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REPORT ON LATERITE GEOCHEMISTRY IN THE CSIRO-AGE DATABASE FOR THE NORTHERN MURCHISON REGION

(Cue, Belele, Glengarry, Sandstone sheets)

E.C. Grunsky, R.E. Smith and J.L. Perdrix

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September 1998

(CSIRO Division of Exploration Geoscience Report 68R, 1989.
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CRC LEME is an unincorporated joint venture between The Australian National University, University of Canberra, Australian Geological Survey Organisation and CSIRO Exploration and Mining
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RESEARCH ARISING FROM CSIRO/AMIRA REGOLITH GEOCHEMISTRY PROJECTS 1987-1993

In 1987, CSIRO commenced a series of multi-client research projects in regolith geology and geochemistry which were sponsored by companies in the Australian mining industry, through the Australian Mineral Industries Research Association Limited (AMIRA). The initial research program, "Exploration for concealed gold deposits, Yilgarn Block, Western Australia" (1987-1993) had the aim of developing improved geological, geochemical and geophysical methods for mineral exploration that would facilitate the location of blind, buried or deeply weathered gold deposits. The program included the following projects:

P240: Laterite geochemistry for detecting concealed mineral deposits (1987-1991). Leader: Dr R.E. Smith.
Its scope was development of methods for sampling and interpretation of multi-element laterite geochemistry data and application of multi-element techniques to gold and polymetallic mineral exploration in weathered terrain. The project emphasised viewing laterite geochemical dispersion patterns in their regolith-landform context at local and district scales. It was supported by 30 companies.

P241: Gold and associated elements in the regolith - dispersion processes and implications for exploration (1987-1991). Leader: Dr C.R.M. Butt.
The project investigated the distribution of ore and indicator elements in the regolith. It included studies of the mineralogical and geochemical characteristics of weathered ore deposits and wall rocks, and the chemical controls on element dispersion and concentration during regolith evolution. This was to increase the effectiveness of geochemical exploration in weathered terrain through improved understanding of weathering processes. It was supported by 26 companies.

These projects represented "an opportunity for the mineral industry to participate in a multi-disciplinary program of geoscience research aimed at developing new geological, geochemical and geophysical methods for exploration in deeply weathered Archaean terrains". This initiative recognised the unique opportunities, created by exploration and open-cut mining, to conduct detailed studies of the weathered zone, with particular emphasis on the near-surface expression of gold mineralisation. The skills of existing and specially recruited research staff from the Floreat Park and North Ryde laboratories (of the then Divisions of Minerals and Geochemistry, and Mineral Physics and Mineralogy, subsequently Exploration Geoscience and later Exploration and Mining) were integrated to form a task force with expertise in geology, mineralogy, geochemistry and geophysics. Several staff participated in more than one project. Following completion of the original projects, two continuation projects were developed.

P240A: Geochemical exploration in complex lateritic environments of the Yilgarn Craton, Western Australia (1991-1993). Leaders: Drs R.E. Smith and R.R. Anand.
The approach of viewing geochemical dispersion within a well-controlled and well-understood regolith-landform and bedrock framework at detailed and district scales continued. In this extension, focus was particularly on areas of transported cover and on more complex lateritic environments typified by the Kalgoorlie regional study. This was supported by 17 companies.

P241A: Gold and associated elements in the regolith - dispersion processes and implications for exploration. Leader: Dr. C.R.M. Butt.
The significance of gold mobilisation under present-day conditions, particularly the important relationship with pedogenic carbonate, was investigated further. In addition, attention was focussed on the recognition of primary lithologies from their weathered equivalents. This project was supported by 14 companies.

Although the confidentiality periods of the research reports have expired, the last in December 1994, they have not been made public until now. Publishing the reports through the CRC LEME Report Series is seen as an appropriate means of doing this. By making available the results of the research and the authors' interpretations, it is hoped that the reports will provide source data for future research and be useful for teaching. CRC LEME acknowledges the Australian Mineral Industries Research Association and CSIRO Division of Exploration and Mining for authorisation to publish these reports. It is intended that publication of the reports will be a substantial additional factor in transferring technology to aid the Australian Mineral Industry.

This report (CRC LEME Open File Report 18) is a Second impression (second printing) of CSIRO, Division of Exploration Geoscience Restricted Report 068R, first issued in 1989, which formed part of the CSIRO/AMIRA Project P240.

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ABSTRACT

A multi-element geochemical study has been carried out upon laterite and ferricrete samples that cover parts of the main greenstone belts of the CUE, BELELE, GLENGARRY, and SANDSTONE 1:250,000 map sheets. This report presents a summary of the data, and a provisional interpretation of selected parts of the data. The data used in the study are contained in the accompanying diskette (in the back pocket).

The sampling arose as part of a combined research programme at CSIRO and an experimental exploration programme (the AGE Joint Venture Programme) during the period 1983 to 1986.

In the region covered by the present report a total of 1065 samples were analyzed for 30 elements. Summary statistics, histograms, and maps of the percentile classes, are presented for selected elements in laterites and some very Fe-rich materials from partly eroded profiles which have been referred to as ferricretes.

The database that was used for the study is dominated by two major sample types, laterites and ferricretes. The two sample media have different geochemical characteristics, and thus have been treated separately. Lateritic sample media are abundant in the southwestern parts of the area and ferricrete sample media are more abundant in the northern and eastern parts of the area. The study also provides knowledge of the element abundance levels and variation of laterite and ferricrete geochemistry that complement information arising from orientation studies about mineral deposits.

The geochemical characteristics of the area have been studied using four techniques.

a) Exploratory data analysis techniques were employed to rank the data for each element. Samples that rank in the upper percentiles for selected elements (chalcophile) have been considered as significant for further exploration follow-up.

b) Principal components analysis of the multi-element data was used for the purpose of isolating significant linear combinations of elements that are associated with dispersion haloes within potentially mineralized zones. The results of the analysis also confirm the presence of some broad regional geochemical trends that are related to bedrock lithologies and regional alteration processes.

c) Chalcophile and pegmatophile indices were computed for the purposes of isolating areas that are enriched in elements that are commonly associated with several types of mineral deposits. These indices are based on the cumulative concentrations of selected elements and outline regions where further exploration follow-up may be warranted.

d) χ^2 (Chi-square) plots provide a means of isolating multi-element outliers from the background population of samples. These outliers may be related to multi-element dispersion haloes that surround many types of mineral deposits and may warrant further exploration follow-up.

Application of the above methods of data analysis have outlined the following dominant geochemical features.

a) district-scale (10 to 30 km in length) patterns in the distribution of Cu + Zn + Ni + Co ± Cr; V + Sn; and Zr + Nb; each pattern appearing to relate to the dominant characteristics of varying bedrock associations;

b) an As + Sb + Mo + Sn + Be + W + Au association in the Weld Range - Meekatharra - Gnaweeda greenstone belts trending northeasterly which infers the presence of a chalcophile corridor;

c) an association of Au and W within selected laterite samples in the Dalgaranga greenstone area;

d) an association of Au and Sb within selected ferricrete sample in the Weld Range - Meekatharra - Gnaweeda greenstone areas;

e) several anomalies at the 1-km scale that require follow-up sampling in order to assess their continuity and significance. These anomalies have been determined by a variety of methods. The most anomalous samples tend to occur as outliers when these methods are applied.

Sporadic Au anomalies also occur. However, the general sample spacing of 3 km with fill-in sampling at 1 km is too wide for reliable interpretation of Au patterns in laterites. Laterite and ferricrete geochemistry at these low sample densities generally requires the use of intermediate zonal targets, such as anomalous chalcophile envelopes, which can occur about individual deposits.

INTRODUCTION

This report summarizes the results of some of the progress of an on-going project to assess the geochemistry of laterites and associated materials for the purposes of developing and improving exploration concepts, sampling strategies, and isolation of potentially mineralized areas. The report presents the results of reconnaissance-scale laterite geochemistry on parts of BELELE, GLENGARRY, SANDSTONE, and CUE 1:250,000 map sheets. The sampling was carried out during the 1983-1986 period as part of a research programme and application feasibility test of laterite geochemistry for mineral exploration. This work was collaborative between the AGE Joint Venture (Greenbushes Ltd., St. Joe Minerals, and later Sons of Gwalia, NL) and the Multi-element Geochemistry Group, CSIRO.

This report is produced in a format similar to that of the previous Exploration Geoscience Report 2R, *Report On Laterite Geochemistry In The CSIRO-AGE Database For The Southern Murchison Region.*

Regional geochemical databases have been developed for a variety of uses in several countries. Furthermore, we see increasing interest in geochemical mapping by the scope and proposed activities of IGCP 259, the International Geochemical Mapping Project. One of the aims of establishing regional geochemical databases and associated maps is to aid mineral exploration by contributing towards better delineation and understanding of metallogenic provinces and regional geology. This is achieved by highlighting regional geochemical patterns and by defining areas which have anomalous geochemical characteristics.

The data described in this report are part of the CSIRO/AGE laterite geochemical database which is widely distributed over parts of the Yilgarn Block of Western Australia, and forms part of the foundations for on-going research into the use of laterite geochemistry in mineral exploration. The project has focused on the sampling and analysis of the laterite cover and other residual materials that are extensively, but variably, developed throughout the Yilgarn Block.

The North Murchison area forms part of the Archaean Yilgarn Block which is composed of synformal arcuate sequences of metamorphosed supracrustal volcanic and sedimentary assemblages intruded by felsic plutons. A consistent stratigraphy has been recognized by Baxter and Lipple (1985) for several of the supracrustal greenstone belts. Large regional domains of gneissic terrain occur throughout the area and, in part, represent assimilated supracrustal areas.

Selected areas within the region were sampled, partly based upon the approach using a 3-km triangular spacing. Follow-up sampling of anomalies arising from the 3-km reconnaissance programmes, used spacings of 1 km and 300 m. Several classes of lateritic materials were sampled following predetermined priorities. Most samples belong to either of two broad groups, samples belonging to the laterite group or those belonging to a ferricrete group. Samples taken from loose pisolitic and nodular gravels dominate the laterite group. The ferricrete material is typically Fe-rich, occurring as a rubbly, or pebbly lag from partly truncated profiles.

CONCEPT AND SCOPE

The research objectives of establishing this regional geochemical database were:

- to provide knowledge of variations in laterite geochemistry that may be due to regional changes in climate or landform characteristics;
- to establish the types of variation in laterite composition encountered in areas away from orientation studies about specific ore deposits;
- to relate laterite composition to both regional and local geological variation;
- to test, and further develop the most efficient sampling strategies which would allow cost effective exploration.

BACKGROUND TO THE STUDY

A major research programme was commenced in 1980 and expanded in 1983, in which the Laterite Geochemistry Project focussed upon assessing the feasibility of applying relatively low density multi-element laterite geochemistry for reconnaissance exploration in the Yilgarn Block. It was realized at that time, from research carried out at Golden Grove (Smith *et al.*, 1979) and Greenbushes (Smith *et al.*, 1987), that lateritic weathering can result in kilometre-scale, relatively consistent multi-element dispersion haloes. These observations together with the findings of Mazzuchelli and James (1966) and Zeegers *et al.* (1981) provided the rationale for sampling various lateritic materials and analyzing for a broad suite of elements which included the chalcophile and associated elements.

A location map of the region (Figure 1) outlines the generalized geology of the area as well as the more significant localities. This map can be used for reference purposes with the accompanying geochemical maps.

PHYSIOGRAPHY AND CLIMATE

The region is characterized by generally low to moderate relief, related to a partially-stripped upper portion of the lateritic weathering profile that is widespread throughout the Yilgarn Block. The gently undulating lateritic terrain is part of the Great Plateau of Jutson (1950). The lateritic landscape is being dismantled and characterised by breakaways with associated pediments, and outwash plains with deposits of colluvium and alluvium. Trunk drainages typically are filled with saline and playa lake sediments and valley calcrete. In places the supracrustal rocks form ridges from which the lateritic weathering profile has been eroded. Resistant lithologies occur as prominent hills and ridges, such as banded iron formation, and thick massive mafic sills. Dalgaranga Hill, Mount Charles, and Mount Farmer are resistant metagabbros that represent this type of terrain.

Four major drainage systems occur in the area. All of BELELE, all but the southwest corner of CUE, and the west side of GLENGARRY, and the north west part of SANDSTONE, drain into the Murchison drainage basin (Mann, 1982). Eastern GLENGARRY, and northwest SANDSTONE drain into the Way-Carey systems; whilst the southeast part of SANDSTONE drains into the Barlee-Raeside system. The southwest corner of CUE drains into the Moore system. The north-south trending fundamental Yilgarn drainage divide passes though SANDSTONE and GLENGARRY, the Murchison and Moore systems leading to the Indian Ocean, with the Way Carey and Barlee-Raeside systems draining to the Nullarbor plain.

The physiography of each of the map sheets is covered by the respective Explanatory Notes. In addition much of the SANDSTONE sheet lies within a study of landforms, regolith, and soils by Churchward (1977).

The area falls within a semi-desert Mediterranean climatic regime with mild winters and hot summers with most rain falling in the cooler months of April-September although cyclonic systems can cause heavy falls in the summer months. Rainfall is variable but averages between 200-250 mm per year. Temperature ranges from a winter mean of 16° C to a summer mean of 28° C in the general area although summer maxima in excess of 40° C are common.

GEOLOGICAL SETTING AND MINERALIZATION

REGIONAL GEOLOGY

The regional geology of the area has been reported elsewhere (Watkins *et al.*, 1987; Tingey, 1985; Elias *et al.*, 1982; Elias, 1982). Only a brief summary of the regional Archaean geology is presented here. A geological map (Figure 1) at the same scale as the geochemical plots has been summarized from these sources.

Most of the region is underlain by supracrustal rocks, and surrounding felsic intrusive stocks and batholiths with enclaves of gneissic material of Archaean age. Rocks of Proterozoic age occur in the northeast part of the GLENGARRY sheet and form part of the Nabberu Basin. The supracrustal areas consist predominantly of mafic volcanics overlain by later felsic volcanic and sedimentary sequences that have been deformed, metamorphosed, and intruded by post-kinematic plutons. Late stage faulting has occurred throughout the preserved greenstone belts. Many Au deposits have a proximity to these large regional-scale fault systems.

There are several distinct greenstone belts within the area. The largest belt, the Meekatharra-Mount Magnet belt, extends from south of the area, northerly into the BELELE and GLENGARRY boundary area. Other less extensive greenstone belts are the Dalgaranga, Weld Range, Mingah, Abbotts, Gum Creek, Poison Hills, and Sandstone belts. These smaller belts surround the larger Meekatharra-Mount Magnet belt and some may represent dismembered parts of a larger supracrustal sequence.

The Meekatharra-Mount Magnet greenstone belt is composed of a number of distinct volcanic sequences. The western part of the belt is composed of tholeiitic basalt with interlayered high Mg-basalts, and concordant sills of dolerite and gabbro. High Mg-basalt is commonly observed in the Corner Well area. Sequences that comprise a mafic plain environment (Greeley, 1982; Thurston and Chivers, in press) are composed of mafic and ultramafic volcanics and sills with interlayered quartz-hematite banded iron formation.

The Weld Range belt is dominantly composed of tholeiitic basalt, and high Mg-basalt. However, poorly-outcropping sequences of metapelites and metapsammites are also found.

The Warda Warra belt contains significant amounts of tholeiitic basalt, and high Mg-basalt. This belt is dominantly a mafic plain type of environment.

Two large gabbroic intrusions occur within the CUE area, the Dalgaranga-Mount Farmer gabbroic complex in the southwest part of the area, and the Windimurra gabbroid complex in the south east corner of the CUE sheet.

The Jack Hills metasedimentary belt contains ultramafic and mafic volcanics overlain by pelitic, psammitic, conglomeratic, and banded iron formation units. Compston and Pidgeon (1986) have shown that the belt contains some of the oldest detrital zircons discovered to date. Its relationship to the Meekatharra-Mount Magnet greenstone belt is uncertain. It appears to have undergone structural deformation and metamorphism similar to the other greenstone belts in the area (Elias, 1982).

The Gum Creek greenstone belt trends northerly throughout the SANDSTONE area and is characterized by a lower sequence of mafic basalts in the west capped by a sequence of felsic volcanics and sedimentary rocks. The part of the Sandstone greenstone belt that occurs within the SANDSTONE area is characterized by tholeiitic basalt, and local interbeds of banded iron formation.

The Poison Hills greenstone belt straddles the boundary between the GLENGARRY-SANDSTONE areas and is dominated by basalts and interbedded banded iron formation.

The Joyners Find-Booylgoo Range belt trends northerly at the far eastern end of the GLENGARRY-SANDSTONE areas. It comprises a sequence of mafic-ultramafic volcanics overlain by sedimentary assemblages.

The felsic intrusive rocks are composed of regional gneissic domains and granitoid intrusions. The granitic intrusions commonly exhibit foliated margins and become increasingly massive at their cores. The gneissic rocks are composed of intrusively-derived plutonic material (quartz-microcline-plagioclase-biotite gneiss) and gneiss that is derived from supracrustal material (compositionally banded gneiss). The compositionally-banded gneiss often contains recognizable remnants of supracrustal material (e.g., Banded Iron Formation). The recrystallized granitic rocks are the most abundant and are dominantly monzogranitic in composition. Post-tectonic granitic rocks commonly intrude within or at the margins of the greenstone belts and can be adamellite, granodiorite, monzogranite or tonalite in composition.

Regional stratigraphic correlations (Watkins *et al.*, 1987; Watkins and Hickman, 1988) indicate that the Meekatharra-Mount Magnet, Dalgaranga, and Weld Range belts have a common stratigraphic sequence. The lowest sequences are composed of tholeiitic and ultramafic rocks. The sequences are overlain by or juxtaposed with fractionated volcanic sequences composed of felsic volcanics and volcanogenically-derived sediments that represent continental magmatic arc sequences. These upper diverse groups of volcanics appear to be preserved in the Meekatharra-Mount Magnet, Dalgaranga, Minga Range, Warda Warra, and Weld Range area. The lower mafic sequences appear to be preserved in the Meekatharra-Mount Magnet, Dalgaranga, Weld Range, and Abbotts belts. These sequences have been grouped into the following associations:

Lower mafic volcanic association (Murrouli Basalt, Golconda Formation and Gabanintha Formation (in part) in the Luke Creek Group) - comprises mainly tholeiitic metabasalts and dolerites with mafic and ultramafic intrusives. Pillow and vesicular textures are common. Banded iron formation and minor felsic (mainly dacitic) volcanics are present in cyclic alternation with the mafic flows. This association hosts the largest proportion of historical Au producers in the southern part of the Murchison Province.

Lower sedimentary-volcanic association (mainly Windaning Formation in Luke Creek Group, also Gabanintha Formation in part) - comprises mainly fine-grained sediments with banded iron formation and volcaniclastic rocks. Minor felsic volcanics, constrained to local sub-aerial or sub-aqueous eruptive centres, are also present. The association is intruded by both mafic and ultramafic rocks. Lower units within this association host economic syngenetic base metal sulphide - Au/Ag mineralization.

Upper mafic volcanic association (Singleton and Wadgingarra Basalts, Camberathunun Formation in Mount Farmer Group) - resembles the lower mafic volcanic association generally, but differs in having a lower proportion of banded iron formation and a higher proportion of pyroclastic rocks and high Mg-(komatiitic) basalts. Local dacitic to rhyodacitic volcanics are present.

Upper sedimentary association (Mougooderra Formation in Mount Farmer Group) - comprises mainly shale and siltstone with interbedded polymictic and oligomictic conglomerates with sandstone and minor banded iron formation towards the base of the sequence. This association unconformably overlies the Luke Creek Group rocks.

At least four deformation periods have been described (Watkins *et al.*, 1987). The youngest of these periods has resulted in a series of northerly trending faults and shears. Many of the Au mines and occurrences are in proximity to these zones.

MINERALIZATION

Gold mineralization is widespread throughout the area. Although there have been many Au mines, only four localities have had substantial production. The largest Au producers have been Day Dawn (40,038 kg), Big Bell (22,758 kg), Meekatharra locality (29,874 kg), and the Sandstone area (14,578 kg). Additional information regarding the mine localities and grades can be obtained from Watkins and Hickman, (1988).

Most of the Au deposits are viewed as epigenetic and many shears and mineralized vein systems are associated with CO_2, soda and potash metasomatism. The mineralizing fluids have conceivably been derived by progressive metamorphic dewatering of mafic and ultramafic sequences in the supracrustal pile (e.g. Browning *et al.*, 1987). Hallberg (1976) notes that on a gross scale, Au producers were virtually restricted to deposits within the two older supracrustal associations noted above and particularly within para-amphibolites, ultramafic schists and banded iron formations grouped into the lower mafic volcanic association. A more recent study by Hickman and Watkins (1988) suggests that there are both regional and local controls on the formation of Au deposits in the area. Regional controls included proximity of the deposits to large regional fault systems, a general occurrence within 2 km of granitoid-greenstone contacts, and concentration of deposits in the upper three formations of the Luke Creek Group. Local controls include structures, ore-fluid composition, temperature-pressure conditions, and host rock compositions.

According to Watkins *et al.* (1987), Au deposits in the Murchison area can be grouped into six major categories:

a) shear zones and quartz veins with banded iron formation and mafic volcanics,

b) shear zones and quartz veins with mafic/ultramafic volcanics and local intrusion of porphyry,

c) shear zones within chert and clastic sediments,

d) quartz veins in granites close to the greenstone-granite margins,

e) hydrothermally-altered, clastic rocks (Big Bell), and

f) eluvial-colluvial and supergene enriched materials (lateritic).

THE SAMPLING PROGRAMME

SAMPLING

A 3-km spaced triangular sampling grid was used over most of the sampled area, with limitations caused by the distribution of access roads and tracks, the extent of erosional dissection of the laterite cover, the extent of cover by younger alluvium/colluvium, and the extent of mining and other land tenements at that time. Various follow-up and fill-in samples were also taken, usually closing the sample spacing to 1 km, and in some cases to 330 m. The locations of follow-up sampling will be obvious in plots showing sample sites, particularly at scales of 1:250,000 or more.

The database includes samples collected from all three phases of the study. Samples that are labelled 'R' in the DESCRIPT field of the database (see Appendix 1) represent 508 samples that were initially collected at the 3-km spacing regional scale. Samples labelled 'F2' in the DESCRIPT field (395 samples) are those collected during follow-up work at the 1-km spacing interval, and samples labelled 'F3' in the DESCRIPT field (197 samples) are those samples collected at less than 1-km spacing from additional follow-up work after the 'F2' samples were collected.

Not all of the greenstone and metasedimentary belts have been sampled. Areas that were not included in the sampling programme are; Jack Hills, Sandstone, Booylgoo, and the eastern part of the Gum Creek greenstone belts.

The intention was to sample the cemented pisolitic laterite blanket, and/or the loose lateritic pisoliths and nodules which had been released from the duricrust by natural disaggregation. Lateritic nodules and pisoliths in the range of 1-cm to 2-cm diameter were sought in order to avoid the possibility of skewing the sample characteristics if very coarse material was collected and to aid sample preparation by providing suitable feed for the disk grinding stage (avoiding coarse crushing). Where possible, sampling was typically carried out over a 10 metre radius in order to suppress any unforseen local variation. A 1-kg sample was collected for crushing, grinding, and chemical analysis of an aliquot. A separate 1-kg sample was collected for permanent reference. Other sample types were collected where the prime media were not available. A breakdown of the number of samples collected is given in Table 1. Where available, 1:50,000 photomosaics were used in selecting sample sites and for recording the locations. All samples were allocated AMG coordinates.

The classification developed during the CSIRO/AGE study of 1983-1986 is retained in this report. A more comprehensive and, in due course, genetic classification scheme is currently under development within the CSIRO/AMIRA Laterite Geochemistry Project. The updated terminology and classification can be found in Anand *et al.* (1989) in which the terminology and classification of lateritic and ferruginous materials has been expanded. Cross referencing of the two schemes is shown in Table 1.

Many categories in the 'lateritic family' translate directly to the 1989 terminology and classification. However, some of the categories in the 'ferricrete family' will require relogging of the reference material and identification of the local regolith situation before translation to the 1989 scheme is possible. This has not yet been done. The terms used in this report therefore, follow the original CSIRO/AGE scheme as outlined below.

I LATERITE SAMPLE TYPES

Samples belonging to the laterite family (typically occurring geomorphically above breakaways) and thus relating to a relatively complete laterite profile:

Loose Pisoliths (LP) and Cemented Pisoliths (CP) - Ferruginous particles with high sphericity, 2 mm - 3 cm in diameter, and a concretionary goethitic coating. Internal concentric banding is common. This sample type commonly forms a blanket deposit, whether loose or cemented, up to a few metres in thickness. Redistributed colluvial gravels were avoided in the sampling programme where they were recognizable.

Loose Nodular Laterite (LN) Cemented Nodular Laterite (CN) - Ferruginous particles with low sphericity but rounded extremities. Commonly 1 - 4 cm across and having a goethitic skin. Lateritic nodules and pisoliths form a continuous series and commonly occur together.
Vermiform Laterite (VL) - Fe-rich cemented duricrust or the upper mottled zone saprolite containing sinuous worm-like tunnels, holes, or clay zones. May contain spaced pisoliths, nodules, or sporadic rock fragments.

Plinthite and Plinthite Fragments (PN) - Grit cemented by goethite, with visible quartz grains. Plinthite fragments do not have a concretionary skin. Typically plinthite fragments are released by disaggregation of a lateritic duricrust or mottled zone developed in medium to coarse grain felsic rocks.

Mottled Zone Scree (MS) - Loose, derived scree or float locally derived from Fe-rich mottles within the lateritic weathering profile.

II FERRICRETE SAMPLE TYPES

Samples belonging to the ferricrete family typically occur in situations where the lateritic duricrust or associated pisolitic and nodular lateritic gravels have been removed by erosion, but stripping has not cut deeply into saprolite. These include:

Massive Ferricrete (MF) - Iron-rich material lacking pisolitic/nodular texture, commonly has a botryoidal texture.

Ferricrete Fragments (FF) - Rounded fragments of Fe-rich material often showing relict internal structure, but they have no Fe-rich concretionary skin.

Cemented Pebbly Ferricrete (PF) - Dense black Fe-rich material with pebbly texture and irregular shape. This type normally occurs at the top of a full laterite profile. Note: the PF category presents a problem for categorization at this stage, however, only 7 samples are present in the North Murchison database.

Ferricrete Pellets (PE) - Particles of Fe-rich material with moderate to high sphericity, up to 1.5 mm across and having no Fe-rich concretionary cutan.

Recemented Fe-rich Colluvium (RC) - Iron-rich angular to sub-rounded rock fragments in a fine Fe-rich matrix.

III OTHER CATEGORIES

Loose Ooliths (OL) - Ferruginous particles with high sphericity <2 mm in size with a definite concretionary Fe-rich coating. Commonly they are black or very dark brown. May occur in soil and as surface lag in a variety of situations including braided drainages. They do not form blanket deposits.

Lateritized Rock (LR) - Saprolite that is enriched in Fe-bearing weathering such as goethite and hematite. By definition, some form of relict bedrock fabric is visible.

Figure 2 shows the distribution of the lateritic sample materials (LN, LP, CN, CP, MS, PN) and Figure 3 shows the distribution of the ferricrete materials (FF, MF, PF, RC, PE). Sampling of ferricretes is more widespread in the northern part of the area, whilst sampling of loose nodules dominates the southern part of the area. This is a direct result of more extensive stripping of the lateritic profile in the areas sampled in the north. In comparison with the South Murchison area (Grunsky *et al.*, 1988) the North Murchison area laterite cover has been truncated resulting in less lateritic sampling material. Thus, it was necessary to sample the ferricrete materials where suitable lateritic material could not be found.

Table 1. Sample Type, Abbreviation, and Number of Samples.

Sample type	Code	Number of Samples	Equivalent Classification CSIRO/AMIRA 1989 Codes
Lateritic Types			
Loose Pisoliths	LP	85	LT102
Cemented Pisoliths	CP	3	LT202, LT214
Loose Nodules	LN	227	LT104
Cemented Nodules	CN	6	LT204, LT214
Vermiform Laterite	VL	0	LT231
Plinthite	PN	9	
Mottled Zone Scree	MS	22	LG105
Ferricrete Types			
Massive Ferricrete	MF	188	IS101, IS102, IS103, IS201, IS301, Some LT229
Ferricrete Fragments	FF	418	LG201, LG203, LG206
Cemented Pebbly Ferricrete	PF	7	LG201
Ferricrete Pellets	PE	14	
Re-cemented Fe-rich Colluvium	RC	8	in part IS301
Miscellaneous Types			
Ooliths Loose	OL	14	
Lateritized Rock	LR	64	

SAMPLE PREPARATION

The samples were prepared by AMDEL Laboratories, Frewville, S.A., according to CSIRO specifications using non-metallic sample preparation methods described by Smith *et al.* (1987). Oversized material from 1-kg samples is reduced to minus 8 mm by crushing between zirconia plates in an automated hydraulic press. The crushed oversized material together with the direct feed material is then fed into an epoxy-resin lined disc grinder with alumina plates and further reduced to minus 1 mm. Final milling is done in an agate or alumina mill. Cleaning of the equipment is performed by a combination of air- and sand-blasting and the passage of a quartz blank.

ANALYTICAL METHODS

A total of 1065 samples were analyzed by Amdel Ltd. (Adelaide) for 22 elements. An additional 7 elements were analyzed by the CSIRO analytical facilities on 40% of the samples. Gold was analyzed 737 of the samples. The methods of analysis are outlined in Table 2. Tin and Bi were analyzed by two methods because of their perceived importance in laterite geochemistry and to provide a consistent gauge of confidence in the results. At this point, the following elements have been analyzed by the methods outlinedin Table 2: SiO_2, Al_2O_3, Fe_2O_3, MgO, CaO, TiO_2, Mn, Cr, V, Cu, Pb, Zn, Ni, Co, As, Sb, Bi, Mo, Ag, Sn, Ge, Ga, W, Ba, Zr, Nb, Ta, Se, Be, and Au. From time to time data on additional elements, or data derived from different analytical methods have been added.

Samples were analyzed by CSIRO using an Inductively Coupled Plasma Spectrometer (ICP). Samples were prepared using a lithium metaborate fusion dissolved in nitric acid. Gold was analyzed by Analabs Laboratories using Atomic Absorption Spectroscopy (Graphite Furnace) after aqua-regia dissolution of 50-g aliquots.

ANALYTICAL QUALITY CONTROL

Each batch of samples submitted for analysis contained three control samples that represent a spectrum of multi-element values. These control samples were submitted in a scrambled numerical sequence. The samples were also subjected to replicate analysis both by the CSIRO analytical facilities and by an independent laboratory. Problems of between-batch variation could usually be detected by examination of included standards and examination of maps of the plotted data. If any clustering or unusual patterns were noted, the duplicated samples were submitted for assay.

DATA PRESENTATION AND ANALYSIS

The geochemical data that accompanies this report are contained on a (5 ¼ inch) floppy diskette which can be found in the back pocket of the report. Appendix 1 provides the details regarding the format of the data.

A summary of the multi-element geochemical data is listed in Tables 3 and 4. The tables list the number of samples analyzed for each element, the 1, 5, 10, 25, 50, 75, 90, 95, and 99th percentiles, minimum, maximum, mode, mean values, and the standard deviation.

Material that was classified as loose nodules (LN), loose pisoliths (LP), cemented nodules (CN), cemented pisoliths (CP), plinthite (PN), and mottled zone scree (MS) are generally known to be compatible sample media and were therefore grouped together. These samples, placed in the laterite family, total 362 in number and the summary statistics of this group are shown in Table 3. Similarly, samples of the ferricrete categories, ferricrete fragments (FF), massive ferricrete (MF), cemented pebbly ferricrete (PF), and re-cemented Fe-rich colluvium (RC) were grouped together, totalling 635 samples, and the summary statistics of this group are listed in Table 4.

Many samples were analyzed for elements whose values were below the detection limit. In these cases, the value of the variable was arbitrarily set to one third of the detection limit as the default minimum values. Subsequent statistical and numerical procedures used this minimum value. All samples have not been analyzed for the same set of elements at this stage. In such cases, for calculations of statistics the number of samples used to compute the statistic was reduced. The number of samples used, for the calculations of the statistics, for each element is indicated in summary statistics of Tables 3 and 4

Barium must be interpreted with caution as the method of sample preparation (from alumina disks) adds an average of about 100 ppm of Ba depending on the hardness of the sample. High Ba values however, should be considered significant.

Bismuth and Sn include two methods of analysis one by OES and the other by XRF. Both methods confirm consistency of the results.

In conjunction with the summary Tables 3 and 4, Table 5 provides a list of samples that have abundance levels exceeding the 95th percentile for selected elements. The table includes the sample number, easting, northing and the corresponding element/oxide value. These ranked sample lists can assist in choosing exploration targets.

HISTOGRAMS

Careful examination of histograms of a geochemical dataset is an important aspect of an exploration strategy. Histograms of the data were plotted for selected elements of specific sample types. These plots are shown in Figures 4 - 33. The histograms were computed using 40 class divisions based on the minimum and maximum values of the variables. For presentation purposes, the minimum and maximum values were truncated at the mean ± three standard deviations. Above each histogram is a box and whisker plot that shows the median (50th percentile), left hinge (25th percentile), right hinge (75th percentile) and range (minimum and maximum values) of the data. Outliers are most easily expressed using this type of presentation of the data distribution. Each histogram also indicates the mode, left hinge, right hinge, minimum value, maximum value, mean, and standard deviation in a numerical form at the right hand side of the figure.

Each figure comprises two histograms; the lateritic materials group (CN, CP, LN, LP, PN) and the ferricrete group (FF, MF, PC, PE, RC). The lateritic materials display some differences, as discussed below, in their distribution relative to the ferricrete group samples. At this stage, it is difficult to test these differences quantitatively. Because none of the elements exhibits normal distribution, it is difficult to apply standard statistical tests to compare sample types or groups of data. Thus, statistical tests such as the t-test (testing the similarities of the means) and the F-test (testing the similarities of variances) have not been carried out since any statistical inferences may be misleading. Norming transformations can be applied such as Box-Cox power transformations (see Smith *et al.*, 1984). This is being left for future investigations that will be examining the differences of non-normally distributed multivariate populations. Thus, a detailed analysis of the distribution of the sample populations is not attempted in this report.

The North Murchison area lateritic materials show a greater range of abundances in comparison to the ferricretes. Ferricrete materials show that Fe_2O_3, Mn, Co, Cu, Pb, Zn, Ni, and possibly Ba (Figures 6, 10, 17, 13, 14, 15,16, 27) exhibit greater abundance ranges than the lateritic materials. The differences are most clearly seen by examining the box and whisker plots and comparing the hinge lines (25th and 75th percentiles) between the two sample types. The histograms also show that the laterite group commonly have higher average abundances of SiO_2, Al_2O_3, Ga, and Zr (Figures 4, 5, 25, 28) relative to the ferricrete group. The difference in Ba levels need to be viewed with caution as the ferricretes, being harder than samples in the laterite group, could result in greater abrasion of the grinding disks that are known to contain Ba.

The two main sample media types share common means and frequency distributions for some elements. On the other hand, some elements have different means and frequency distributions between the two types. Al_2O_3, Fe_2O_3, Mn Cr, Cu, Pb, Zn, Ni, Co, Ga, and Zr (Figures 5, 6, 10,11, 13, 14, 15, 16, 17, 25, 28) have different frequency distributions, while Al_2O_3, Fe_2O_3, Ag, Mn, Cr, Cr, Zn, Ni, Co, Ga, and Au (Figures 5, 6, 10,11, 13, 14, 15, 16, 17, 25, 28, 33) have different means. These differences can be observed in the ordered statistics of Tables 3 and 4 as well as visually in the histograms of Figures 4-33.

Several distinct populations are observed in the data. The lateritic materials show polymodal distributions for SiO_2, Fe_2O_3, Cr, Cu, Zr, and Au, and the ferricrete materials show polymodal distributions for SiO_2 TiO_2, Mn, Cr, V, Ni, and Zr. For these elements, the distinct modes represent populations that reflect differences between the supracrustal volcanic host rocks (basalts vs. rhyolites, etc.), and/or differences in weathered materials, and/or anomalous abundances (dispersion haloes) associated with mineralization.

An analysis on the nature of the causes of the frequency distributions of the elements is beyond the scope of this report. However, non-normal distributions can be due to a mixture of samples from different geological environments, some of which may represent rare occurrences due to mineralization (e.g., As, Sb, Bi, Ag, Au). Other distributions (e.g., MgO, CaO) are non-normal in their frequency distribution because they are naturally rare occurrences in weathered materials.

Most of the elements have non-normal frequency distributions and for many of these histograms positively-skewed values represent anomalous values that are potentially associated with various types of mineralization. Some elements, in particular the chalcophile suite (As, Sb, Bi, Se, Pb, Ge, Zn, Cu, Ag), are known to be good pathfinders for both base-metal sulphide mineralization and precious metal mineralization (Smith *et al.*, 1989; Smith and Perdrix, 1983). These elements are the basis for the empirical chalcophile and pegmatophile indices that have been developed by Smith and Perdrix (1983) and Smith *et al.* (1987). They are also useful in multivariate data analysis and statistical applications (see Smith *et al.*, 1984).

ELEMENT MAPS

Figures 34-55 display the sample sites and associated elemental abundances for the more significant elements. The laterites are shown in the a) part of the figure and the ferricretes are shown in the b) part of the figure.

Because the sample sites are not distributed uniformly over the map area, methods of data presentation such as contour maps are not appropriate for describing the spatial variation of the data at the scale presented. However, the *data can be conveniently presented by using symbols whose sizes are based on the percentile ranking of the data* and the percentile values of the ranked data are plotted with respect to the maximum and minimum of the data. A commonly used method of expressing concentrations over irregularlysampled areas is the expression of each concentration by a symbol whose size is proportional to its magnitude (Howarth, 1983, p.124). The use of such symbols can be employed to indicate areas that are enriched or depleted. However, caution is advised in the interpretation of these proportionally-sized symbols. Symbol size does not necessarily reflect anomalously low or high values, rather it reflects the maximum and minimum values of the data which may or may not be *anomalous* with respect to zones of mineralization.

TABLE 2
ANALYTICAL METHODS AND LOWER LIMITS OF DETECTION

Element	Reported as	Detection Limit	Laboratory	Analysis	Digestion Method
SiO_2	WT%	0.5	CSIRO	ICP FS	
Al_2O_3	WT%	0.5	CSIRO	ICP FS	
Fe_2O_3	WT%	0.1	AMDEL	AAS	HF
MgO	WT%	0.05	CSIRO	ICP FS	
CaO	WT%	0.05	CSIRO	ICP FS	
TiO_2	WT%	0.003	CSIRO	ICP FS	
Mn	PPM	5	AMDEL	AAS	HF
Cr	PPM	5	AMDEL	XRF	
V	PPM	10	AMDEL	XRF	
Cu	PPM	2	AMDEL	AAS	HF
Pb	PPM	4	AMDEL	XRF	
Zn	PPM	2	AMDEL	AAS	HF
Ni	PPM	5	AMDEL	AAS	HF
Co	PPM	5	AMDEL	AAS	HF
As	PPM	2	AMDEL	XRF	
Sb	PPM	2	AMDEL	XRF	
Bi	PPM	1	AMDEL	XRF	
Mo	PPM	2	AMDEL	XRF	
Ag	PPM	0.1	AMDEL	OES	
Sn	PPM	1	AMDEL	XRF	
Ge	PPM	1	AMDEL	OES	
Ga	PPM	1	AMDEL	OES	
W	PPM	10	AMDEL	XRF	
Ba	PPM	100	CSIRO	ICP FS	
Zr	PPM	50	CSIRO	ICP FS	
Nb	PPM	3	AMDEL	XRF	
Ta	PPM	3	AMDEL	XRF	
Se	PPM	1	AMDEL	XRF	
Be	PPM	1	AMDEL	OES	
Au	PPB	1	ANALABS	Carbon Rod	Aqua Regia

Legend:
- AAS Atomic Absorption Spectroscopy
- XRF X-ray Flouresence
- ICP FS Inductively Coupled Plasma Fusion
- OES Optical Emission Spectroscopy

The size of the symbols is not a linear function of concentration of the elements. For visual ease and assistance in the recognition of outlier data the symbol sizes are defined as:

Map Symbol Size = Minimum Symbol Size for Map + Constant Symbol Size * $(\text{Percentile}/100)^4$,

where the percentile is the percentile ranking of the sample for the particular element being considered. This fourth order function enhances the size of the symbols for the high end outliers of the data, whilst making the samples that fit in the rankings of less than 75th percentile range more equal in size.

INTERPRETATION OF THE GEOCHEMICAL DISTRIBUTIONS

Interpretation of the geochemical maps requires some knowledge of the geological processes that have acted, or are still acting within an area. Inference about the geological environment can be made from many of the geochemical maps and can assist in refining geological models. Hallberg (1984) has shown that within the saprolitic laterite profile, TiO_2, Cr, and Zr abundances commonly reflect the original lithologies. Titanium, and Cr abundances, commonly outline the mafic volcanic or mafic volcanic derived sedimentary assemblages, whilst Zr is useful in outlining the Zr enriched felsic volcanics. Maps of these elements must be interpreted with caution as the abundances of the elements may have been modified by several processes, particularly during weathering. Fractionated igneous rocks tend to be enriched in Mo, Be, W, Ga, and Sn and laterite geochemistry on a regional scale could be expected to reflect such effects.

Several patterns emerge from a careful examination of the element maps. As in the South Murchison area (Grunsky *et al.*, 1988), one of the more dominant patterns is that shown by TiO_2, Mn, Cr, V, Cu, Zn, Ni, and Co (Figures 34, 35, 36, 37, 38, 40, 41, 42). These elements all show high relative abundance in the parts of the Dalgaranga, Weld Range, and Meekatharra greenstone belts, occurring as a northeast linear trend, parallel to the regional stratigraphy of the belts (Watkins and Hickman, 1988). The abundances of these elements in the laterite and ferricrete materials may reflect mafic-ultramafic bedrock lithologies. In the case of the Weld Range greenstone belt, the pattern can be explained by the presence of gabbroic and doleritic layered sills. Part of the increases in abundances may be due to sampling bias, namely, more of the samples were collected over mafic and ultramafic lithologies.

Arsenic and Sb (Figures 43, 44) show significant abundance levels in the Weld Range, Meekatharra, and a portion of Gnaweeda greenstone belt. These values are possibly associated with shear and fault zones that are parallel to the stratigraphy. The regional patterns of As and Sb suggest that a chalcophile corridor strikes northeasterly through the Dalgaranga and Meekatharra greenstone belts. Silver, Pb, Bi, Mo, W, Be (Figures 47, 39, 45, 46, 49, 54) also show association with As and Sb.

Gold shows anomalous abundances in the Dalgaranga, Weld Range, Gum Creek, and Meekatharra areas and is concordant with the chalcophile elements listed above. The distribution of Au must be carefully considered. The general sample spacing of 3 km with fill-in sampling at 1 km is too wide for reliable interpretation of Au patterns in laterites and ferricretes. Laterite and ferricrete geochemistry at these low sample densities generally requires the use of intermediate zonal targets, such as anomalous chalcophile envelopes, which can occur about individual deposits. Thus the absence of Au in a 3-km spacing sampling programme should not infer that it is not present.

