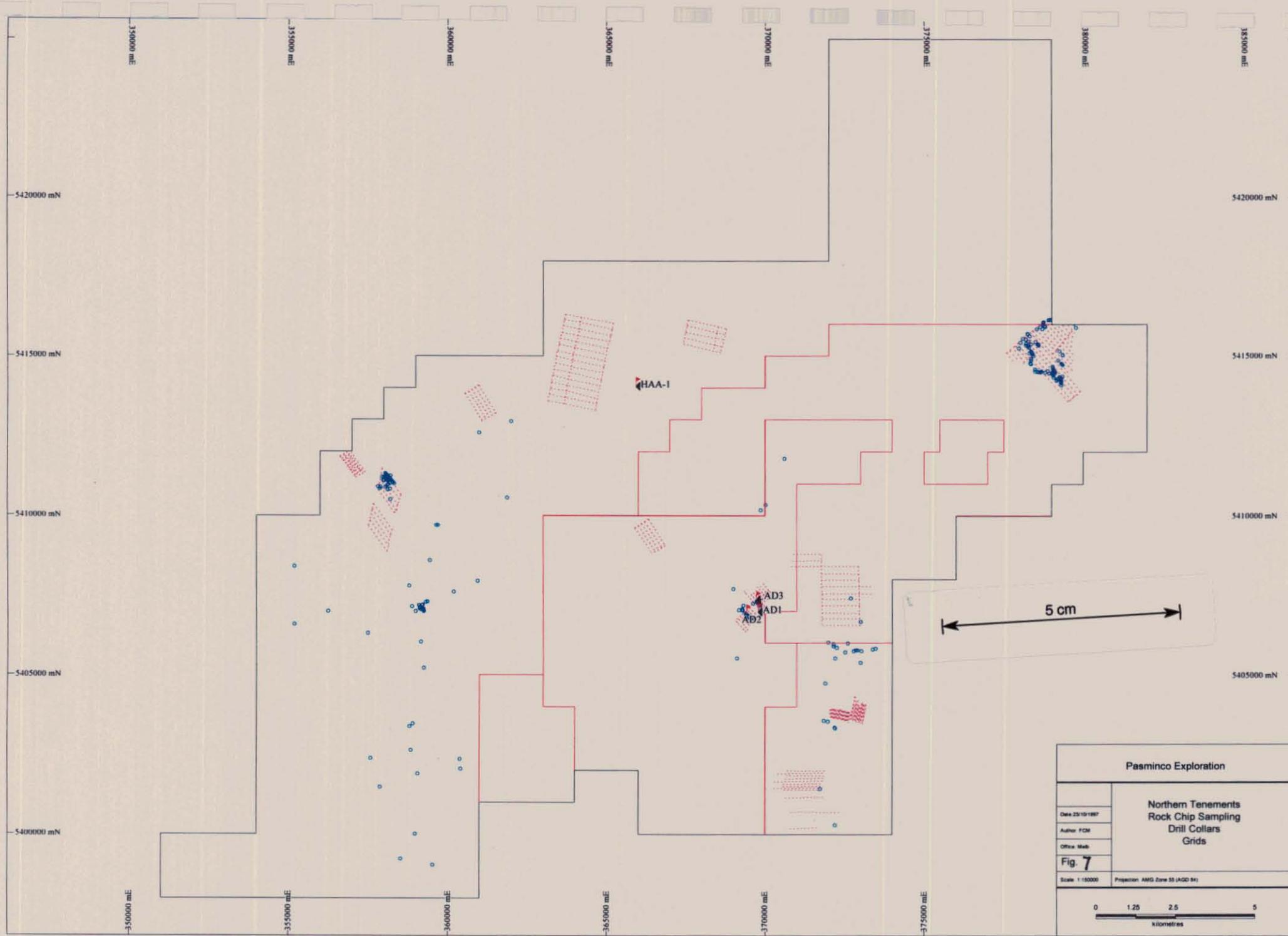


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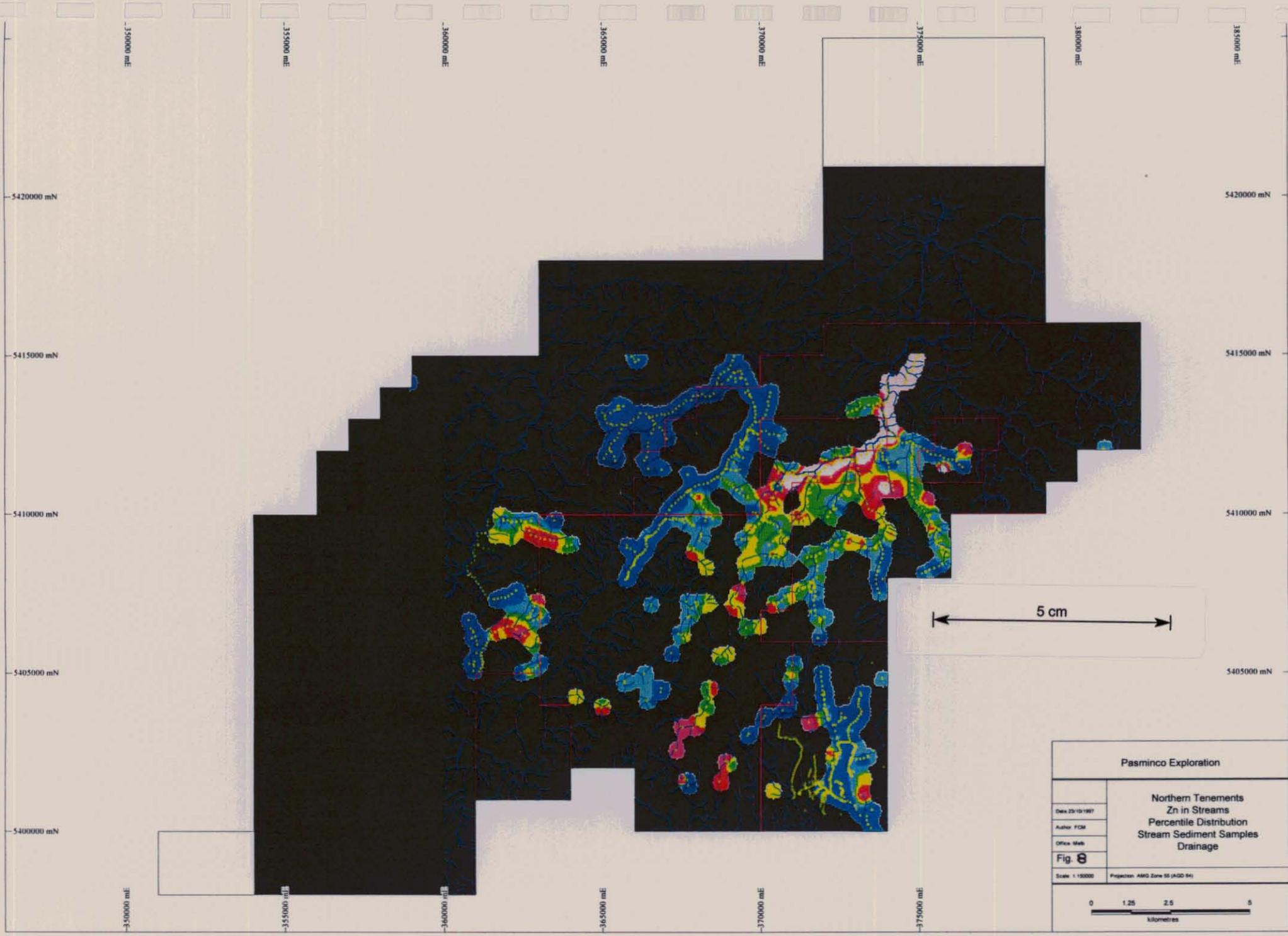
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Office: Meib	
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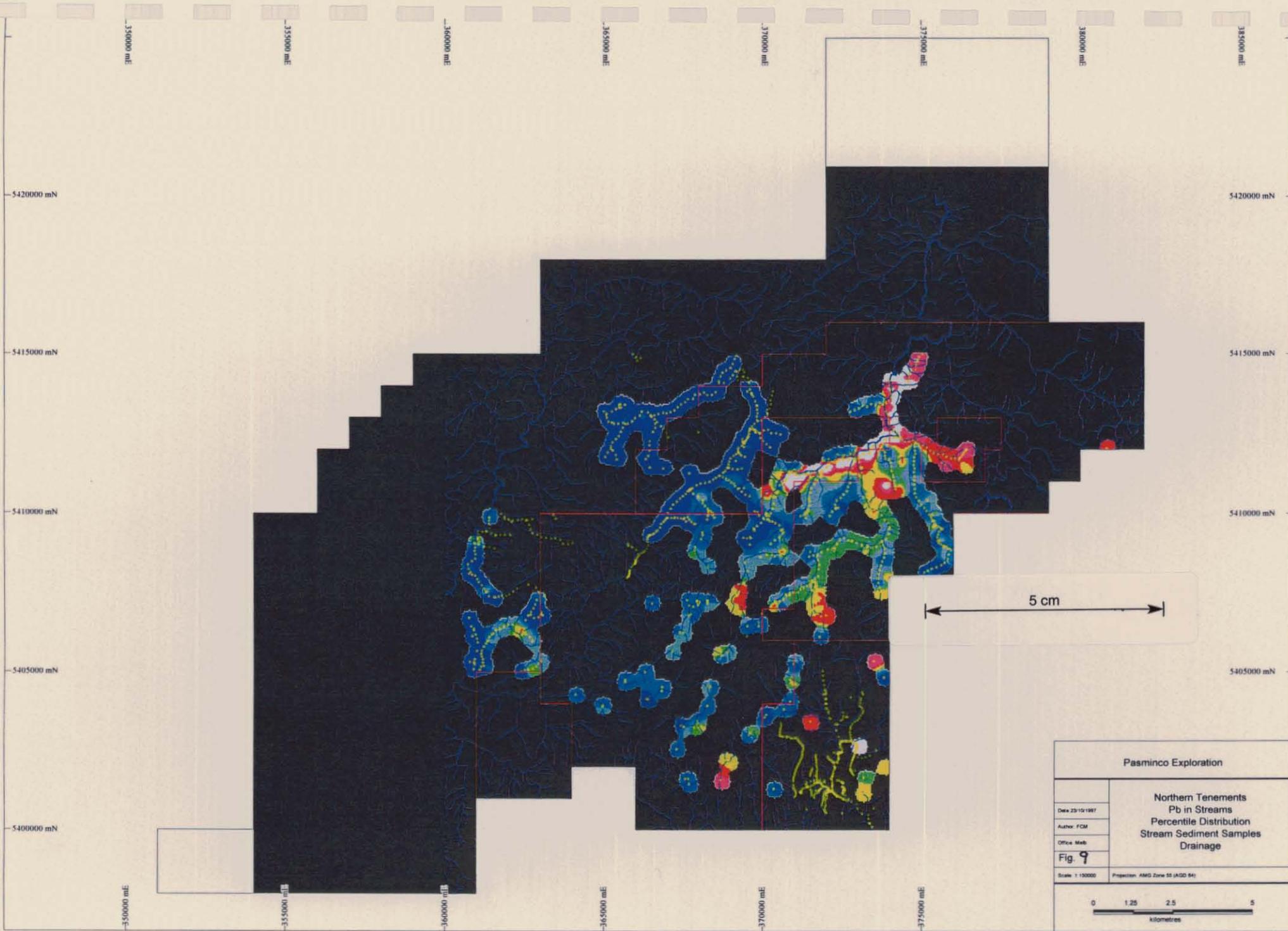