The Gum Creek greenstone belt in the SANDSTONE area shows elevated levels of some of the pathfinder elements, Pb, Bi, Sn, W, Be, as well as Au (Figures 39, 45, 48, 49, 54, 55). However, these values are noticeably less than the abundances in the Dalgaranga and Meekatharra areas. Almost all of the samples are ferricretes rather than laterites and the nature of the sample media may have some influence on the nature of the distribution of the elements.

Niobium, and Zr (Figures 52, 51) display patterns that reflect the presence of fractionated volcanics in the Meekatharra and Gum Creek greenstone belts. Some of the samples are high in Nb or Zr concentrations which may be due to the presence of the surrounding intrusive rocks.

The relative abundance pattern of V (Figure 37) is high in the northeastern part of the Dalgaranga (Mount Farmer), Weld Range, central Gum Creek, and Meekatharra areas, again, outlining the mafic sills. Some of the V abundances may be associated with oxide facies ironstones as in the Mount Marion area of the Gum Creek Greenstone belt.

The abundances of Cu, Pb, and Zn (Figures 38, 39, 40) can be dependent upon lithology and mineralization. The abundance levels of the elements indicate that they predominantly outline the mafic volcanic host rocks. Their use as indicators for mineralization requires special care as discussed by Smith *et al.* (1984). Elevated abundances of these elements occur in the Meekatharra, Weld Range, and Gnaweeda areas.

Molybdenum (Figure 46) is associated with the chalcophile corridor of the Dalgaranga and Meekatharra greenstone belts. It is also associated with the felsic plutonic rocks at the margins of the greenstone belts, most notably, the Gum Creek area.

Tin (Figure 48) shows an increase in relative abundances in the Gum Creek, Gnaweeda, and Meekatharra areas. Tin is commonly associated with dispersion from the base metal sulphide deposits as shown by Smith and Perdrix (1983). It may be a suitable pathfinder for such deposits. Other Sn patterns in the area may be related to magmatic enrichment from the syn-kinematic granitic rocks.

Barium (Figure 50) displays elevated abundances in every region for which it was analyzed. It does not appear to have any significance as a pathfinder.

PRINCIPAL COMPONENTS ANALYSIS

Many of the trends discussed above can be determined by the use of systematic and statistical methods of data analysis. One such commonly used technique is principal components analysis. A fundamental objective in the analysis of numerical data is the extraction of meaningful information, achieved by reducing the number of elements that originally described the data into a new set of variables that are linear combinations of the original elements. From this it is may be possible to construct one or more models from which one or more geological processes can be inferred. As the number of variables increases, the more detail is provided, however, this is at the expense of simplicity of interpretation.

In geological applications, and particularly within the study of igneous rocks, the foundation of petrology is based upon the systematic variation of the elements involved in magmatic fractionation. It is already known that the lithogeochemistry of igneous rocks contains a number of chemical variables that will correlate with one another. Because of this, it would be easier to examine just a few critical elements to extract a meaningful interpretation. However, it is not always known which elements are involved in the magmatic process during fractionation of igneous rocks, nor is it always known what subsequent alteration or metamorphism has occurred. Thus, there is uncertainty in choosing, a priori, which variables to include in a subsequent data analysis. A way to overcome this uncertainty is to apply some technique of data analysis that will assist in reducing the number of variables based on correlations or covariances of the variables. Techniques such as factor analysis, principal components analysis, and cluster analysis, have been developed in response to these problems. There are several good reviews that discuss the basics of multivariate data analysis techniques (e.g., Jöreskog *et al.*, 1976; Davis, 1986).

The objective of principal components analysis is to reduce the number of variables necessary to describe the observed variation within a set of data. This is done by forming linear combinations of the variables (components) that describe the distribution of the data. Ideally, to the geologist, each component might be interpreted as describing a geological process, such as differentiation (partial melting, crystal fractionation, etc.) and alteration/mineralization (carbonatization, silicification, alkali depletion, metal associations and enrichments etc.). A method of principal components analysis known as simultaneous RQ-mode principal components analysis (Zhou *et al.*, 1983) was carried out on the correlation matrix of the laterite and ferricrete data groups separately. Only those samples which were analyzed for all elements were included in the analysis. This resulted in only 213 laterite samples and 285 ferricrete samples being used. In addition to the samples that were the original regional samples (DESCRIPT=R), a substantial number of the samples that were included in the analysis were comprised of follow-up samples (DESCRIPT=F2, F3). The inclusion of these samples has biased the results towards areas that are anomalous. This should be taken into consideration when interpreting the results.

Tables 6 and 7 show the results of the principal components analyses for both groups of data. Tables 6a, 7a show tables of element correlations; Tables 6b, 7b list the eigenvalues and corresponding variance represented by each components. Tables 6c, 7c list the component loadings of the elements, and Tables 6d, 7d lists the contribution (relative significance) that each element makes to each component of the reduced variable space.

The correlation coefficients can be useful in assessing pairs of significant relationships between elements. Correlation coefficients can be tested for their significance by statistical procedures (Student's t-test). In the case of the laterites and ferricretes, composed of 213 and 285 samples respectively, significant correlation coefficients are defined by absolute correlation coefficient values greater than 0.13 at the 99% confidence level. It must be kept in mind that many of the elements have non-normal distributions and that the significance of the correlation coefficients may be distorted. A description of the correlations between the elements would be awkward. The relationships can best be expressed by the examination of the principal component scores in Tables 6c, 6d and 7c, 7d. As well, the relationships can be visually assessed by projecting the principal component scores of the elements and samples on to the principal component axes.

LATERITIC SAMPLES

Generally, the significant components of a principal components analysis are associated with eigenvalues that have values greater than 1.0. Thus in Table 6b the first 8 components would be considered to be significant. The cumulative contribution of the eigenvalues accounts for 67% of the data variation.

Tables 6c, 6d show that Ni, Co, Cr, Zn, and Sb contribute the greatest amount to the first principal component. This component accounts for 15% of the total variation of the data. The second principal component accounts for 12% of the data variation and is dominated by Nb, Sn, Ga, Bi, Zn, Ta, and Cu. Figure 56a shows a plot of the elements and samples projected onto the Component 1-Component 2 (C1-C2) plane. This figure shows the relationships of the elements and the samples with respect to the first two principal components. The sum of the variance that these two components account for, 27% of the variation of the data, and Figure 56a exhibits the relative relationships of the elements and the samples for this amount of variation. The principal component scores of the elements are listed in Table 6c and their corresponding positions in the Component 1-Component 2 (C1-C2) plane are shown in the figure. *Each sample is plotted as a small cross and each element is also projected onto the Component 1-Component 2 plane. In this way the relationship between the samples and the elements can be graphically displayed.*

Figure 56a, shows that certain elements are grouped together. Nickel, Co, Cr, Zn, Mn, Fe_2O_3, and As are positively correlated and plot at the positive end of the Component 1 axis. Beryllium, Ta, Bi, Sn, and Nb are also positively correlated, but are negatively associated with the Cr, Ni, Co, Zn, Mn, As, Fe_2O_3 group. They represent the most significant elements of the second component as shown in Tables 6c and 6d. As shown in Table 6a, these elements are significantly correlated with each other. Samples that plot close to these elements on the Component 1-Component 2 projection are enriched in those elements. Few samples plot very close to these extreme elements on either the Component 1 or the Component 2 axis. This is due to the *relative* enrichment of the samples in the various elements. Note that Figure 56a shows the inverse relationship of Ga and Nb with Fe_2O_3, Ni, Co, Zn, and Mn. Thus, these diagrams are a useful summary of the relationships of the data. Note that the bulk of samples are located close to the origin of the plot. These samples represent the background population that are not enriched in those elements that plot along the extremes of the axes. For the first two components, Figure 56a shows that the majority of samples have background values in Se, Ag, Au, B, W, Mo, Pb, and Sb. An interpretation of Figure 56a indicates that Cr, Ni, Co, Zn represent the mafic/ultramafic sequences of volcanics whilst the association of Be, Bi, Ta, Sn may suggest samples associated with felsic intrusive rocks or as indicator elements suggesting possible mineralization.

The third component accounts for 9% of the data variation and is dominated by Pb, Se, As, Ag, Mo, and Fe_2O_3. Table 6c shows that these elements have negative component scores. Thus, samples that have negative scores for the third component tend to be enriched in these elements.

The fifth component accounts for most of the Au variation in the area. This component accounts for only 7% of the total data variation. Tables 6c, 6d show that Au and W are closely associated, and Figure 56b shows the projection of the samples and elements onto the Component 1-Component 5 (C1-C5) plane. Most of the samples plot close to the origin of the plot, indicating that they have little or no Au or W. However, a number of samples plot along the Component 5 (C5) axis showing a enrichment in Au, and W. Molybdenum, Cu, and Sb appear to be related to Au, W enrichment.

The principal component scores of the samples can also be plotted on the maps. Figures 57a, 57b, 57c show the scores for the first, second, and fifth components respectively. Figure 57a shows large positive scores (Cr, Co, Ni) in the Meekatharra, and Gnaweeda areas, most probably associated with ultramafic rocks. Negative Component 1 scores indicate samples that are enriched in Se and Ga. Figure 57b shows the map of the second component. Positive scores are associated with Cu, Zn, Fe_2O_3, Co, Sb, and As enrichment, and negative scores associated with Nb, Sn, Bi, Ta, and Be enrichment. Significant scores (>95th percentile of the ranked principal component scores) for the second component occur in the Gnaweeda and Dalgaranga areas. A consistently large group of positive scores occurs in the Weld Range area, outlining the ultramafic association as shown in Figure 56a. Figure 57c shows significant positive scores associated with Au and W enrichment in the Dalgaranga, Weld Range, Gnaweeda, and Warda Warra greenstone belts. The largest component score occurs in the Reedy area of the Meekatharra greenstone belt. *Samples with large positive scores in the fifth component indicate possible Au/W enrichment and would be suitable exploration targets.*

FERRICRETE SAMPLES

Tables 7a, 7b, 7c, 7d summarize the results of principal components analysis applied to the ferricrete data. Table 7a lists the correlation matrix of the elements. Correlation coefficients of 0.13 are significant at the 99% confidence interval (based on the assumption of normal distributions). Table 7b shows that the first six components account for 65% of the data variation. Table 7c lists the component scores of the elements for the first 10 components, and Table 7d lists the relative contribution that each element makes to the first 10 components.

The first component shows that most of the data variation is due to Sn, Ta, Bi, Be, Nb, Ga, with lesser contributions by Cr, Zn, Co, and Mn. The second component is dominated by variation due to Co, Mn, Zn, Ni, Cr, and V, and to a lesser extent by Ta, Ga, W, Be, Bi, and Sn. Figure 58a shows the samples and elements projected onto the Component 1-Component 2 (C1-C2) plane. The figure illustrates the overall enrichment of Cr-bearing ferricretes with W, Be, Bi, Ta, and Sn, as indicated along the Component 1 axis. This is due to two samples that are enriched in Cr, W, Be, Bi, Ta, and Sn. This means that these two groups of data are linearly dependent on each other and can create problems in interpretation. A component rotation procedure would help in maximizing the difference between these two components. Because this method of principal components is non-robust, outliers can distort the overall relationships of the data. In this case, the outliers are caused by Cr enrichment with W, Be, Bi, Ta, and Sn. Thus a combination of the first two components generally outlines the differences between the ultramafic rocks and the Be, Bi, W, Sn, Ta enriched rocks. Outliers may be undesirable for procedures that require the knowledge of the overall consistency (for example, the background population) of linear relationships of the data. However, in exploration strategies, the detection of outliers is crucial for subsequent follow-up (to be discussed below). If the outliers were to be deleted and the components analysis run again, then these two relationships would be greatly diminished.

The fourth component accounts for most of the variation of Au (43% of the Au variation over the component space). Tables 7c, 7d show that Au is positively correlated with Sb and As, and negatively correlated with Se, Ag, and Pb. Figure 58b shows the samples and elements projected onto the Component 1-Component 4 (C1-C4) plane. Samples that plot along the positive part of the Component 4 axis tend to be enriched in As, Au, and Sb.

Figures 59a, 59b, 59c show the principal component scores plotted onto the maps for the first, second and fourth components. Figure 59a shows that the large negative scores outline the ultramafic/mafic rocks of the Weld Range, Meekatharra, and Gnaweeda greenstone belts. Similarly, the large positive scores of the second component in Figure 59b show the same features in the same area. However, positive scores of the second component also indicate W, Be, Bi, Ta, Sn, and Cr enrichment.

Figure 59c shows that the largest component scores represent Au-Sb-As association and enrichment and occur in the western part of the Weld Range area, followed by some elevated associations in the eastern part of the Meekatharra, and Gnaweeda areas.

GEOCHEMICAL ANOMALIES

Geochemical anomalies can be defined by a number of techniques. As shown above, simple ranking and examination of the extremes of pathfinder and target elements is an effective means of defining anomalies.

Previous unpublished work by the Laterite Geochemistry Group outlined a number of anomalies associated with element enrichments determined by a number of methods. These methods detected anomalies through:

a) element abundances above known background thresholds,

b) samples in which several elements had elevated abundances above specified percentile levels after the data were ranked,

c) the use of empirical indices such as the chalcophile index, CHI-6*X, and the pegmatophile index, PEG4.

Figure 60 and Table 8 show the anomalies that were noted from the initial regional sampling programme. Samples that are associated with these anomalies are noted in the database file that accompanies this report. These anomalies are noted in the field entitled DESCRIPT as outlined in Appendix 1. These anomalies were outlined by a number of empirical procedures including selection by abundances greater than the 95th percentile ranking of chalcophile elements, CHI-6*X, and PEG-4 indices.

ANOMALY RECOGNITION BY THE CHI-6*X AND PEG-4 INDICES

The initial regional samples of laterites and ferricretes were selected from the database and were used to calculate the CHI-6*X and PEG-4 indices as outlined by Smith *et al.* (1989). These indices are based on the empirical selection of pathfinder elements that are combined to produce a 'score'. The magnitude of the score is directly proportional to the significance of the exploration target. The indices are calculated according to the following formulae:

$$CHI\text{-}6{*}X = As + 3.0{*}Sb + 10.0{*}Bi + 3.0{*}Mo + 30.0{*}Ag + 30.0{*}Sn + 10.0{*}W + 3.0{*}Se$$

$$PEG\text{-}4 = 0.09{*}As + 1.33{*}Sb + Sn + 0.14{*}Ga + 0.4{*}W + 0.6{*}Nb + Ta$$

A number of indices can be created, largely dependent upon the regional background values and methods of analysis for which the indices are calculated. These formulae should not be applied without careful consideration of the materials being used and a knowledge, preferably from an orientation study, of the area. Depending on the commodities being sought, the index can be varied by adding or deleting elements and varying the threshold coefficients. Only regional samples were used (DESCRIPT='R'). 'F2' and 'F3' samples were not used since, as follow-up samples, they generally defined anomalies that were initially discovered using 'R' samples.

The upper percentile values of these indices are the samples most worthy of further follow-up, provided that the index is above the regional background total for the index itself. Tables 9a, 9b, 9c, 9d lists the samples that scored greater than the 90th percentile level for the laterites and ferricretes.

Figures 61a, 61b, 61c, 61d show all of the ranked regional samples. Figure 61a, shows the ranked regional samples for the CHI-6*X index of the regional lateritic samples using the previously defined formula. Significant values occur in the Dalgaranga, eastern Meekatharra, Gnaweeda, western Weld Range, and Warda Warra greenstone areas. The 'F2' and 'F3' follow-up samples provide additional enhancements to these anomalies. Figure 61b shows the ranked lateritic samples for the PEG-4 index. The upper percentile values of the PEG-4 index duplicate the CHI-6*X samples of Figure 61a.

Figure 61c shows the ranked samples for the CHI-6*X index of the regional ferricrete samples. Notice that the CHI-6*X values are comparatively greater in magnitude than those for the laterites. The upper percentiles however, outline the same anomalies as the laterites. Similarly, Figure 61d shows the ranked samples for the PEG-4 index of the ferricrete samples. The upper percentiles also outline the same areas as the CHI-6*X index. Significant CHI-6*X and PEG-4 indices occur in the Weld Range, southern Abbotts, eastern Meekatharra, and Gnaweeda areas. It should be noted that the prominence of the CHI-6*X anomalies becomes clearer when follow-up samples are included. In particular, the As-Sb anomaly at Weld Range becomes a prominent geochemical feature.

ANOMALY RECOGNITION BY PRINCIPAL COMPONENTS ANALYSIS

The results of the principal components analysis can be used as a means for detecting geochemical anomalies. Because the method determines components based on the variance of the data, extreme values of the components represent samples that have abundances that are elevated relative to the linear combinations of the majority of samples that comprise that component.

In the case of the lateritic materials, Tables 6c, 6d show that the fifth component accounts for a very significant amount of Au variation. Projection of the samples and elements onto the Component 1-Component 5 (C1-C5) plane shows which samples are most enriched in Au, and W. The map of Figure 57c shows the areas with the highest Component 5 values. Areas where large Component 5 values (Au-W association) occur are in the Meekatharra-Mt. Magnet belt in the northeast corner of the Cue area, the Weld Range area, and the Mt. Farmer area of the Dalgaranga belt.

The samples that ranked above the 90th percentile values are listed in Table 10.

The ferricrete materials also showed that Au is a significant element in the fourth component as seen in Tables 7c, 7d. In this case, Au, Sb, and Se are associated, as seen in Figure 58b. The Weld Range, eastern Meekatharra, and Gnaweeda areas have the highest Component 4 scores.

Table 11 lists the samples above the 90th percentile values.

ANOMALY RECOGNITION BY THE USE OF χ^2 PLOTS

Most anomaly recognition procedures are based upon determining the threshold that distinguishes background from anomalous values. However, the use of multivariate procedures can be useful in determining background from anomalous samples for a set of desired elements, such as those used for the CHI-6*X and PEG-4 indices by Smith and Perdrix (1983), and Smith *et al.* (1989).

Garrett (in press, 1989) describes the use of the covariance matrix as a tool for discriminating background sample populations from anomalous sample populations. The covariance matrix contains information on the variability of the elements as well as their inter-relationships. The multi-element data define a hyper-ellipsoid in multi-dimensional space. In a multivariate normal sample population, most samples fall within a close distance of each other and by definition are part of the background group of samples. However, if outliers are included in the data, the shape of the hyper-ellipsoid that is defined by the covariance matrix changes. The distance of each sample to the centroid of the cloud of points is the Mahalanobis distance.

Outliers can be distinguished from the main background population by determining the Mahalanobis distance of each sample to the group centroid. The distances can be compared to the 'expected' distances of a multivariate normal population (cumulative probability with the number of degrees of freedom defined as the number of variables) by the use of χ^2 values (NOT to be confused with CHI-6*X index, above).

A graphical procedure of plotting the Mahalanobis distances of the observed from the expected, allows for the detection of outliers. If the sample population is multivariate normal, then the χ^2 plot is a straight line. If the population contains outliers, then the observed Mahalanobis distances are greater than the expected χ^2 value, and the plot becomes non-linear.

This procedure was applied to the laterite (132 samples) and ferricrete (328 samples) regional (DESCRIPT='R') data for a suite of chalcophile and pegmatophile elements (As, Sb, Mo, Bi, Ag, Sn, W, Se, Ga, and Nb). Figures 62a, b show the χ^2 plots for the regional samples of laterites and ferricretes. The two curves show that many samples appear to be outliers as the observed χ^2 is greater than the expected χ^2 values. These samples were removed from the data and the covariances and corresponding χ^2 values recalculated. Figures 63a, 63b show the curves for a reduced set of data (Laterites=109, Ferricretes=233) from which the outliers were trimmed. Figure 63a reveals that the data appear to approximate a straight line and it is most probable that the outliers have been removed. Figure 63b on the other hand indicates that many more outliers exist. This is not necessarily true, and it is more likely that the data are not multivariate normal and thus it may be very difficult to get a straight line by further trimming of the data. Garrett (in press) discusses procedures for assessing multivariate normality of multi-element suites, and Smith *et al.* (1984) discuss procedures that can be used to transform the data into more normal-like distributions.

Maps of the trimmed data, 23 lateritic samples and 95 ferricrete samples are shown in Figures 64a, 64b. Tables 12 and 13 list the samples . The lateritic samples can be considered outliers and most probably anomalous whilst only the upper percentiles of the trimmed ferricrete data can be considered anomalous and worthy of exploration follow-up. These samples are ranked and plotted according to their significance. Figure 64a shows that the most significant laterite outliers occur in the Weld Range and Gum Creek areas. The ferricrete outliers of Figure 64b are most significant in the Weld Range, Meekatharra, and Gum Creek areas. Thus, these two figures show areas that contain anomalous abundances in the multi-element signatures of As, Sb, Mo, Bi, Ag, Sn, W, Se, Ga, and Nb.

DISCUSSION AND CONCLUSIONS

The North Murchison area is host to a number of significant Au deposits. Previous reports (Watkins *et al.*, 1987; Tingey, 1985; Elias *et al.*, 1982; Elias, 1982) suggest that the potential for base metals and other commodities is not high. Thus, the emphasis on Au-associated geochemical signatures would have the most economic significance.

Gold mineralization is commonly associated with an increase in the abundance of a variety of elements, most commonly, As, Sb, W, Mo, B, Ag, Li, Ba, Rb, and Cr in the unweathered profile. As well, Cu, Pb, and Zn can be present in some Au deposits (Groves, 1988; Colvine *et al.*, 1988). However, not all of these elements are present for all types of deposits. Pegmatite associated rare metal deposits can be indicated by enrichment of Bi, As, Sb, Mo, Sn, Ge, W, Nb, and Au. Any one or combination of these elements can be considered as possible pathfinders to a variety of ore deposits.

The chalcophile corridors that were clearly delineated in the South Murchison area (Grunsky *et al.*, 1988) do not appear to have the same prominence in the North Murchison area. Only the Weld Range and Meekatharra greenstone belts exhibit the 'chalcophile' trend. The 'chalcophile' trends of both these areas are associated with significant deformation zones and thus the structure must also be considered an important part of an exploration strategy. These areas are also those areas with a history of the most Au production. To a lesser extent, the Dalgaranga and Gnaweeda belts also show some chalcophile enrichment. Based on the data used for this study, the Gum Creek and Mingah areas appear to show the least likelihood of being part of a chalcophile corridor. Additional sampling may prove otherwise for these areas.

The maps of the elements are useful in picking out elevated abundances for subsequent exploration follow-up. Gold (Figure 55) shows elevated values in the Weld Range, Meekatharra, and northern part of the Dalgaranga and Gum Creek greenstone belts. Copper, Pb, and Zn (Figures 38, 39, 40) show elevated abundances in the Dalgaranga and Meekatharra-Gnaweeda areas. Tin (Figure 48) shows anomalous abundances in the eastern part of the Meekatharra area. Many of the anomalies of Table 8 and Figure 60 were discovered in follow-up sampling ('F2', 'F3' samples) which were not included in the subsequent procedures presented in this report.

The use of principal components analysis, CHI-6*X, PEG-4, and χ^2 plots also outline zones that area enriched in the chalcophile elements, As, Sb, Mo, Bi, Ag, Sn, W, Se, Ga, and Nb. These procedures confirm some of the anomalies presented in Figure 60 and Table 8. The most prominent As-Sb trend through the Weld Range towards Meekatharra suggests the presence of a chalcophile corridor and its presence is confirmed by the application of principal components analysis, the CHI-6*X index and the χ^2 plots. The use of Figures 57, 59, 60, 61, and 64 enhance the signatures associated with these elements and provide a key for further exploration targets.

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APPENDIX 1

Data Format of the North Murchison Database

The data are contained on a double sided double density (360Kb) 5¼ inch floppy diskette that is formatted for an IBM PC or compatible computer running under DOS.

The name of the file that contains the data is: NMURCH.SDF
Refer to Table 2 for the meaning of the various element codes.
The data is coded in ASCII format and each record of the file has the following attributes:

Field	Field Name	Type	Width	Dec
1	SAMPLE	Character	7	
2	SAMPLETYPE	Character	5	
3	MAPREF	Character	8	
4	EASTING	Numeric	6	
5	NORTHING	Numeric	7	
6	GEOLOGY	Character	5	
7	DESCRIPT	Character	3	
8	ANOMALY	Character	5	
9	SIO2	Numeric	7	2
10	AL2O3	Numeric	7	2
11	FE2O3	Numeric	7	2
12	MGO	Numeric	7	3
13	CAO	Numeric	7	3
14	TIO2	Numeric	7	3
15	AG	Numeric	7	1
16	MN	Numeric	7	
17	CR	Numeric	7	
18	V	Numeric	7	
19	CU	Numeric	7	
20	PB	Numeric	7	
21	ZN	Numeric	7	
22	NI	Numeric	7	
23	CO	Numeric	7	
24	AS	Numeric	7	
25	SB	Numeric	7	
26	BI	Numeric	7	
27	MO	Numeric	7	
28	SN	Numeric	7	
29	GE	Numeric	7	
30	GA	Numeric	7	
31	W	Numeric	7	
32	BA	Numeric	7	
33	ZR	Numeric	7	
34	NB	Numeric	7	
35	TA	Numeric	7	
36	SE	Numeric	7	
37	BE	Numeric	7	
38	AU	Numeric	7	

For the variable, GEOLOGY, the following codes are used to define the geology of the areas where the samples were collected:

AVR - Acid Volcanic Rocks
BIF - Banded Iron Formation
FGM - Foliated Granite and Migmatite
GIR - Granitic Intrusions
LBU - Layered Basic and Ultrabasic Intrusions
MBU - Metabasic and Ultrabasic Rocks
MSR - Metasedimentary Rocks
UMG - Undifferentiated Massive Granitic Rocks

The codes were derived from the geological maps of the Western Australia Geological Survey.

A FORTRAN 77 format statement would read in the data in the following manner

```
      CHARACTER*3 ANOMALY
      CHARACTER*5 SAMTYP,GEOL,DESCRIPT
      CHARACTER*7 SAMPLE
      CHARACTER*8 MAPREF
      REAL*4   EAST,NORTH,
     $         SIO2,AL2O3,FE2O3,MGO,CAO,TIO2,AG,MN,CR,V,CU,PB,
     $         ZN,NI,CO,AS,SB,BI,MO,SN,GE,GA,W,BA,ZR,NB,TA,SE,
     $         BE,AU
      READ(5,10) SAMPLE,SAMTYP,MAPREF,EAST,NORTH,
     $         GEOL,DESCRIPT,ANOMALY,
     $         SIO2,AL2O3,FE2O3,MGO,CAO,TIO2,AG,MN,CR,V,CU,PB,
     $         ZN,NI,CO,AS,SB,BI,MO,SN,GE,GA,W,BA,ZR,NB,TA,SE,
     $         BE,AU
10    FORMAT(A7,A5,A8,F6.0,F7.0,2A5,A3,3F7.2,3F7.3,F7.1,23F7.0)
```

Negative values indicate less than detection limit. The detection limit is defined as the absolute value of the quoted value.

Zero values indicate that no analysis was performed for that element.

Table 3: Summary statistics for North Murchison Database

Sample types: Laterites
LP CP LN CN PN

No. of Samples in Group: 350

Element		Lab	Method	L.L.D.	#Samples	Percentiles 1%	5%	10%	25%	50%	75%	90%	95%	99%
SiO2	Wt%	Csiro	ICP	0.5	113	6.20	7.87	11.85	18.99	26.64	36.48	53.13	62.51	65.64
Al2O3	Wt%	Csiro	ICP	0.5	113	2.39	7.15	9.06	12.17	14.72	18.95	22.22	24.16	30.40
Fe2O3	Wt%	Amdel	AAS-HF	0.1	350	10.15	17.30	22.30	32.17	43.75	54.19	62.62	67.62	81.49
MgO	Wt%	Csiro	ICP	0.05	113	.02	.02	.02	.03	.05	.08	.14	.23	.50
CaO	Wt%	Csiro	ICP	0.05	113	.02	.02	.02	.04	.05	.08	.10	.13	.24
TiO2	Wt%	Csiro	ICP	0.003	113	.15	.36	.43	.58	.79	1.31	2.18	2.69	4.97
Ag	ppm	Amdel	OES	0.1	350	.03	.03	.03	.03	.20	.40	.80	1.00	2.00
Mn	ppm	Amdel	AAS-HF	5.0	350	1.50	3.00	3.50	6.00	11.80	23.80	41.30	55.80	260.00
Cr	ppm	Amdel	XRF	5.0	350	92.00	177.00	282.00	451.00	1013.00	1921.00	4043.00	6127.00	9999.00
V	ppm	Amdel	XRF	10.0	350	12.00	105.00	178.00	500.00	853.00	1205.00	1716.00	2226.00	3484.00
Cu	ppm	Amdel	AAS	2.0	350	11.00	15.00	20.00	48.00	95.00	210.00	679.00	861.00	1217.00
Pb	ppm	Amdel	XRF	4.0	350	.67	5.00	11.00	18.00	28.00	46.00	68.00	86.00	154.00
Zn	ppm	Amdel	AAS	2.0	350	8.00	14.00	16.00	22.00	30.00	48.00	85.00	108.00	180.00
Ni	ppm	Amdel	AAS	5.0	350	1.67	10.00	20.00	33.00	63.00	120.00	208.00	300.00	652.00
Co	ppm	Amdel	AAS	5.0	350	1.67	1.67	1.67	5.00	11.00	20.00	30.00	44.00	100.00
As	ppm	Amdel	XRF	2.0	350	2.00	6.00	9.00	15.00	30.00	71.00	225.00	424.00	891.00
Sb	ppm	Amdel	XRF	2.0	350	.67	.67	.67	.67	2.00	4.00	7.00	9.00	35.00
Bi	ppm	Amdel	XRF	1.0	350	.33	.33	.33	.33	.33	2.00	4.00	7.00	19.00
Mo	ppm	Amdel	XRF	2.0	350	.67	.67	.67	.67	3.00	7.00	13.00	23.00	47.00
Sn	ppm	Amdel	XRF	1.0	350	.33	.33	.33	.33	2.00	4.00	6.00	8.00	14.00
Ge	ppm	Amdel	OES	1.0	350	.33	.33	.33	.33	.33	.33	1.00	1.00	2.00
Ga	ppm	Amdel	OES	1.0	350	3.00	6.00	10.00	15.00	20.00	25.00	30.00	40.00	40.00
W	ppm	Amdel	XRF	10.0	350	3.33	3.33	3.33	3.33	3.33	11.00	19.00	34.00	228.00
Ba	ppm	Csiro	ICP	100.0	113	33.33	33.33	80.00	112.00	186.00	466.00	908.00	1316.00	2810.00
Zr	ppm	Csiro	ICP-FS	50.0	113	150.00	161.00	194.00	227.00	279.00	346.00	405.00	469.00	590.00
Nb	ppm	Amdel	XRF	3.0	350	1.33	1.33	1.33	4.00	8.00	12.00	17.00	23.00	45.00
Ta	ppm	Amdel	XRF	3.0	350	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	11.00
Se	ppm	Amdel	XRF	1.0	350	.33	.33	.33	2.00	4.00	6.00	7.00	8.00	11.00
Be	ppm	Amdel	OES	1.0	350	.33	.33	.33	.33	.33	.33	.33	.33	1.00
Au	ppb	Analb	234	1.0	262	.33	.33	.33	1.00	2.00	5.00	11.00	17.00	82.00

Table 3 (cont'd): Summary statistics for North Murchison Database

Sample types: Laterites
LP CP LN CN PN

No. of Samples in Group: 350

Element		Lab	Method	L.L.D.	#Samples	Minimum	Maximum	Median	Mode	Mean	Std. Dev.
SiO2	Wt%	Csiro	ICP	0.5	113	2.19	73.91	26.47	19.98	29.35	15.66
Al2O3	Wt%	Csiro	ICP	0.5	113	1.65	37.37	14.58	13.47	15.47	5.75
Fe2O3	Wt%	Amdel	AAS-HF	0.1	350	5.29	85.21	43.61	43.62	43.26	15.59
MgO	Wt%	Csiro	ICP	0.05	113	.02	2.37	.05	.02	.09	.23
CaO	Wt%	Csiro	ICP	0.05	113	.02	.39	.05	.02	.06	.05
TiO2	Wt%	Csiro	ICP	0.003	113	.08	5.83	.79	.51	1.09	.88
Ag	ppm	Amdel	OES	0.1	350	.03	10.00	.10	.04	.31	.65
Mn	ppm	Amdel	AAS-HF	5.0	350	1.10	999.90	11.50	5.20	24.23	64.03
Cr	ppm	Amdel	XRF	5.0	350	33.00	9999.00	1009.00	307.23	1695.13	2080.45
V	ppm	Amdel	XRF	10.0	350	3.33	5228.00	848.00	547.89	944.26	710.44
Cu	ppm	Amdel	AAS	2.0	350	6.00	2211.00	93.00	18.83	209.77	292.33
Pb	ppm	Amdel	XRF	4.0	350	.67	227.00	28.00	24.99	35.75	28.88
Zn	ppm	Amdel	AAS	2.0	350	8.00	592.00	30.00	26.50	43.47	45.91
Ni	ppm	Amdel	AAS	5.0	350	1.67	1200.00	61.00	30.01	99.15	123.27
Co	ppm	Amdel	AAS	5.0	350	1.67	150.00	11.00	4.84	15.50	17.77
As	ppm	Amdel	XRF	2.0	350	.67	6407.00	30.00	15.48	116.95	485.53
Sb	ppm	Amdel	XRF	2.0	350	.67	175.00	2.00	.71	4.13	12.15
Bi	ppm	Amdel	XRF	1.0	350	.33	164.00	.33	.37	2.23	9.26
Mo	ppm	Amdel	XRF	2.0	350	.67	780.00	3.00	.78	8.04	42.18
Sn	ppm	Amdel	XRF	1.0	350	.33	18.00	2.00	.37	2.46	2.81
Ge	ppm	Amdel	OES	1.0	350	.33	10.00	.33	.34	.53	.65
Ga	ppm	Amdel	OES	1.0	350	1.00	40.00	20.00	19.91	21.09	8.46
W	ppm	Amdel	XRF	10.0	350	3.33	4881.00	3.33	3.49	25.66	262.26
Ba	ppm	Csiro	ICP	100.0	113	33.33	3067.00	184.00	103.88	377.49	490.21
Zr	ppm	Csiro	ICP-FS	50.0	113	139.00	794.00	276.00	213.25	294.74	99.20
Nb	ppm	Amdel	XRF	3.0	350	1.33	68.00	8.00	1.44	9.08	8.49
Ta	ppm	Amdel	XRF	3.0	350	1.00	13.00	1.00	1.01	1.43	1.59
Se	ppm	Amdel	XRF	1.0	350	.33	21.00	4.00	3.98	4.00	2.64
Be	ppm	Amdel	OES	1.0	350	.33	2.00	.33	.00	.35	.12
Au	ppb	Analb	234	1.0	262	.33	221.00	2.00	1.08	5.73	17.64

NOTE: Mode estimated by binning of data: # of bins= 100.
Bin width=(95%ile-minimum value)/100.0

Table 4: Summary statistics for North Murchison Database

Sample types: Ferricretes
MF FF PF PE RC

No. of Samples in Group: 657

Element		Lab	Method	L.L.D.	#Samples	Percentiles 1%	5%	10%	25%	50%	75%	90%	95%	99%
SiO2	Wt%	Csiro	ICP	0.5	360	5.22	7.24	8.04	10.85	14.72	21.18	33.03	45.67	58.75
Al2O3	Wt%	Csiro	ICP	0.5	360	1.14	2.02	2.40	3.59	5.56	7.75	11.93	14.12	20.01
Fe2O3	Wt%	Amdel	AAS-HF	0.1	657	19.44	42.75	53.47	62.33	70.63	77.06	82.64	85.07	88.50
MgO	Wt%	Csiro	ICP	0.05	360	.02	.02	.06	.08	.11	.14	.19	.26	.84
CaO	Wt%	Csiro	ICP	0.05	360	.02	.05	.06	.08	.09	.12	.15	.19	.75
TiO2	Wt%	Csiro	ICP	0.003	360	.05	.12	.17	.36	.61	1.11	1.81	2.77	5.49
Ag	ppm	Amdel	OES	0.1	657	.03	.03	.03	.03	.03	.10	.30	.60	2.00
Mn	ppm	Amdel	AAS-HF	5.0	657	5.50	11.20	18.00	38.00	94.00	216.00	340.00	400.00	577.20
Cr	ppm	Amdel	XRF	5.0	657	69.00	157.00	245.00	420.00	770.00	1358.00	2345.00	3497.00	8446.00
V	ppm	Amdel	XRF	10.0	657	35.00	115.00	178.00	339.00	547.00	878.00	1338.00	1716.00	2921.00
Cu	ppm	Amdel	AAS	2.0	657	20.00	44.00	70.00	130.00	200.00	293.00	440.00	663.00	1516.00
Pb	ppm	Amdel	XRF	4.0	657	.67	.67	3.00	11.00	28.00	51.00	82.00	110.00	199.00
Zn	ppm	Amdel	AAS	2.0	657	16.00	30.00	46.00	120.00	270.00	436.00	620.00	777.00	1132.00
Ni	ppm	Amdel	AAS	5.0	657	5.00	20.00	40.00	85.00	185.00	357.00	566.00	907.00	1600.00
Co	ppm	Amdel	AAS	5.0	657	1.67	9.00	14.00	30.00	70.00	140.00	219.00	260.00	438.00
As	ppm	Amdel	XRF	2.0	657	.67	5.00	7.00	15.00	41.00	139.00	283.00	494.00	961.00
Sb	ppm	Amdel	XRF	2.0	657	.67	.67	.67	.67	3.00	6.00	9.00	15.00	62.00
Bi	ppm	Amdel	XRF	1.0	657	.33	.33	.33	.33	.33	2.00	3.00	4.00	8.00
Mo	ppm	Amdel	XRF	2.0	656	.67	.67	.67	.67	2.00	4.00	6.00	12.00	33.00
Sn	ppm	Amdel	XRF	1.0	657	.33	.33	.33	.33	2.00	5.00	7.00	9.00	13.00
Ge	ppm	Amdel	OES	1.0	657	.33	.33	.33	.33	.33	.33	.33	1.00	2.00
Ga	ppm	Amdel	OES	1.0	657	.33	.33	.33	2.00	6.00	15.00	20.00	25.00	30.00
W	ppm	Amdel	XRF	10.0	657	3.33	3.33	3.33	3.33	3.33	12.00	18.00	24.00	40.00
Ba	ppm	Csiro	ICP	100.0	361	33.33	135.00	152.00	203.00	335.00	730.00	1171.00	1626.00	3976.00
Zr	ppm	Csiro	ICP-FS	50.0	361	127.00	185.00	197.00	215.00	242.00	294.00	370.00	465.00	708.00
Nb	ppm	Amdel	XRF	3.0	657	1.33	1.33	1.33	1.33	10.00	15.00	20.00	25.00	55.00
Ta	ppm	Amdel	XRF	3.0	656	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	9.00
Se	ppm	Amdel	XRF	1.0	656	.33	.33	.33	1.00	2.00	4.00	6.00	8.00	11.00
Be	ppm	Amdel	OES	1.0	656	.33	.33	.33	.33	.33	.33	.33	1.00	2.00
Au	ppb	Analb	234	1.0	383	.33	.33	.33	1.00	1.00	3.00	8.00	15.00	30.00

Table 4 (cont'd): Summary statistics for North Murchison Database

Sample types: Ferricretes
MF FF PF PE RC

Element		Lab	Method	L.L.D.	#Samples	Minimum	Maximum	Median	Mode	Mean	Std. Dev.
SiO2	Wt%	Csiro	ICP	0.5	360	2.59	95.03	14.65	10.99	18.26	12.20
Al2O3	Wt%	Csiro	ICP	0.5	360	.03	28.80	5.53	6.87	6.44	4.05
Fe2O3	Wt%	Amdel	AAS-HF	0.1	657	5.86	93.07	70.63	70.42	68.36	13.28
MgO	Wt%	Csiro	ICP	0.05	360	.02	3.87	.10	.02	.13	.23
CaO	Wt%	Csiro	ICP	0.05	360	.02	4.71	.09	.09	.12	.26
TiO2	Wt%	Csiro	ICP	0.003	360	.02	9.74	.61	.55	.93	1.11
Ag	ppm	Amdel	OES	0.1	657	.03	15.00	.03	.04	.15	.64
Mn	ppm	Amdel	AAS-HF	5.0	657	1.50	999.90	93.50	35.37	142.66	138.72
Cr	ppm	Amdel	XRF	5.0	657	46.00	9999.00	769.00	304.82	1186.67	1419.95
V	ppm	Amdel	XRF	10.0	657	3.33	6406.00	547.00	440.06	694.01	598.82
Cu	ppm	Amdel	AAS	2.0	657	10.00	2605.00	200.00	150.40	257.50	256.13
Pb	ppm	Amdel	XRF	4.0	657	.67	507.00	27.00	1.21	38.37	43.34
Zn	ppm	Amdel	AAS	2.0	657	12.00	1910.00	270.00	31.13	309.35	248.81
Ni	ppm	Amdel	AAS	5.0	657	1.67	2400.00	183.00	42.41	277.35	306.51
Co	ppm	Amdel	AAS	5.0	657	1.67	569.00	70.00	15.88	98.77	90.92
As	ppm	Amdel	XRF	2.0	657	.67	2484.00	41.00	8.07	120.79	207.76
Sb	ppm	Amdel	XRF	2.0	657	.67	451.00	3.00	.74	6.13	23.29
Bi	ppm	Amdel	XRF	1.0	657	.33	58.00	.33	.35	1.30	3.02
Mo	ppm	Amdel	XRF	2.0	656	.67	165.00	2.00	.72	3.90	10.09
Sn	ppm	Amdel	XRF	1.0	657	.33	71.00	2.00	.38	3.13	4.11
Ge	ppm	Amdel	OES	1.0	657	.33	20.00	.33	.34	.44	.83
Ga	ppm	Amdel	OES	1.0	657	.33	60.00	6.00	5.88	8.24	8.27
W	ppm	Amdel	XRF	10.0	657	3.33	337.00	3.33	3.44	8.81	18.75
Ba	ppm	Csiro	ICP	100.0	361	33.33	6464.00	333.00	152.78	574.18	694.56
Zr	ppm	Csiro	ICP-FS	50.0	361	91.00	1032.00	242.00	227.51	273.13	108.74
Nb	ppm	Amdel	XRF	3.0	657	1.33	86.00	10.00	1.45	10.38	10.30
Ta	ppm	Amdel	XRF	3.0	656	1.00	195.00	1.00	1.01	1.71	7.78
Se	ppm	Amdel	XRF	1.0	656	.33	19.00	2.00	.37	2.94	2.55
Be	ppm	Amdel	OES	1.0	656	.33	6.00	.33	.34	.39	.32
Au	ppb	Analb	234	1.0	383	.33	609.00	1.00	.99	4.97	31.63

NOTE: Mode estimated by binning of data: # of bins= 100.
Bin width=(95%ile-minimum value)/100.0

Table 5a:
>95th Percentiles for North Murchison Database
Laterites

Sample types:
LP CP LN CN PN

Element	Lab	Method	L.L.D.	# Samples
Ag ppm	Amdel	OES	0.1	350

Sample No.	Easting	Northing	Value
G03700	542428.	7009474.	10.000
G03939	678650.	7066150.	2.000
G02703	548730.	7000528.	2.000
G03881	586490.	7022020.	2.000
G04191	577150.	6901606.	2.000
G03814	583720.	7019180.	2.000
G04243	582672.	6930343.	1.000
G04192	577959.	6900062.	1.000
G03325	550806.	7003289.	1.000
G03929	679700.	7063000.	1.000
G02697	583119.	7017270.	1.000
G03941	676050.	7067550.	1.000
G03892	577470.	7017920.	1.000
G03940	678000.	7067200.	1.000
G04251	535542.	7009957.	1.000
G03937	681000.	7065650.	1.000

Element	Lab	Method	L.L.D.	# Samples
Cr ppm	Amdel	XRF	5.0	350

Sample No.	Easting	Northing	Value
G02659	503282.	6919701.	9999.000
G03957	675800.	7068650.	9999.000
G03951	679250.	7069800.	9999.000
G03968	660299.	7056963.	9999.000
G02650	519955.	6913223.	9999.000
G03889	585880.	7022400.	9999.000
G04201	591214.	6901507.	9947.000
G02699	577065.	7019155.	9822.000
G03830	583470.	7021920.	9018.000
G04190	575642.	6900754.	8666.000
G03942	677300.	7068150.	8590.000
G03828	583790.	7021470.	8453.000
G03860	585030.	7019430.	7729.000
G03955	680550.	7072550.	7604.000
G03947	677750.	7070750.	6957.000

Element	Lab	Method	L.L.D.	# Samples
V ppm	Amdel	XRF	10.0	350

Sample No.	Easting	Northing	Value
G03818	585030.	7019160.	5228.000
G03859	584920.	7019770.	4811.000
G03836	584090.	7020150.	3540.000
G03837	584090.	7020480.	3484.000
G03971	661215.	7061568.	3339.000
G03981	677300.	7069400.	3098.000
G03986	580261.	7022981.	2966.000
G03988	584230.	7018493.	2946.000
G03835	584080.	7020810.	2691.000
G03983	581056.	7018053.	2678.000
G03980	678300.	7069350.	2526.000
G04209	537912.	6930104.	2397.000
G03975	677439.	7068156.	2323.000
G02633	584146.	6925717.	2311.000
G03960	681200.	7069500.	2243.000

Element	Lab	Method	L.L.D.	# Samples
Cu ppm	Amdel	AAS	2.0	350

Sample No.	Easting	Northing	Value
G04233	525012.	6913213.	2211.000
G04256	538759.	7025793.	1369.000
G04253	535568.	7019341.	1357.000
G04247	543532.	7010086.	1217.000
G04242	587059.	6931235.	1215.000
G04266	568162.	7029822.	1207.000
G04241	590135.	6921519.	1167.000
G04255	537094.	7022413.	1025.000
G04231	525158.	6917829.	1025.000
G04238	540256.	6935173.	1024.000
G04267	567734.	7027209.	982.000
G02649	521591.	6911220.	980.000
G03703	545872.	7009462.	973.000
G04257	541930.	7025167.	925.000
G04240	541379.	6943324.	892.000
G04263	543573.	7021931.	871.000
G04232	525154.	6915829.	865.000

Element	Lab	Method	L.L.D.	# Samples
Pb ppm	Amdel	XRF	4.0	350

Sample No.	Easting	Northing	Value
G03703	545872.	7009462.	227.000
G04262	548533.	7020836.	221.000
G04198	591736.	6898272.	181.000
G02697	583119.	7017270.	154.000
G03938	682000.	7067000.	149.000
G03928	679350.	7074900.	115.000
G03937	681000.	7065650.	114.000
G03856	585110.	7020780.	110.000
G03936	679900.	7065500.	109.000
G03700	542428.	7009474.	105.000
G03859	584920.	7019770.	103.000
G02703	548730.	7000528.	96.000
G03935	674750.	7062200.	92.000
G02700	581777.	7022817.	91.000
G03850	584750.	7020110.	88.000
G03854	585120.	7021440.	87.000
G02649	521591.	6911220.	87.000

Element	Lab	Method	L.L.D.	# Samples
Zn ppm	Amdel	AAS	2.0	350

Sample No.	Easting	Northing	Value
G04234	527886.	6915053.	592.000
G02649	521591.	6911220.	360.000
G04275	570168.	7018426.	180.000
G04273	566309.	7018662.	180.000
G03936	679900.	7065500.	145.000
G03932	675850.	7064500.	139.000
G03703	545872.	7009462.	135.000
G03326	550799.	7001597.	133.000
G03938	682000.	7067000.	130.000
G02704	551500.	7002400.	126.000
G03931	674000.	7060050.	124.000
G03702	544222.	7010237.	122.000
G02662	507932.	6920622.	120.000
G02621	577655.	6916374.	110.000
G04192	577959.	6900062.	110.000

Table 5a:
>95th Percentiles for North Murchison Database
Laterites

Sample types:
LP CP LN CN PN

Element	Lab	Method	L.L.D.	# Samples
Ni ppm	Amdel	AAS	5.0	350

Sample No.	Easting	Northing	Value
G03889	585880.	7022400.	1200.000
G04190	575642.	6900754.	754.000
G02699	577065.	7019155.	652.000
G03824	583750.	7020170.	510.000
G02648	524464.	6912599.	510.000
G02650	519955.	6913223.	470.000
G04234	527886.	6915053.	403.000
G04262	548533.	7020836.	386.000
G03828	583790.	7021470.	380.000
G03893	576510.	7018390.	330.000
G03968	660299.	7056963.	325.000
G04201	591214.	6901507.	322.000
G02704	551500.	7002400.	315.000
G04273	566309.	7018662.	310.000
G04191	577150.	6901606.	300.000

Element	Lab	Method	L.L.D.	# Samples
Co ppm	Amdel	AAS	5.0	350

Sample No.	Easting	Northing	Value
G03895	574440.	7017630.	150.000
G03824	583750.	7020170.	150.000
G04234	527886.	6915053.	113.000
G03889	585880.	7022400.	100.000
G04273	566309.	7018662.	60.000
G03834	583450.	7020840.	60.000
G02699	577065.	7019155.	57.000
G03325	550806.	7003289.	57.000
G02621	577655.	6916374.	55.000
G02679	515491.	6950000.	54.000
G02666	516278.	6923537.	50.000
G03931	674000.	7060050.	46.000
G03932	675850.	7064500.	45.000

Element	Lab	Method	L.L.D.	# Samples
As ppm	Amdel	XRF	2.0	350

Sample No.	Easting	Northing	Value
G04262	548533.	7020836.	6407.000
G02682	597224.	6987628.	5969.000
G03938	682000.	7067000.	1320.000
G02703	548730.	7000528.	891.000
G02679	515491.	6950000.	833.000
G03936	679900.	7065500.	777.000
G04234	527886.	6915053.	723.000
G04269	573698.	7032713.	710.000
G03939	678650.	7066150.	638.000
G02649	521591.	6911220.	595.000
G03942	677300.	7068150.	564.000
G02701	578605.	7022991.	544.000
G02692	588992.	7029076.	483.000
G03326	550799.	7001597.	442.000
G03892	577470.	7017920.	427.000
G03937	681000.	7065650.	425.000

Element	Lab	Method	L.L.D.	# Samples
Sb ppm	Amdel	XRF	2.0	350

Sample No.	Easting	Northing	Value
G03885	585740.	7019730.	102.000
G04269	573698.	7032713.	93.000
G04233	525012.	6913213.	35.000
G04234	527886.	6915053.	32.000
G04241	590135.	6921519.	17.000
G02691	576863.	7031156.	16.000
G02646	524066.	6918754.	11.000
G03938	682000.	7067000.	11.000
G02645	519964.	6918915.	10.000
G02703	548730.	7000528.	10.000
G03817	584690.	7019170.	9.000
G04266	568162.	7029822.	9.000
G02686	588688.	7005539.	9.000

Element	Lab	Method	L.L.D.	# Samples
Bi ppm	Amdel	XRF	1.0	350

Sample No.	Easting	Northing	Value
G03959	680500.	7068900.	164.000
G03896	573480.	7018700.	35.000
G03962	679100.	7068750.	20.000
G04211	537782.	6932103.	19.000
G02699	577065.	7019155.	17.000
G03994	576900.	7029900.	15.000
G03947	677750.	7070750.	13.000
G03942	677300.	7068150.	12.000
G04190	575642.	6900754.	11.000
G04262	548533.	7020836.	11.000
G02616	583878.	6906946.	10.000
G02652	505057.	6915085.	10.000
G03995	577650.	7030800.	10.000
G03858	585000.	7020110.	9.000
G04237	530901.	6917969.	8.000
G03703	545872.	7009462.	8.000
G04270	560783.	7016321.	7.000

Element	Lab	Method	L.L.D.	# Samples
Mo ppm	Amdel	XRF	2.0	350

Sample No.	Easting	Northing	Value
G03703	545872.	7009462.	780.000
G02672	513006.	6933541.	63.000
G02616	583878.	6906946.	50.000
G03960	681200.	7069500.	47.000
G03961	679900.	7066600.	44.000
G03947	677750.	7070750.	42.000
G02653	510522.	6911389.	37.000
G04193	579733.	6899896.	36.000
G03952	679300.	7071500.	36.000
G03953	680250.	7071500.	35.000
G03951	679250.	7069800.	29.000
G03990	583551.	7020036.	29.000
G03950	680250.	7070250.	28.000
G03997	579554.	7020216.	28.000
G02634	582381.	6927729.	25.000
G03957	675800.	7068650.	25.000
G03831	583140.	7021510.	25.000

Table 5a:
>95th Percentiles for North Murchison Database
Laterites

Sample types:
LP CP LN CN PN

Element	Lab	Method	L.L.D.	# Samples
Sn ppm	Amdel	XRF	1.0	350

Sample No.	Easting	Northing	Value
G02699	577065.	7019155.	18.000
G03942	677300.	7068150.	17.000
G03815	584050.	7019170.	16.000
G02648	524464.	6912599.	14.000
G04270	560783.	7016321.	12.000
G03959	680500.	7068900.	12.000
G02636	586766.	6928622.	11.000
G03969	659812.	7057831.	10.000
G03951	679250.	7069800.	9.000
G03975	677439.	7068156.	9.000
G04271	563131.	7017233.	8.000
G03892	577470.	7017920.	8.000
G03848	584710.	7019450.	8.000
G02679	515491.	6950000.	8.000
G03974	677000.	7067700.	8.000
G04275	570168.	7018426.	8.000
G02645	519964.	6918915.	8.000

Element	Lab	Method	L.L.D.	# Samples
Ge ppm	Amdel	OES	1.0	350

Sample No.	Easting	Northing	Value
G04278	588714.	6932916.	2.000
G03852	584770.	7020800.	2.000
G03851	584770.	7020450.	2.000
G03836	584090.	7020150.	2.000
G03861	585370.	7019430.	2.000
G02660	501367.	6917701.	2.000
G02674	513020.	6947233.	2.000
G02661	501503.	6915855.	2.000
G02668	517923.	6925842.	2.000
G02673	512876.	6940310.	2.000

Element	Lab	Method	L.L.D.	# Samples
W ppm	Amdel	XRF	10.0	350

Sample No.	Easting	Northing	Value
G03959	680500.	7068900.	4881.000
G03962	679100.	7068750.	345.000
G03951	679250.	7069800.	228.000
G03978	679250.	7068150.	194.000
G02672	513006.	6933541.	161.000
G03947	677750.	7070750.	114.000
G03852	584770.	7020800.	112.000
G02653	510522.	6911389.	79.000
G02634	582381.	6927729.	64.000
G03896	573480.	7018700.	53.000
G03963	678400.	7066900.	51.000
G04270	560783.	7016321.	47.000
G03893	576510.	7018390.	43.000
G03957	675800.	7068650.	40.000
G02616	583878.	6906946.	37.000

Element	Lab	Method	L.L.D.	# Samples
Ba ppm	Csiro	ICP	100.0	350

Sample No.	Easting	Northing	Value
G02613	587673.	6902765.	3067.000
G03895	574440.	7017630.	2810.000
G02639	514223.	6920924.	1623.000
G02658	503828.	6918316.	1582.000
G02650	519955.	6913223.	1538.000
G03898	574860.	7019630.	1316.000
G04274	568782.	7017111.	1258.000
G05001	668180.	7101060.	1200.000
G02657	503963.	6912316.	1088.000
G02619	581070.	6916044.	984.000
G03952	679300.	7071500.	961.000
G03956	678750.	7072450.	908.000
G04278	588714.	6932916.	880.000
G03928	679350.	7074900.	866.000
G02620	579148.	6914826.	651.000

Element	Lab	Method	L.L.D.	# Samples
Nb ppm	Amdel	XRF	3.0	350

Sample No.	Easting	Northing	Value
G03815	584050.	7019170.	68.000
G03890	585880.	7022740.	62.000
G04270	560783.	7016321.	45.000
G03969	659812.	7057831.	45.000
G02699	577065.	7019155.	44.000
G03942	677300.	7068150.	42.000
G03975	677439.	7068156.	40.000
G03859	584920.	7019770.	35.000
G04190	575642.	6900754.	26.000
G04275	570168.	7018426.	26.000
G02636	586766.	6928622.	25.000
G02633	584146.	6925717.	25.000
G02634	582381.	6927729.	24.000
G03971	661215.	7061568.	23.000

Element	Lab	Method	L.L.D.	# Samples
Ta ppm	Amdel	XRF	3.0	350

Sample No.	Easting	Northing	Value
G02699	577065.	7019155.	13.000
G03815	584050.	7019170.	13.000
G04219	541641.	6939784.	11.000
G03942	677300.	7068150.	10.000
G04210	539416.	6929484.	8.000
G03852	584770.	7020800.	7.000
G04267	567734.	7027209.	7.000
G03981	677300.	7069400.	6.000
G04238	540256.	6935173.	6.000
G02634	582381.	6927729.	5.000
G03323	551765.	7002054.	5.000
G04261	546058.	7022538.	5.000
G03929	679700.	7063000.	5.000
G02679	515491.	6950000.	5.000
G03867	586840.	7022340.	5.000

Table 5a:
>95th Percentiles for North Murchison Database
Laterites

Sample types:
LP CP LN CN PN

Element	Lab	Method	L.L.D.	# Samples
Se ppm	Amdel	XRF	1.0	350

Sample No.	Easting	Northing	Value
G03700	542428.	7009474.	21.000
G03850	584750.	7020110.	13.000
G03957	675800.	7068650.	11.000
G04262	548533.	7020836.	11.000
G03870	586080.	7020070.	11.000
G03849	584720.	7019780.	11.000
G04198	591736.	6898272.	10.000
G03969	659812.	7057831.	10.000
G04217	545491.	6943617.	10.000
G02633	584146.	6925717.	10.000
G03961	679900.	7066600.	9.000
G02618	581744.	6914501.	9.000
G03944	677850.	7068900.	9.000
G04210	539416.	6929484.	9.000
G03820	584350.	7018800.	9.000
G02617	590501.	6915669.	9.000
G03953	680250.	7071500.	8.000

Element	Lab	Method	L.L.D.	# Samples
Au ppb	Analb	234	1.0	350

Sample No.	Easting	Northing	Value
G04202	588598.	6898603.	147.000
G03940	678000.	7067200.	82.000
G04269	573698.	7032713.	34.000
G02701	578605.	7022991.	34.000
G03973	677850.	7066900.	30.000
G03887	585770.	7020400.	29.000
G03967	662034.	7058511.	25.000
G03996	582211.	7026045.	22.000
G02650	519955.	6913223.	19.000
G04234	527886.	6915053.	19.000
G02703	548730.	7000528.	18.000
G03324	550803.	7002520.	17.000
G03822	583710.	7019500.	17.000
G04222	536531.	6925954.	17.000
G03888	585800.	7021410.	17.000
G02664	512863.	6927849.	16.000

Table 5b:
>95th Percentiles for North Murchison Database
Ferricretes

Sample types:
MF FF PF PE RC

Element	Lab	Method	L.L.D.	# Samples
Ag ppm	Amdel	OES	0.1	657

Sample No.	Easting	Northing	Value
G03828	583790.	7021470.	15.000
G04248	540502.	7010096.	3.000
G05770	525000.	6912650.	2.000
G03858	585000.	7020110.	2.000
G04244	576940.	6932996.	2.000
G04246	546154.	7011307.	2.000
G05797	524650.	6913900.	2.000
G06232	502450.	6916300.	2.000
G05681	678590.	7070160.	1.000
G03862	585390.	7019760.	1.000
G05007	682946.	7085469.	1.000
G05670	678330.	7071420.	1.000
G05038	651400.	7032700.	1.000
G06254	539000.	6931800.	1.000
G05101	746390.	6928892.	1.000
G04213	542581.	6934242.	1.000
G03869	586070.	7019730.	.800
G05676	678270.	7070840.	.800
G02688	588165.	7009543.	.800
G04266	568162.	7029822.	.800
G04255	537094.	7022413.	.800
G04272	564236.	7017689.	.800
G03866	586750.	7021920.	.600
G02683	597397.	6992088.	.600
G05086	632934.	7074696.	.600
G06231	503950.	6915250.	.600
G05098	749157.	6943619.	.600
G02642	513671.	6916770.	.600
G05008	682920.	7083684.	.600
G02656	506559.	6911237.	.600
G05131	734300.	7030600.	.600

Element	Lab	Method	L.L.D.	# Samples
Mn ppm	Amdel	AAS-HF	5.0	657

Sample No.	Easting	Northing	Value
G03854	585120.	7021440.	999.900
G02635	584309.	6929562.	999.900
G05112	740220.	6949342.	733.600
G03834	583450.	7020840.	680.000
G03958	679950.	7068900.	600.000
G05120	741719.	6941921.	580.000
G02666	516278.	6923537.	577.200
G04197	587930.	6900609.	570.000
G02642	513671.	6916770.	566.200
G03960	681200.	7069500.	550.000
G05117	740020.	6939183.	541.800
G02671	509446.	6932929.	528.400
G02650	519955.	6913223.	505.000
G02664	512863.	6927849.	500.000
G03967	662034.	7058511.	490.000
G02678	514400.	6960900.	489.600
G02677	513443.	6958002.	479.100
G03965	661112.	7057815.	450.000
G02665	518057.	6923842.	449.200
G02669	516556.	6926459.	439.600
G05007	682946.	7085469.	430.300
G03999	565174.	7017745.	430.000
G02617	590501.	6915669.	430.000
G05008	682920.	7083684.	428.400
G03982	582442.	7019121.	420.000
G02693	583862.	7025358.	407.800
G04279	588872.	6935838.	407.500
G05009	681320.	7087960.	404.000
G02652	505057.	6915085.	401.600
G06259	523350.	6912500.	400.000
G03991	583426.	7022037.	400.000

Element	Lab	Method	L.L.D.	# Samples
Cr ppm	Amdel	XRF	5.0	657

Sample No.	Easting	Northing	Value
G03831	583140.	7021510.	9999.000
G03832	583140.	7021190.	9999.000
G02622	577686.	6921298.	9999.000
G02633	584146.	6925717.	9999.000
G03936	679900.	7065500.	8932.000
G03824	583750.	7020170.	8446.000
G05638	640625.	7060500.	8151.000
G06272	527450.	6913050.	7281.000
G05048	650700.	7021300.	7274.000
G02613	587673.	6902765.	6750.000
G03886	585760.	7020080.	6421.000
G06250	544100.	6935000.	6149.000
G03989	584260.	7022955.	6116.000
G06227	543900.	6961950.	5968.000
G05635	641000.	7061430.	5959.000
G04252	534872.	7016882.	5913.000
G05052	576560.	7095460.	5422.000
G03986	580261.	7022981.	5244.000
G05107	735946.	6941110.	5219.000
G02627	575948.	6927617.	5149.000
G03858	585000.	7020110.	4972.000
G04193	579733.	6899896.	4905.000
G03882	586800.	7021360.	4562.000
G04259	544275.	7025467.	4489.000
G03983	581056.	7018053.	4416.000
G03835	584080.	7020810.	4263.000
G05640	640450.	7059950.	4036.000
G05111	740129.	6944724.	3927.000
G03885	585740.	7019730.	3877.000
G05694	678270.	7066170.	3675.000
G04253	535568.	7019341.	3522.000

Element	Lab	Method	L.L.D.	# Samples
V ppm	Amdel	XRF	10.0	657

Sample No.	Easting	Northing	Value
G05791	523200.	6913900.	6148.000
G05046	656000.	7027000.	3921.000
G05047	650700.	7018900.	3396.000
G05681	678590.	7070160.	3321.000
G04267	567734.	7027209.	3155.000
G03840	584140.	7021470.	2921.000
G03883	586420.	7020370.	2496.000
G04230	525026.	6919983.	2377.000
G03824	583750.	7020170.	2339.000
G03846	584430.	7020130.	2285.000
G03838	584120.	7020820.	2238.000
G06074	681688.	7084717.	2174.000
G06232	502450.	6916300.	2123.000
G05641	640350.	7059725.	2110.000
G04204	586972.	6900308.	2107.000
G02630	578676.	6926215.	2010.000
G05788	522800.	6915050.	1984.000
G04264	541367.	7021785.	1950.000
G04252	534872.	7016882.	1886.000
G05789	525250.	6915050.	1868.000
G03326	550799.	7001597.	1855.000
G05012	681360.	7090720.	1843.000
G03842	584130.	7022130.	1842.000
G05001	668180.	7101060.	1838.000
G03858	585000.	7020110.	1821.000
G05619	641275.	7059450.	1743.000
G05048	650700.	7021300.	1741.000
G04222	536531.	6925954.	1728.000
G02620	579148.	6914826.	1717.000

Table 5b:
>95th Percentiles for North Murchison Database
Ferricretes

Sample types:
MF FF PF PE RC

Element	Lab	Method	L.L.D.	# Samples
Cu ppm	Amdel	AAS	2.0	657

Sample No.	Easting	Northing	Value
G05085	631244.	7071944.	2605.000
G05070	579789.	7079752.	2307.000
G05052	576560.	7095460.	2093.000
G05102	746098.	6927985.	1810.000
G05071	585607.	7079714.	1773.000
G05089	745997.	6950151.	1553.000
G05122	742597.	6944675.	1516.000
G05087	632905.	7071927.	1451.000
G05099	747456.	6940882.	1322.000
G05111	740129.	6944724.	1252.000
G05103	742376.	6933592.	1115.000
G05093	750149.	6951915.	1088.000
G05101	746390.	6928892.	1080.000
G05107	735946.	6941110.	1051.000
G05072	586419.	7076940.	1046.000
G05124	742688.	6949293.	960.000
G05086	632934.	7074696.	944.000
G05097	737842.	6954008.	869.000
G05654	640200.	7059500.	850.000
G05123	745867.	6943686.	789.000
G05060	582320.	7085270.	784.000
G05105	736625.	6933706.	781.000
G05083	637059.	7071883.	762.000
G05777	524600.	6911800.	760.000
G05074	588069.	7075082.	741.000
G05090	747568.	6946423.	734.000
G05062	581500.	7088050.	693.000
G05092	750187.	6953762.	690.000
G05088	638690.	7069096.	686.000
G03942	677300.	7068150.	680.000
G05669	678920.	7071460.	680.000
G02670	514092.	6925539.	672.000

Element	Lab	Method	L.L.D.	# Samples
Pb ppm	Amdel	XRF	4.0	657

Sample No.	Easting	Northing	Value
G05687	678600.	7069510.	507.000
G03815	584050.	7019170.	299.000
G05039	651000.	7035500.	279.000
G03327	551082.	7003442.	255.000
G02704	551500.	7002400.	237.000
G03814	583720.	7019180.	221.000
G03854	585120.	7021440.	199.000
G04199	591400.	6899400.	198.000
G03817	584690.	7019170.	194.000
G03869	586070.	7019730.	193.000
G03839	584130.	7021160.	187.000
G05795	525400.	6913550.	187.000
G03828	583790.	7021470.	170.000
G05089	745997.	6950151.	167.000
G05675	678500.	7070840.	166.000
G02635	584309.	6929562.	158.000
G04213	542581.	6934242.	156.000
G04244	576940.	6932996.	152.000
G05101	746390.	6928892.	147.000
G05797	524650.	6913900.	136.000
G02669	516556.	6926459.	136.000
G05088	638690.	7069096.	130.000
G04248	540502.	7010096.	126.000
G05067	580637.	7082515.	124.000
G03326	550799.	7001597.	119.000
G04210	539416.	6929484.	117.000
G04207	531888.	6929352.	116.000
G05658	640900.	7058450.	116.000
G05683	678250.	7069850.	113.000
G05021	676880.	7067700.	112.000
G05022	658500.	7031500.	112.000
G04277	588743.	6936916.	111.000

Element	Lab	Method	L.L.D.	# Samples
Zn ppm	Amdel	AAS	2.0	657

Sample No.	Easting	Northing	Value
G05067	580637.	7082515.	1910.000
G02685	595514.	6997796.	1593.000
G03818	585030.	7019160.	1507.000
G03950	680250.	7070250.	1200.000
G05110	738413.	6941062.	1146.000
G05119	742486.	6939134.	1132.000
G05036	651600.	7030200.	1043.000
G03894	575410.	7018700.	1000.000
G05656	640800.	7059225.	940.000
G05098	749157.	6943619.	938.000
G05077	586457.	7082478.	931.000
G05106	738322.	6936400.	930.000
G04207	531888.	6929352.	927.000
G02666	516278.	6923537.	923.000
G05094	748541.	6953795.	915.000
G05112	740220.	6949342.	900.000
G05682	678950.	7070090.	900.000
G02697	583119.	7017270.	894.000
G05066	578143.	7082531.	886.000
G05065	574845.	7087165.	883.000
G04279	588872.	6935838.	875.000
G05080	589743.	7076917.	873.000
G05626	640650.	7059625.	840.000
G04209	537912.	6930104.	834.000
G06229	502850.	6918300.	830.000
G05117	740020.	6939183.	827.000
G05120	741719.	6941921.	820.000
G03979	680200.	7067800.	800.000
G05680	678250.	7070170.	790.000
G05056	576530.	7089930.	788.000
G05068	583963.	7082494.	778.000

Element	Lab	Method	L.L.D.	# Samples
Ni ppm	Amdel	AAS	5.0	657

Sample No.	Easting	Northing	Value
G03979	680200.	7067800.	2400.000
G03886	585760.	7020080.	1900.000
G05007	682946.	7085469.	1769.000
G05638	640625.	7060500.	1700.000
G02627	575948.	6927617.	1700.000
G02670	514092.	6925539.	1653.000
G05656	640800.	7059225.	1600.000
G03936	679900.	7065500.	1500.000
G05041	654100.	7037400.	1425.000
G05770	525000.	6912650.	1400.000
G05639	640525.	7060225.	1400.000
G03837	584090.	7020480.	1400.000
G04201	591214.	6901507.	1374.000
G05009	681320.	7087960.	1324.000
G04193	579733.	6899896.	1200.000
G05635	641000.	7061430.	1200.000
G03897	573900.	7019480.	1200.000
G02703	548730.	7000528.	1165.000
G04269	573698.	7032713.	1111.000
G05117	740020.	6939183.	1109.000
G02622	577686.	6921298.	1100.000
G05640	640450.	7059950.	1100.000
G04260	546901.	7026842.	1100.000
G04279	588872.	6935838.	1087.000
G05008	682920.	7083684.	1031.000
G02697	583119.	7017270.	1020.000
G03818	585030.	7019160.	1013.000
G05626	640650.	7059625.	1000.000
G05669	678920.	7071460.	1000.000
G03823	583730.	7019820.	919.000
G03814	583720.	7019180.	917.000

Table 5b:
>95th Percentiles for North Murchison Database
Ferricretes

Sample types:
MF FF PF PE RC

Element		Lab	Method	L.L.D.	# Samples
Co	ppm	Amdel	AAS	5.0	657

Sample No.	Easting	Northing	Value
G05110	738413.	6941062.	569.000
G05119	742486.	6939134.	566.000
G05117	740020.	6939183.	548.000
G04279	588872.	6935838.	530.000
G03979	680200.	7067800.	480.000
G05120	741719.	6941921.	450.000
G05112	740220.	6949342.	438.000
G05009	681320.	7087960.	424.000
G05041	654100.	7037400.	407.000
G05007	682946.	7085469.	380.000
G05080	589743.	7076917.	354.000
G05050	664000.	7023000.	349.000
G02666	516278.	6923537.	331.000
G02617	590501.	6915669.	330.000
G05656	640800.	7059225.	330.000
G02652	505057.	6915085.	325.000
G05626	640650.	7059625.	320.000
G05094	748541.	6953795.	315.000
G05128	743621.	6954818.	308.000
G05049	660800.	7023400.	307.000
G05073	591392.	7075059.	303.000
G02697	583119.	7017270.	299.000
G04207	531888.	6929352.	289.000
G03823	583730.	7019820.	288.000
G05056	576530.	7089930.	285.000
G05008	682920.	7083684.	283.000
G02676	511657.	6955081.	279.000
G02636	586766.	6928622.	268.000
G02668	517923.	6925842.	263.000
G02644	517600.	6917400.	261.000
G05630	641050.	7060850.	260.000
G06259	523350.	6912500.	260.000

Element		Lab	Method	L.L.D.	# Samples
As	ppm	Amdel	XRF	2.0	657

Sample No.	Easting	Northing	Value
G02648	524464.	6912599.	2484.000
G02631	581132.	6925276.	1596.000
G03818	585030.	7019160.	1514.000
G04244	576940.	6932996.	1154.000
G04220	539861.	6940098.	972.000
G04213	542581.	6934242.	962.000
G02671	509446.	6932929.	961.000
G04246	546154.	7011307.	908.000
G05020	679370.	7067670.	881.000
G02672	513006.	6933541.	878.000
G02647	524334.	6915984.	849.000
G03815	584050.	7019170.	820.000
G04225	535011.	6920727.	765.000
G03867	586840.	7022340.	764.000
G05114	739452.	6952129.	755.000
G04248	540502.	7010096.	714.000
G02664	512863.	6927849.	709.000
G05106	738322.	6936400.	689.000
G05095	747680.	6951965.	665.000
G05134	726000.	7027300.	660.000
G05075	586494.	7088016.	653.000
G05101	746390.	6928892.	653.000
G05076	589775.	7081532.	641.000
G02698	580508.	7018518.	629.000
G03701	543259.	7010856.	603.000
G03849	584720.	7019780.	594.000
G05099	747456.	6940882.	568.000
G05039	651000.	7035500.	555.000
G03327	551082.	7003442.	534.000
G05661	640300.	7058675.	532.000
G04245	579934.	6930207.	506.000
G04228	537591.	6914719.	502.000

Element		Lab	Method	L.L.D.	# Samples
Sb	ppm	Amdel	XRF	2.0	657

Sample No.	Easting	Northing	Value
G05134	726000.	7027300.	451.000
G03833	583140.	7020860.	299.000
G03849	584720.	7019780.	178.000
G02700	581777.	7022817.	91.000
G03848	584710.	7019450.	80.000
G05131	734300.	7030600.	78.000
G03850	584750.	7020110.	62.000
G03895	574440.	7017630.	44.000
G03877	586210.	7022710.	42.000
G02635	584309.	6929562.	35.000
G02701	578605.	7022991.	32.000
G03894	575410.	7018700.	31.000
G05095	747680.	6951965.	28.000
G04221	537495.	6927951.	28.000
G03892	577470.	7017920.	27.000
G04242	587059.	6931235.	24.000
G05627	640775.	7059900.	24.000
G02689	589831.	7011377.	24.000
G04210	539416.	6929484.	24.000
G03889	585880.	7022400.	22.000
G04220	539861.	6940098.	21.000
G04231	525158.	6917829.	20.000
G03882	586800.	7021360.	20.000
G03890	585880.	7022740.	19.000
G05111	740129.	6944724.	19.000
G05129	746090.	6954769.	19.000
G05130	731900.	7029300.	19.000
G02699	577065.	7019155.	18.000
G04213	542581.	6934242.	17.000
G04211	537782.	6932103.	15.000
G03851	584770.	7020450.	15.000

Element		Lab	Method	L.L.D.	# Samples
Bi	ppm	Amdel	XRF	1.0	657

Sample No.	Easting	Northing	Value
G05636	640900.	7061100.	29.000
G06075	682247.	7085017.	23.000
G02633	584146.	6925717.	18.000
G05003	667950.	7094586.	9.000
G02624	580975.	6922199.	9.000
G05631	641270.	7061090.	8.000
G03825	583770.	7020500.	8.000
G06271	528450.	6913350.	7.000
G05005	666300.	7084460.	7.000
G05799	525500.	6913750.	7.000
G04261	546058.	7022538.	7.000
G05093	750149.	6951915.	6.000
G05100	745774.	6939068.	6.000
G04258	540821.	7023479.	6.000
G05378	577900.	7019920.	6.000
G03858	585000.	7020110.	5.000
G04257	541930.	7025167.	5.000
G05668	678600.	7071500.	5.000
G06251	543650.	6932700.	5.000
G05090	747568.	6946423.	5.000
G05634	641070.	7061740.	4.000
G02640	513674.	6919386.	4.000
G05024	657900.	7034200.	4.000
G05001	668180.	7101060.	4.000
G03977	679100.	7067350.	4.000
G02704	551500.	7002400.	4.000
G03703	545872.	7009462.	4.000
G05069	585644.	7085252.	4.000
G04234	527886.	6915053.	4.000
G03843	584440.	7021080.	4.000

Table 5b:
>95th Percentiles for North Murchison Database
Ferricretes

Sample types:
MF FF PF PE RC

Element		Lab	Method	L.L.D.	# Samples
Mo	ppm	Amdel	XRF	2.0	657

Sample No.	Easting	Northing	Value
G03817	584690.	7019170.	165.000
G05131	734300.	7030600.	143.000
G05378	577900.	7019920.	73.000
G05377	576930.	7019920.	58.000
G03327	551082.	7003442.	51.000
G05132	730200.	7028000.	37.000
G06251	543650.	6932700.	33.000
G03840	584140.	7021470.	32.000
G03858	585000.	7020110.	29.000
G03326	550799.	7001597.	27.000
G06219	513700.	6940300.	26.000
G05653	639875.	7059575.	24.000
G05129	746090.	6954769.	20.000
G05647	640550.	7061325.	20.000
G05045	650500.	7025000.	18.000
G03865	585480.	7021760.	18.000
G03981	677300.	7069400.	17.000
G05130	731900.	7029300.	16.000
G03702	544222.	7010237.	15.000
G04246	546154.	7011307.	15.000
G04255	537094.	7022413.	14.000
G05003	667950.	7094586.	13.000
G05651	640350.	7061725.	13.000
G03869	586070.	7019730.	13.000
G03703	545872.	7009462.	13.000
G03814	583720.	7019180.	12.000
G04203	593899.	6895639.	12.000
G03825	583770.	7020500.	12.000
G03982	582442.	7019121.	12.000
G05052	576560.	7095460.	12.000
G04250	535396.	7007188.	12.000

Element		Lab	Method	L.L.D.	# Samples
Sn	ppm	Amdel	XRF	1.0	657

Sample No.	Easting	Northing	Value
G02633	584146.	6925717.	26.000
G05645	640400.	7060750.	15.000
G04255	537094.	7022413.	14.000
G03327	551082.	7003442.	13.000
G03998	566002.	7017956.	13.000
G03896	573480.	7018700.	12.000
G05621	641075.	7059775.	12.000
G04261	546058.	7022538.	12.000
G04262	548533.	7020836.	11.000
G03858	585000.	7020110.	11.000
G05619	641275.	7059450.	11.000
G02693	583862.	7025358.	11.000
G04190	575642.	6900754.	11.000
G05681	678590.	7070160.	11.000
G05012	681360.	7090720.	11.000
G06220	512350.	6940450.	10.000
G06268	526950.	6915050.	10.000
G03970	661032.	7062402.	10.000
G04194	580023.	6902510.	10.000
G05622	641150.	7060050.	10.000
G03999	565174.	7017745.	10.000
G03878	586220.	7023040.	10.000
G06074	681688.	7084717.	10.000
G05038	651400.	7032700.	10.000
G04195	583844.	6902023.	10.000
G03989	584260.	7022955.	9.000
G03870	586080.	7020070.	9.000
G03992	575300.	7031950.	9.000
G05644	640275.	7060450.	9.000

Element		Lab	Method	L.L.D.	# Samples
Ge	ppm	Amdel	OES	1.0	657

Sample No.	Easting	Northing	Value
G03985	580233.	7018673.	3.000
G04195	583844.	6902023.	3.000
G03974	677000.	7067700.	3.000
G04213	542581.	6934242.	3.000
G05797	524650.	6913900.	3.000
G03840	584140.	7021470.	2.000
G05650	640450.	7062000.	2.000
G03843	584440.	7021080.	2.000
G04261	546058.	7022538.	2.000
G03988	584230.	7018493.	1.000
G05659	640675.	7058925.	1.000
G02639	514223.	6920924.	1.000
G05651	640350.	7061725.	1.000
G03889	585880.	7022400.	1.000
G03838	584120.	7020820.	1.000
G02634	582381.	6927729.	1.000
G03844	584490.	7020800.	1.000
G05683	678250.	7069850.	1.000
G03885	585740.	7019730.	1.000
G05656	640800.	7059225.	1.000
G03997	579554.	7020216.	1.000
G02629	576374.	6930076.	1.000
G03882	586800.	7021360.	1.000
G05685	678910.	7069840.	1.000
G03846	584430.	7020130.	1.000
G04262	548533.	7020836.	1.000
G03983	581056.	7018053.	1.000
G03836	584090.	7020150.	1.000

Element		Lab	Method	L.L.D.	# Samples
W	ppm	Amdel	XRF	10.0	657

Sample No.	Easting	Northing	Value
G02633	584146.	6925717.	337.000
G05004	666836.	7087411.	76.000
G05631	641270.	7061090.	56.000
G02686	588688.	7005539.	45.000
G03327	551082.	7003442.	44.000
G03895	574440.	7017630.	40.000
G02634	582381.	6927729.	37.000
G02647	524334.	6915984.	36.000
G04250	535396.	7007188.	35.000
G04242	587059.	6931235.	34.000
G03869	586070.	7019730.	34.000
G02624	580975.	6922199.	33.000
G02672	513006.	6933541.	32.000
G06074	681688.	7084717.	30.000
G03838	584120.	7020820.	30.000
G05378	577900.	7019920.	30.000
G03940	678000.	7067200.	30.000
G05114	739452.	6952129.	29.000
G05062	581500.	7088050.	29.000
G06267	525150.	6910900.	28.000
G05681	678590.	7070160.	28.000
G03892	577470.	7017920.	28.000
G03825	583770.	7020500.	27.000
G03984	583114.	7016501.	27.000
G02658	503828.	6918316.	26.000
G05128	743621.	6954818.	26.000
G03814	583720.	7019180.	25.000
G05130	731900.	7029300.	25.000
G05001	668180.	7101060.	24.000

Table 5b:
>95th Percentiles for North Murchison Database
Ferricretes

Sample types:
MF FF PF PE RC

Element	Lab	Method	L.L.D.	# Samples
Ba ppm	Csiro	ICP	100.0	657

Sample No.	Easting	Northing	Value
G03854	585120.	7021440.	6464.000
G04203	593899.	6895639.	5121.000
G03967	662034.	7058511.	4941.000
G04202	588598.	6898603.	3976.000
G04233	525012.	6913213.	2689.000
G06233	505350.	6919700.	2616.000
G05783	523950.	6912650.	2384.000
G03895	574440.	7017630.	2269.000
G02635	584309.	6929562.	2200.000
G05655	640475.	7059350.	2181.000
G05627	640775.	7059900.	2172.000
G03891	578300.	7018840.	2072.000
G03947	677750.	7070750.	2037.000
G04204	586972.	6900308.	1824.000
G05654	640200.	7059500.	1815.000
G03971	661215.	7061568.	1779.000
G04209	537912.	6930104.	1756.000
G03892	577470.	7017920.	1626.000
G03951	679250.	7069800.	1500.000
G05641	640350.	7059725.	1494.000
G04240	541379.	6943324.	1473.000
G03973	677850.	7066900.	1391.000
G04238	540256.	6935173.	1351.000
G03972	660806.	7059819.	1334.000
G04241	590135.	6921519.	1314.000
G04216	542612.	6943320.	1307.000
G06243	544700.	6946250.	1306.000
G05798	525250.	6913250.	1272.000
G03870	586080.	7020070.	1247.000
G05683	678250.	7069850.	1240.000
G04239	538211.	6938103.	1214.000

Element	Lab	Method	L.L.D.	# Samples
Nb ppm	Amdel	XRF	3.0	657

Sample No.	Easting	Northing	Value
G05644	640275.	7060450.	77.000
G05645	640400.	7060750.	75.000
G05657	641100.	7059075.	71.000
G04261	546058.	7022538.	60.000
G05378	577900.	7019920.	55.000
G05012	681360.	7090720.	51.000
G05681	678590.	7070160.	51.000
G03858	585000.	7020110.	47.000
G05037	653700.	7032400.	39.000
G03816	584320.	7019180.	38.000
G03868	586050.	7019360.	34.000
G05659	640675.	7058925.	34.000
G05643	640125.	7060075.	34.000
G05101	746390.	6928892.	33.000
G04248	540502.	7010096.	32.000
G03869	586070.	7019730.	31.000
G05085	631244.	7071944.	30.000
G06074	681688.	7084717.	30.000
G06263	524200.	6915050.	29.000
G05687	678600.	7069510.	29.000
G06220	512350.	6940450.	29.000
G05791	523200.	6913900.	29.000
G05633	641430.	7061460.	27.000
G05625	641440.	7060940.	27.000
G03864	585460.	7021430.	27.000
G03883	586420.	7020370.	27.000
G03983	581056.	7018053.	27.000
G05647	640550.	7061325.	26.000

Element	Lab	Method	L.L.D.	# Samples
Ta ppm	Amdel	XRF	3.0	657

Sample No.	Easting	Northing	Value
G02633	584146.	6925717.	31.000
G05657	641100.	7059075.	13.000
G05004	666836.	7087411.	13.000
G03827	583810.	7021160.	10.000
G03972	660806.	7059819.	10.000
G05040	652800.	7034900.	9.000
G02624	580975.	6922199.	9.000
G02690	574804.	7033015.	9.000
G04248	540502.	7010096.	9.000
G02629	576374.	6930076.	8.000
G05789	525250.	6915050.	8.000
G05014	675320.	7075110.	7.000
G05116	745212.	6952015.	7.000
G04190	575642.	6900754.	7.000
G02626	575929.	6924540.	7.000
G04210	539416.	6929484.	7.000
G04230	525026.	6919983.	6.000
G02634	582381.	6927729.	6.000
G04278	588714.	6932916.	6.000
G05126	744278.	6946490.	6.000
G05113	736929.	6949406.	6.000
G05099	747456.	6940882.	5.000
G04259	544275.	7025467.	5.000
G05008	682920.	7083684.	5.000
G05083	637059.	7071883.	5.000
G05625	641440.	7060940.	5.000
G03831	583140.	7021510.	5.000
G05081	593067.	7076893.	5.000
G03848	584710.	7019450.	5.000
G04246	546154.	7011307.	4.000
G03864	585460.	7021430.	4.000