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269023



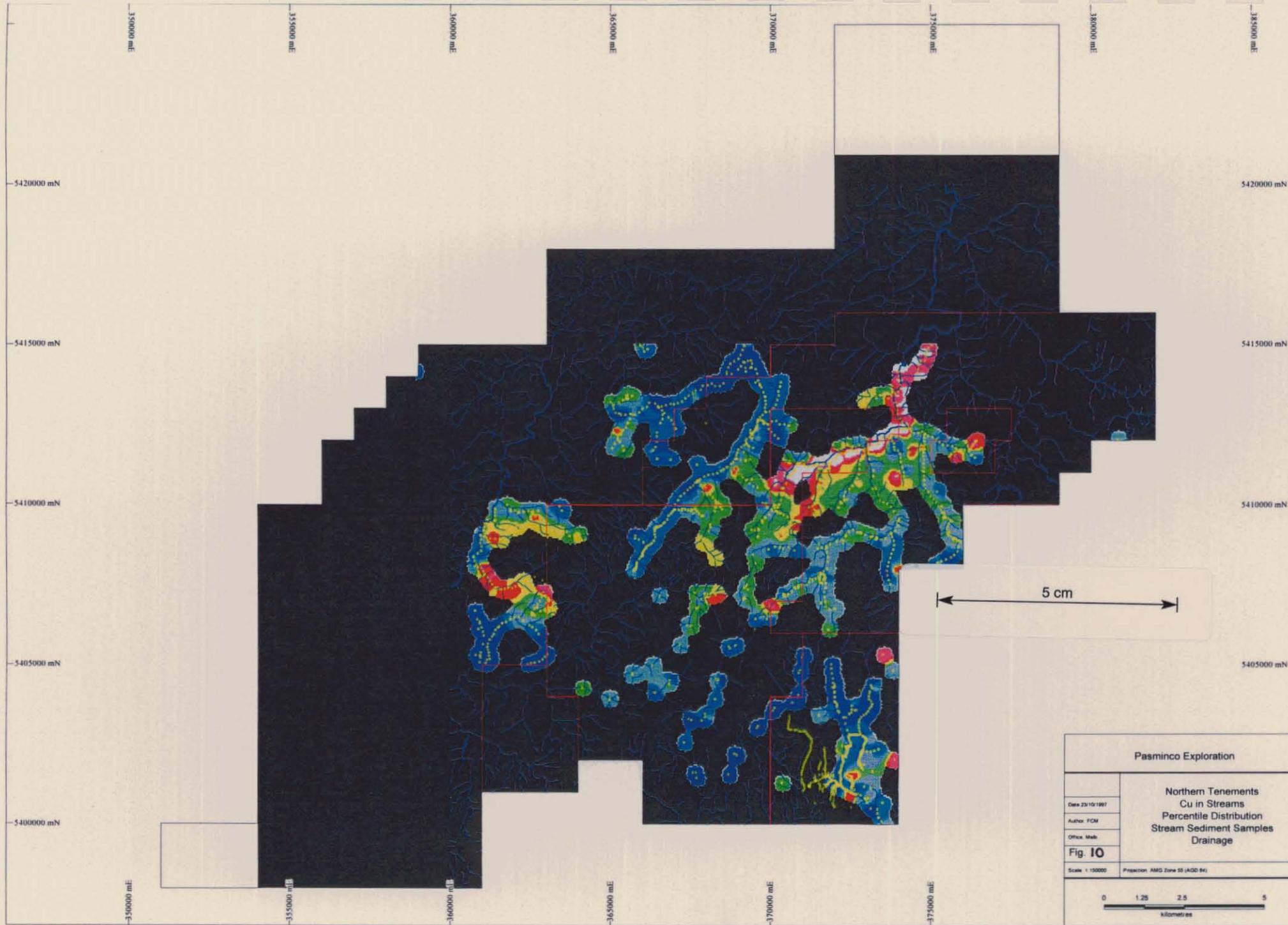
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269024

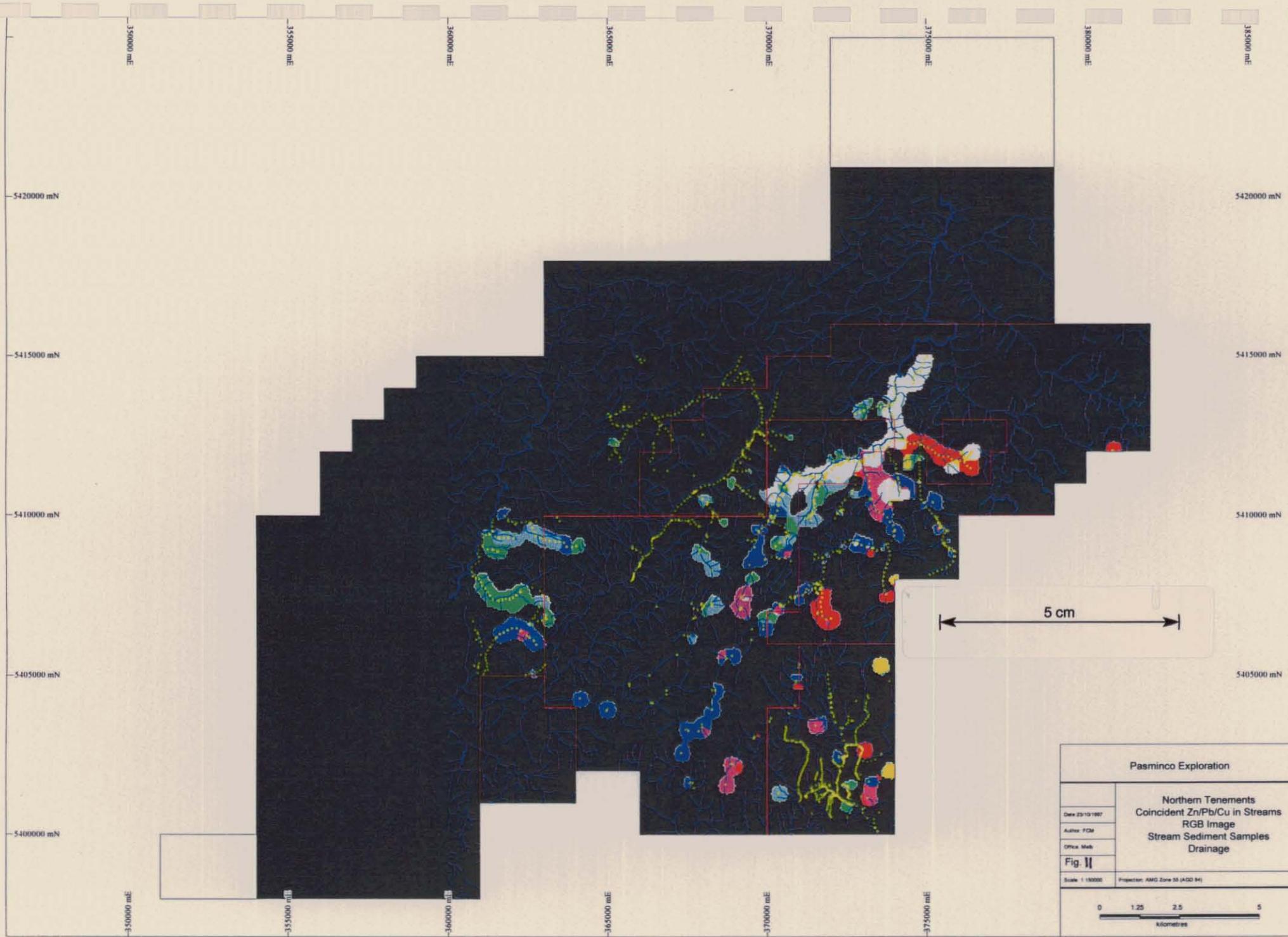


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Author: FCM	