Element	Lab	Method	L.L.D.	# Samples
Se ppm	Amdel	XRF	1.0	657

Sample No.	Easting	Northing	Value
G03828	583790.	7021470.	19.000
G05086	632934.	7074696.	17.000
G05797	524650.	6913900.	13.000
G04246	546154.	7011307.	12.000
G03326	550799.	7001597.	11.000
G05090	747568.	6946423.	11.000
G05038	651400.	7032700.	11.000
G04253	535568.	7019341.	11.000
G04248	540502.	7010096.	10.000
G05048	650700.	7021300.	10.000
G05659	640675.	7058925.	10.000
G04263	543573.	7021931.	10.000
G03834	583450.	7020840.	10.000
G06259	523350.	6912500.	9.000
G05129	746090.	6954769.	9.000
G05074	588069.	7075082.	9.000
G04262	548533.	7020836.	9.000
G02657	503963.	6912316.	9.000
G03816	584320.	7019180.	9.000
G03815	584050.	7019170.	8.000
G05686	678250.	7069510.	8.000
G05791	523200.	6913900.	8.000
G03814	583720.	7019180.	8.000
G05058	579850.	7089900.	8.000
G05005	666300.	7084460.	8.000
G02697	583119.	7017270.	8.000
G03323	551765.	7002054.	8.000
G03845	584440.	7020460.	8.000
G06227	543900.	6961950.	8.000
G03858	585000.	7020110.	8.000
G04272	564236.	7017689.	8.000

Table 5b:
>95th Percentiles for North Murchison Database
Ferricretes

Sample types:
MF FF PF PE RC

Element	Lab	Method	L.L.D.	# Samples
Be ppm	Amdel	OES	1.0	657

Sample No.	Easting	Northing	Value
G05633	641430.	7061460.	3.000
G03702	544222.	7010237.	2.000
G02633	584146.	6925717.	2.000
G03854	585120.	7021440.	2.000
G05795	525400.	6913550.	2.000
G03325	550806.	7003289.	2.000
G03327	551082.	7003442.	2.000
G04264	541367.	7021785.	2.000
G05798	525250.	6913250.	1.000
G05022	658500.	7031500.	1.000
G05787	523300.	6915050.	1.000
G05796	524650.	6913550.	1.000
G05651	640350.	7061725.	1.000
G04265	547837.	7018993.	1.000
G02635	584309.	6929562.	1.000
G05642	640000.	7059775.	1.000
G05687	678600.	7069510.	1.000
G05680	678250.	7070170.	1.000
G05110	738413.	6941062.	1.000
G05021	676880.	7067700.	1.000
G05683	678250.	7069850.	1.000
G03817	584690.	7019170.	1.000
G05078	591425.	7079674.	1.000
G05643	640125.	7060075.	1.000
G05037	653700.	7032400.	1.000
G05656	640800.	7059225.	1.000
G05658	640900.	7058450.	1.000
G03324	550803.	7002520.	1.000
G05653	639875.	7059575.	1.000
G03703	545872.	7009462.	1.000
G05032	660200.	7029400.	1.000

Element	Lab	Method	L.L.D.	# Samples
Au ppb	Analb	234	1.0	657

Sample No.	Easting	Northing	Value
G03833	583140.	7020860.	609.000
G04225	535011.	6920727.	82.000
G02700	581777.	7022817.	53.000
G05045	650500.	7025000.	30.000
G06268	526950.	6915050.	29.000
G03842	584130.	7022130.	23.000
G05378	577900.	7019920.	23.000
G05092	750187.	6953762.	22.000
G04195	583844.	6902023.	20.000
G04242	587059.	6931235.	19.000
G02659	503282.	6919701.	19.000
G02630	578676.	6926215.	19.000
G05098	749157.	6943619.	18.000
G05095	747680.	6951965.	17.000
G05377	576930.	7019920.	17.000
G02666	516278.	6923537.	17.000
G05085	631244.	7071944.	16.000
G02649	521591.	6911220.	16.000
G02629	576374.	6930076.	15.000
G03814	583720.	7019180.	15.000
G04223	538031.	6924257.	14.000
G03700	542428.	7009474.	14.000
G03823	583730.	7019820.	13.000
G02703	548730.	7000528.	12.000
G02638	519011.	6921379.	12.000
G05682	678950.	7070090.	12.000
G05636	640900.	7061100.	11.000
G06272	527450.	6913050.	11.000
G03701	543259.	7010856.	10.000
G05676	678270.	7070840.	10.000
G06270	529400.	6914150.	10.000

Table 6: Principal Components Analysis North Murchison Laterites

# of observations: 213
# of variables: 22

Table 6a: Correlation Matrix

	Fe3	Ag	Mn	Cr	V	Cu	Pb	Zn	Ni	Co
Fe3	1.0000	-.0812	.1744	.1685	.4315	.0641	.1421	.3067	.0790	.2478
Ag	-.0812	1.0000	-.0032	.0131	-.0336	.0160	.2179	.0081	-.0212	-.0719
Mn	.1744	-.0032	1.0000	.0583	.1126	-.1186	.0603	.2210	.1081	.3572
Cr	.1685	.0131	.0583	1.0000	-.0639	-.0297	.0545	.1129	.7646	.5053
V	.4315	-.0336	.1126	-.0639	1.0000	-.3444	.1507	-.0529	-.1387	-.0504
Cu	.0641	.0160	-.1186	-.0297	-.3444	1.0000	.0363	.2021	.0659	.0527
Pb	.1421	.2179	.0603	.0545	.1507	.0363	1.0000	.1750	-.0223	-.1116
Zn	.3067	.0081	.2210	.1129	-.0529	.2021	.1750	1.0000	.2843	.5559
Ni	.0790	-.0212	.1081	.7646	-.1387	.0659	-.0223	.2843	1.0000	.7384
Co	.2478	-.0719	.3572	.5053	-.0504	.0527	-.1116	.5559	.7384	1.0000
As	.1314	.0511	.0028	.0961	-.0195	.1976	.4346	.1892	.1996	.1436
Sb	.2061	-.0094	.0326	.0132	-.0901	.0897	-.0636	.0923	.0008	.0201
Bi	-.0749	.0207	.0438	.3046	-.0572	-.0810	.3168	-.0511	.2113	.0454
Mo	.0381	-.0165	-.0390	.0098	-.0551	.1274	.4534	.0981	.0235	-.0139
Sn	.0608	.0643	.1375	.2581	.2344	-.2539	.0886	.0236	.2091	.0963
Ga	-.3538	.0958	-.0586	-.1300	.0633	-.1044	.0115	-.3523	-.2232	-.3080
W	.0362	-.0058	.0000	.0858	.0196	-.0911	-.0287	-.0418	-.0342	-.0148
Nb	-.0621	-.0153	.0606	.1483	.1216	-.2365	.1460	-.0618	.0371	-.0659
Ta	-.0129	.0143	.0819	.1637	.0324	.0097	.0091	.0140	.1024	.1002
Se	.1612	.4191	-.0697	-.0847	.1633	.0034	.2203	-.0367	-.1391	-.1910
Be	-.1617	-.0073	.0930	.1617	-.0781	-.0560	.0242	-.0441	.1666	.1055
Au	-.0158	.0136	.0027	.0159	-.0372	-.0588	-.0569	.0278	-.0047	-.0101

	As	Sb	Bi	Mo	Sn	Ga	W	Nb	Ta	Se
Fe3	.1314	.2061	-.0749	.0381	.0608	-.3538	.0362	-.0621	-.0129	.1612
Ag	.0511	-.0094	.0207	-.0165	.0643	.0958	-.0058	-.0153	.0143	.4191
Mn	.0028	.0326	.0438	-.0390	.1375	-.0586	.0000	.0606	.0819	-.0697
Cr	.0961	.0132	.3046	.0098	.2581	-.1300	.0858	.1483	.1637	-.0847
V	-.0195	-.0901	-.0572	-.0551	.2344	.0633	.0196	.1216	.0324	.1633
Cu	.1976	.0897	-.0810	.1274	-.2539	-.1044	-.0911	-.2365	.0097	.0034
Pb	.4346	-.0636	.3168	.4534	.0886	.0115	-.0287	.1460	.0091	.2203
Zn	.1892	.0923	-.0511	.0981	.0236	-.3523	-.0418	-.0618	.0140	-.0367
Ni	.1996	.0008	.2113	.0235	.2091	-.2232	-.0342	.0371	.1024	-.1391
Co	.1436	.0201	.0454	-.0139	.0963	-.3080	-.0148	-.0659	.1002	-.1910
As	1.0000	.1017	.1612	.0208	.0484	-.2170	-.0350	-.0423	.0073	.1219
Sb	.1017	1.0000	-.0821	-.0236	-.0184	-.1467	-.0080	-.0657	-.0349	.0553
Bi	.1612	-.0821	1.0000	.2127	.3316	.1077	.1193	.3044	.3153	.0945
Mo	.0208	-.0236	.2127	1.0000	.0227	-.1096	.0476	-.0207	-.0069	-.0221
Sn	.0484	-.0184	.3316	.0227	1.0000	.1236	.0354	.6064	.3276	-.0504
Ga	-.2170	-.1467	.1077	-.1096	.1236	1.0000	-.0209	.3268	.0482	-.0052
W	-.0350	-.0080	.1193	.0476	.0354	-.0209	1.0000	.1420	.1823	-.0858
Nb	-.0423	-.0657	.3044	-.0207	.6064	.3268	.1420	1.0000	.3447	-.0537
Ta	.0073	-.0349	.3153	-.0069	.3276	.0482	.1823	.3447	1.0000	-.0292
Se	.1219	.0553	.0945	-.0221	-.0504	-.0052	-.0858	-.0537	-.0292	1.0000
Be	.0042	-.0244	.2619	-.0089	.2341	.0929	-.0275	.2054	.3255	-.0882
Au	-.0080	.0249	-.0238	-.0078	-.0390	-.0474	.5249	.0355	.0742	-.0310

	Be	Au
Fe3	-.1617	-.0158
Ag	-.0073	.0136
Mn	.0930	.0027
Cr	.1617	.0159
V	-.0781	-.0372
Cu	-.0560	-.0588
Pb	.0242	-.0569
Zn	-.0441	.0278
Ni	.1666	-.0047
Co	.1055	-.0101
As	.0042	-.0080
Sb	-.0244	.0249
Bi	.2619	-.0238
Mo	-.0089	-.0078
Sn	.2341	-.0390
Ga	.0929	-.0474
W	-.0275	.5249
Nb	.2054	.0355
Ta	.3255	.0742
Se	-.0882	-.0310
Be	1.0000	-.0225
Au	-.0225	1.0000

Table 6b: North Murchison Laterites

Eigenvalue	% Trace	Cumulative %
3.2052	14.5689	14.5689
2.6688	12.1311	26.7000
2.0607	9.3669	36.0669
1.7671	8.0322	44.0991
1.5644	7.1111	51.2102
1.2946	5.8845	57.0947
1.1417	5.1893	62.2841
1.0713	4.8697	67.1538
.8950	4.0681	71.2219
.8901	4.0460	75.2679
.8666	3.9389	79.2068
.7213	3.2787	82.4855
.6621	3.0095	85.4950
.5716	2.5981	88.0931
.5108	2.3218	90.4149
.4711	2.1414	92.5562
.4288	1.9489	94.5051
.3910	1.7771	96.2823
.2804	1.2748	97.5570
.2603	1.1832	98.7403
.1656	.7525	99.4928
.1116	.5072	100.0000

Table 6c: North Murchison Laterites

Principal Components R-Scores -

	1	2	3	4	5	6	7	8	9	10
Fe3	.3239	.3316	-.3584	-.5748	.0311	.0651	.0963	-.2343	.1057	.1801
Ag	-.0330	-.0958	-.4025	.1608	-.0209	-.6650	-.0677	.3413	.1713	-.0841
Mn	.3454	.0226	.0153	-.3468	-.1168	.0854	.1832	.6109	.0472	-.1472
Cr	.7356	-.0445	.1700	.1030	-.0336	-.2251	-.3209	-.2864	.1200	-.0253
V	.0104	-.1983	-.3375	-.7267	-.1445	.0896	-.1603	-.1048	-.0861	.2100
Cu	.0208	.4345	-.0835	.4886	.0920	.0415	.3334	-.0262	-.0752	.1634
Pb	.2122	-.1237	-.7824	.2042	.0671	.2419	-.1252	.1122	-.0964	-.1224
Zn	.5054	.4516	-.1331	-.0829	.0409	.1052	.1698	.3482	-.0543	-.0829
Ni	.8001	.1519	.2485	.1764	-.1138	-.1861	-.2737	-.1263	.0041	-.0542
Co	.7726	.3496	.2628	-.0889	-.1062	-.0627	-.0894	.1974	-.0087	-.0008
As	.3242	.1874	-.4582	.2211	.0639	-.0253	.1319	-.1769	-.6332	-.1296
Sb	.0584	.2460	-.0633	-.0931	.0956	-.1485	.5818	-.3690	.3535	-.4471
Bi	.4140	-.4876	-.2200	.3186	.0724	.0717	-.0639	-.1105	.0801	.0854
Mo	.1347	.0140	-.3885	.3043	.2190	.5401	-.2049	.0699	.4839	-.0186
Sn	.4484	-.5974	-.0656	-.1979	-.1484	.0244	.1204	-.0989	.0058	-.1902
Ga	-.3154	-.5834	.0760	.1157	-.1789	-.0592	-.0434	.1334	-.0775	-.2347
W	.0868	-.2043	.1096	-.1663	.8200	-.0632	-.0852	.0106	-.0151	.0145
Nb	.2551	-.7231	-.0195	-.1117	-.0107	.0847	.1543	-.0522	-.0828	-.2605
Ta	.3539	-.4546	.0655	.0437	.1562	-.0321	.4160	.0307	.0139	.4594
Se	-.1258	-.0110	-.6105	-.0387	-.0564	-.5532	-.0046	-.0171	.1377	.1961
Be	.2962	-.3854	.1689	.2411	-.1221	-.0026	.3182	.1182	.0589	.3054
Au	.0270	-.0603	.1353	-.1403	.8081	-.1746	-.0571	.1189	-.1007	-.0793

Table 6d: North Murchison Laterites
Relative Contributions: Variables

	1	2	3	4	5	6	7	8	9	10
Fe3	10.4917	10.9988	12.8485	33.0370	.0968	.4244	.9275	5.4914	1.1180	3.2438
Ag	.1090	.9173	16.2032	2.5869	.0437	44.2169	.4581	11.6469	2.9341	.7070
Mn	11.9311	.0511	.0234	12.0245	1.3641	.7295	3.3563	37.3211	.2224	2.1661
Cr	54.1054	.1980	2.8891	1.0617	.1127	5.0651	10.2999	8.2020	1.4408	.0638
V	.0108	3.9316	11.3936	52.8134	2.0866	.8037	2.5697	1.0982	.7415	4.4107
Cu	.0433	18.8808	.6972	23.8702	.8461	.1723	11.1139	.0686	.5662	2.6703
Pb	4.5012	1.5298	61.2092	4.1701	.4502	5.8492	1.5677	1.2599	.9292	1.4978
Zn	25.5447	20.3905	1.7725	.6872	.1675	1.1068	2.8846	12.1275	.2946	.6868
Ni	64.0161	2.3073	6.1770	3.1111	1.2940	3.4615	7.4887	1.5964	.0017	.2933
Co	59.6901	12.2195	6.9049	.7896	1.1287	.3935	.7992	3.8955	.0076	.0001
As	10.5105	3.5112	20.9948	4.8892	.4077	.0642	1.7402	3.1279	40.0988	1.6788
Sb	.3411	6.0534	.4009	.8673	.9133	2.2059	33.8534	13.6141	12.4960	19.9915
Bi	17.1396	23.7796	4.8396	10.1515	.5236	.5141	.4083	1.2215	.6421	.7297
Mo	1.8141	.0197	15.0927	9.2580	4.7963	29.1664	4.1994	.4887	23.4174	.0347
Sn	20.1051	35.6912	.4300	3.9162	2.2034	.0597	1.4487	.9772	.0034	3.6162
Ga	9.9493	34.0395	.5771	1.3376	3.2001	.3502	.1886	1.7783	.6005	5.5087
W	.7530	4.1757	1.2019	2.7650	67.2480	.3992	.7252	.0112	.0227	.0210
Nb	6.5096	52.2926	.0382	1.2487	.0114	.7176	2.3817	.2720	.6860	6.7866
Ta	12.5241	20.6637	.4290	.1913	2.4389	.1033	17.3039	.0941	.0193	21.1011
Se	1.5820	.0121	37.2659	.1498	.3176	30.6061	.0021	.0294	1.8966	3.8456
Be	8.7722	14.8566	2.8533	5.8135	1.4912	.0007	10.1227	1.3970	.3473	9.3292
Au	.0727	.3631	1.8306	1.9690	65.3021	3.0488	.3255	1.4145	1.0131	.6294

Table 7: Principal Components Analysis North Murchison Ferricretes

\# of observations: 285
\# of variables: 22

Table 7a: Correlation Matrix

	Fe3	Ag	Mn	Cr	V	Cu	Pb	Zn	Ni	Co
Fe3	1.0000	.0432	.2443	-.0713	-.1268	.2164	.0986	.3437	.2234	.3255
Ag	.0432	1.0000	-.1092	-.0060	.0329	-.0433	.2126	-.1153	-.0828	-.1045
Mn	.2443	-.1092	1.0000	-.2095	-.2399	-.0552	.0601	.4837	.4808	.8199
Cr	-.0713	-.0060	-.2095	1.0000	.1175	.0961	-.0853	-.2346	.1025	-.1690
V	-.1268	.0329	-.2399	.1175	1.0000	-.3223	-.1319	-.3317	-.2484	-.2754
Cu	.2164	-.0433	-.0552	.0961	-.3223	1.0000	.0585	-.0305	.0014	-.0531
Pb	.0986	.2126	.0601	-.0853	-.1319	.0585	1.0000	.1272	.0014	-.0522
Zn	.3437	-.1153	.4837	-.2346	-.3317	-.0305	.1272	1.0000	.4335	.5889
Ni	.2234	-.0828	.4808	.1025	-.2484	.0014	.0014	.4335	1.0000	.7078
Co	.3255	-.1045	.8199	-.1690	-.2754	-.0531	-.0522	.5889	.7078	1.0000
As	.0282	.0851	-.0502	.0003	-.0895	.0301	.0533	.1111	.0810	-.0522
Sb	.0126	-.0025	-.1196	-.0378	-.0741	-.0447	-.0750	-.1253	-.0910	-.1328
Bi	-.1416	-.0253	-.1037	.4726	-.0161	.0091	-.0727	-.1103	.0464	-.0699
Mo	-.0995	.0219	-.1245	-.0430	-.0699	-.0060	.1999	-.1476	-.1007	-.1331
Sn	-.1690	.0060	-.1129	.4583	.2100	-.1126	-.1112	-.1233	-.0037	-.0963
Ga	-.3057	.0854	-.4409	.2350	.6175	.0479	-.0175	-.5255	-.3998	-.5154
W	-.0655	-.0085	-.0726	.5875	-.0046	-.0377	-.0497	-.0765	.1041	-.0366
Nb	-.2905	.0223	-.2800	.1817	.4034	-.0355	-.0551	-.2985	-.2248	-.3077
Ta	-.0827	-.0060	-.0586	.4870	-.0110	-.0019	-.0220	-.0596	.0406	-.0295
Se	.1619	.4096	-.2018	.1060	.1390	.1321	.1842	-.1640	-.1352	-.2169
Be	-.1225	-.0319	-.0871	.3791	-.0632	-.0290	.1206	-.0332	-.0050	-.0890
Au	-.0600	.0034	-.0798	-.0023	-.0126	-.0391	-.0445	-.0843	-.0588	-.0783

	As	Sb	Bi	Mo	Sn	Ga	W	Nb	Ta	Se
Fe3	.0282	.0126	-.1416	-.0995	-.1690	-.3057	-.0655	-.2905	-.0827	.1619
Ag	.0851	-.0025	-.0253	.0219	.0060	.0854	-.0085	.0223	-.0060	.4096
Mn	-.0502	-.1196	-.1037	-.1245	-.1129	-.4409	-.0726	-.2800	-.0586	-.2018
Cr	.0003	-.0378	.4726	-.0430	.4583	.2350	.5875	.1817	.4870	.1060
V	-.0895	-.0741	-.0161	-.0699	.2100	.6175	-.0046	.4034	-.0110	.1390
Cu	.0301	-.0447	.0091	-.0060	-.1126	.0479	-.0377	-.0355	-.0019	.1321
Pb	.0533	-.0750	-.0727	.1999	-.1112	-.0175	-.0497	-.0551	-.0220	.1842
Zn	.1111	-.1253	-.1103	-.1476	-.1233	-.5255	-.0765	-.2985	-.0596	-.1640
Ni	.0810	-.0910	.0464	-.1007	-.0037	-.3998	.1041	-.2248	.0406	-.1352
Co	-.0522	-.1328	-.0699	-.1331	-.0963	-.5154	-.0366	-.3077	-.0295	-.2169
As	1.0000	.1855	-.0634	-.0145	-.0272	-.0832	-.0309	-.1079	-.0180	.0383
Sb	.1855	1.0000	-.0378	.0546	-.0498	-.0363	-.0183	-.0687	-.0171	-.0108
Bi	-.0634	-.0378	1.0000	.0037	.6790	.1612	.6630	.3463	.8060	-.0973
Mo	-.0145	.0546	.0037	1.0000	-.0064	-.0301	.0012	.0359	-.0219	-.0308
Sn	-.0272	-.0498	.6790	-.0064	1.0000	.2916	.6950	.5857	.8124	-.0194
Ga	-.0832	-.0363	.1612	-.0301	.2916	1.0000	.1137	.5548	.1663	.1805
W	-.0309	-.0183	.6630	.0012	.6950	.1137	1.0000	.2638	.7158	-.0897
Nb	-.1079	-.0687	.3463	.0359	.5857	.5548	.2638	1.0000	.3429	.0166
Ta	-.0180	-.0171	.8060	-.0219	.8124	.1663	.7158	.3429	1.0000	-.0645
Se	.0383	-.0108	-.0973	-.0308	-.0194	.1805	-.0897	.0166	-.0645	1.0000
Be	-.0540	-.0318	.6639	.0579	.6830	.1167	.6333	.2856	.8077	-.1252
Au	.0840	.4924	.0006	-.0014	.0023	.0499	.0137	-.0184	.0032	-.0267

	Be	Au
Fe3	-.1225	-.0600
Ag	-.0319	.0034
Mn	-.0871	-.0798
Cr	.3791	-.0023
V	-.0632	-.0126
Cu	-.0290	-.0391
Pb	.1206	-.0445
Zn	-.0332	-.0843
Ni	-.0050	-.0588
Co	-.0890	-.0783
As	-.0540	.0840
Sb	-.0318	.4924
Bi	.6639	.0006
Mo	.0579	-.0014
Sn	.6830	.0023
Ga	.1167	.0499
W	.6333	.0137
Nb	.2856	-.0184
Ta	.8077	.0032
Se	-.1252	-.0267
Be	1.0000	-.0070
Au	-.0070	1.0000

Table 7b: North Murchison Ferricretes

Eigenvalue	% Trace	Cumulative %
4.9285	22.4024	22.4024
3.4982	15.9011	38.3035
1.7305	7.8660	46.1695
1.6628	7.5583	53.7278
1.3421	6.1006	59.8284
1.2474	5.6702	65.4986
.9647	4.3850	69.8836
.8994	4.0881	73.9717
.8471	3.8504	77.8221
.7736	3.5165	81.3386
.7145	3.2475	84.5861
.5201	2.3643	86.9504
.5028	2.2857	89.2361
.4704	2.1383	91.3744
.3873	1.7604	93.1348
.3504	1.5928	94.7276
.3070	1.3955	96.1231
.2774	1.2611	97.3842
.2096	.9529	98.3371
.1690	.7683	99.1055
.1081	.4914	99.5969
.0887	.4031	100.0000

Table 7c: North Murchison Ferricretes
Principal Components R-Scores -

	1	2	3	4	5	6	7	8	9	10
Fe3	-.3618	.2668	.3130	-.2473	-.2794	-.2034	-.2607	.1552	.0268	.5500
Ag	.0499	-.1921	.4468	-.3584	-.2871	.3936	.0208	-.2514	-.1941	-.3133
Mn	-.4772	.6030	-.2126	-.0928	-.1124	.1698	-.1846	.0761	.0849	-.1765
Cr	.5977	.2192	.1585	-.0695	-.1794	-.3062	.0950	-.3347	.2867	.0557
V	.3503	-.4343	-.4604	-.2071	-.3944	.1758	-.0421	.0761	.2178	.2623
Cu	-.0506	.0077	.4280	-.1517	.1869	-.6802	-.1636	.3111	.1637	-.2805
Pb	-.0848	-.0022	.4674	-.3202	.2758	.4563	-.1187	.2990	.0715	.0132
Zn	-.4807	.5765	-.0024	-.0723	-.0438	.1342	.0949	.2864	-.1319	.1423
Ni	-.3000	.6627	-.0474	-.0639	-.2297	.0074	.0564	-.1235	.3923	-.1874
Co	-.4995	.7116	-.2106	-.0839	-.1893	.1006	-.1431	-.0136	.1522	-.1438
As	-.0830	.0017	.3593	.2220	-.2296	.0950	.7524	.3021	.2235	.0101
Sb	-.0016	-.1477	.3148	.7132	-.2755	.0885	-.1895	.0323	.0294	.0803
Bi	.7269	.4546	.0692	.0427	.0544	-.0368	-.0170	-.0335	-.0873	-.0436
Mo	.0569	-.1220	.2110	.0948	.5708	.3409	-.1353	-.1952	.5371	.1518
Sn	.8148	.3666	-.0705	-.0331	-.1117	.1191	-.0030	.1077	.0045	.0131
Ga	.5931	-.5125	-.1775	-.1762	-.1589	-.0457	-.0949	.2401	.1797	-.1086
W	.6879	.4902	.1095	.0387	-.0420	-.0288	.0198	-.1592	.0251	.0889
Nb	.6537	-.1580	-.2675	-.1318	-.0329	.1149	-.1000	.3697	.1376	-.1790
Ta	.7613	.5221	.1207	.0169	.0002	.0317	-.0203	.0592	-.1180	.0289
Se	.0520	-.3227	.4718	-.4688	-.3695	.0130	-.0984	-.1369	-.0005	.0060
Be	.6843	.4656	.1477	.0350	.1917	.1321	-.0344	.1013	-.1768	.0744
Au	.0445	-.1135	.2137	.6586	-.3294	.1235	-.3558	.0977	.0381	-.1587

Table 7d: North Murchison Ferricretes
Relative Contributions: Variables

	1	2	3	4	5	6	7	8	9	10
Fe3	13.0929	7.1159	9.7997	6.1175	7.8053	4.1355	6.7975	2.4080	.0718	30.2498
Ag	.2492	3.6901	19.9612	12.8425	8.2438	15.4947	.0433	6.3209	3.7683	9.8173
Mn	22.7692	36.3652	4.5212	.8610	1.2623	2.8844	3.4088	.5787	.7200	3.1143
Cr	35.7203	4.8031	2.5123	.4826	3.2195	9.3771	.9017	11.2050	8.2213	.3107
V	12.2687	18.8638	21.2001	4.2901	15.5550	3.0906	.1771	.5798	4.7452	6.8819
Cu	.2558	.0060	18.3182	2.3018	3.4946	46.2681	2.6767	9.6762	2.6791	7.8670
Pb	.7187	.0005	21.8509	10.2529	7.6079	20.8181	1.4091	8.9418	.5111	.0175
Zn	23.1110	33.2313	.0006	.5226	.1922	1.8010	.8998	8.2019	1.7405	2.0247
Ni	8.9971	43.9145	.2243	.4081	5.2742	.0055	.3186	1.5253	15.3912	3.5132
Co	24.9518	50.6321	4.4371	.7037	3.5840	1.0115	2.0486	.0185	2.3162	2.0673
As	.6897	.0003	12.9101	4.9300	5.2706	.9032	56.6058	9.1289	4.9967	.0102
Sb	.0003	2.1826	9.9117	50.8723	7.5897	.7832	3.5909	.1042	.0865	.6452
Bi	52.8404	20.6665	.4793	.1827	.2956	.1354	.0291	.1120	.7620	.1903
Mo	.3238	1.4876	4.4525	.8994	32.5812	11.6208	1.8308	3.8109	28.8446	2.3032
Sn	66.3832	13.4417	.4972	.1096	1.2481	1.4177	.0009	1.1594	.0020	.0173
Ga	35.1777	26.2620	3.1513	3.1061	2.5248	.2085	.9010	5.7624	3.2303	1.1801
W	47.3179	24.0263	1.1988	.1501	.1766	.0830	.0390	2.5334	.0628	.7897
Nb	42.7285	2.4968	7.1558	1.7378	.1085	1.3201	1.0005	13.6656	1.8946	3.2026
Ta	57.9584	27.2559	1.4578	.0284	.0000	.1003	.0413	.3507	1.3918	.0834
Se	.2706	10.4121	22.2621	21.9800	13.6520	.0170	.9687	1.8742	.0000	.0037
Be	46.8298	21.6828	2.1819	.1225	3.6760	1.7446	.1183	1.0264	3.1274	.5539
Au	.1981	1.2876	4.5679	43.3800	10.8509	1.5242	12.6619	.9548	.1453	2.5200

Table 8: Regional Anomalies of the North Murchison Area

Sample	Type	Easting	Northing	Anomaly #
G07098	FF	643000	7053800	BL 03
G02691	OL	576863	7031156	BL 08
G02694	LN	585780	7023406	BL 09
G04276	LN	574443	7018709	BL 10
G02677	LN	513443	6958002	CU 01
G02673	LP	512876	6940310	CU 02
G02664	LP	512863	6927849	CU 03
G02667	MF	513404	6922617	CU 04
G02652	OL	505057	6915085	CU 05
G02614	LN	587154	6906461	CU 06
G02618	LP	581744	6914501	CU 07
G02627	LP	575948	6927617	CU 08
G04233	LN	525012	6913213	CU 09
G02624	PN	580975	6922199	CU 10
G02625	OL	577699	6923298	CU 11
G02636	OL	586766	6928622	CU 12
G02638	OL	519011	6921379	CU 13
G02646	PE	524066	6918754	CU 14
G02651	OL	508066	6916929	CU 15
G02658	LP	503828	6918316	CU 16
G02671	LN	509446	6932929	CU 17
G04210	LN	539416	6929484	CU 19
G04222	MF	536531	6925954	CU 20
G04249	LP	538856	7012409	CU 22
G02682	OL	597224	6987628	CU 23
G02686	PE	588688	7005539	CU 24
G05045	FF	650500	7025000	GL 01
G07000	LN	661031	7062371	GL 02
G05012	FF	681360	7090720	GL 03
G05015	PN	677810	7075080	GL 04
G05008	PN	682920	7083684	GL 07
G05133	FF	728000	7028800	GL 08
G06506	LN	626500	7001850	KG
G04189	LP	575215	6897925	KL 10
G05116	FF	745212	6952015	SA 04
G05097	LN	737842	6954008	SA 05
G05106	FF	738322	6936400	SA 06

Area Codes:
BL: Belele
CU: Cue
SA: Sandstone
GL: Glengarry
KL: Kirkalocka

Table 9a: North Murchison Laterites

CHI-6*X Indices >90th percentile

Sample	Type	Easting	Northing	CHI-6*X
G04233	LN	525012.	6913213.	1286.0
G02674	LP	513020.	6947233.	1074.0
G07000	LN	661031.	7062371.	993.0
G05097	LN	737842.	6954008.	981.0
G02648	LP	524464.	6912599.	916.0
G02669	LN	516556.	6926459.	854.3
G02618	LP	581744.	6914501.	828.0
G05017	LP	679936.	7072461.	792.3
G04273	LP	566309.	7018662.	715.7
G02668	LN	517923.	6925842.	708.7
G05033	PN	657400.	7029200.	574.0
G02650	LP	519955.	6913223.	558.3
G07167	LN	739400.	7025400.	492.0

Table 9b: North Murchison Laterites

PEG-4 Indices >90th percentile

Sample	Type	Easting	Northing	PEG-4
G04273	LP	566309.	7018662.	166.3
G02669	LN	516556.	6926459.	77.0
G04233	LN	525012.	6913213.	72.8
G05017	LP	679936.	7072461.	69.7
G07000	LN	661031.	7062371.	68.1
G05008	PN	682920.	7083684.	56.3
G02648	LP	524464.	6912599.	55.5
G02668	LN	517923.	6925842.	53.8
G02664	LP	512863.	6927849.	50.0
G02674	LP	513020.	6947233.	45.8
G05033	PN	657400.	7029200.	45.3
G05097	LN	737842.	6954008.	43.3
G02650	LP	519955.	6913223.	43.2

Table 9c: North Murchison Ferricretes

CHI-6*X Indices >90th percentile

Sample	Type	Easting	Northing	CHI-6*X
G02696	MF	583558.	7021113.	1886.3
G04271	MF	563131.	7017233.	1226.7
G05019	FF	677750.	7070460.	1033.7
G07005	FF	660892.	7051293.	904.0
G07022	FF	663900.	7027274.	898.0
G07075	FF	644150.	7064200.	832.3
G05007	FF	682946.	7085469.	794.0
G05021	FF	676880.	7067700.	783.0
G07004	FF	657574.	7051334.	753.3
G07077	FF	641079.	7059837.	700.7
G07018	FF	654970.	7041700.	690.3
G07072	MF	639000.	7067250.	689.0
G05030	PF	658700.	7038700.	677.7
G07122	PF	746969.	6957523.	656.3
G04270	MF	560783.	7016321.	638.0
G07055	FF	632752.	7057157.	612.7
G07118	FF	733130.	7009900.	610.3
G05048	FF	650700.	7021300.	610.3
G07036	FF	660445.	7016211.	605.3
G05018	FF	677769.	7071937.	588.3
G06074	RC	681688.	7084717.	586.3
G07067	FF	631000.	7056500.	557.7
G07182	FF	723400.	7010500.	547.0
G07164	FF	737000.	7030900.	544.0
G07015	FF	657440.	7041740.	536.7
G05133	FF	728000.	7028800.	535.0
G05016	FF	680310.	7075040.	522.0
G05075	FF	586494.	7088016.	513.3
G05045	FF	650500.	7025000.	510.0
G05111	FF	740129.	6944724.	496.3
G05049	FF	660800.	7023400.	496.3
G07065	FF	633900.	7052100.	496.3
G05036	FF	651600.	7030200.	496.0

Table 9d: North Murchison Ferricretes

PEG-4 Indices >90th percentile

Sample	Type	Easting	Northing	PEG-4
G04271	MF	563131.	7017233.	295.2
G02696	MF	583558.	7021113.	177.6
G04270	MF	560783.	7016321.	139.1
G04272	MF	564236.	7017689.	99.2
G05048	FF	650700.	7021300.	92.0
G05019	FF	677750.	7070460.	90.0
G07018	FF	654970.	7041700.	84.8
G07075	FF	644150.	7064200.	83.1
G07051	FF	561548.	7089082.	79.6
G07036	FF	660445.	7016211.	74.0
G05030	PF	658700.	7038700.	73.3
G05029	FF	657500.	7036700.	71.1
G07077	FF	641079.	7059837.	69.5
G07055	FF	632752.	7057157.	68.5
G07005	FF	660892.	7051293.	68.1
G07072	MF	639000.	7067250.	65.0
G05045	FF	650500.	7025000.	62.6
G07035	FF	658838.	7019925.	61.9
G05047	FF	650700.	7018900.	60.7
G05036	FF	651600.	7030200.	59.6
G05007	FF	682946.	7085469.	57.0
G05021	FF	676880.	7067700.	56.9
G05042	FF	651300.	7038600.	56.8
G05035	FF	654700.	7030100.	55.7
G05043	FF	656200.	7039800.	55.3
G07118	FF	733130.	7009900.	52.2
G07022	FF	663900.	7027274.	50.8
G05046	FF	656000.	7027000.	50.6
G07015	FF	657440.	7041740.	50.1
G07080	FF	644400.	7056400.	49.9
G02693	PE	583862.	7025358.	49.8
G07065	FF	633900.	7052100.	49.7
G05133	FF	728000.	7028800.	49.2

Note: The samples used for the CHI-6*X and PEG-4 Indices were regional samples only.
No F2/F3 follow up samples were included.

Table 10: North Murchison Laterites

Principal Component 5 (Au-W Association)

Samples >90th Percentile

G06505	LN	626650.	7000450.	.3045
G06237	LN	525300.	6914300.	.2596
G03326	LN	550799.	7001597.	.2596
G03975	LN	677439.	7068156.	.2189
G04233	LN	525012.	6913213.	.1870
G05691	CP	678520.	7066390.	.1680
G06833	LN	560836.	7015767.	.1313
G02674	LP	513020.	6947233.	.1015
G02648	LP	524464.	6912599.	.0859
G06819	LN	583422.	7021422.	.0685
G06264	LN	523250.	6915700.	.0667
G03948	LN	678600.	7070750.	.0665
G06724	LN	643600.	7063350.	.0650
G06222	LN	512450.	6941350.	.0560
G04276	LN	574443.	7018709.	.0541
G06239	LN	544400.	6945150.	.0525
G03951	LN	679250.	7069800.	.0465
G06220	LN	512350.	6940450.	.0436
G06824	LN	578165.	7023148.	.0415
G06228	LN	503700.	6919400.	.0406

Table 11: North Murchison Ferricretes

Principal Component 4 (Au-Sb Association)
Samples >90th Percentile

G03998	MF	566002.0	7017956.0	.8272
G06831	FF	556224.0	7013850.0	.4569
G04271	MF	563131.0	7017233.0	.2447
G03897	FF	573900.0	7019480.0	.1340
G06828	MF	558377.0	7014548.0	.1264
G04270	MF	560783.0	7016321.0	.1257
G03833	FF	583140.0	7020860.0	.1211
G06761	FF	640664.0	7059842.0	.0885
G02696	MF	583558.0	7021113.0	.0791
G07005	FF	660892.0	7051293.0	.0746
G06246	RC	545200.0	6940700.0	.0721
G05648	MF	640650.0	7061650.0	.0713
G03960	MF	681200.0	7069500.0	.0693
G07027	FF	670370.0	7016080.0	.0691
G05665	MF	639750.0	7059300.0	.0632
G02693	PE	583862.0	7025358.0	.0628
G05048	FF	650700.0	7021300.0	.0621
G07055	FF	632752.0	7057157.0	.0593
G05030	PF	658700.0	7038700.0	.0527
G05641	MF	640350.0	7059725.0	.0525
G05045	FF	650500.0	7025000.0	.0506
G03323	FF	551765.0	7002054.0	.0495
G05047	FF	650700.0	7018900.0	.0495
G03898	FF	574860.0	7019630.0	.0483
G03943	MF	678400.0	7068150.0	.0476
G05683	MF	678250.0	7069850.0	.0448
G04274	MF	568782.0	7017111.0	.0435

Table 12: Chi-square Anomalous Samples for the multi-element
Group: As Sb Mo Bi Ag Sn W Se Ga Nb
Material: Laterites

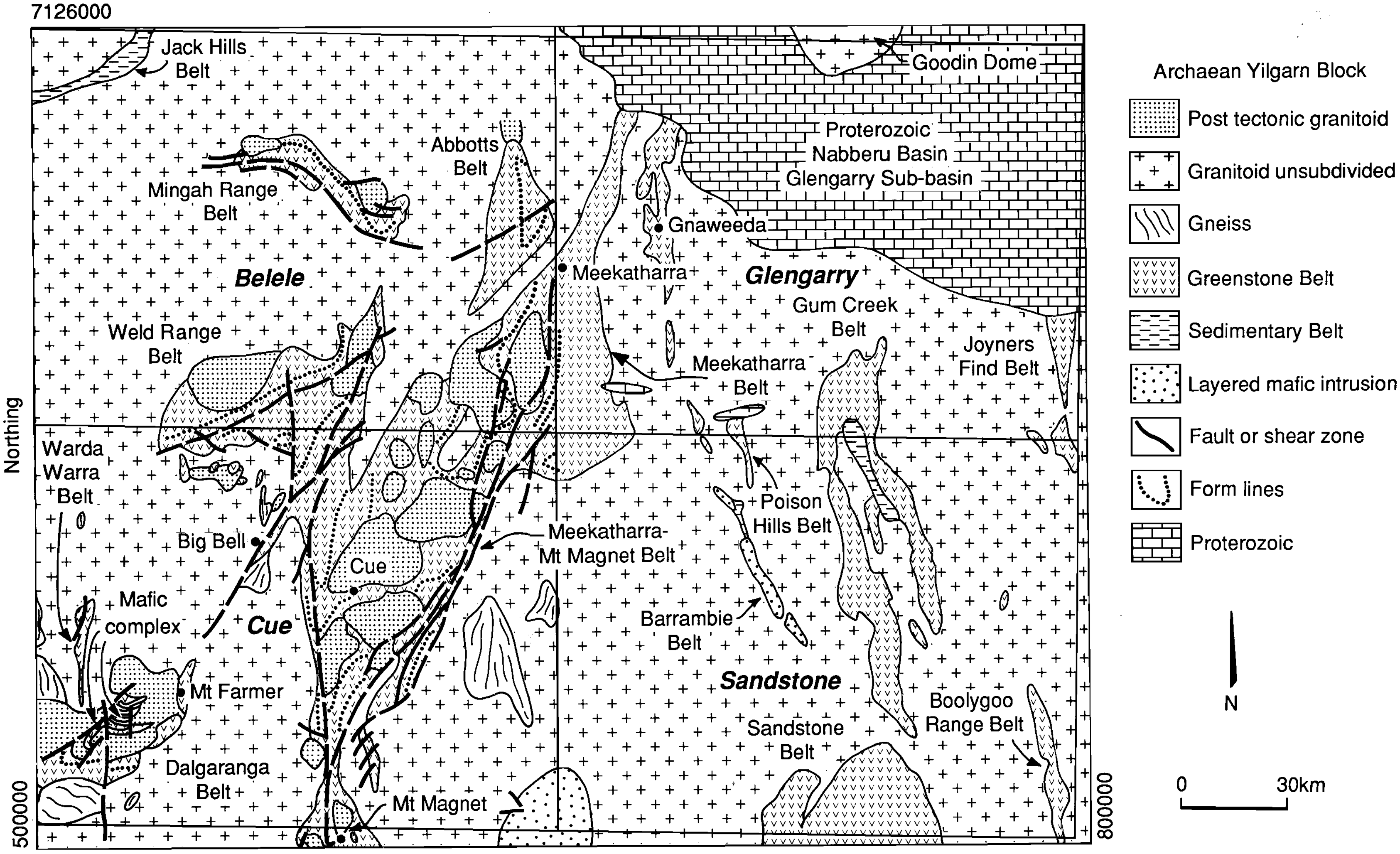
Sample	Type	Easting	Northing	Observed χ^2	Expected χ^2
G04273	LP	566309.	7018662.	122.0	12.7
G05097	LN	737842.	6954008.	100.2	12.6
G04265	LN	547837.	7018993.	68.5	12.5
G04233	LN	525012.	6913213.	68.1	12.4
G02669	LN	516556.	6926459.	65.9	12.3
G02618	LP	581744.	6914501.	60.9	12.2
G05008	PN	682920.	7083684.	48.5	12.1
G02674	LP	513020.	6947233.	39.2	12.0
G05017	LP	679936.	7072461.	35.5	12.0
G07000	LN	661031.	7062371.	32.4	11.9
G02668	LN	517923.	6925842.	28.8	11.8
G02648	LP	524464.	6912599.	21.8	11.7
G06506	LN	626500.	7001850.	18.9	11.6
G04199	LP	591400.	6899400.	17.8	11.5
G02650	LP	519955.	6913223.	17.1	11.5
G02673	LP	512876.	6940310.	16.1	11.4
G04229	LN	536081.	6912570.	15.1	11.3
G04240	LP	541379.	6943324.	13.1	11.2
G05033	PN	657400.	7029200.	12.2	11.2
G04254	LN	537501.	7020105.	11.9	11.1
G02647	LP	524334.	6915984.	11.6	11.0
G06073	PN	683221.	7085311.	11.5	10.9
G07006	LN	659210.	7049467.	11.2	10.9

Table 13: Chi-square Anomalous Samples for the multi-element
Group: As Sb Mo Bi Ag Sn W Se Ga Nb
Material: Ferricretes

Sample	Type	Easting	Northing	Observed χ^2	Expected χ^2
G04271	MF	563131.	7017233.	209.0	7.3
G02696	MF	583558.	7021113.	177.6	7.3
G07027	FF	670370.	7016080.	140.2	7.3
G07005	FF	660892.	7051293.	131.1	7.3
G07123	FF	745230.	6955670.	85.8	7.3
G07004	FF	657574.	7051334.	81.1	7.3
G05007	FF	682946.	7085469.	69.3	7.3
G07091	FF	641600.	7045600.	67.5	7.3
G07118	FF	733130.	7009900.	65.3	7.2
G07145	FF	734950.	6978880.	60.2	7.2
G07035	FF	658838.	7019925.	56.9	7.2
G07075	FF	644150.	7064200.	55.9	7.2
G07036	FF	660445.	7016211.	55.6	7.2
G07022	FF	663900.	7027274.	55.2	7.2
G07051	FF	561548.	7089082.	49.1	7.2
G04270	MF	560783.	7016321.	41.1	7.2
G05019	FF	677750.	7070460.	39.7	7.2
G07165	FF	740600.	7034100.	33.8	7.2
G05048	FF	650700.	7021300.	32.9	7.1
G04272	MF	564236.	7017689.	29.6	7.1
G04212	MF	540108.	6931943.	29.2	7.1
G02686	PE	588688.	7005539.	29.0	7.1
G07112	PE	729370.	6985560.	23.4	7.1
G07053	FF	568177.	7084433.	22.8	7.1
G05021	FF	676880.	7067700.	22.7	7.1
G07130	FF	729610.	6961720.	20.7	7.1
G07122	PF	746969.	6957523.	19.5	7.1
G06074	RC	681688.	7084717.	18.9	7.1
G07055	FF	632752.	7057157.	18.7	7.0
G05030	PF	658700.	7038700.	17.8	7.0
G05029	FF	657500.	7036700.	17.6	7.0
G04190	MF	575642.	6900754.	17.3	7.0
G07169	FF	739900.	7021000.	17.0	7.0
G07064	FF	630700.	7050600.	16.8	7.0
G04207	MF	531888.	6929352.	16.5	7.0
G05125	FF	741811.	6946539.	16.0	7.0
G07077	FF	641079.	7059837.	14.9	7.0
G07070	FF	636200.	7059800.	14.1	7.0
G05012	FF	681360.	7090720.	14.1	6.9
G05045	FF	650500.	7025000.	14.0	6.9
G07174	FF	724800.	7017500.	13.8	6.9
G02695	MF	583708.	7022959.	13.5	6.9
G04225	MF	535011.	6920727.	13.3	6.9
G07046	FF	569000.	7092300.	13.3	6.9
G05066	FF	578143.	7082531.	13.1	6.9
G07182	FF	723400.	7010500.	12.9	6.9
G07038	FF	573800.	7093500.	12.8	6.9
G05020	FF	679370.	7067670.	12.7	6.9
G04201	MF	591214.	6901507.	12.3	6.8
G05128	FF	743621.	6954818.	12.2	6.8
G07018	FF	654970.	7041700.	12.2	6.8
G05108	FF	737644.	6943849.	12.1	6.8
G07080	FF	644400.	7056400.	12.1	6.8
G07139	FF	729950.	6975650.	12.0	6.8
G07072	MF	639000.	7067250.	11.9	6.8
G07073	FF	639000.	7064200.	11.8	6.8
G06512	FF	621800.	6997850.	11.4	6.8
G04222	MF	536531.	6925954.	11.2	6.8
G05111	FF	740129.	6944724.	11.1	6.7
G07012	FF	654190.	7045836.	11.0	6.7
G05035	FF	654700.	7030100.	10.8	6.7
G05049	FF	660800.	7023400.	10.5	6.7
G05036	FF	651600.	7030200.	10.4	6.7
G05110	FF	738413.	6941062.	9.9	6.7
G04231	MF	525158.	6917829.	9.8	6.7
G07120	FF	726542.	7011496.	9.7	6.7
G07183	FF	721400.	7012200.	9.6	6.7
G07067	FF	631000.	7056500.	9.6	6.7
G07034	FF	657160.	7018100.	9.6	6.6
G07133	FF	727400.	6969440.	9.4	6.6
G07176	RC	721100.	7022600.	9.4	6.6
G02693	PE	583862.	7025358.	9.4	6.6
G02667	MF	513404.	6922617.	9.3	6.6

Table 13 (cont'd): Chi-square Anomalous Samples for the multi-element Group: As Sb Mo Bi Ag Sn W Se Ga Nb

G05085	FF	631244.	7071944.	9.1	6.6
G07010	FF	652576.	7049549.	9.0	6.6
G07186	FF	730100.	7012200.	8.9	6.6
G07045	FF	574700.	7088300.	8.9	6.6
G04230	MF	525026.	6919983.	8.4	6.6
G05018	FF	677769.	7071937.	8.1	6.5
G07132	FF	725570.	6967520.	7.9	6.5
G06075	RC	682247.	7085017.	7.9	6.5
G02689	MF	589831.	7011377.	7.9	6.5
G07178	FF	725800.	7020500.	7.7	6.5
G05075	FF	586494.	7088016.	7.6	6.5
G07164	FF	737000.	7030900.	7.6	6.5
G05016	FF	680310.	7075040.	7.5	6.5
G07113	FF	726915.	6986550.	7.5	6.5
G05133	FF	728000.	7028800.	7.5	6.5
G05098	FF	749157.	6943619.	7.5	6.4
G05047	FF	650700.	7018900.	7.4	6.4
G02688	MF	588165.	7009543.	7.3	6.4
G07081	FF	646000.	7059000.	7.1	6.4
G07043	FF	574700.	7084000.	7.0	6.4
G06510	FF	625100.	6995050.	6.9	6.4
G07146	FF	745030.	6962420.	6.8	6.4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Jack Hills Belt
Goodin Dome
Archaean Yilgarn Block
Post tectonic granitoid
Granitoid unsubdivided
Gneiss
Greenstone Belt
Sedimentary Belt
Layered mafic intrusion
Fault or shear zone
Form lines
Proterozoic
Abbotts Belt
Proterozoic Nabberu Basin Glengarry Sub-basin
Mingah Range Belt
Gnaweeda
Belele
Meekatharra
Glengarry
Gum Creek Belt
Weld Range Belt
Joyners Find Belt
Meekatharra Belt
Northing
Warda Warra Belt
Poison Hills Belt
Big Bell
Meekatharra-Mt Magnet Belt
Cue
Mafic complex
Cue
Barrambie Belt
Mt Farmer
Sandstone
Boolygoo Range Belt
Sandstone Belt
N
Dalgaranga Belt
0
30km
Mt Magnet
500000
800000
6895000
Easting

Figure 1

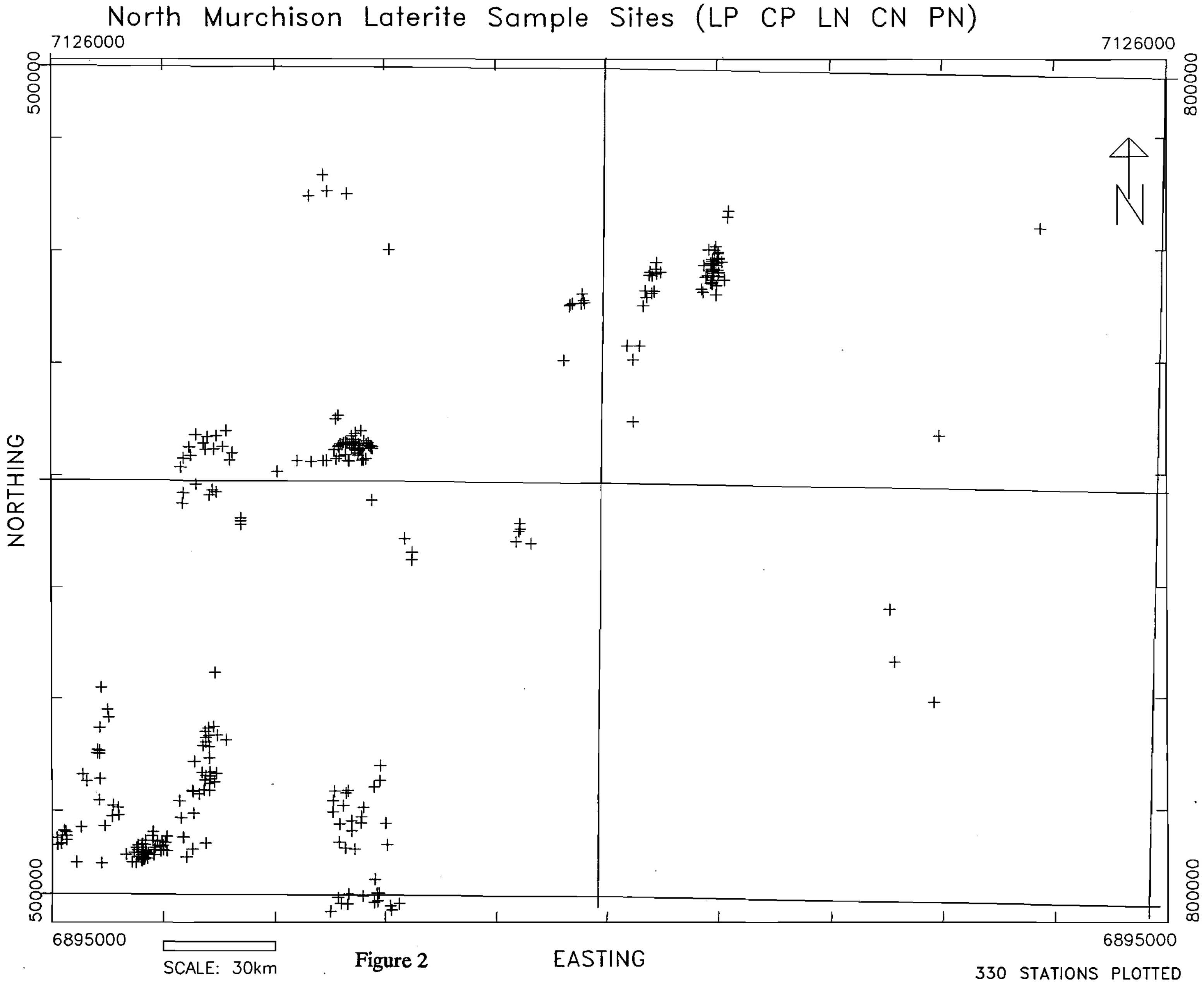

North Murchison Laterite Sample Sites (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
330 STATIONS PLOTTED

Figure 2

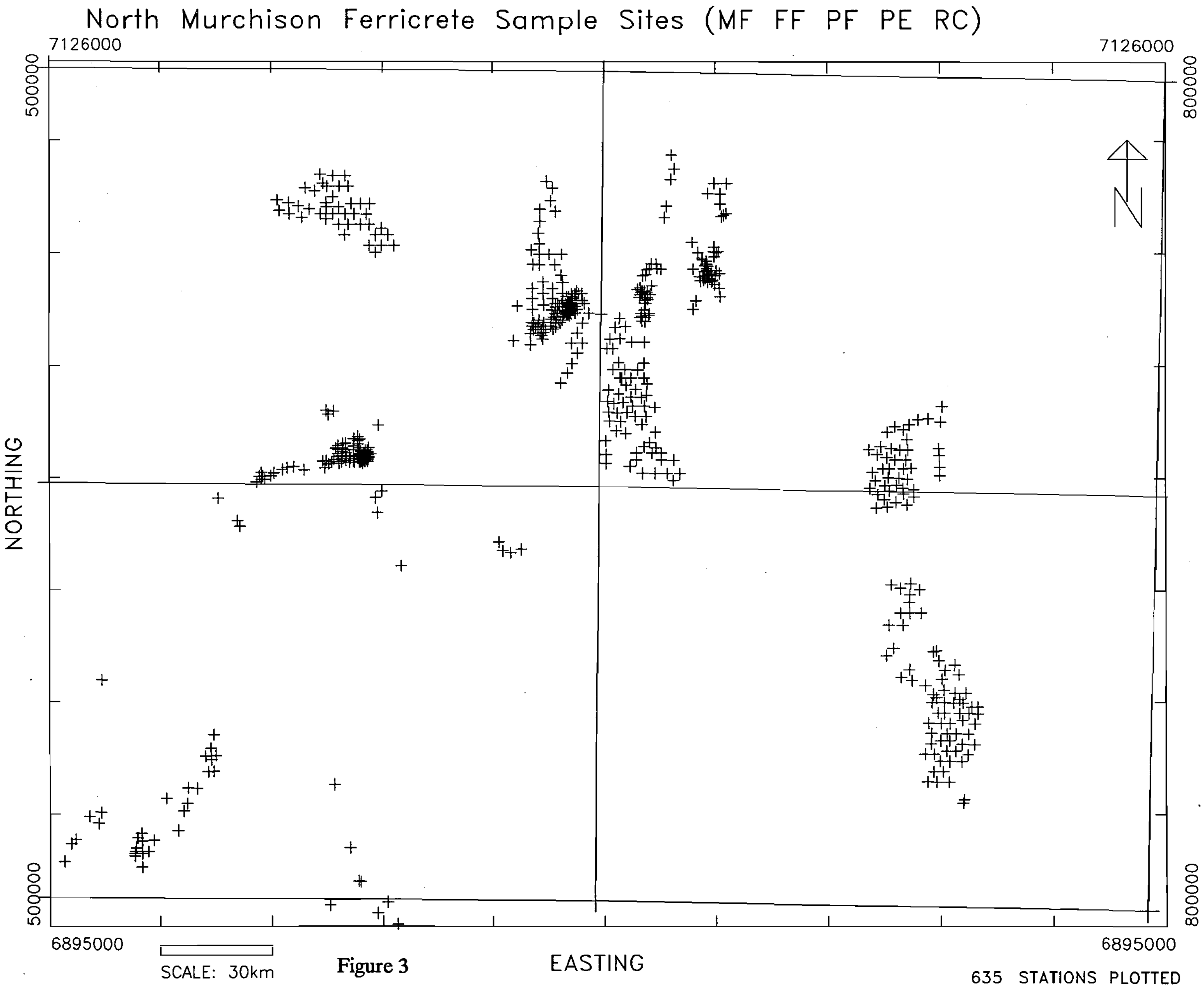

North Murchison Ferricrete Sample Sites (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
EASTING
SCALE: 30km
635 STATIONS PLOTTED
N