Office: Meib	
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269025

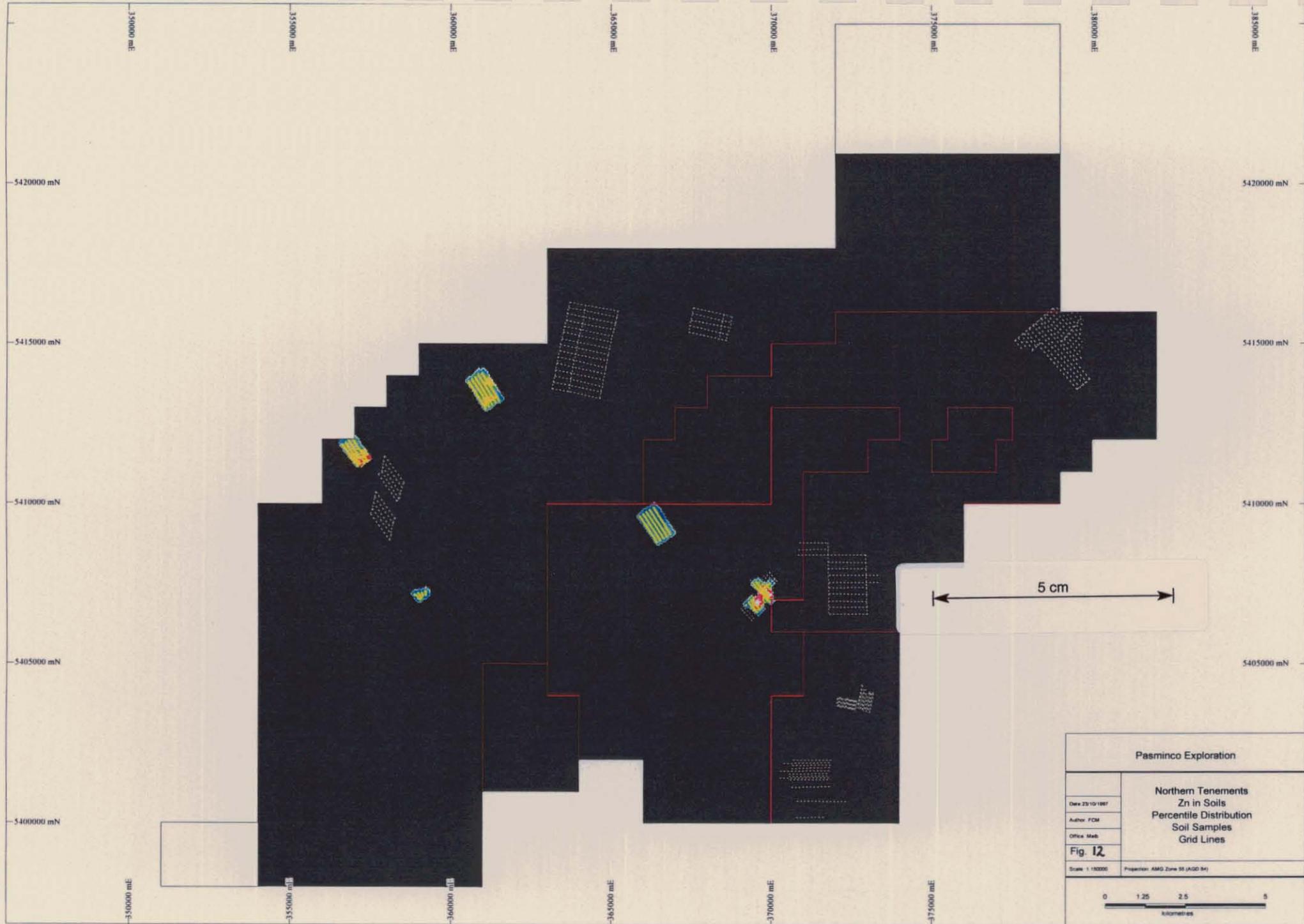


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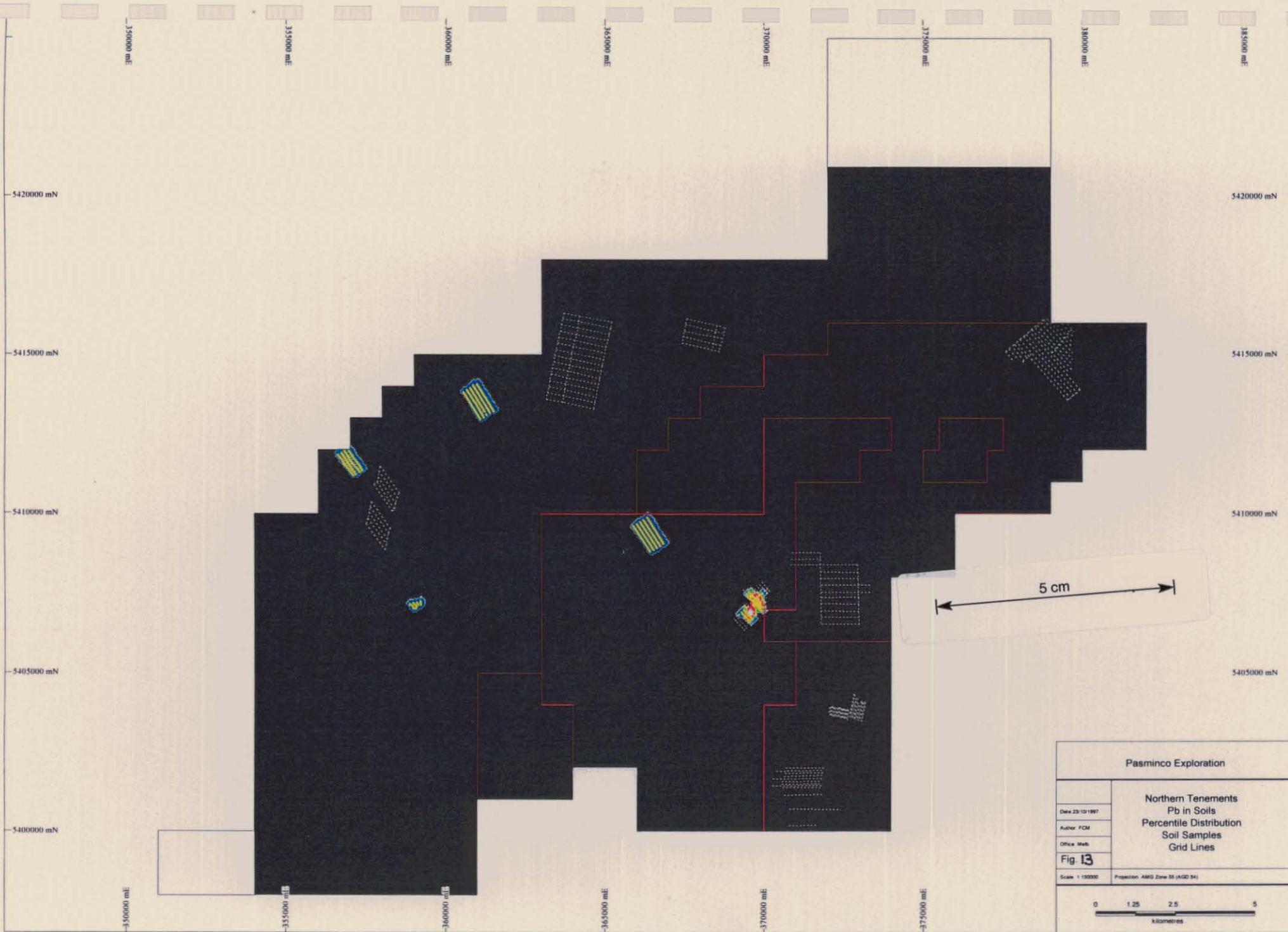
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Author: FCM	