Figure 3

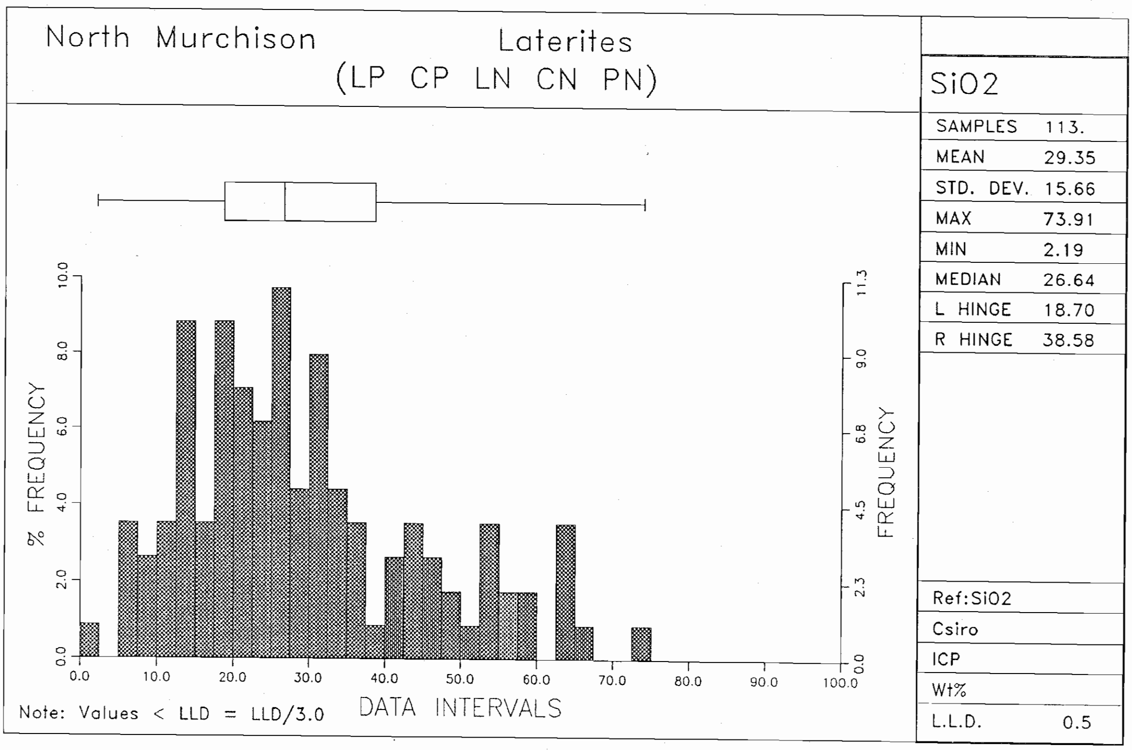


Figure 4a

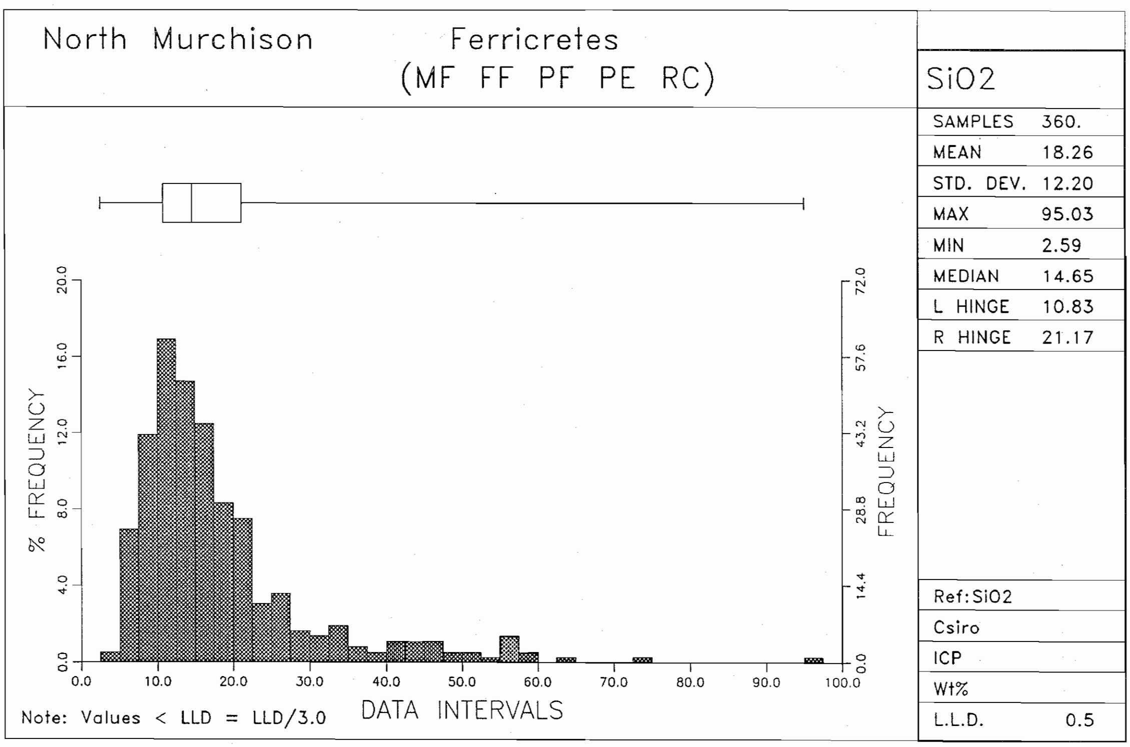


Figure 4b

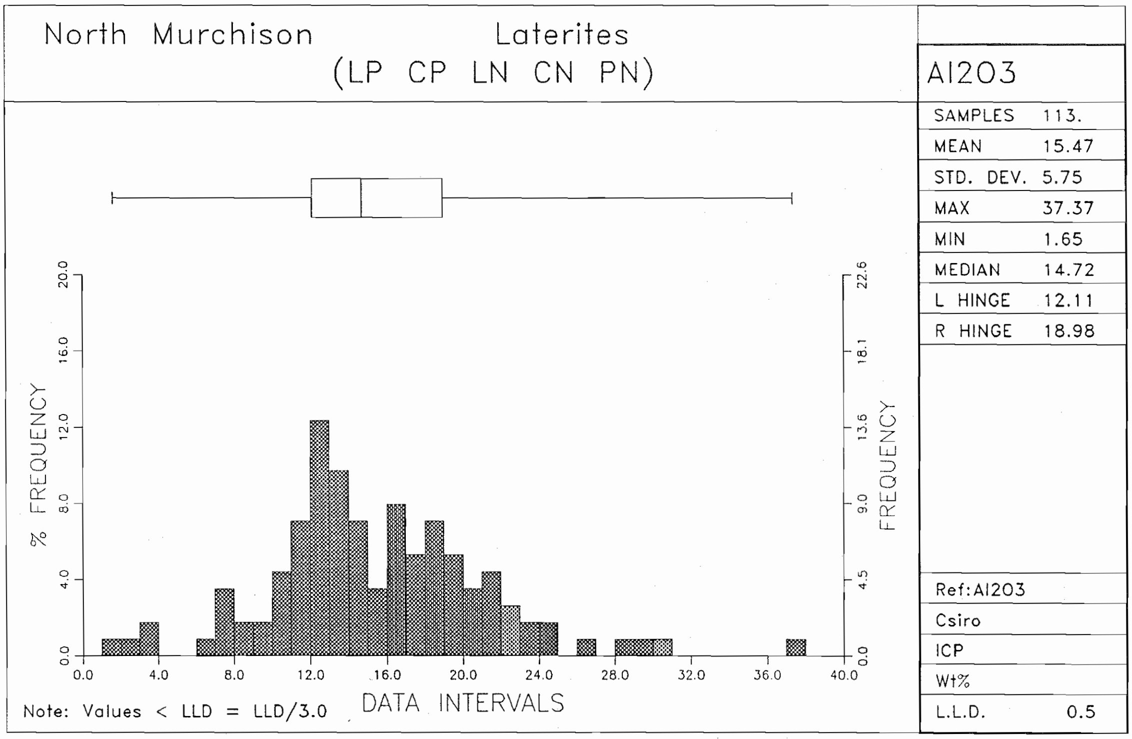


Figure 5a

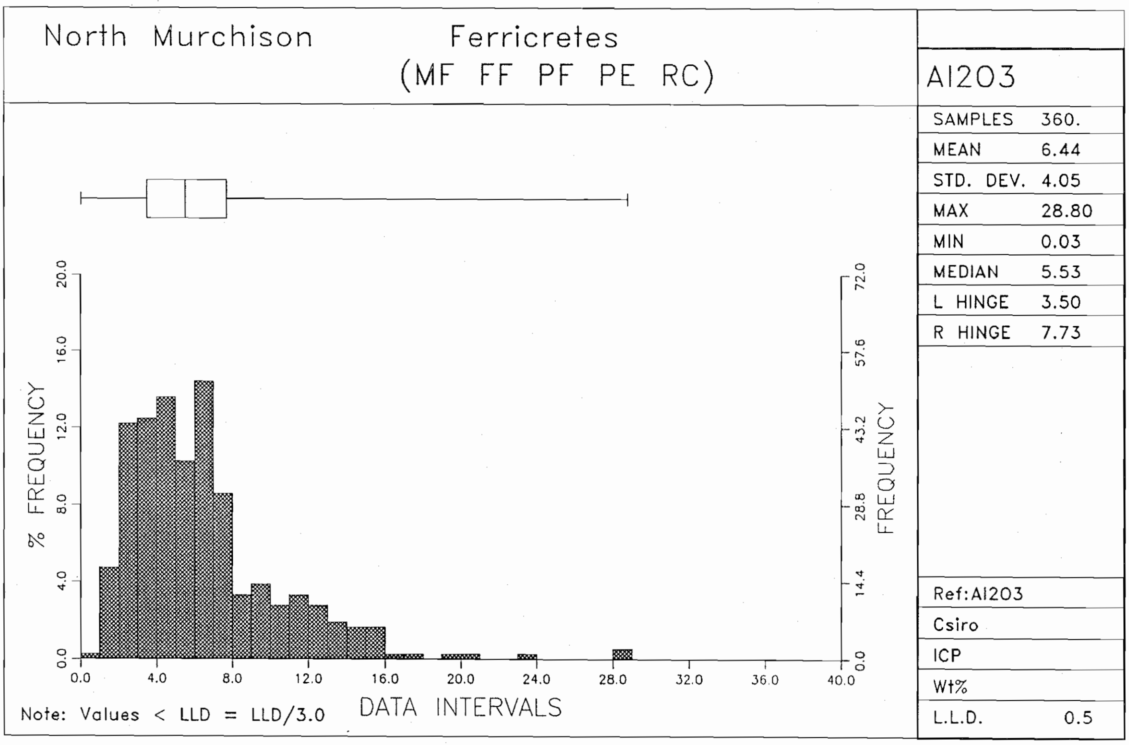


Figure 5b

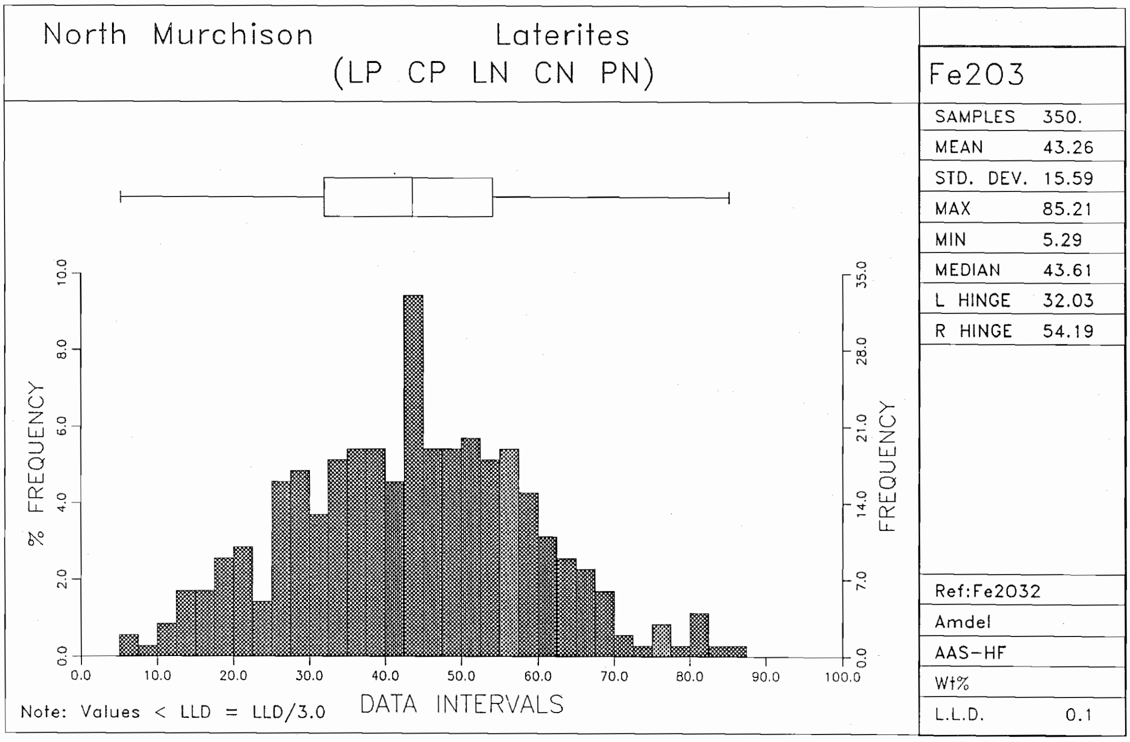


Figure 6a

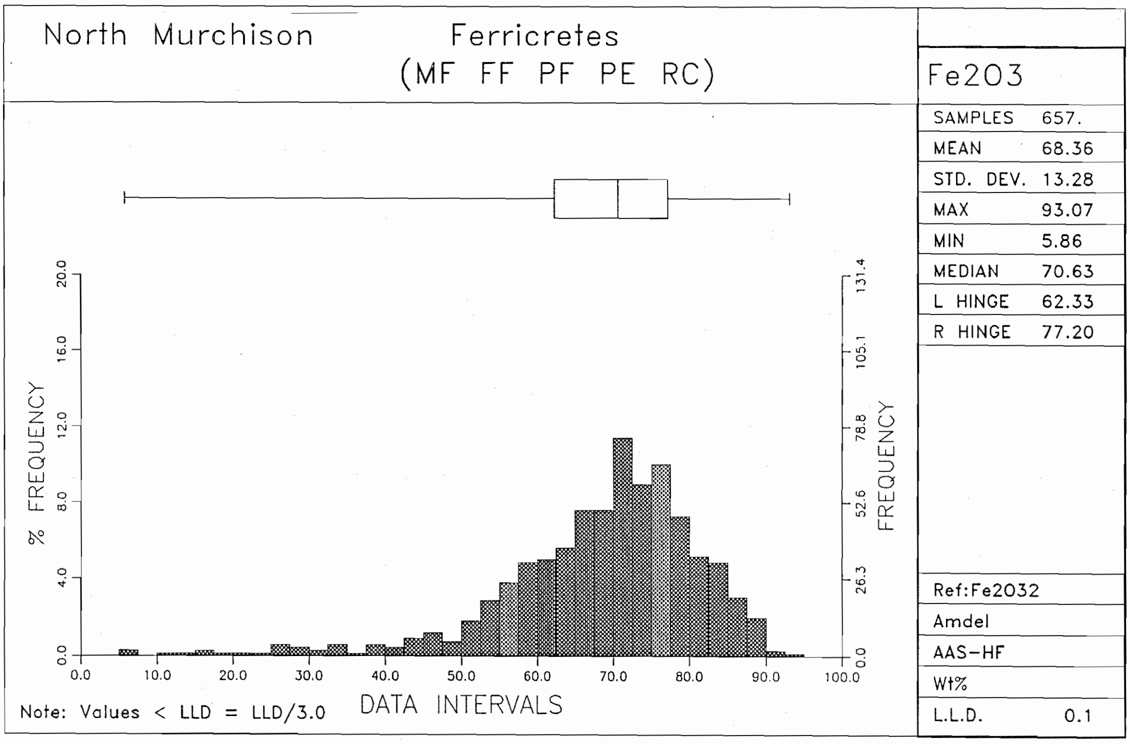


Figure 6b

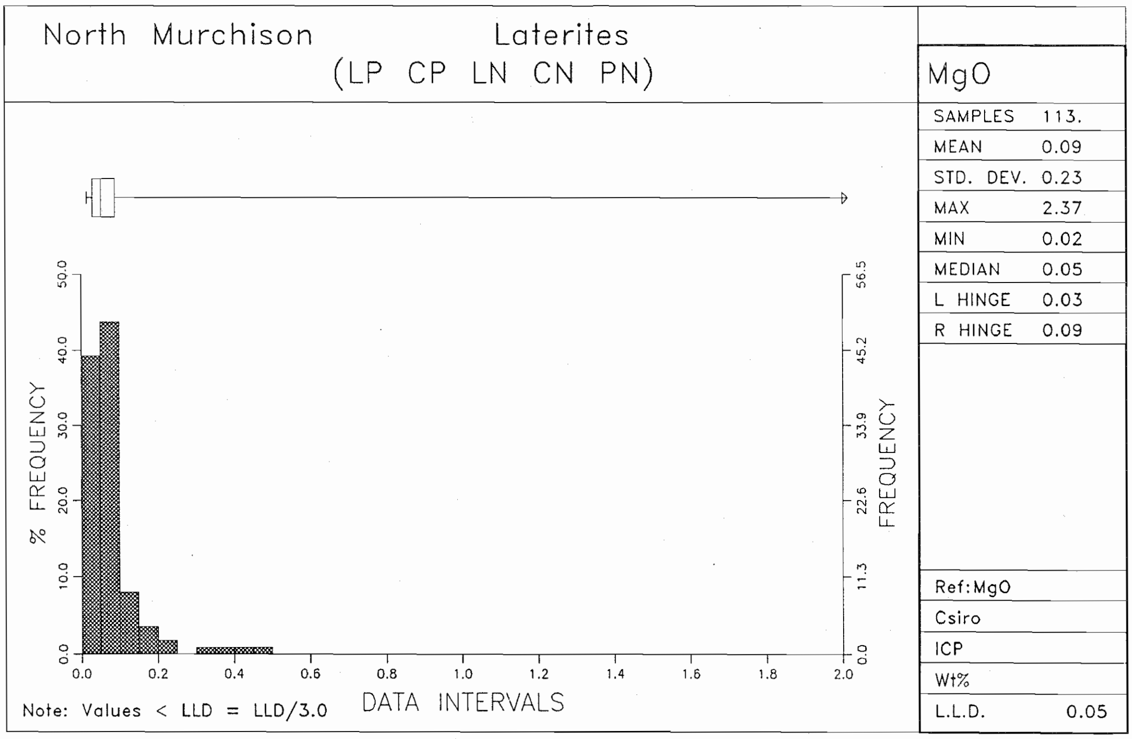


Figure 7a

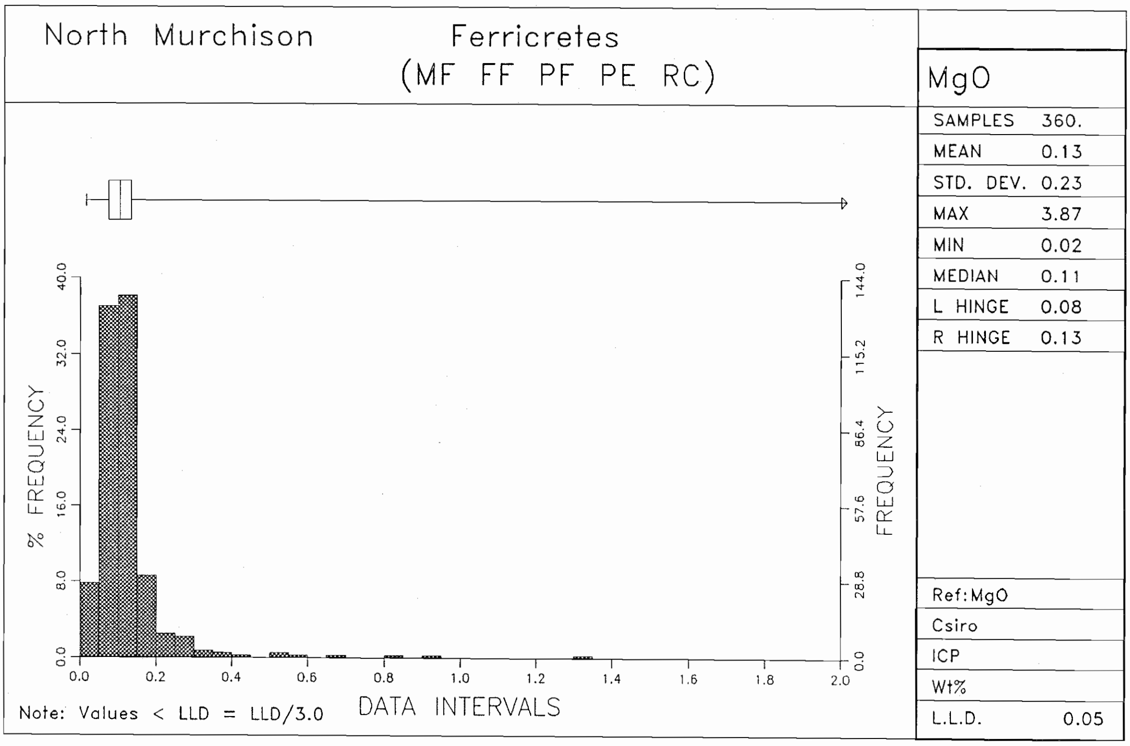


Figure 7b

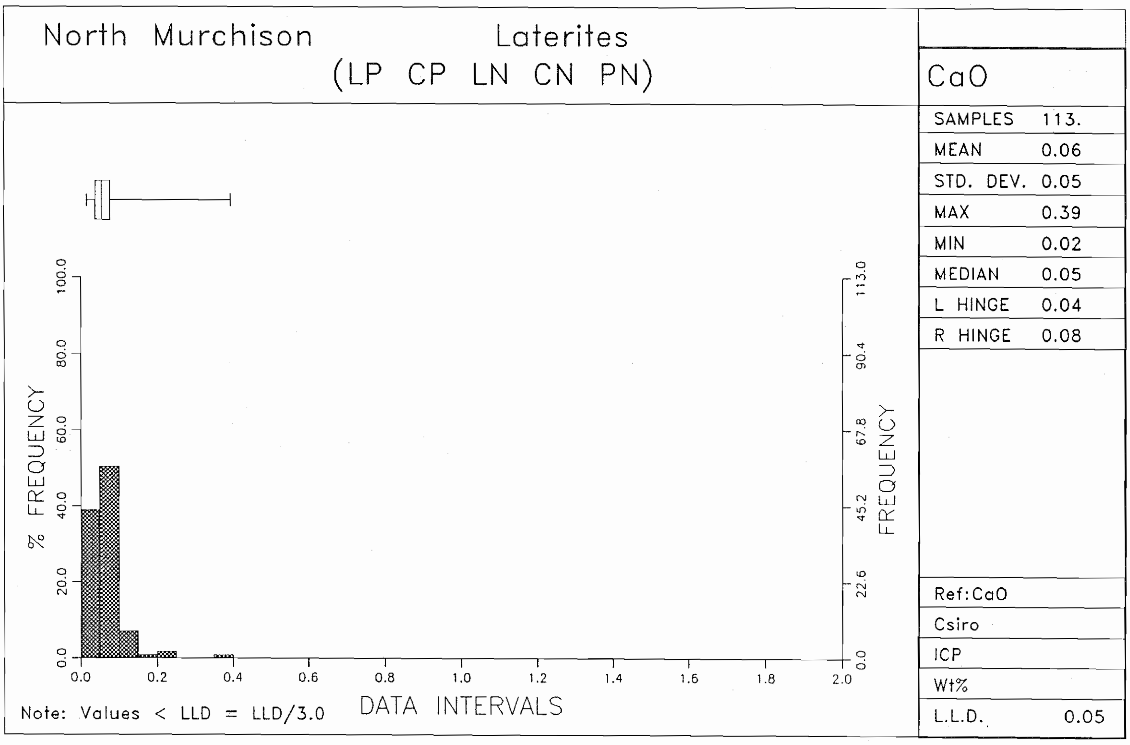


Figure 8a

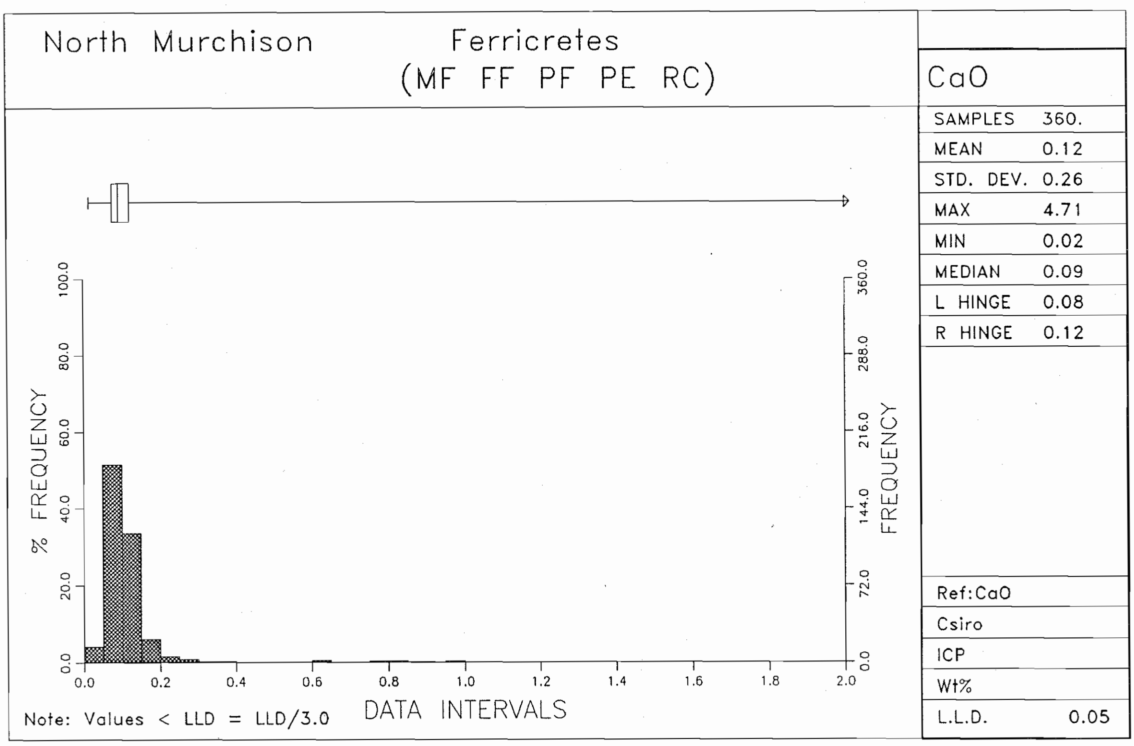


Figure 8b

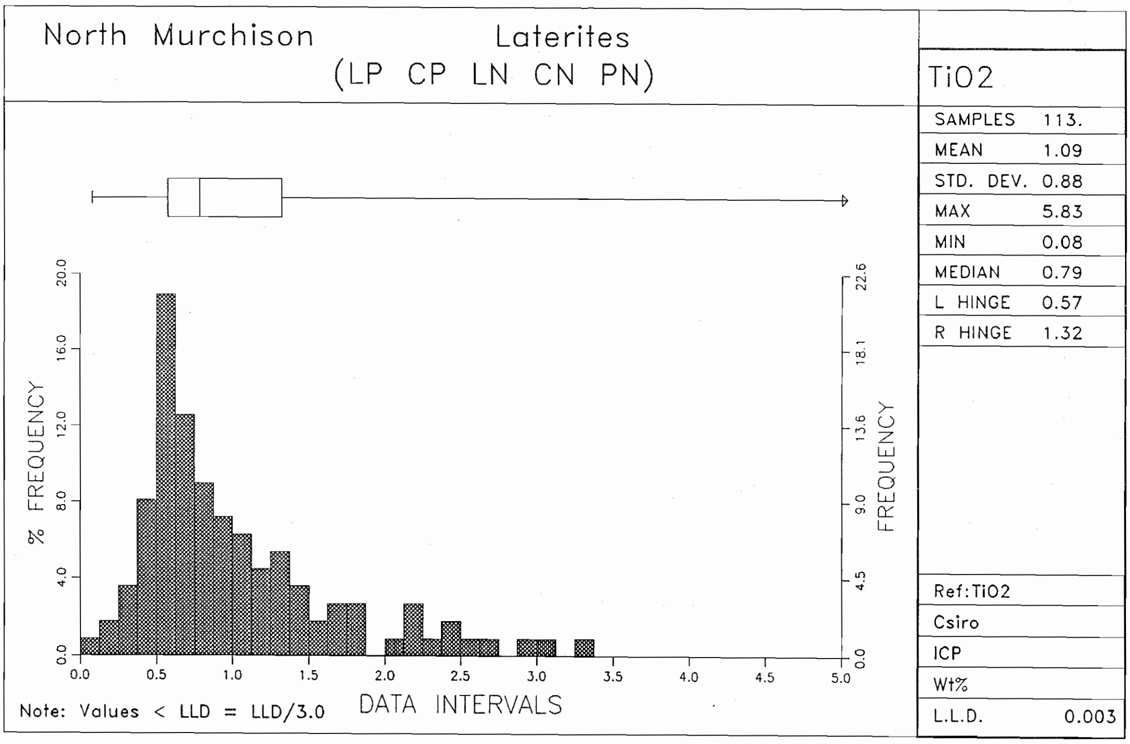


Figure 9a

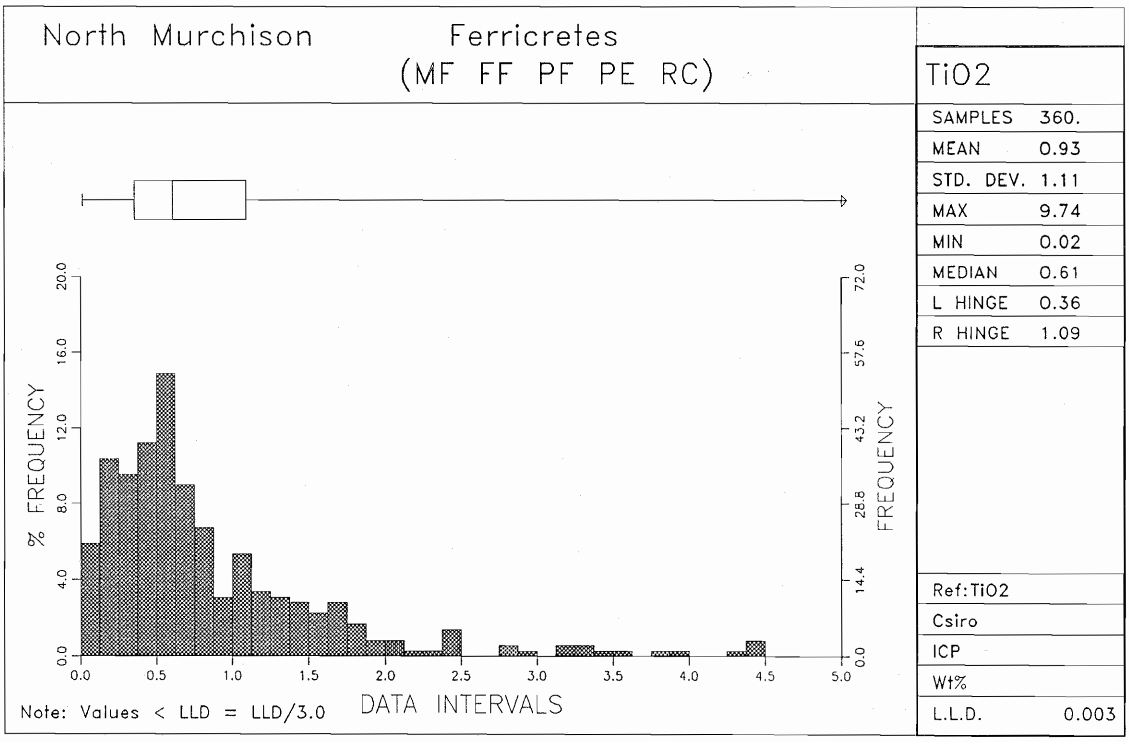


Figure 9b

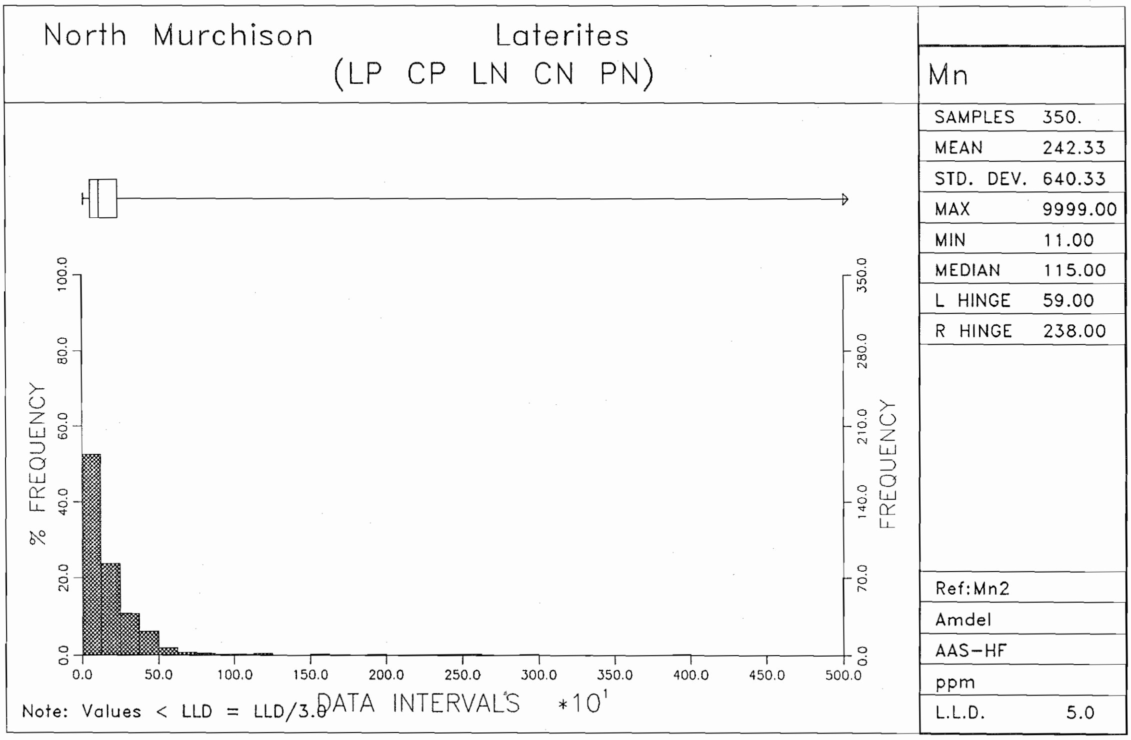


Figure 10a

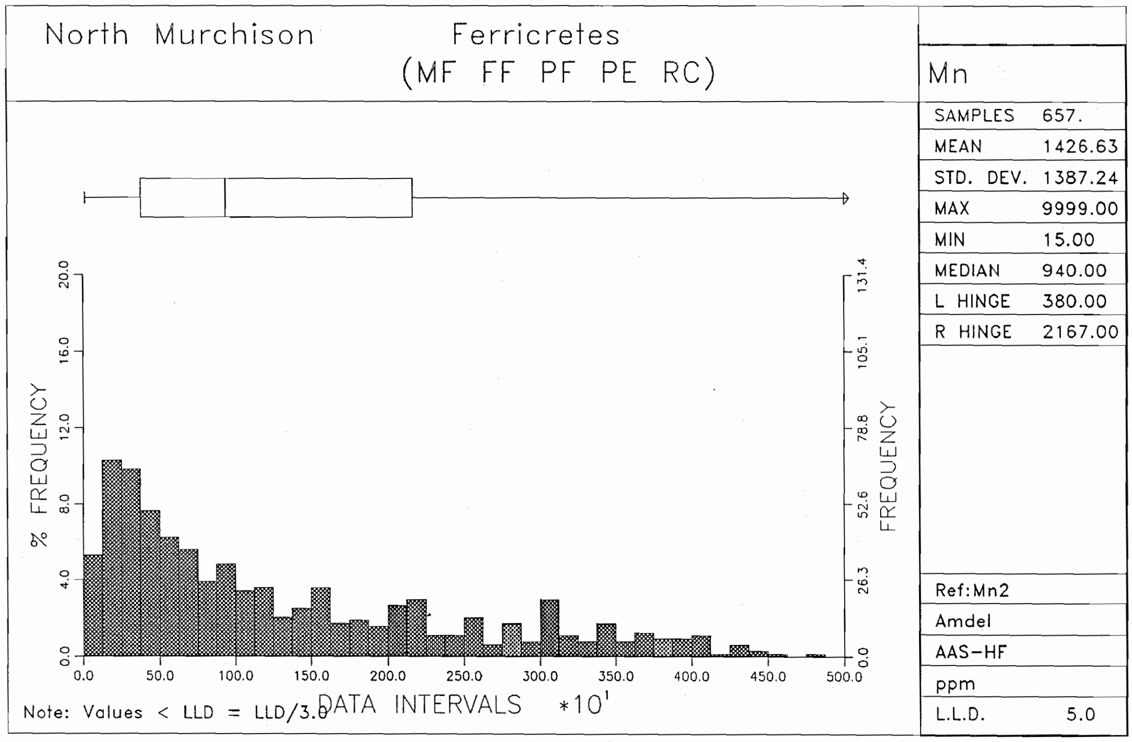


Figure 10b

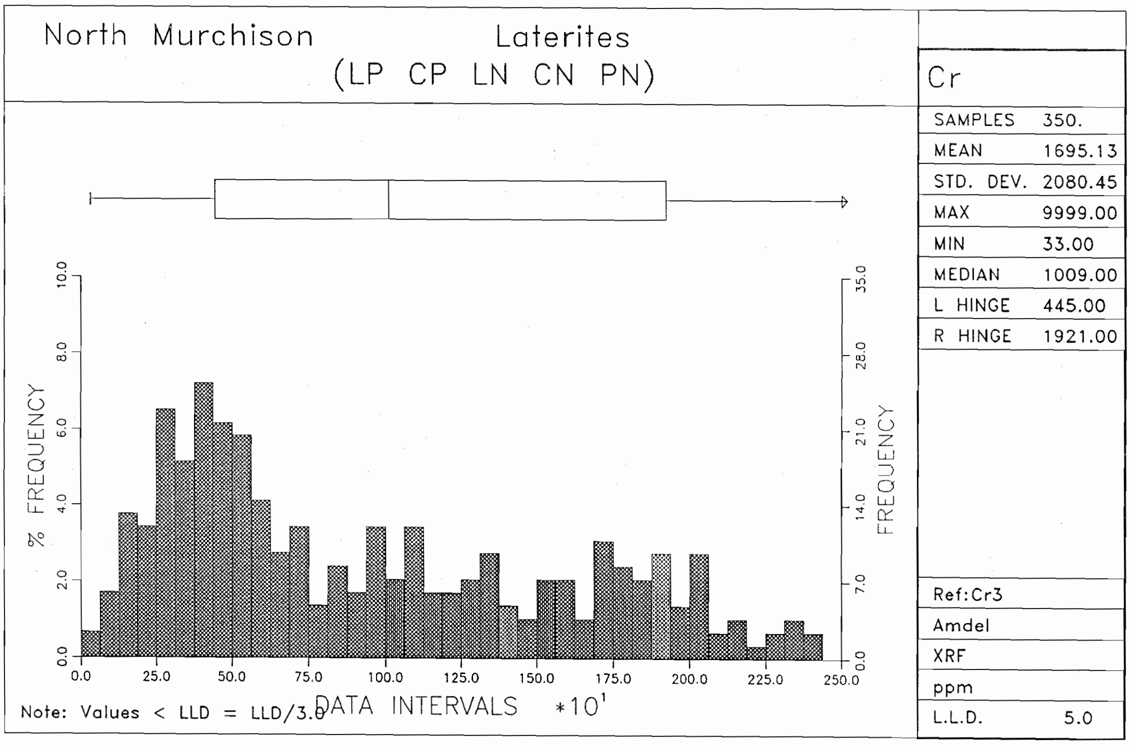


Figure 11a

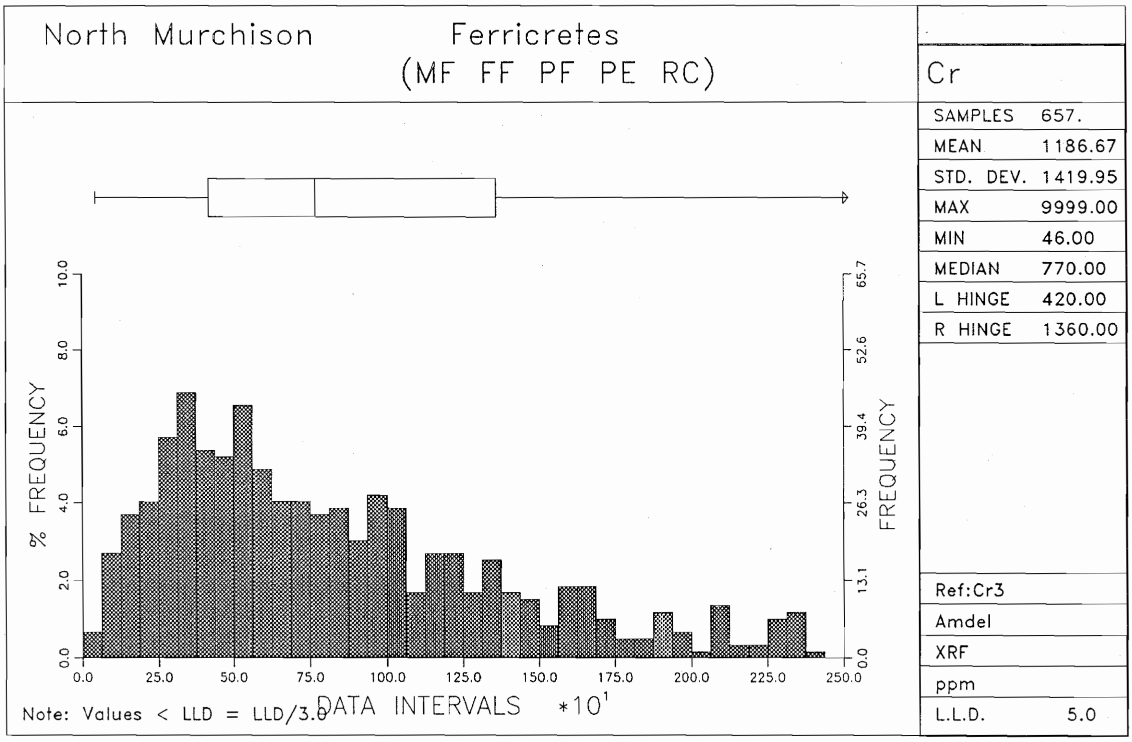


Figure 11b

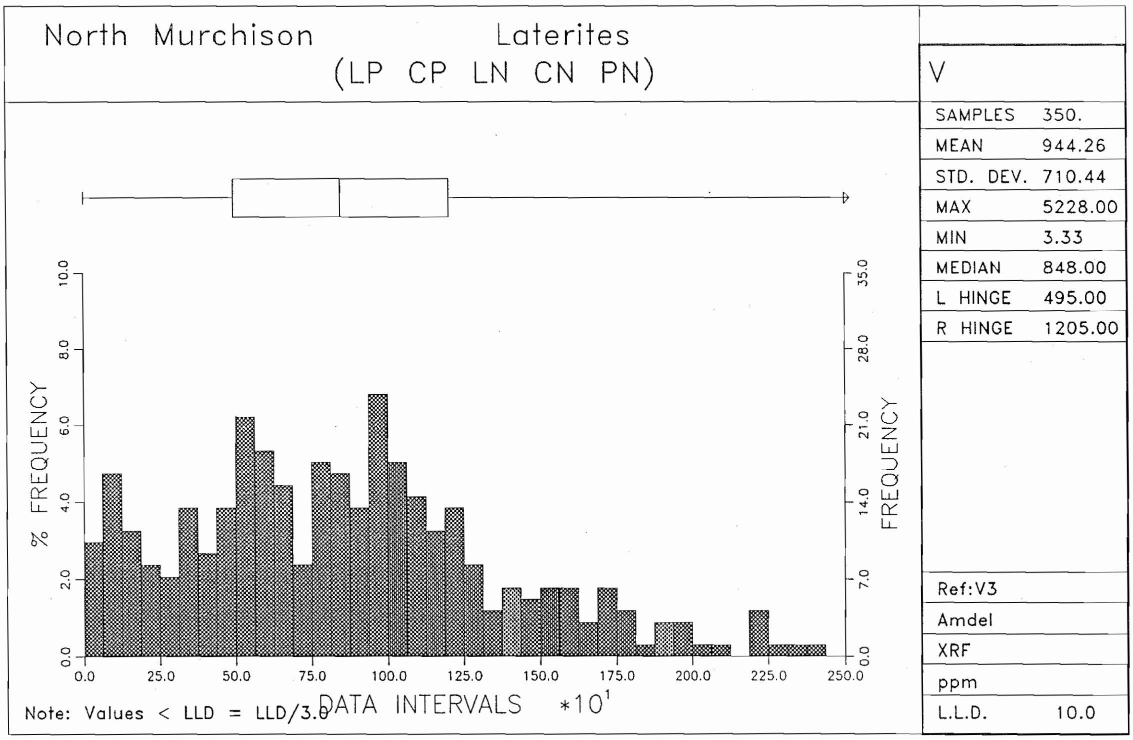


Figure 12a

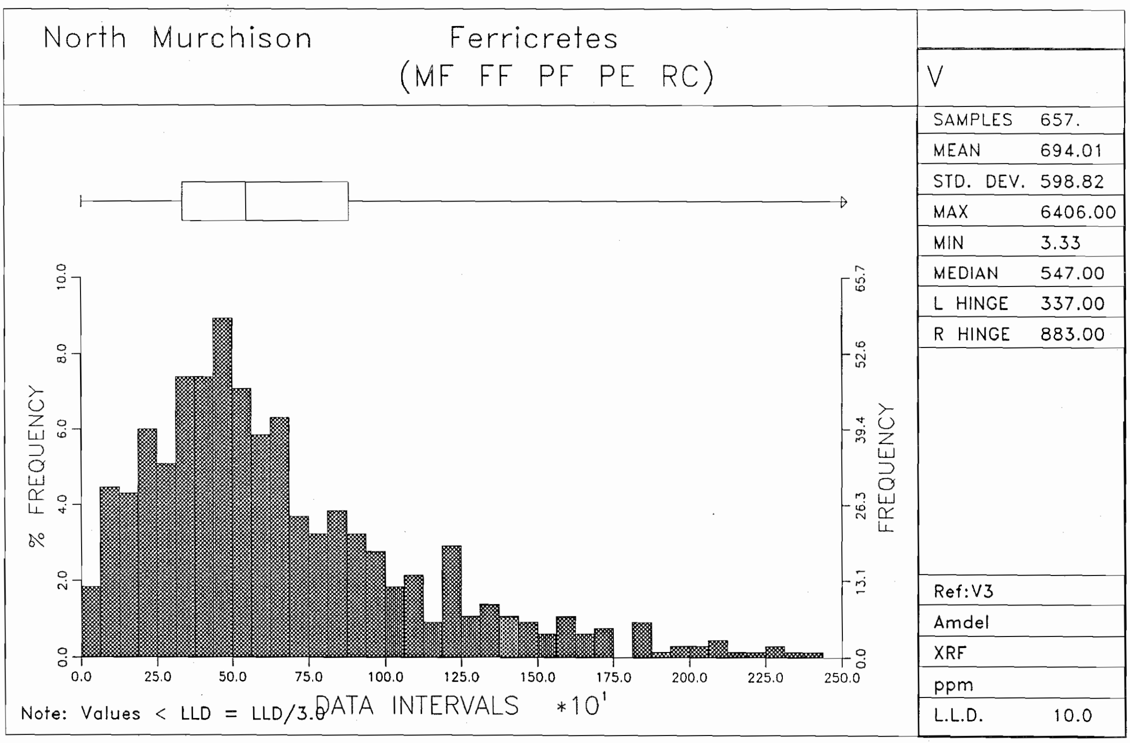


Figure 12b

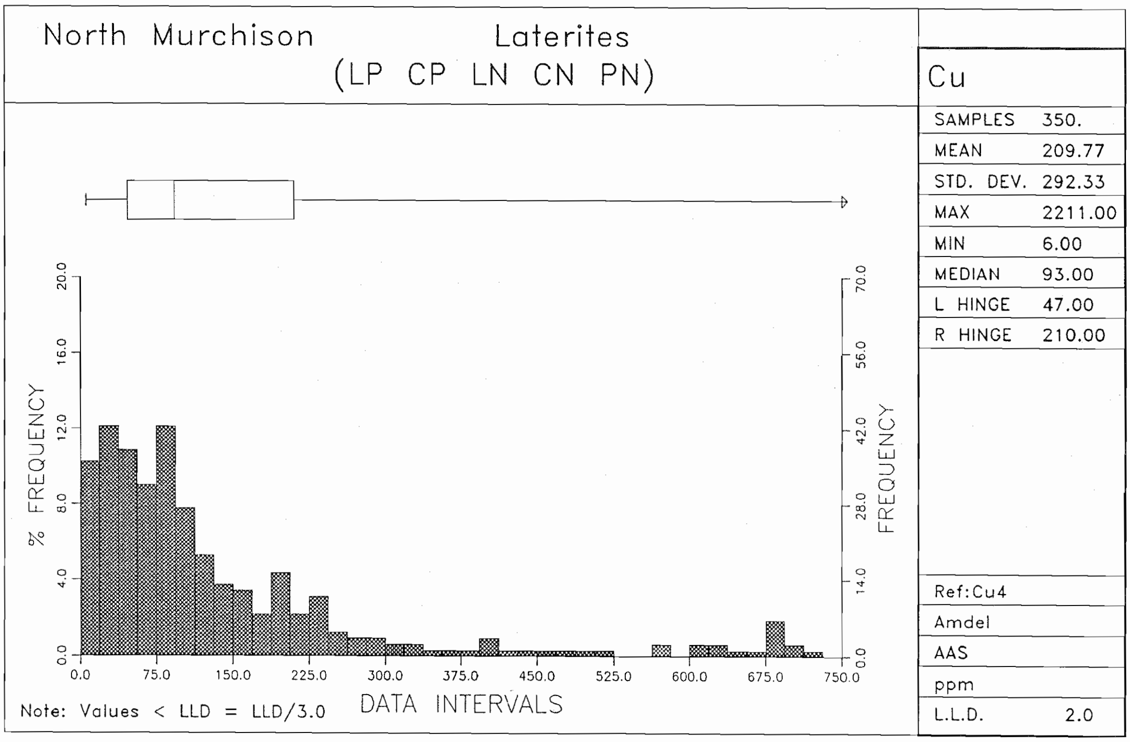


Figure 13a