Office: Meib	
Fig. 11	
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269027



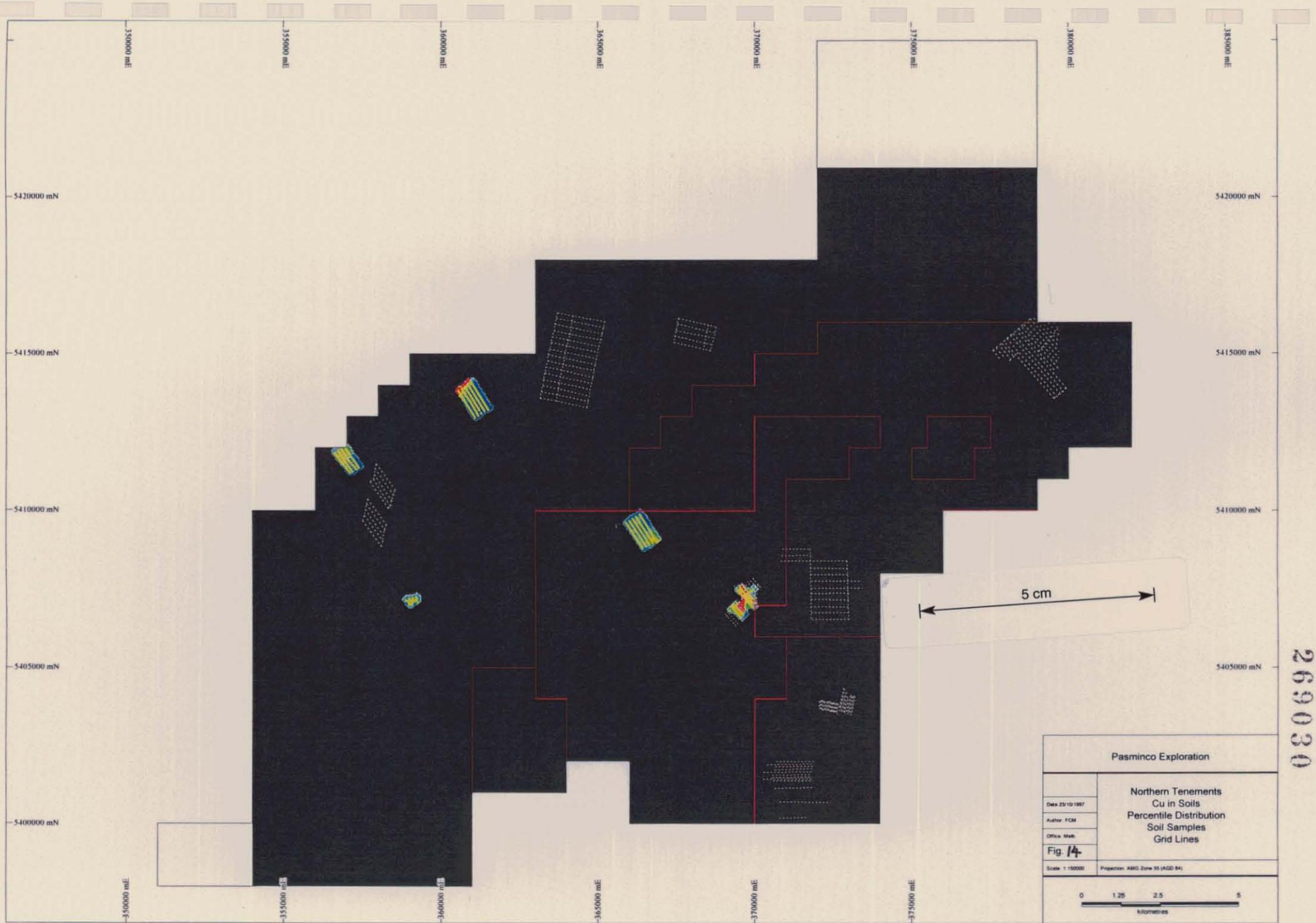
Pasmaenco Exploration	
Date: 23/10/1987 Author: FCM Office: Meb Fig. 12 Scale: 1:150000 Projection: AMG Zone 55 (AGD 84)	