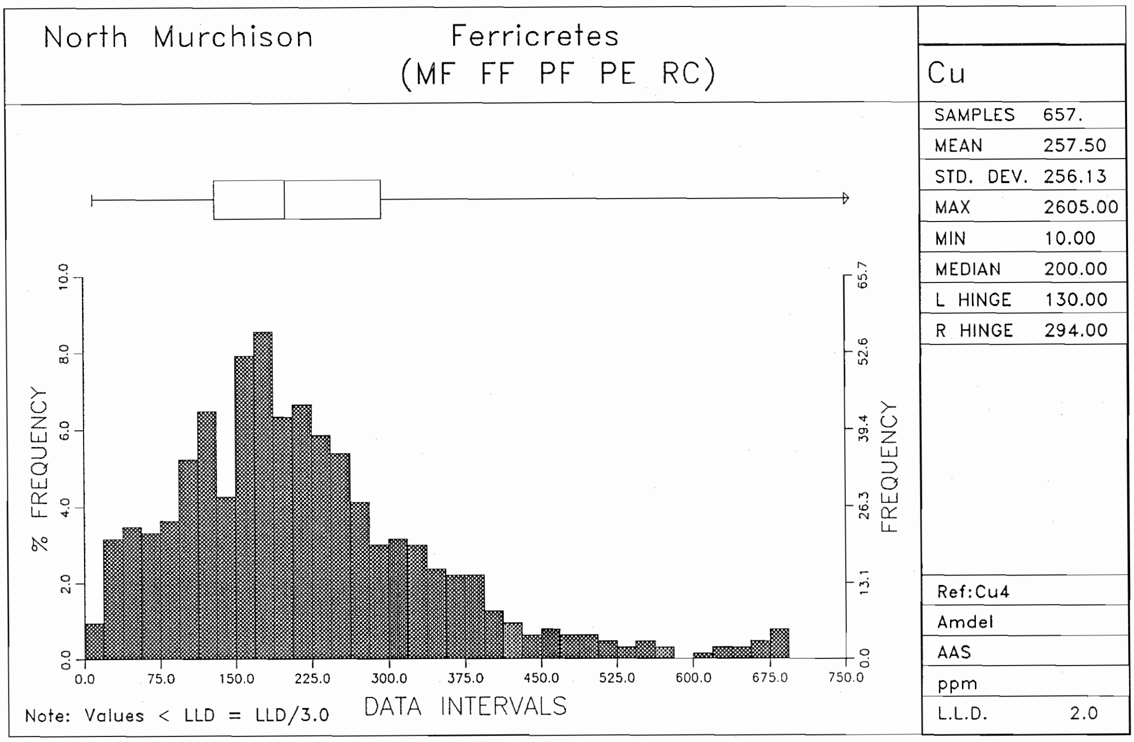


Figure 13b

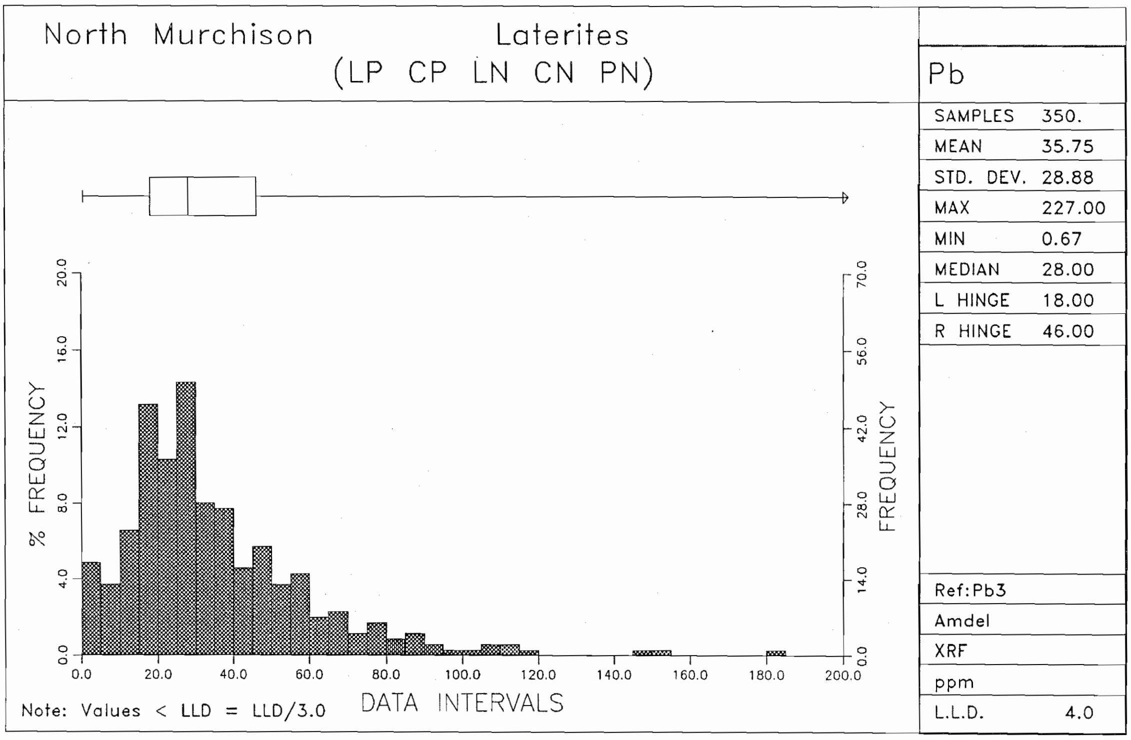


Figure 14a

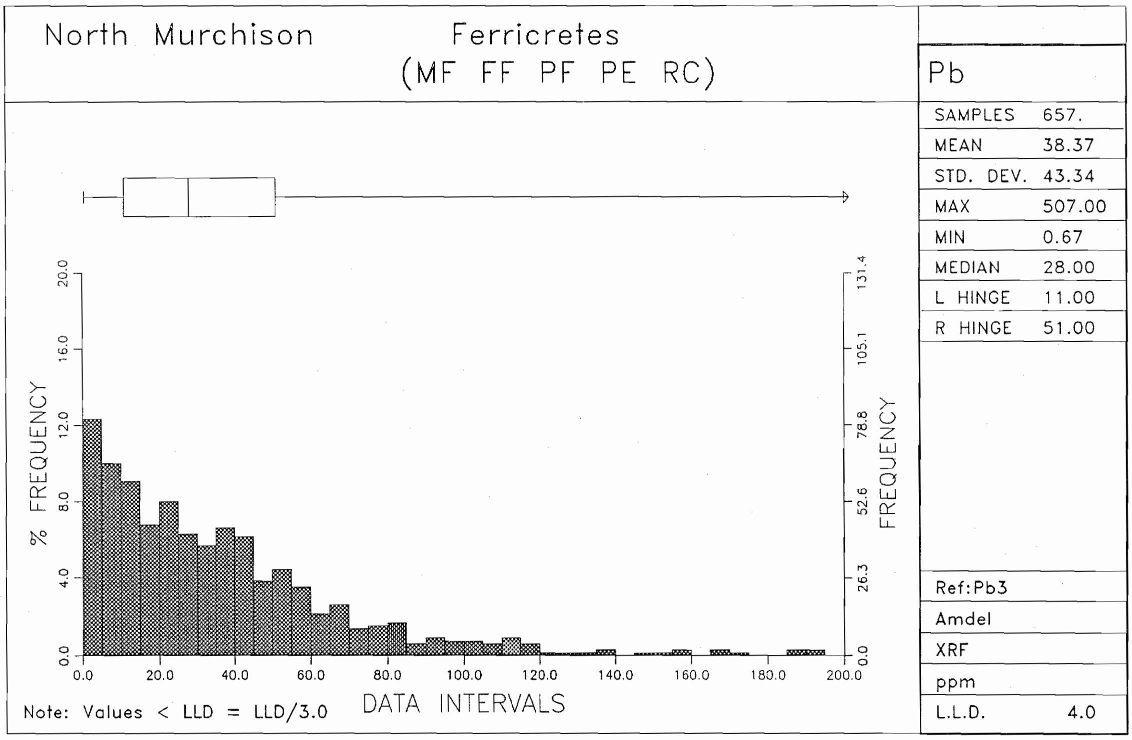


Figure 14b

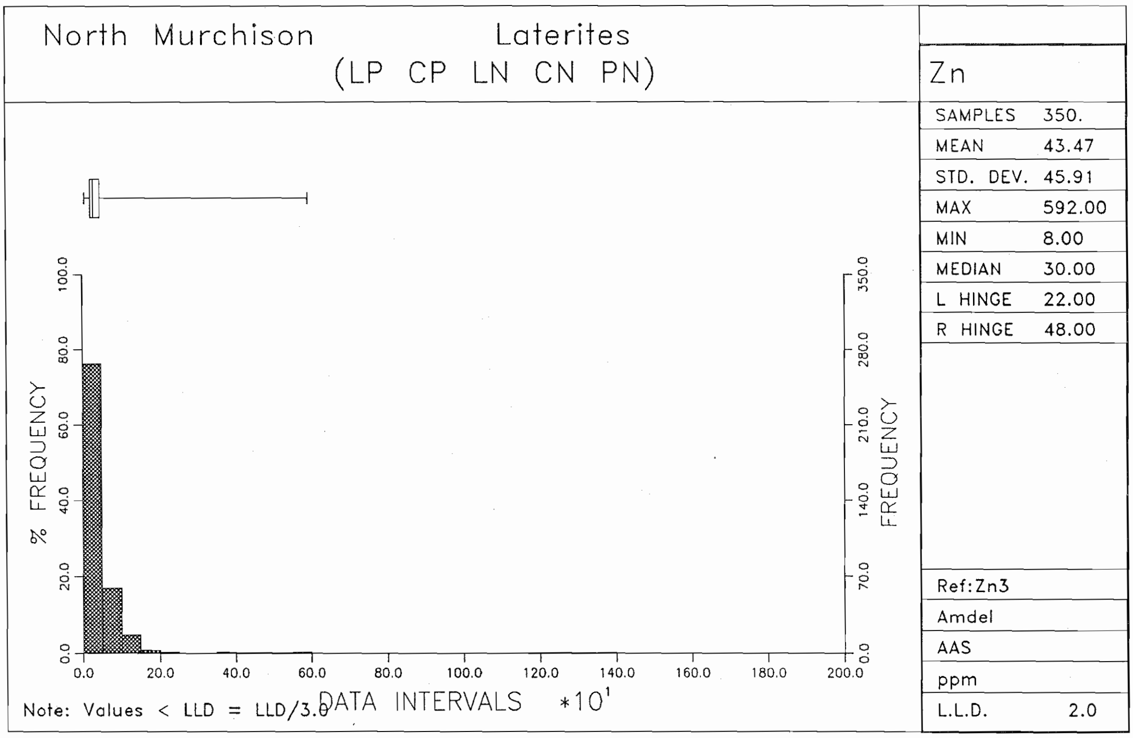


Figure 15a

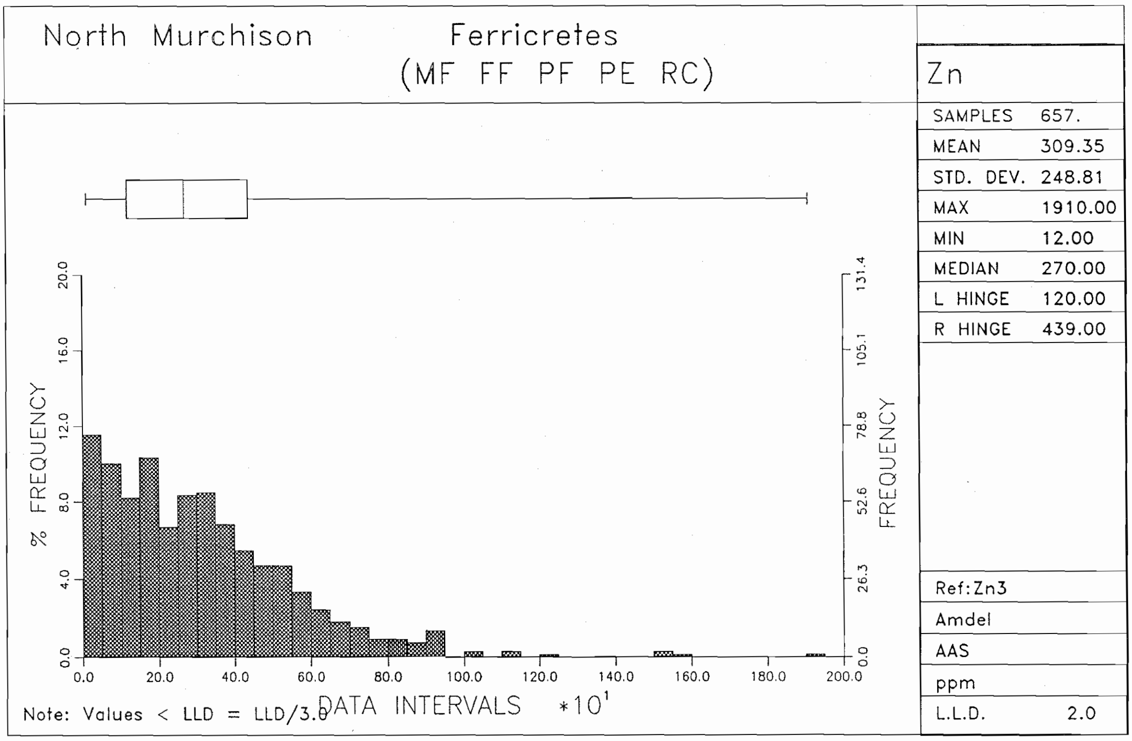


Figure 15b

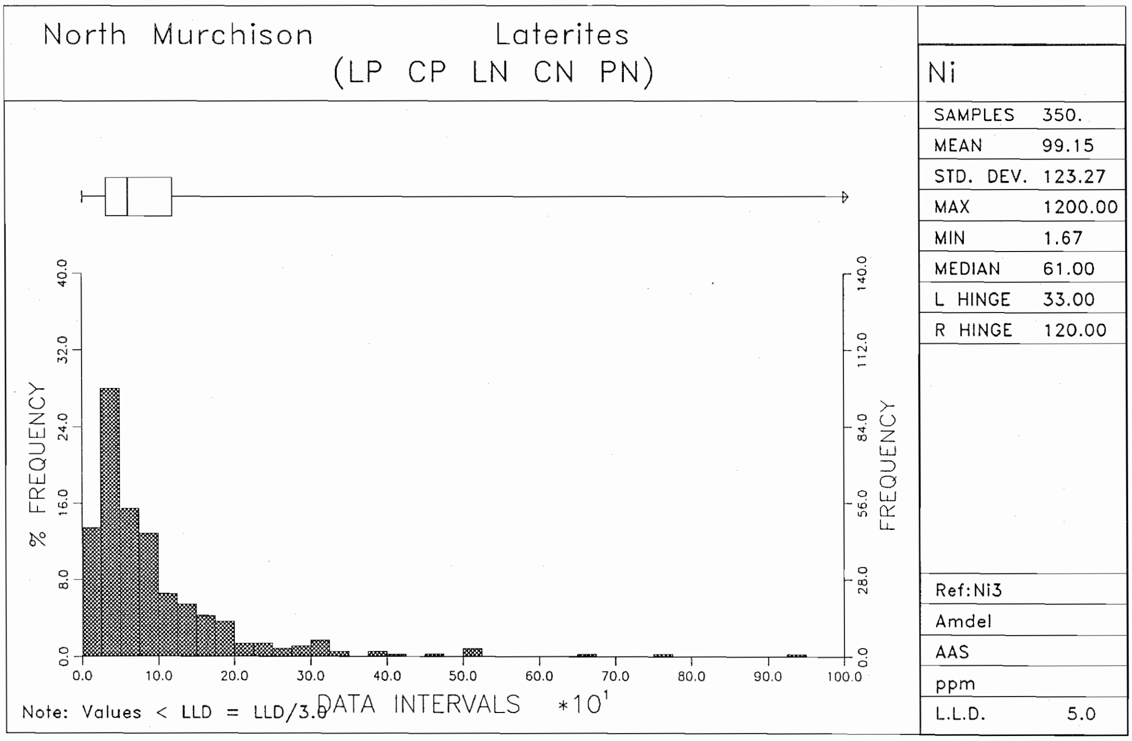


Figure 16a

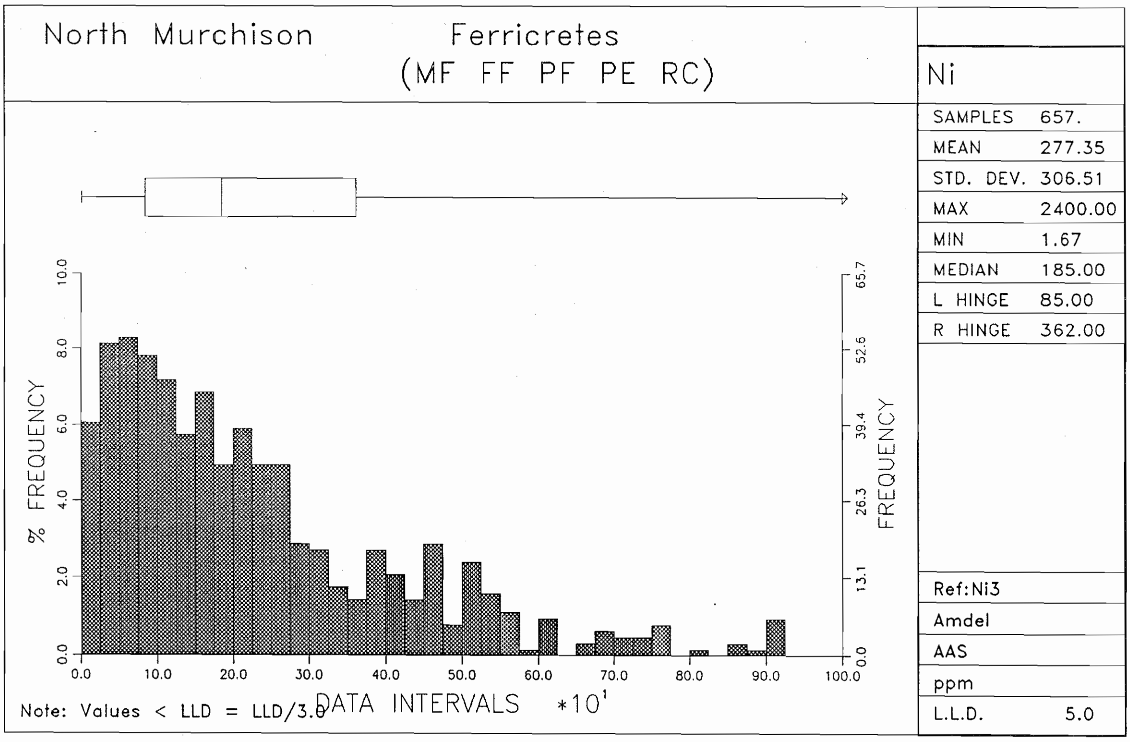


Figure 16b

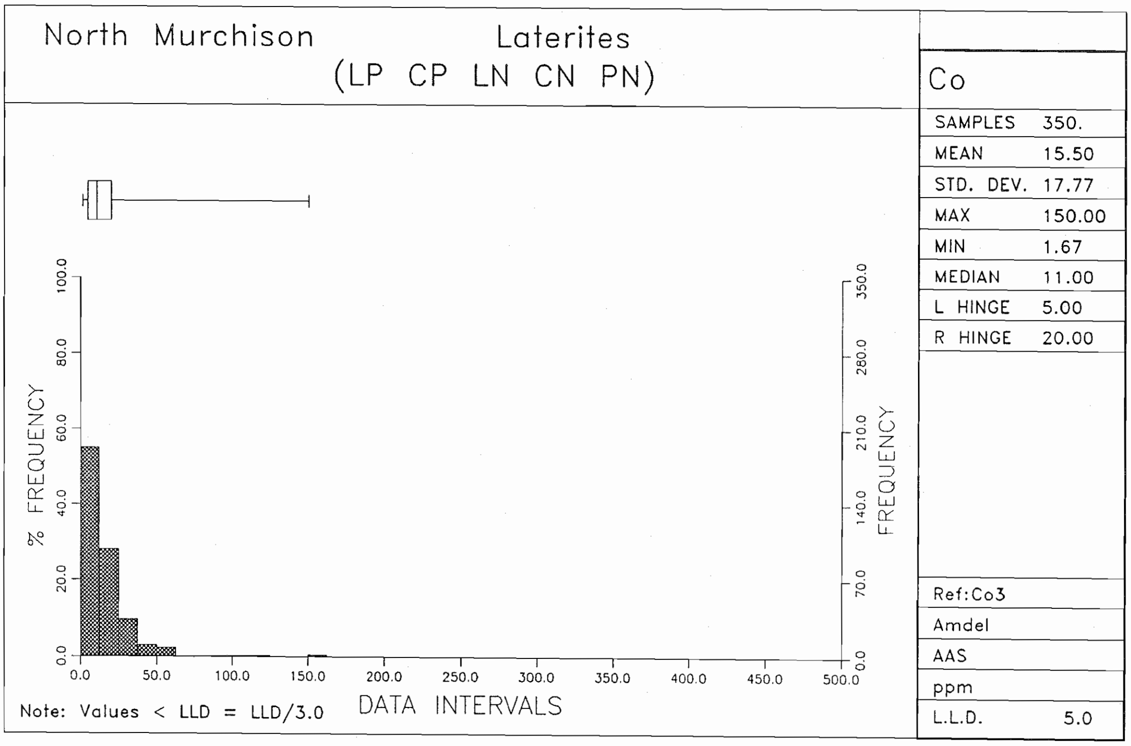


Figure 17a

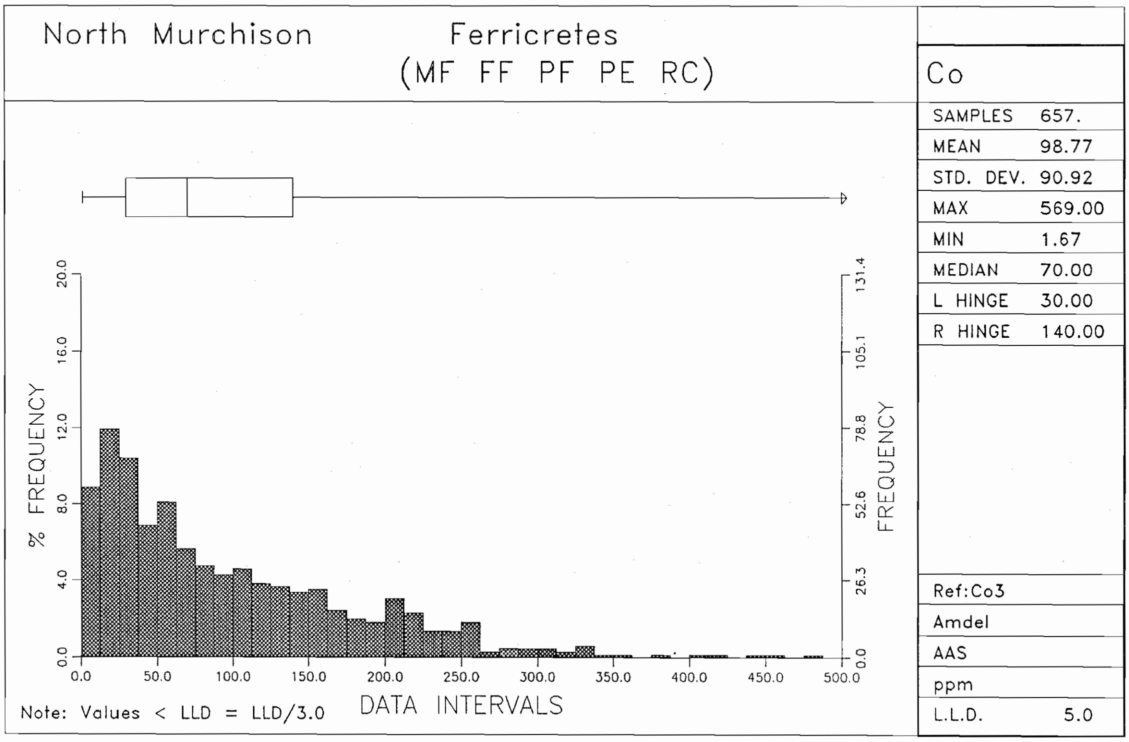


Figure 17b

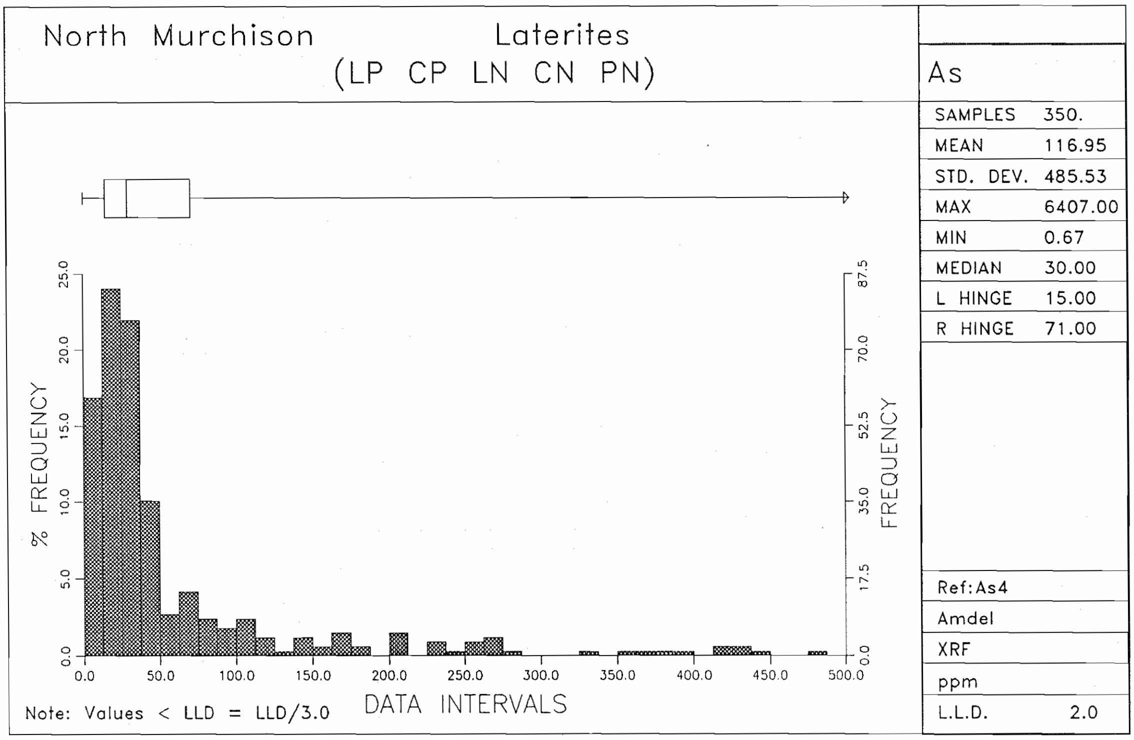


Figure 18a

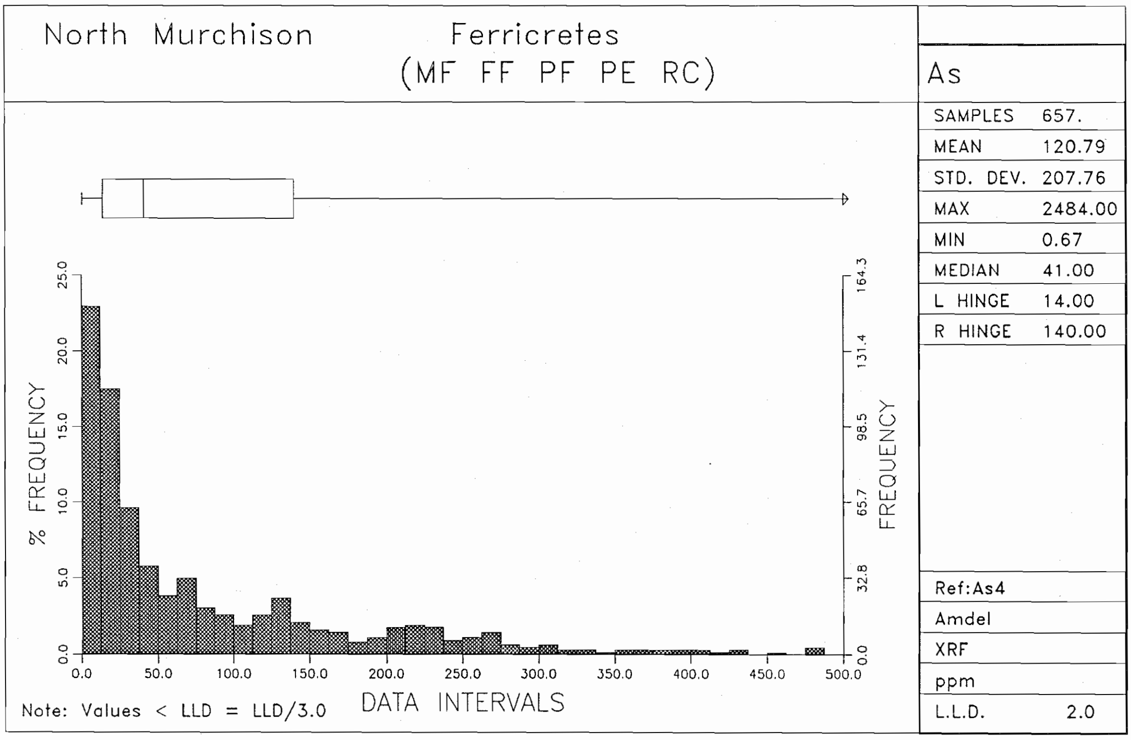


Figure 18b

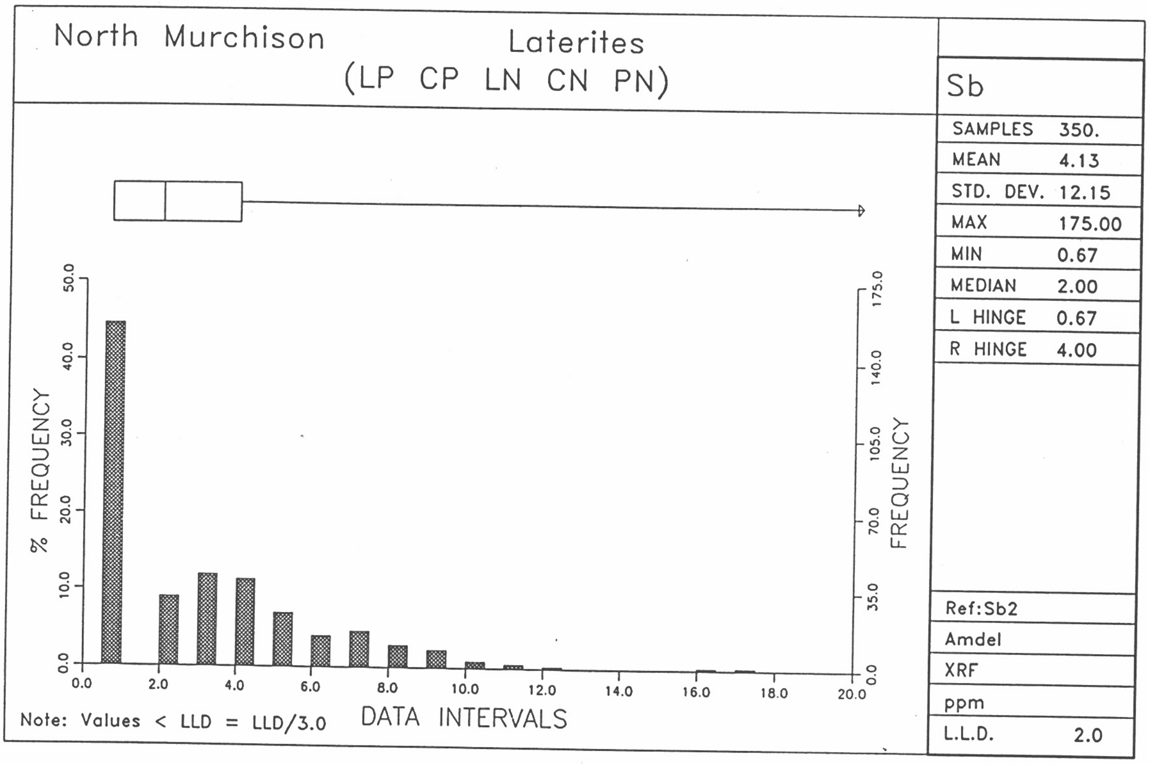


Figure 19a

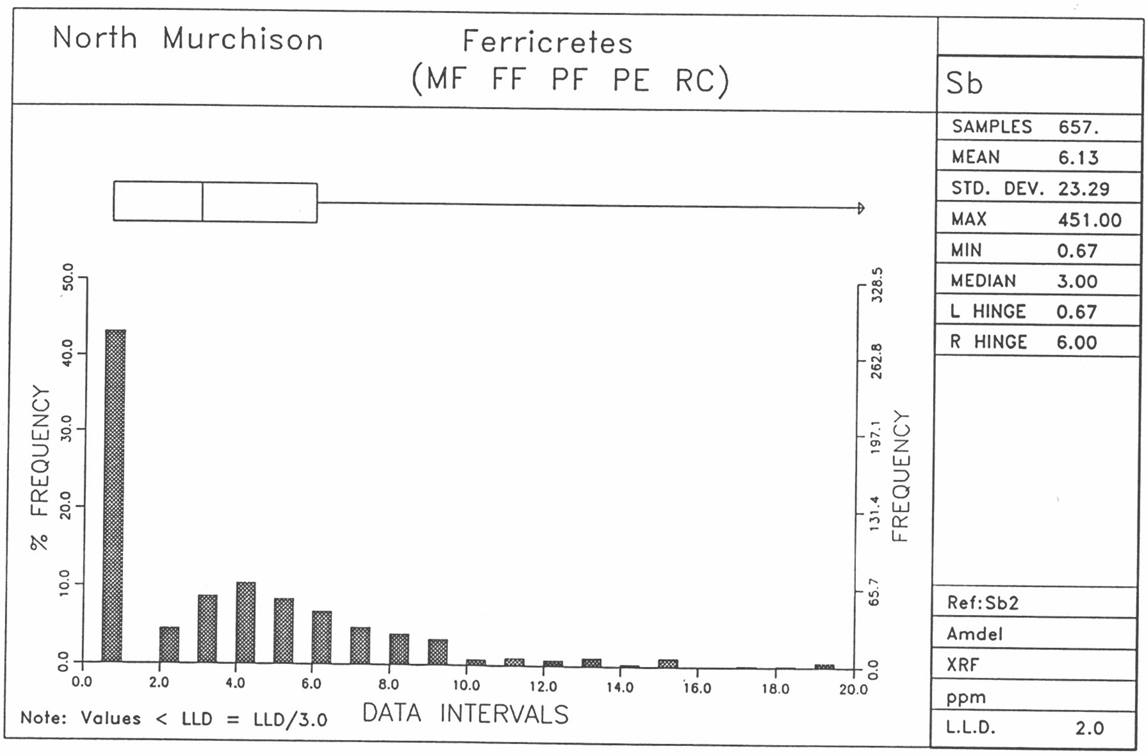


Figure 19b

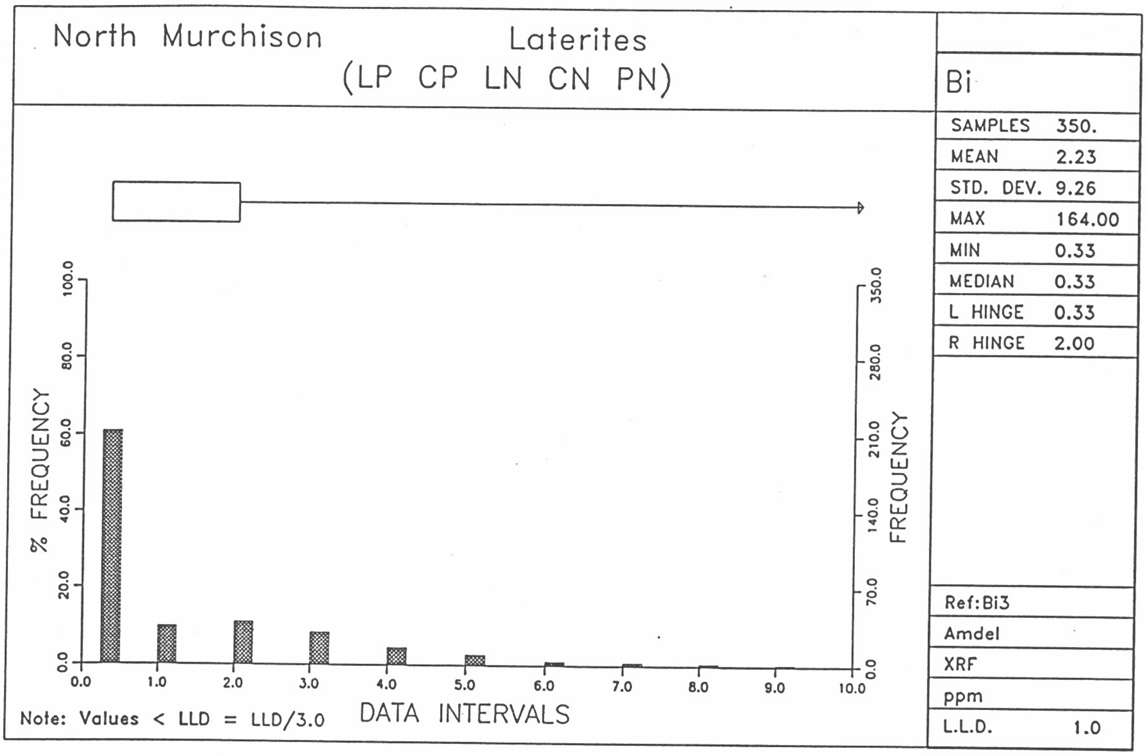


Figure 20a

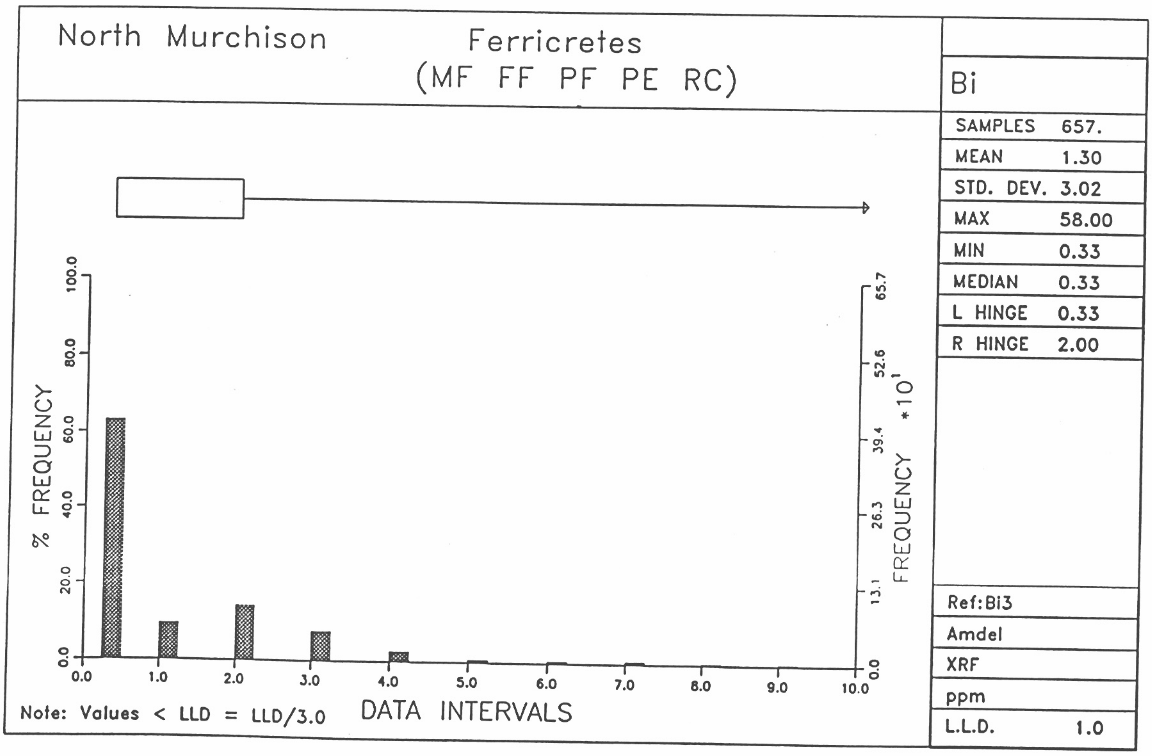


Figure 20b

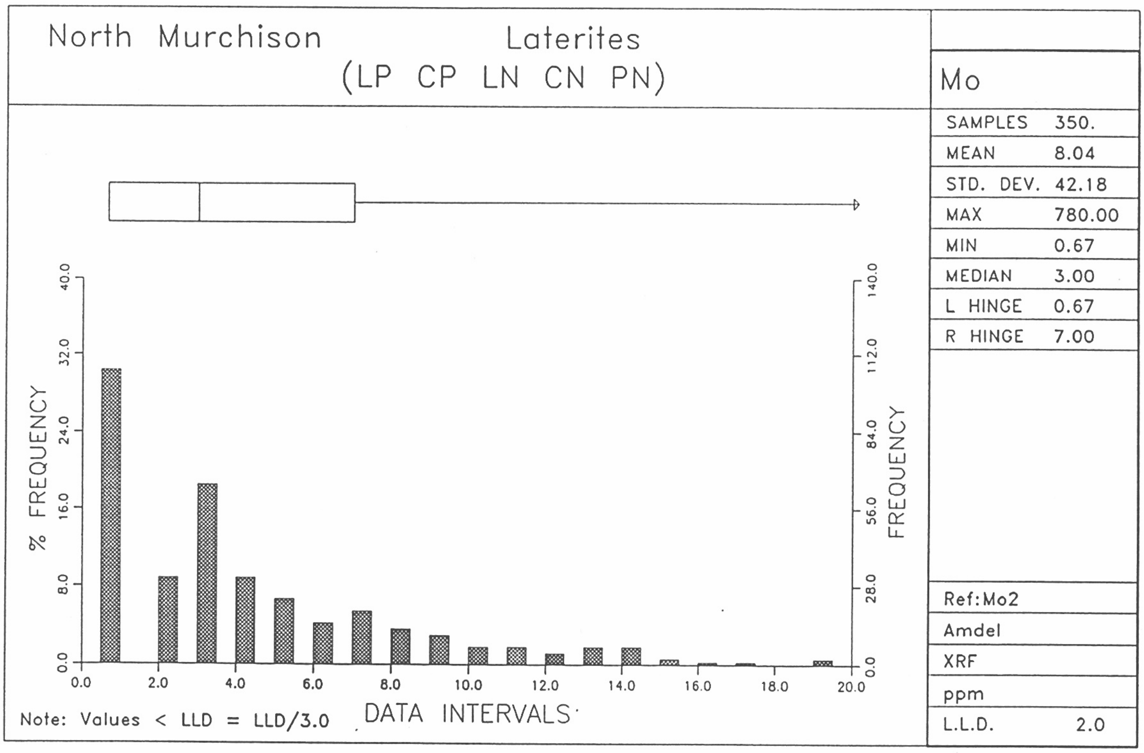


Figure 21a

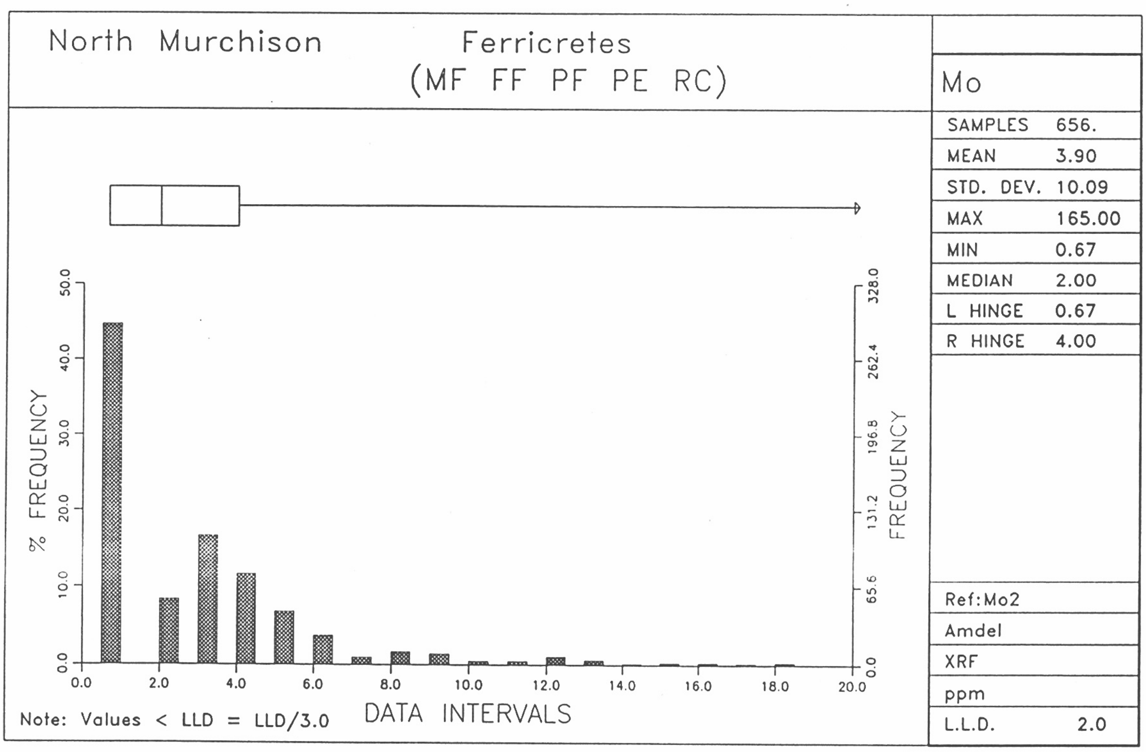


Figure 21b

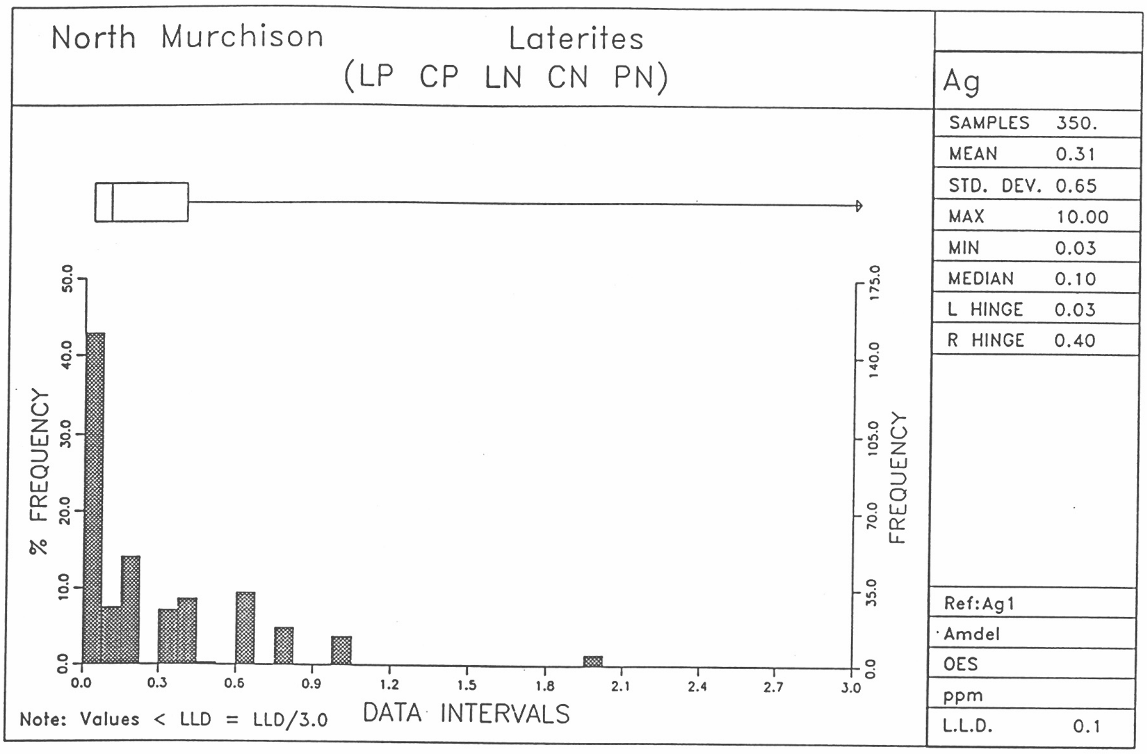


Figure 22a

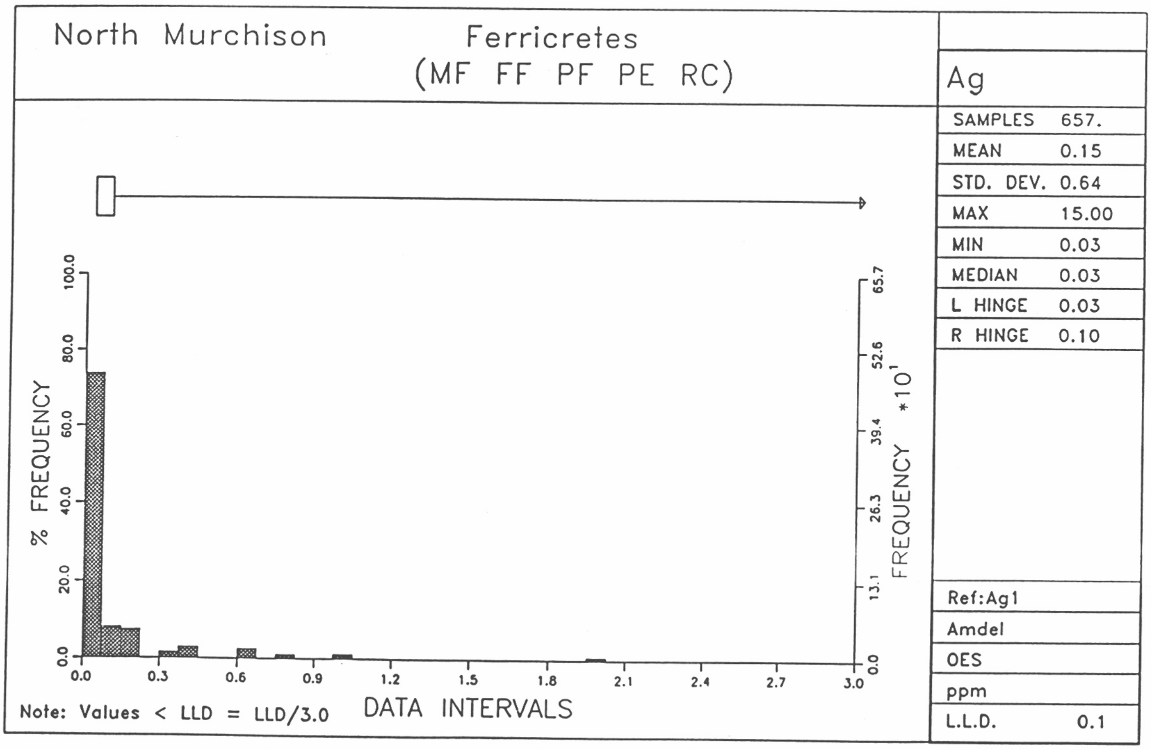


Figure 22b

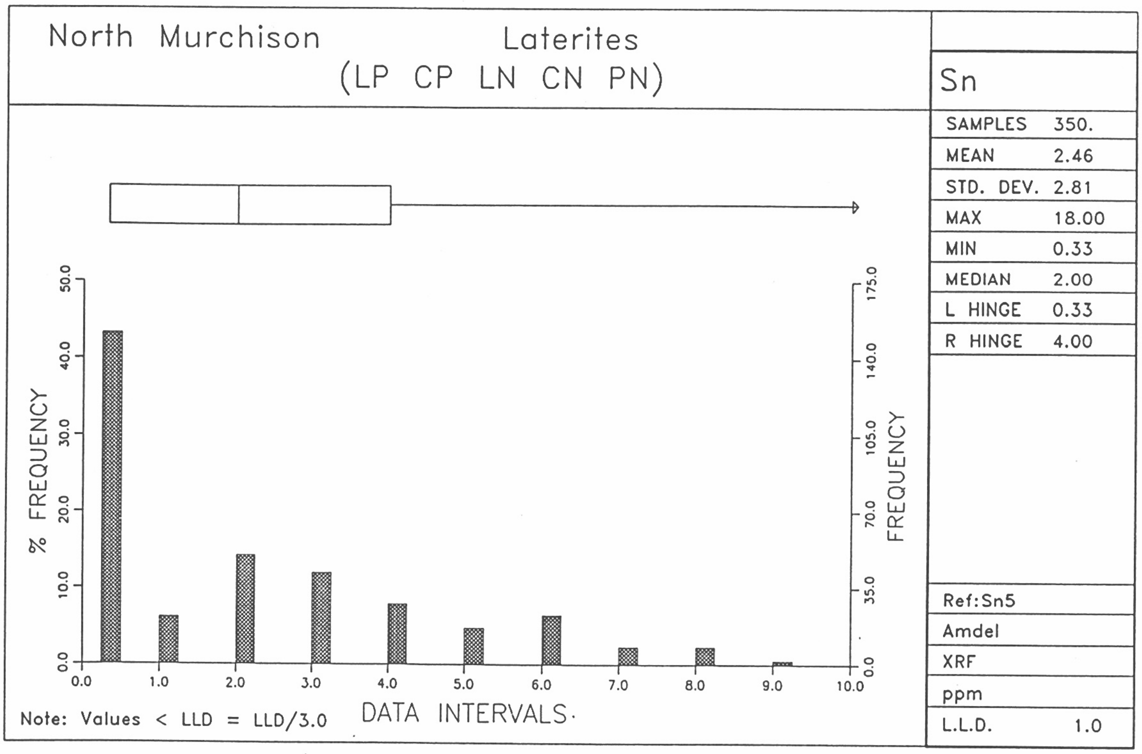