Northern Tenements Zn in Soils Percentile Distribution Soil Samples Grid Lines
0 1.25 2.5 5 Kilometres	

269028

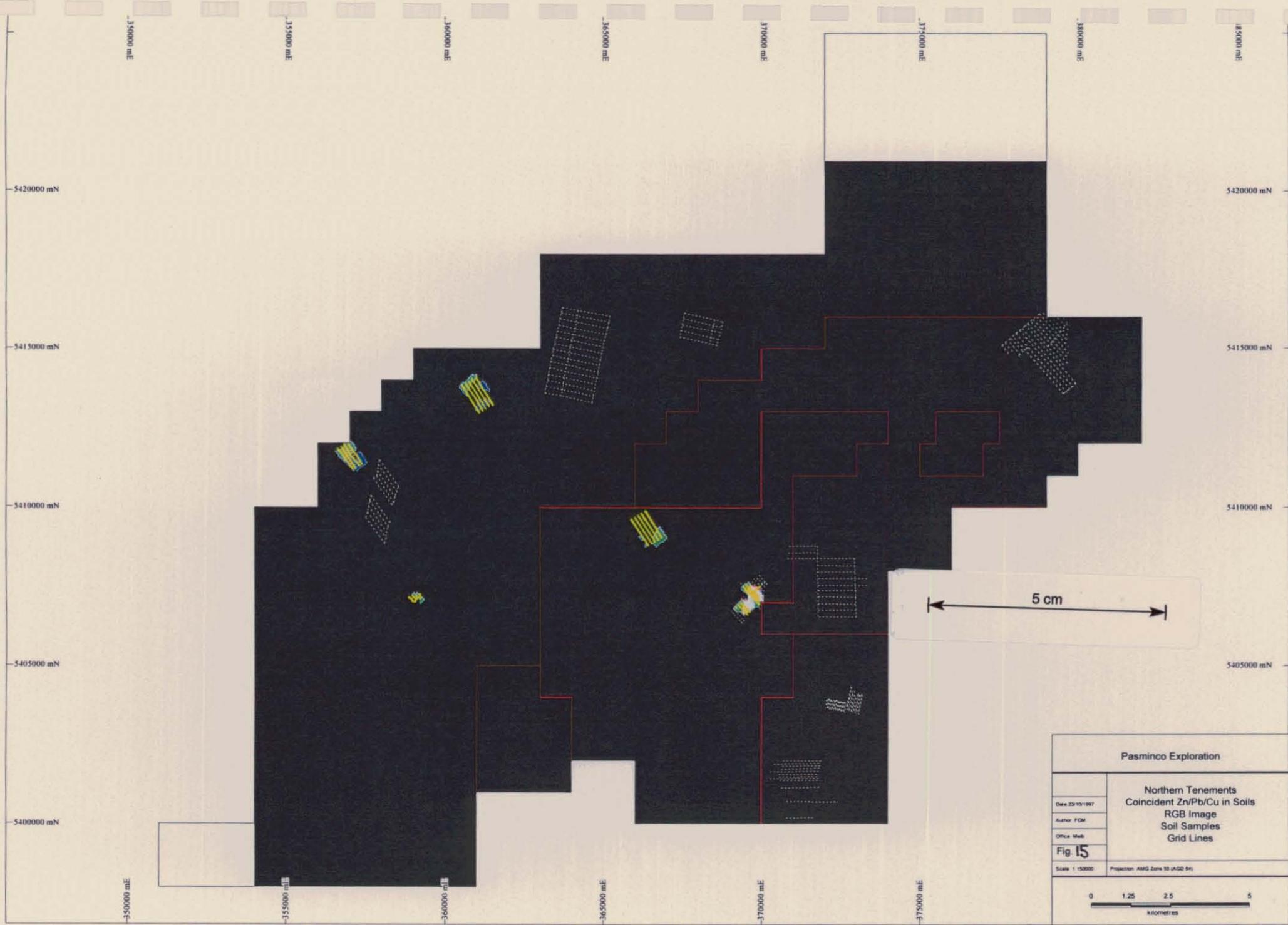


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269029

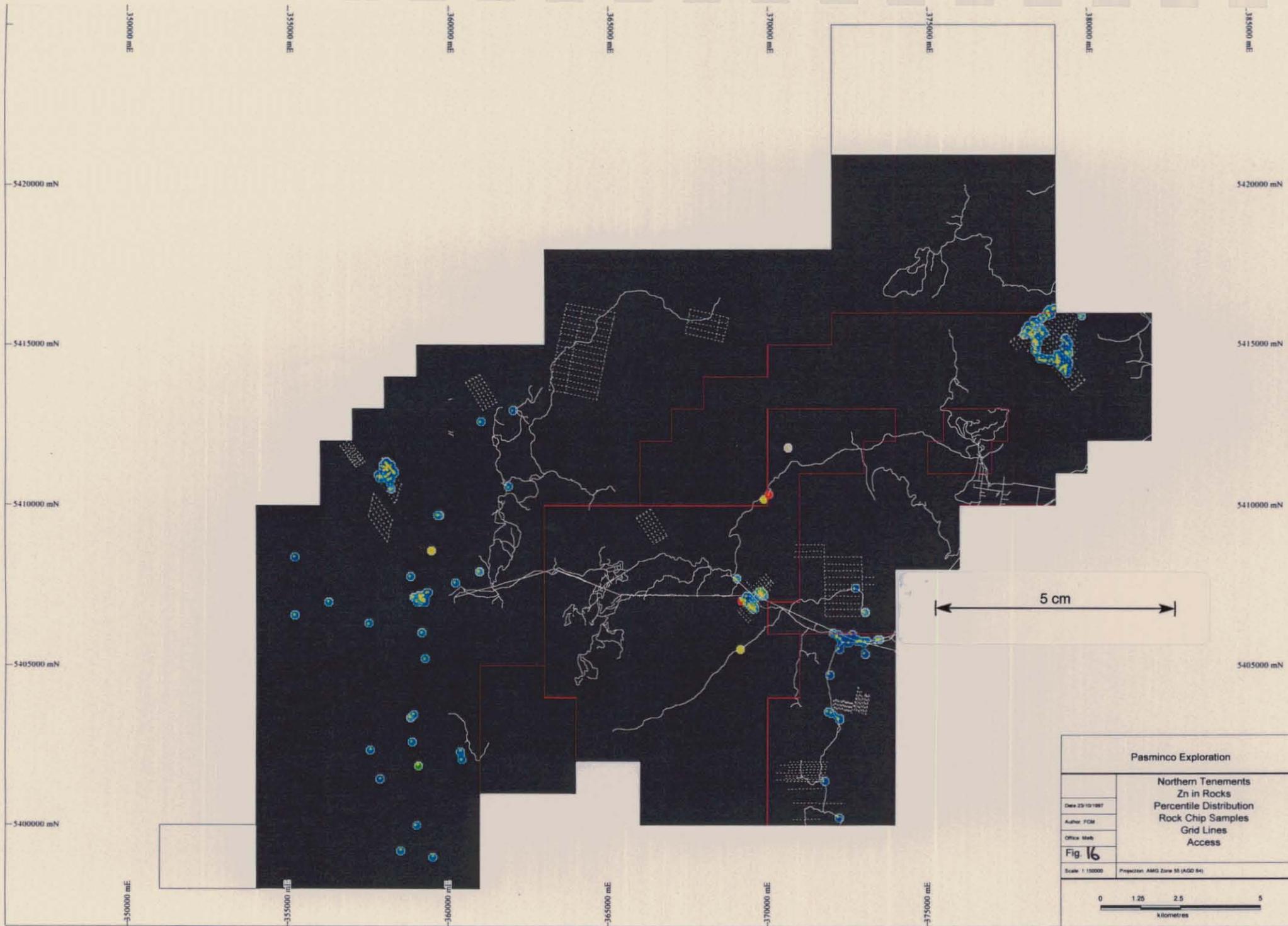


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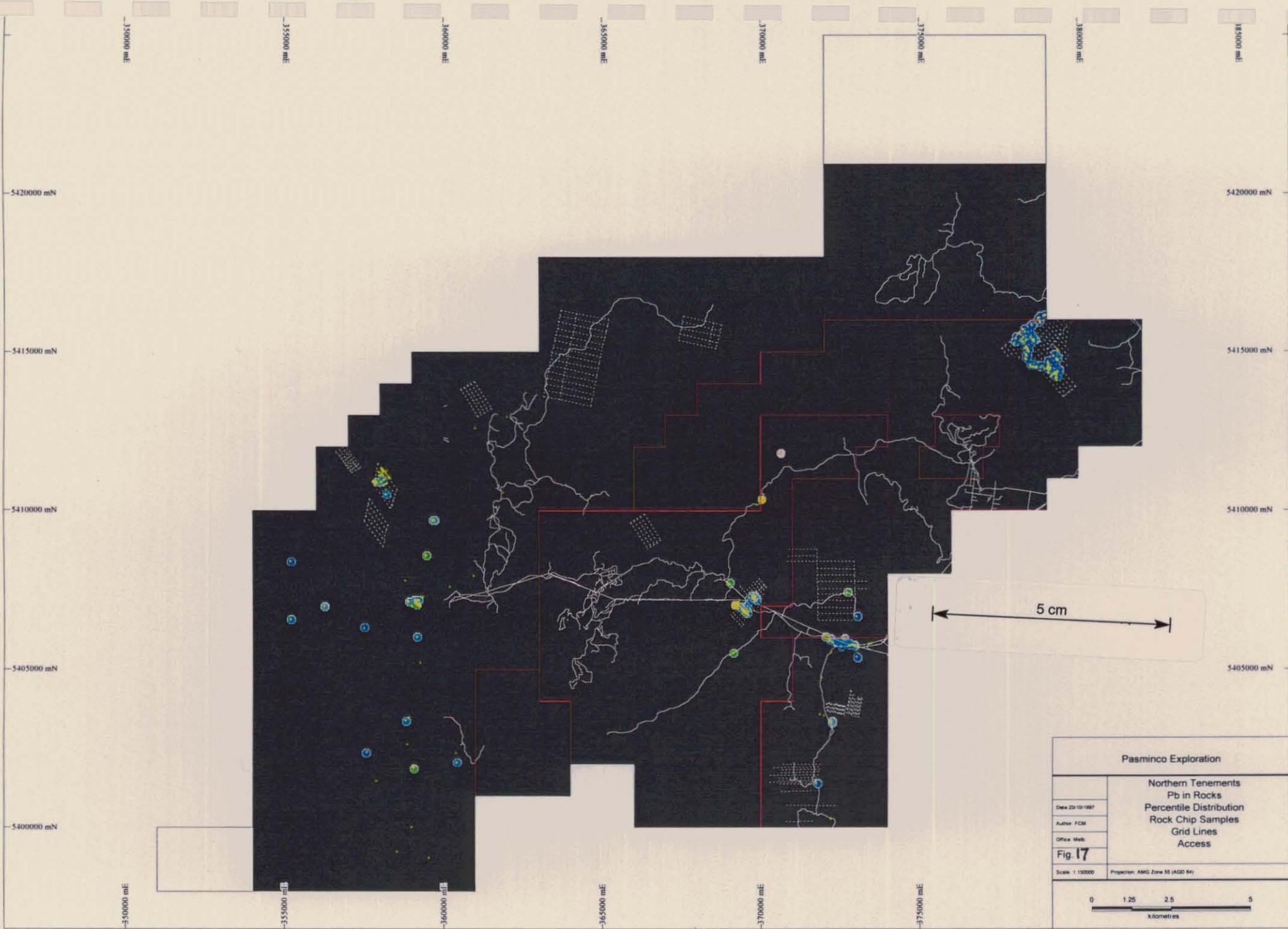
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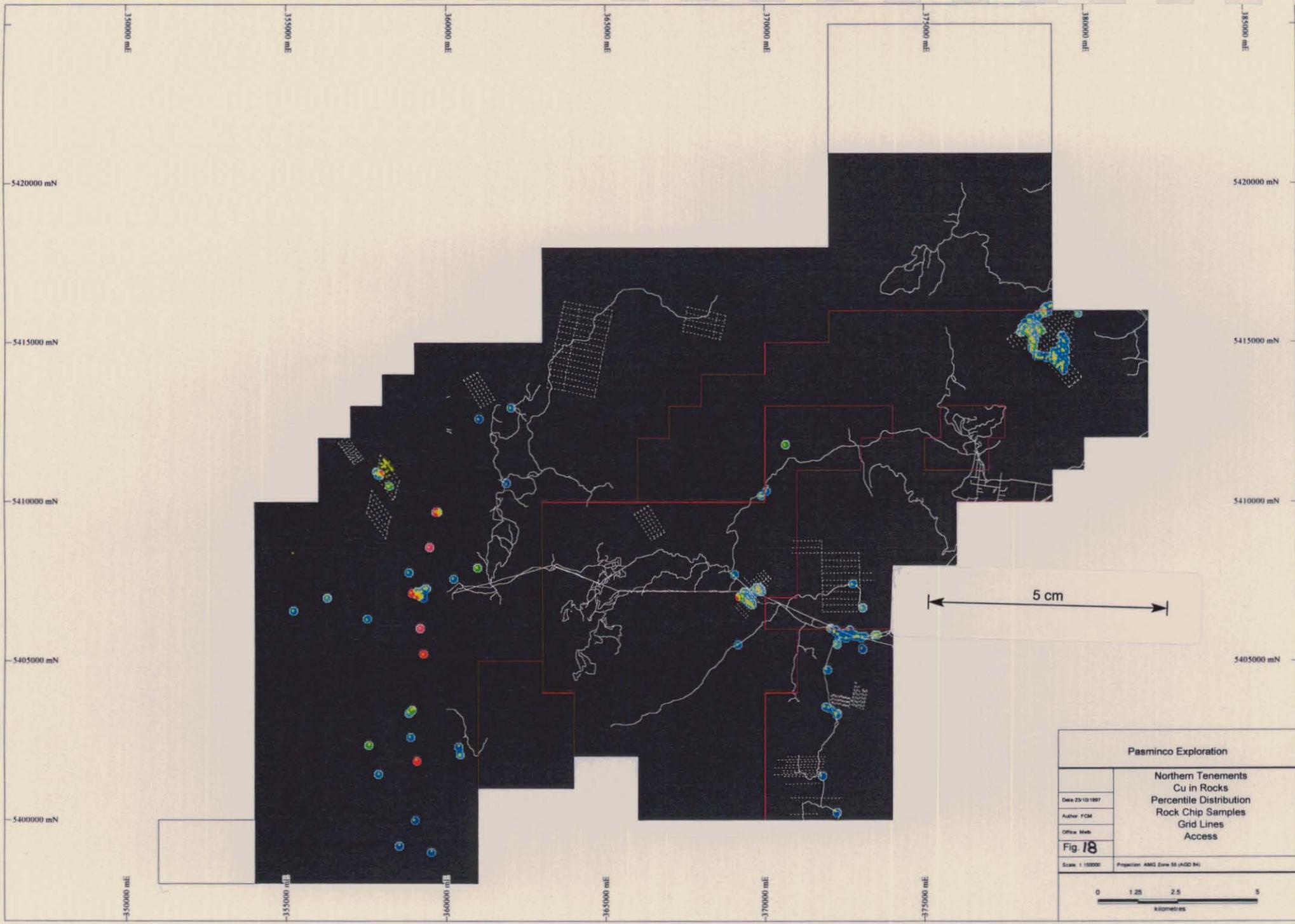


Pasmaingo Exploration	
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Date 23/10/1997	
Author FCM	
Office Mels	
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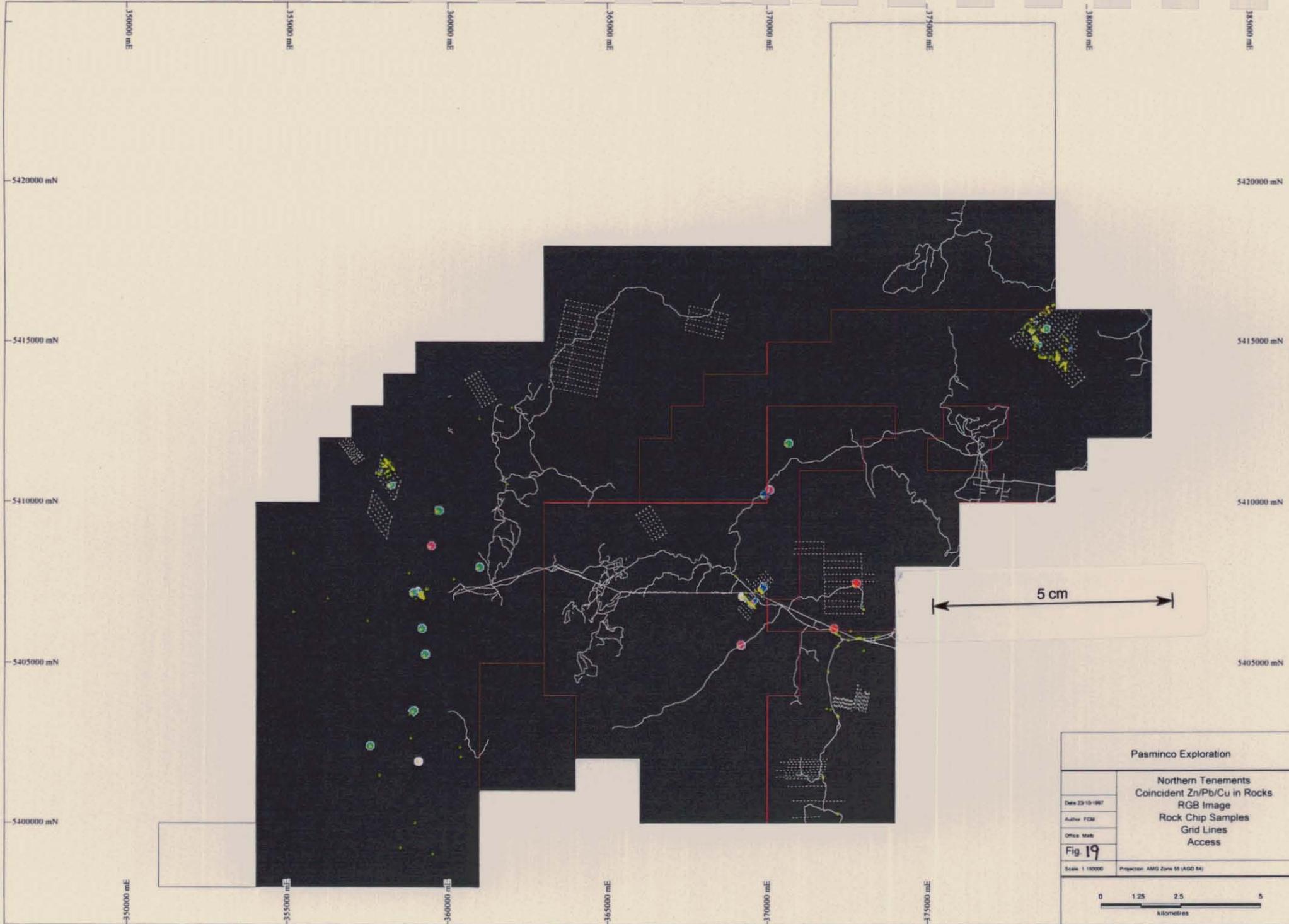
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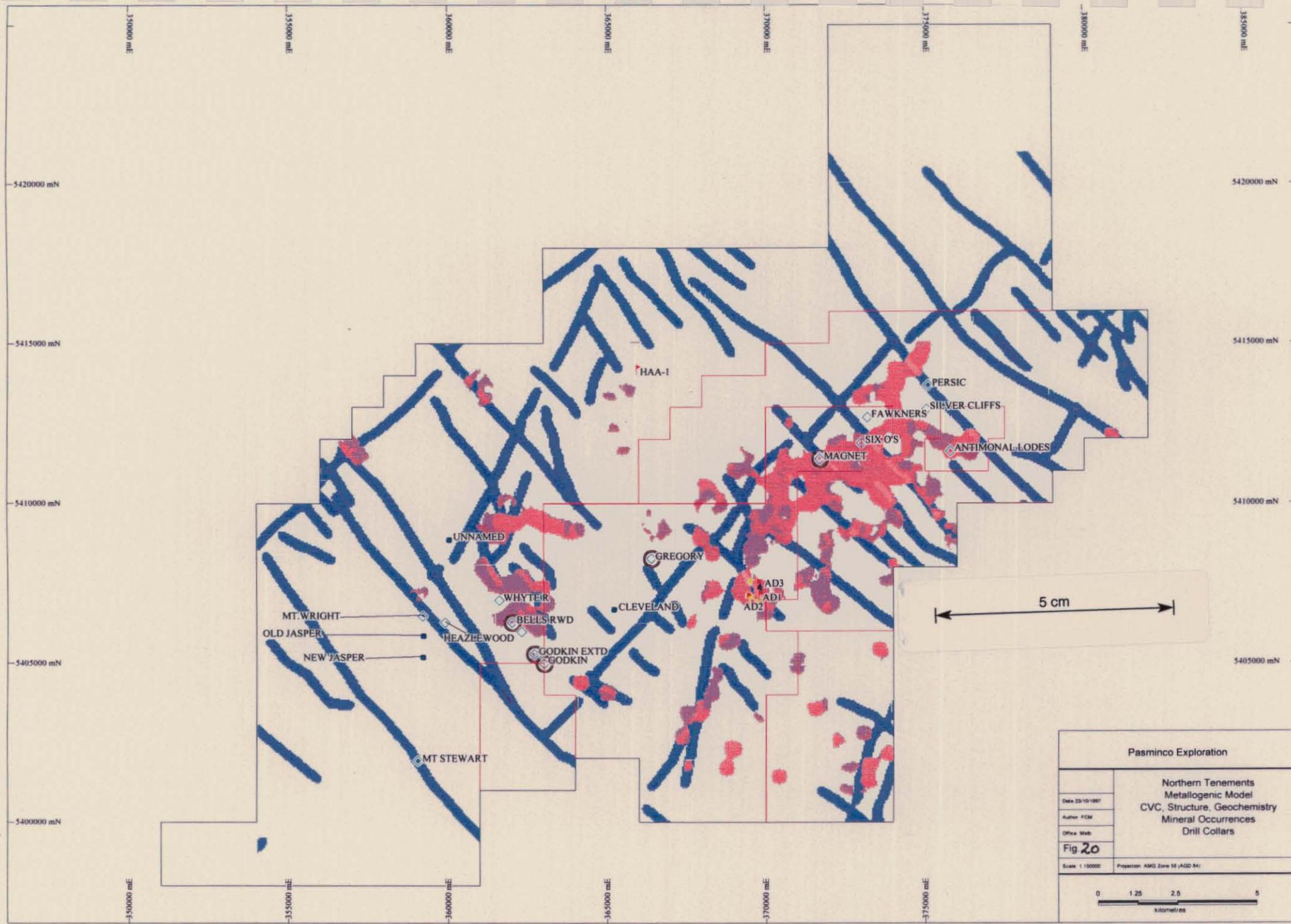
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269034



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Pasinco Exploration	
Date 23/10/1987	Northern Tenements Metallogenic Model CVC, Structure, Geochemistry Mineral Occurrences Drill Collars
Author FCM	
Office Map	
Fig 20	
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