Figure 23a

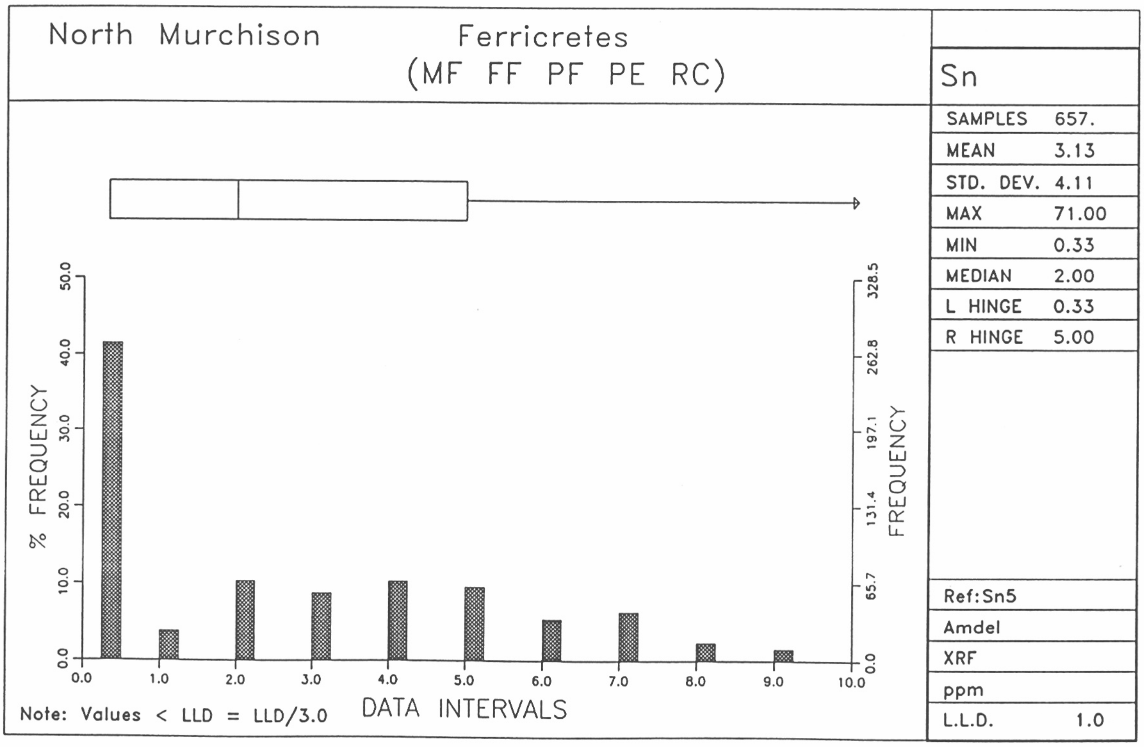


Figure 23b

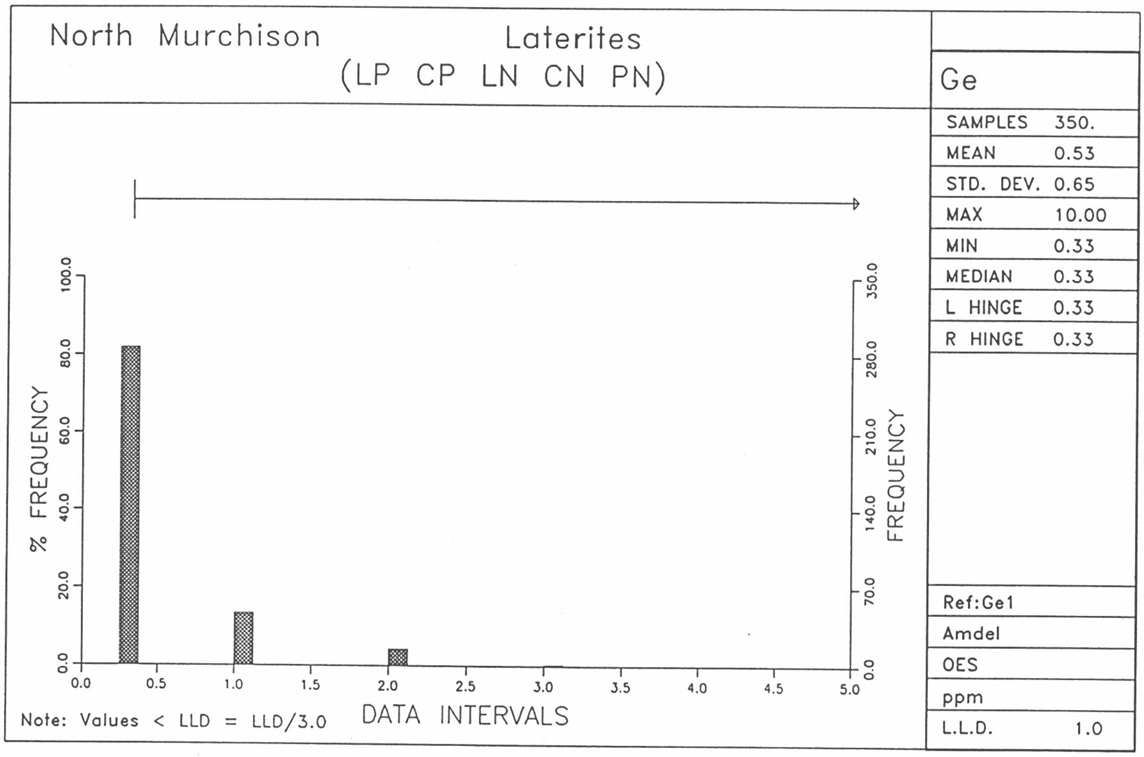


Figure 24a

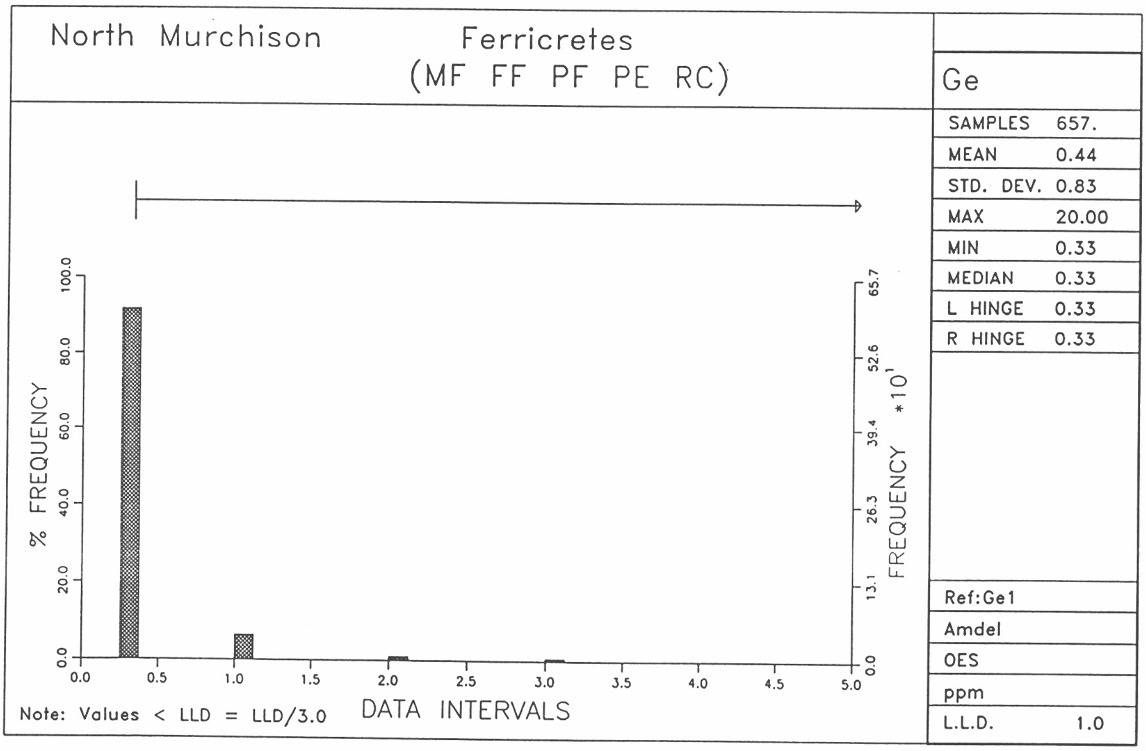


Figure 24b

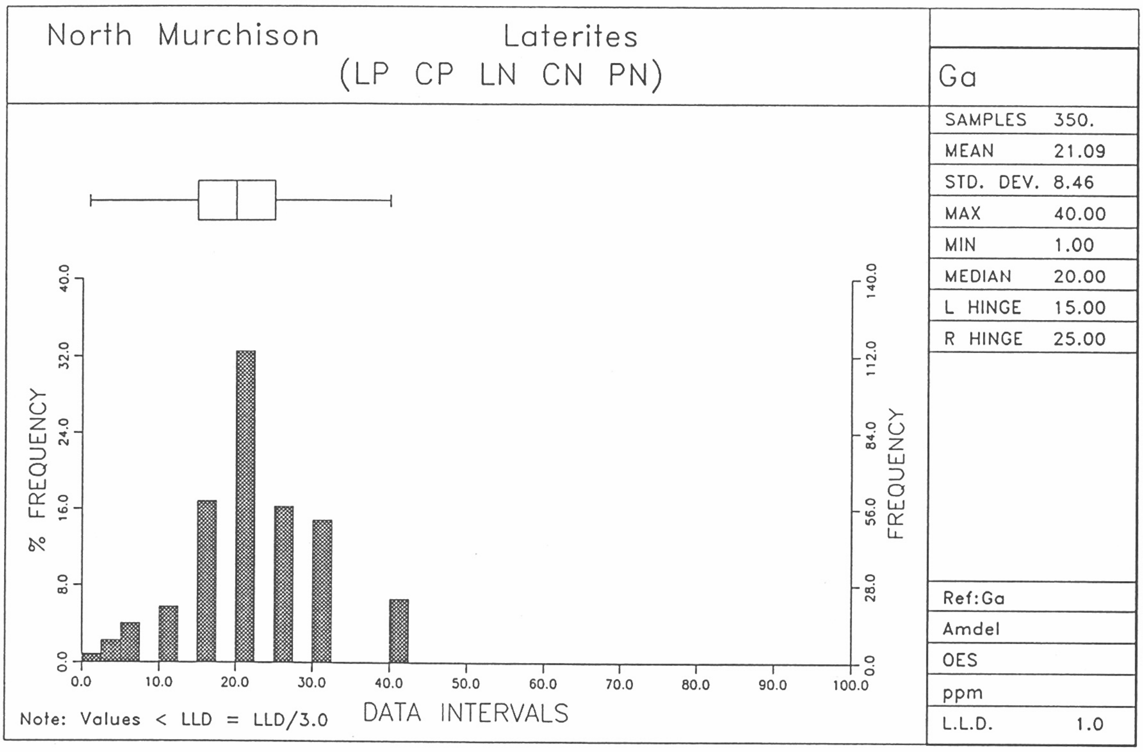


Figure 25a

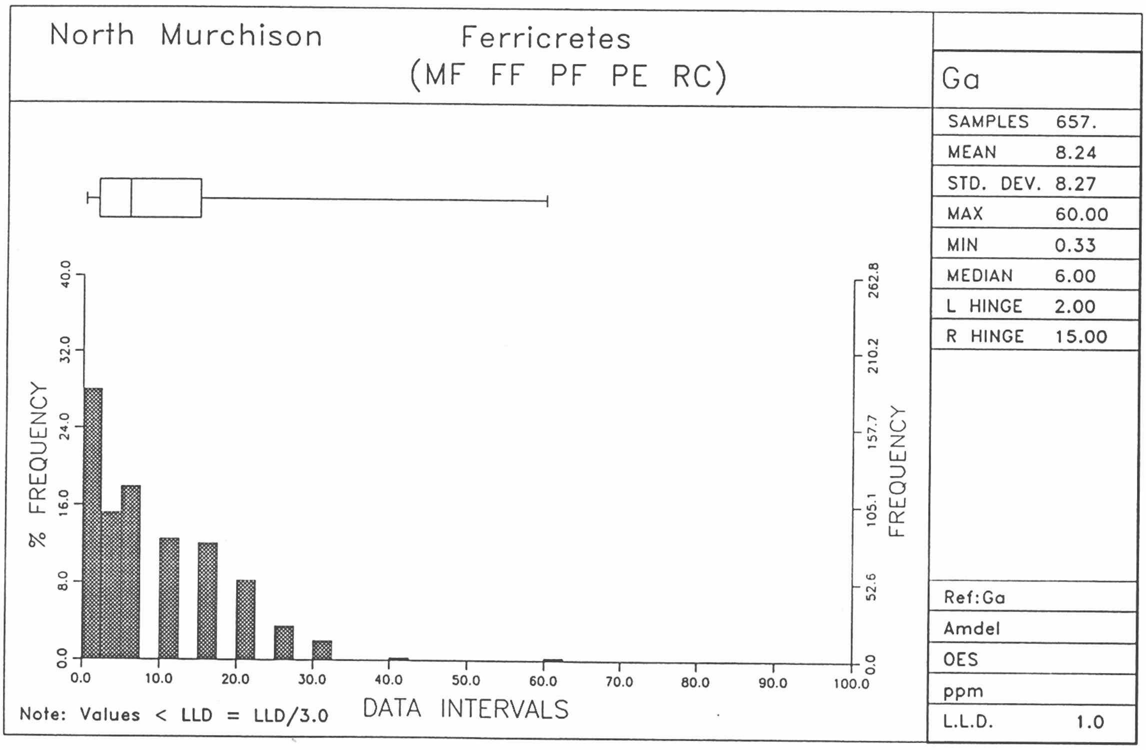


Figure 25b

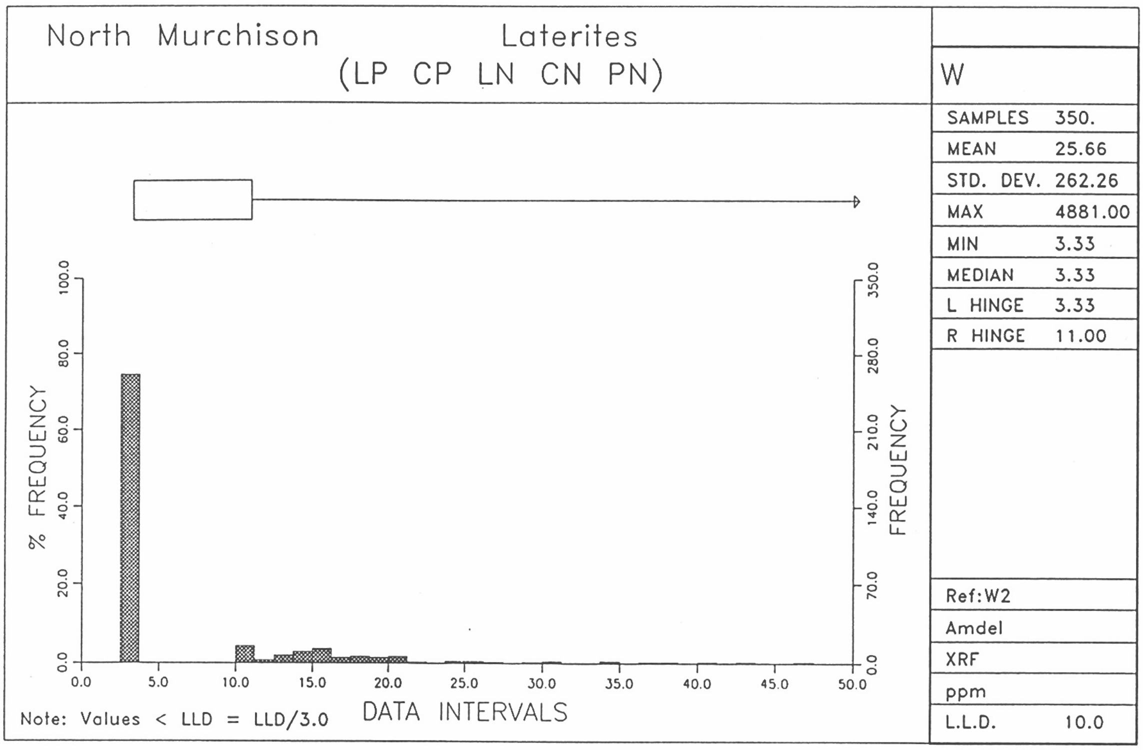


Figure 26a

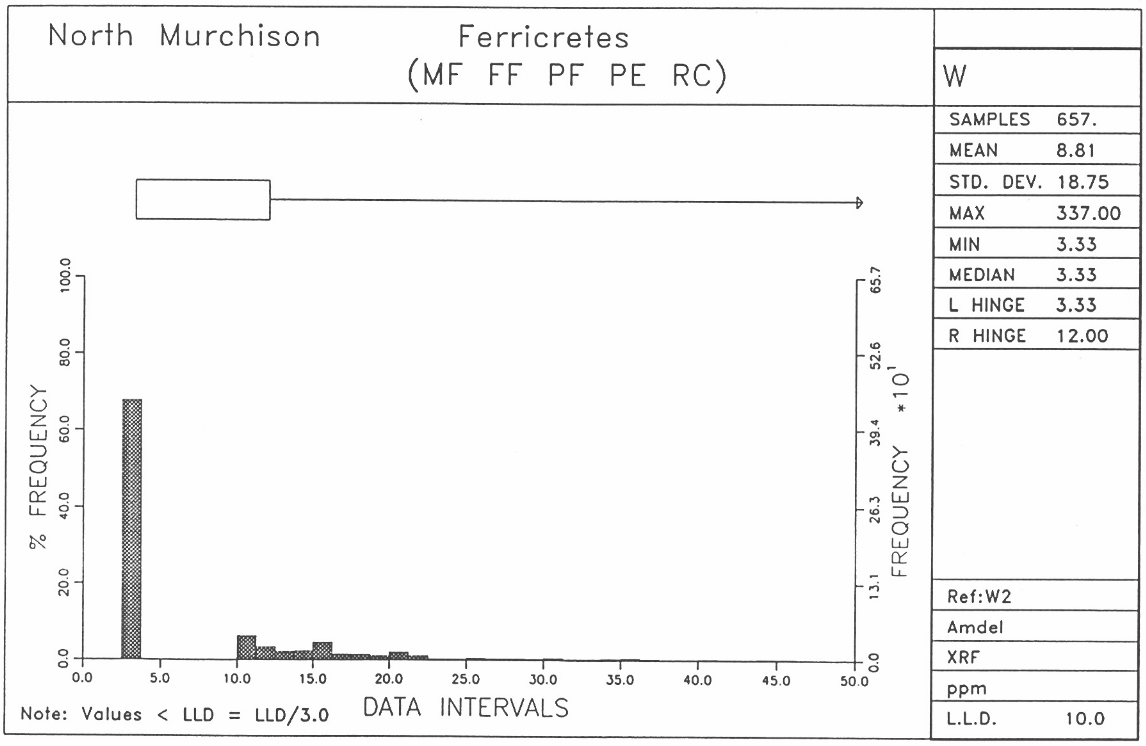


Figure 26b

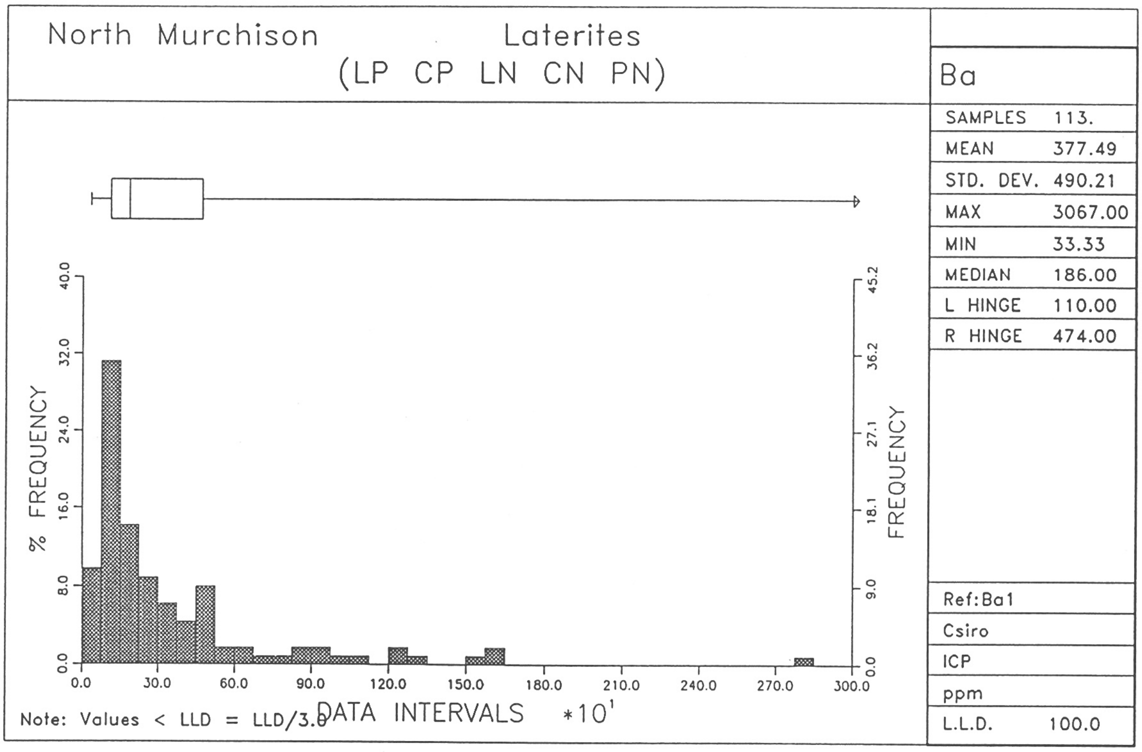


Figure 27a

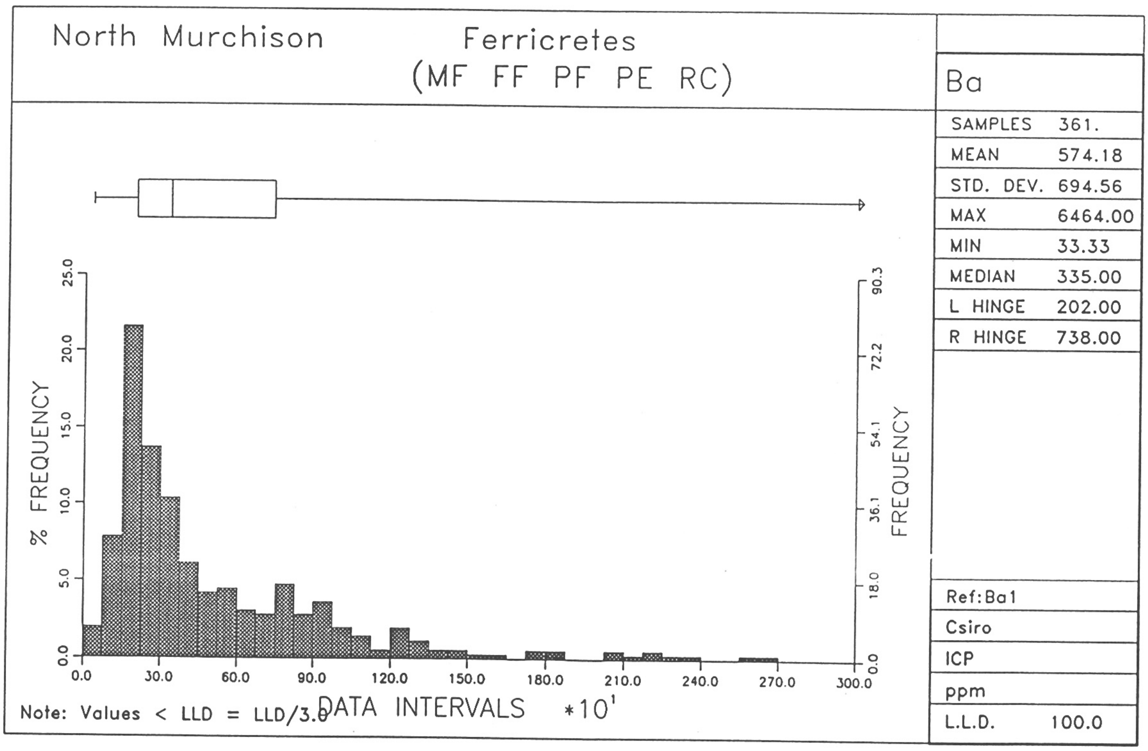


Figure 27b

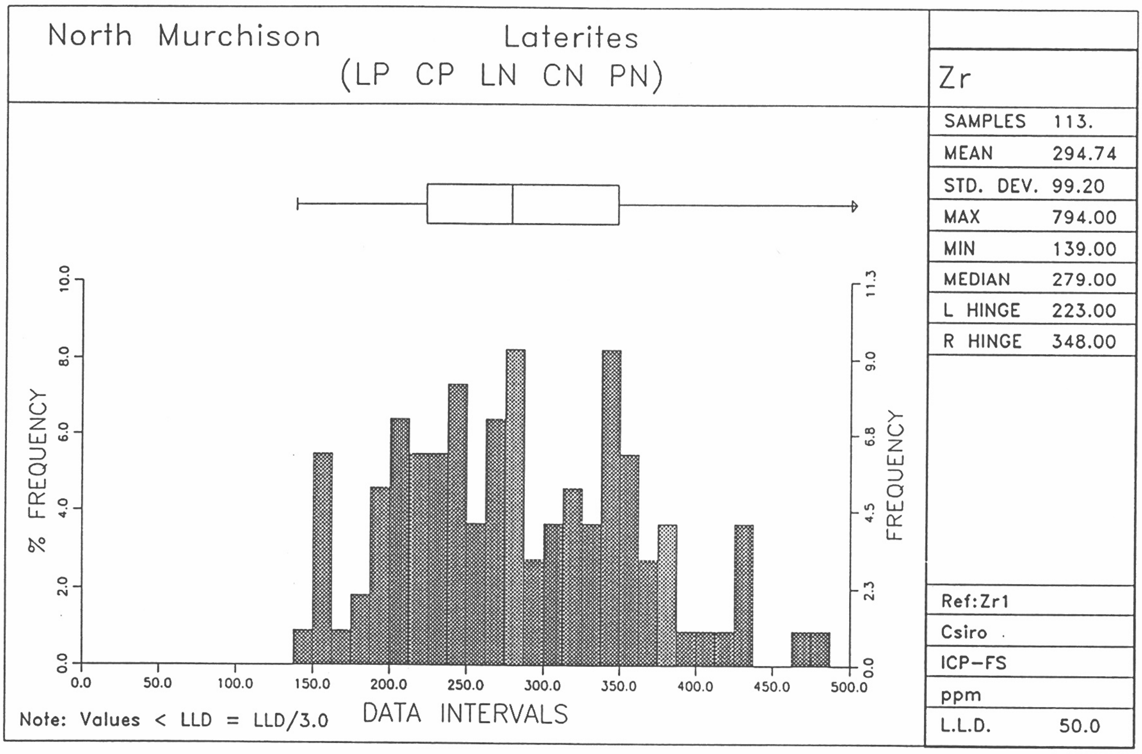


Figure 28a

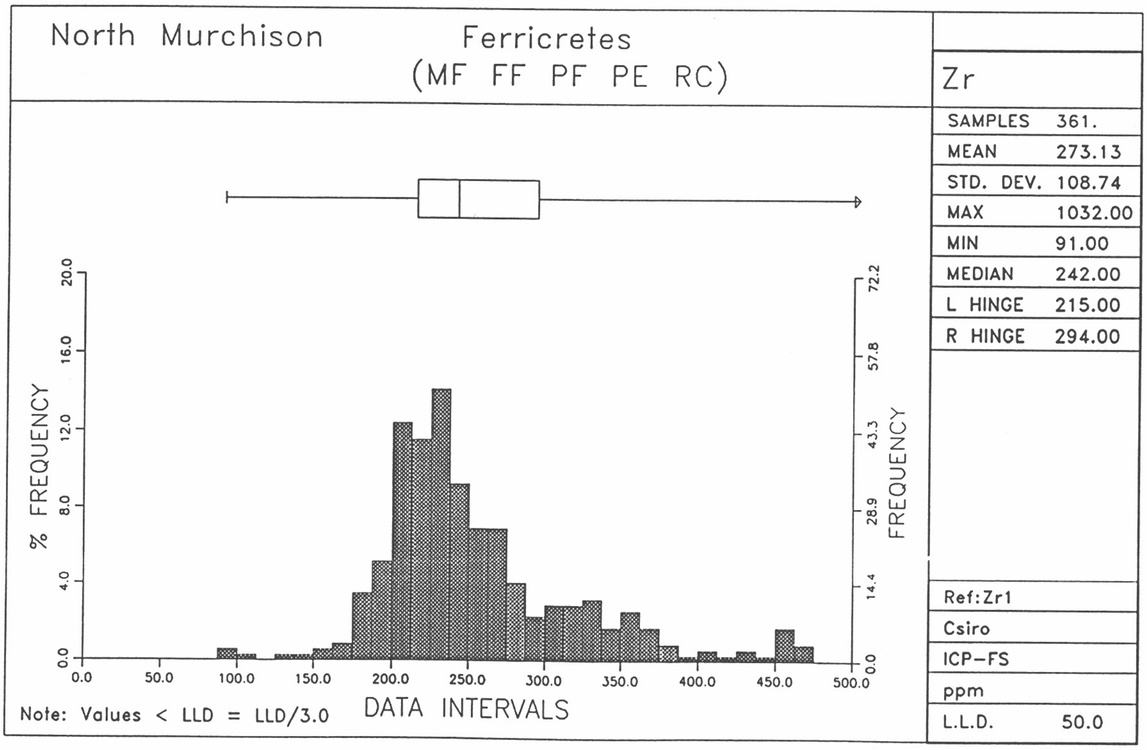


Figure 28b

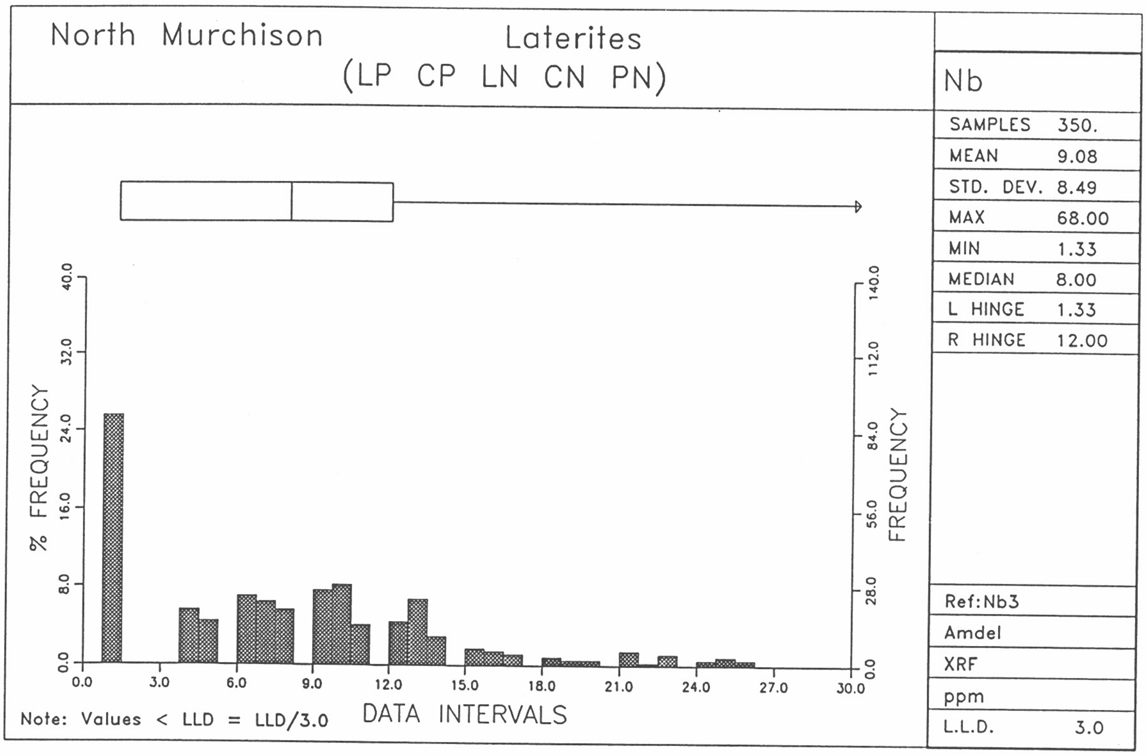


Figure 29a

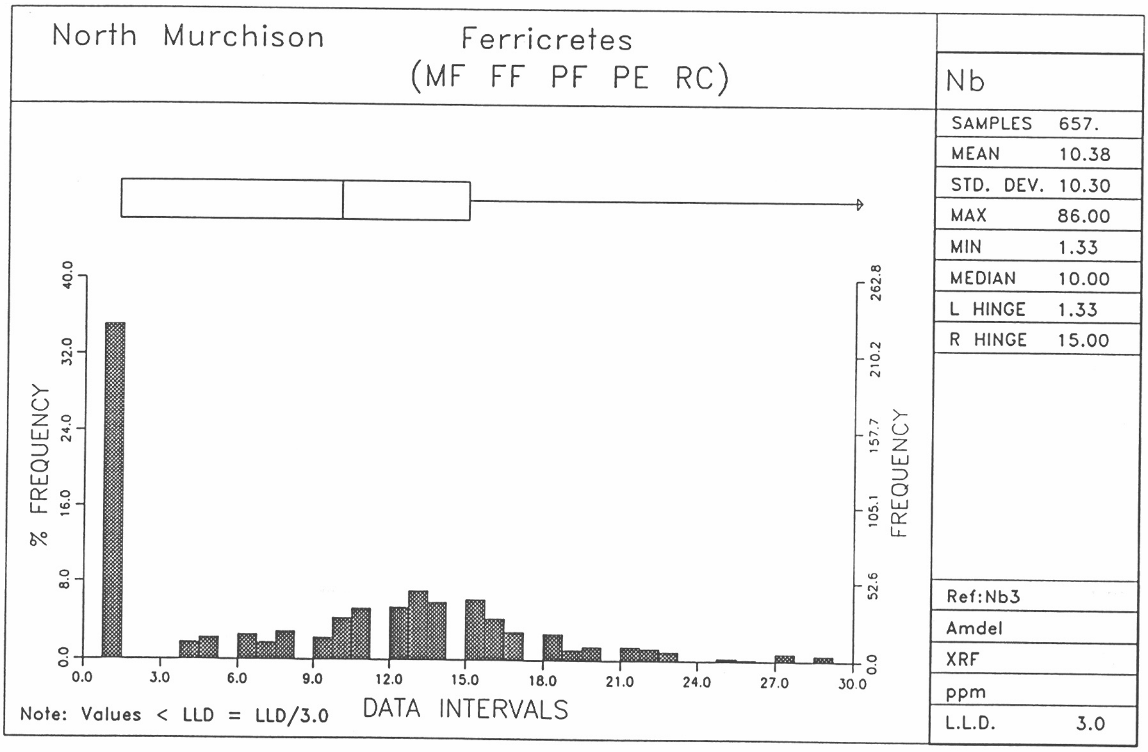


Figure 29b

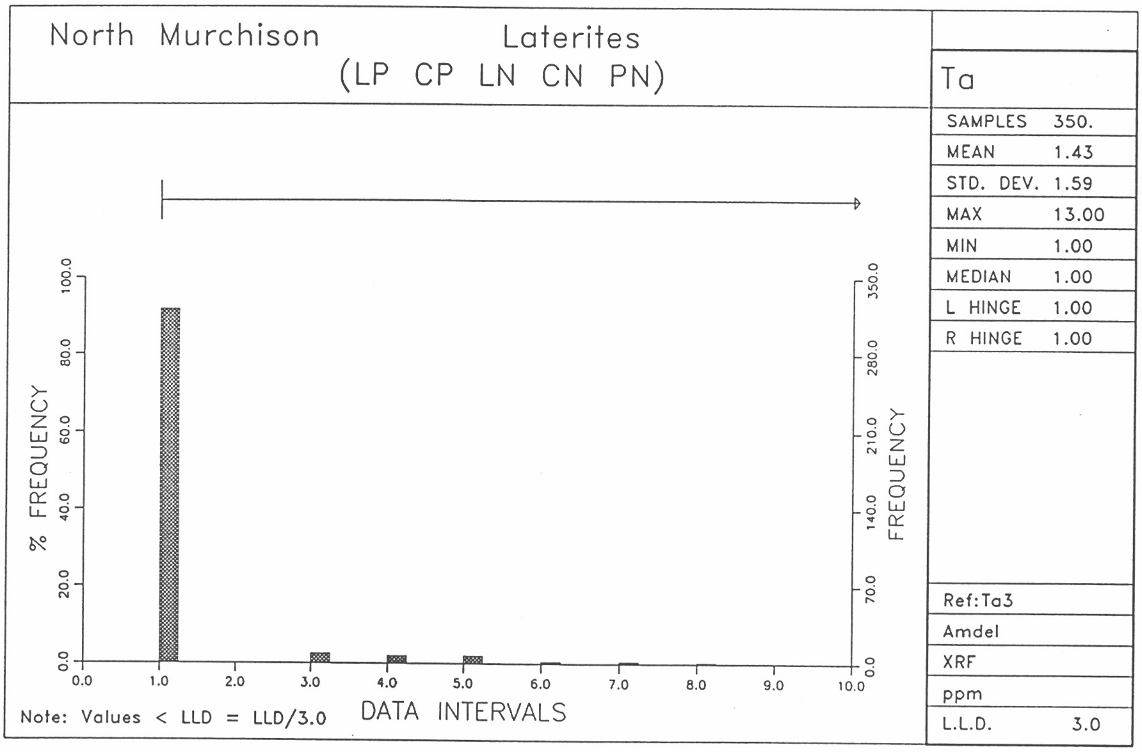


Figure 30a

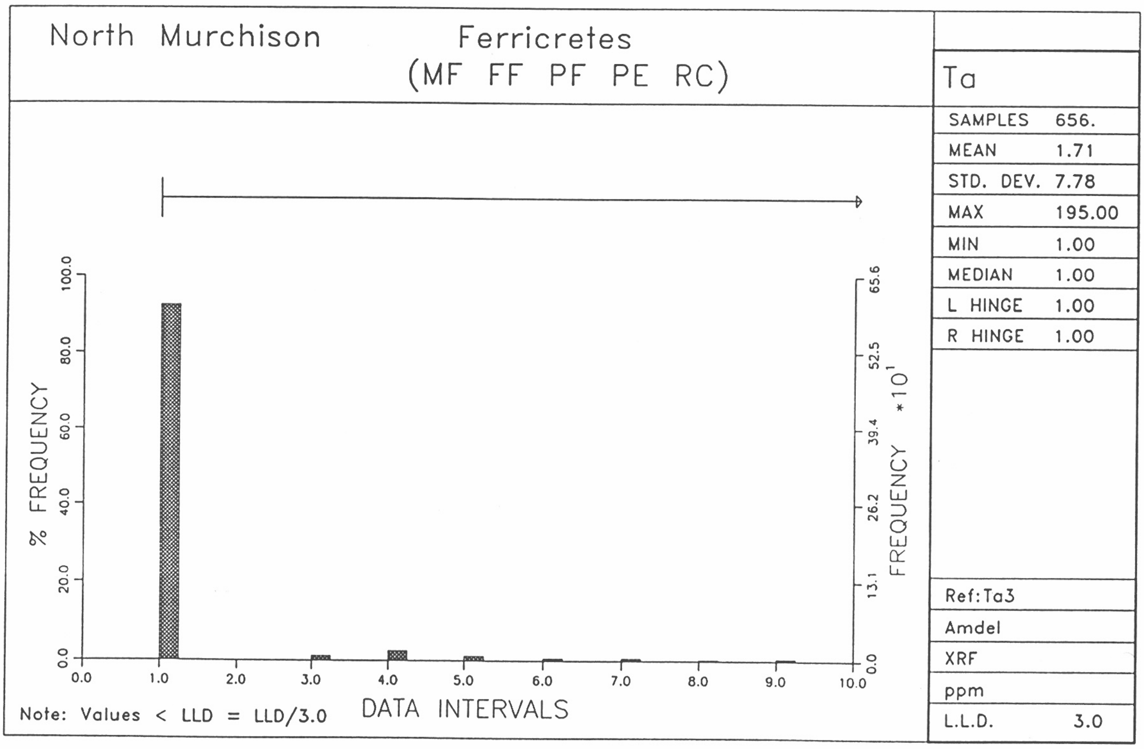


Figure 30b

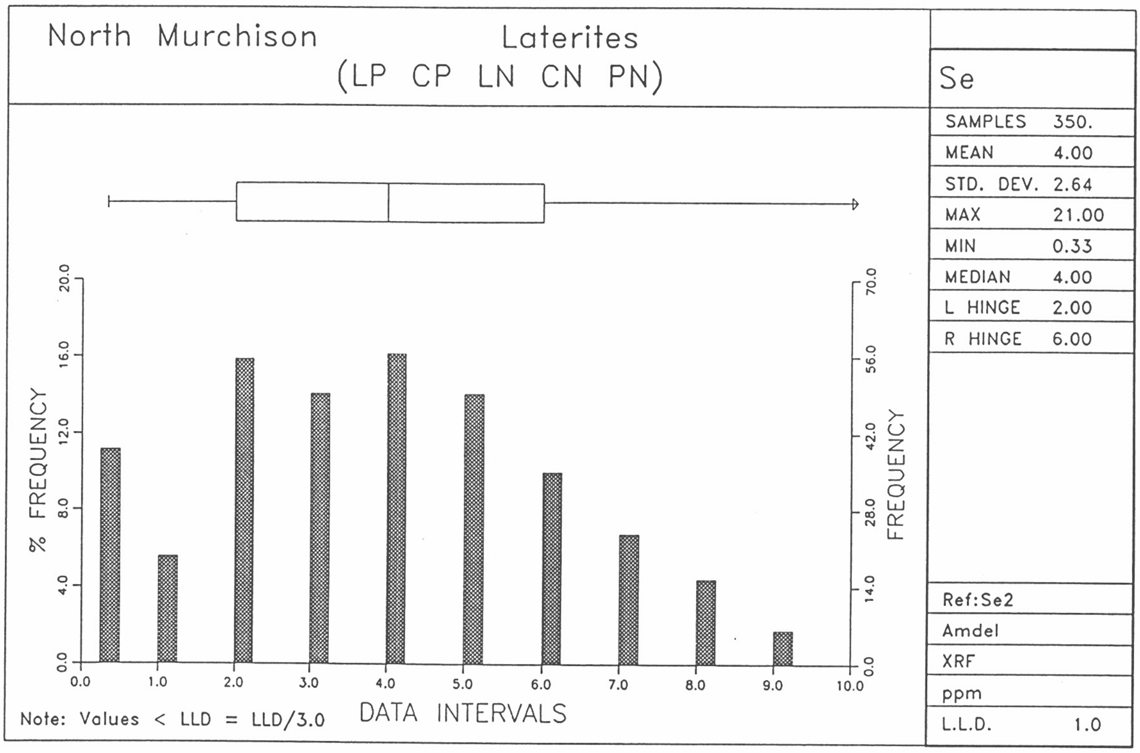


Figure 31a

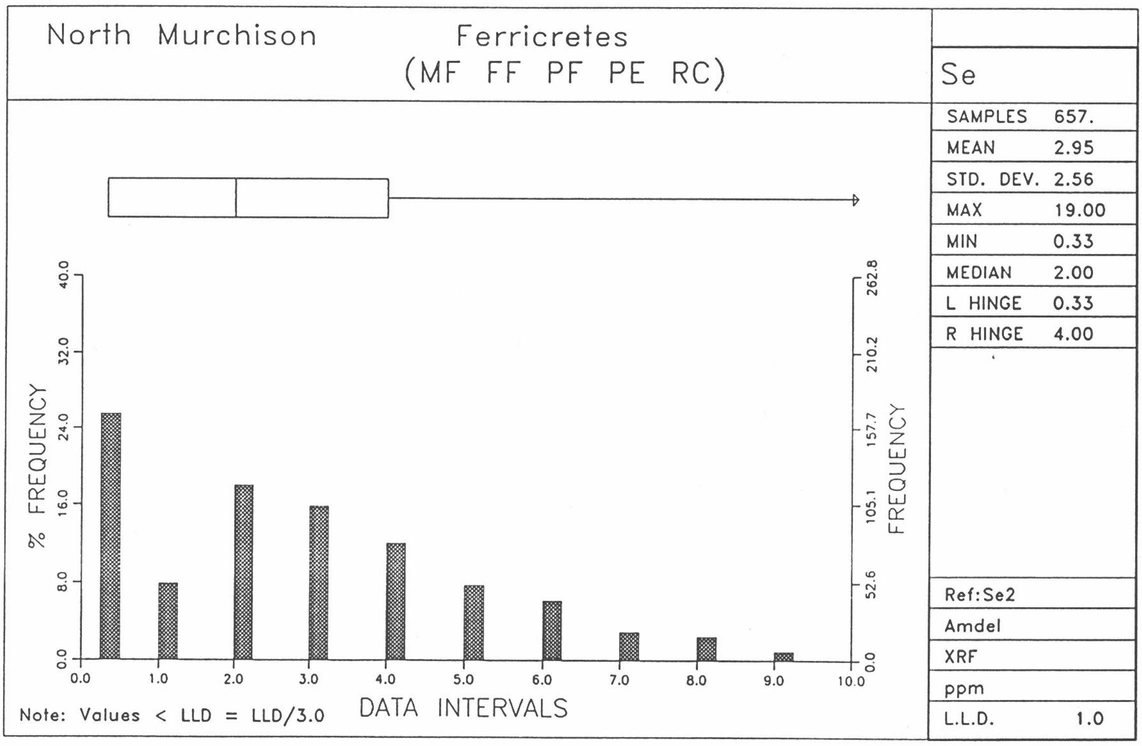


Figure 31b

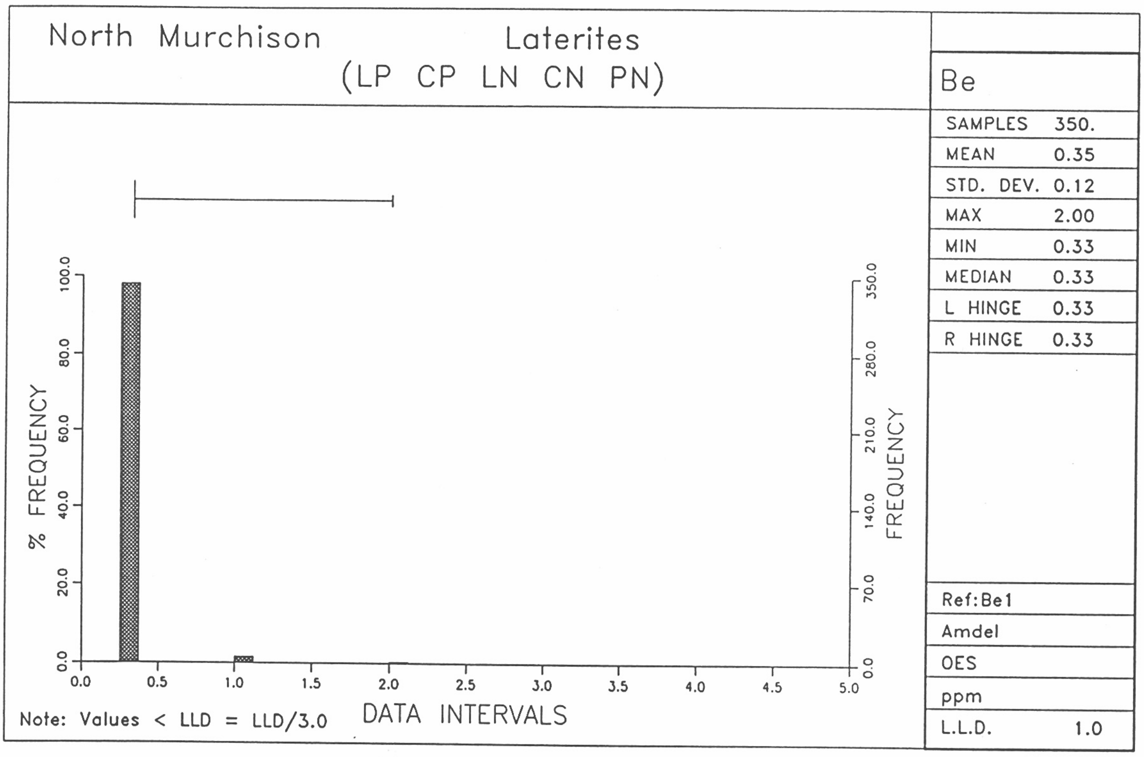


Figure 32a

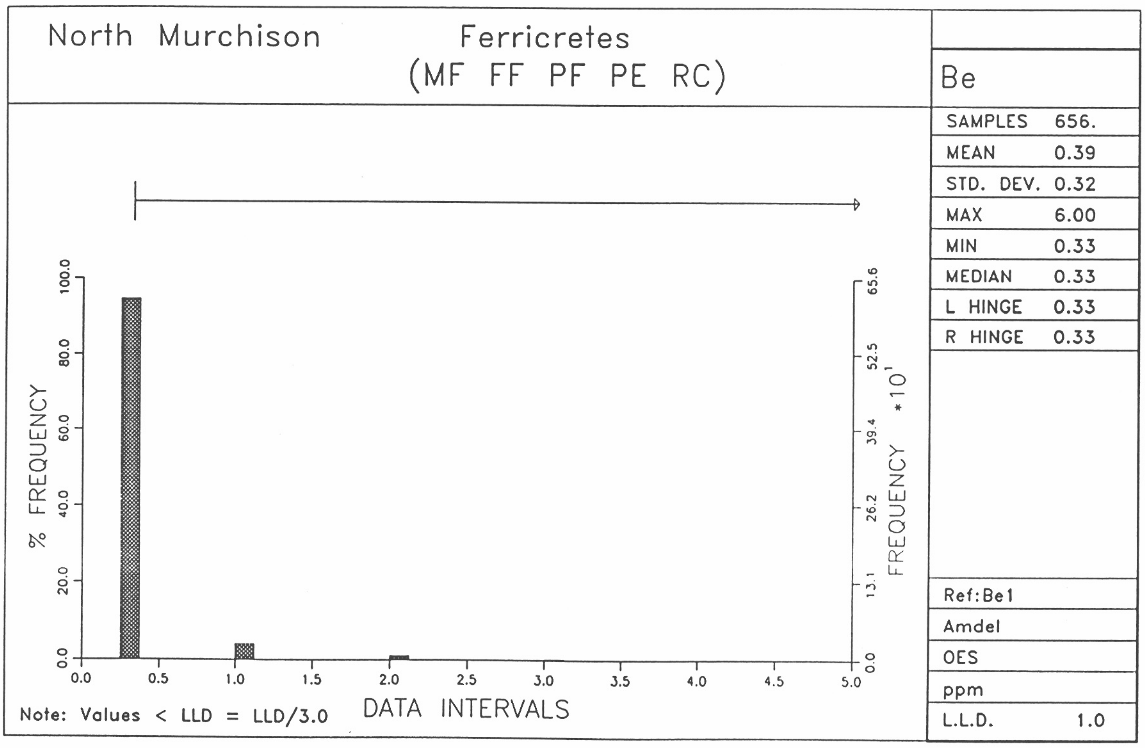


Figure 32b

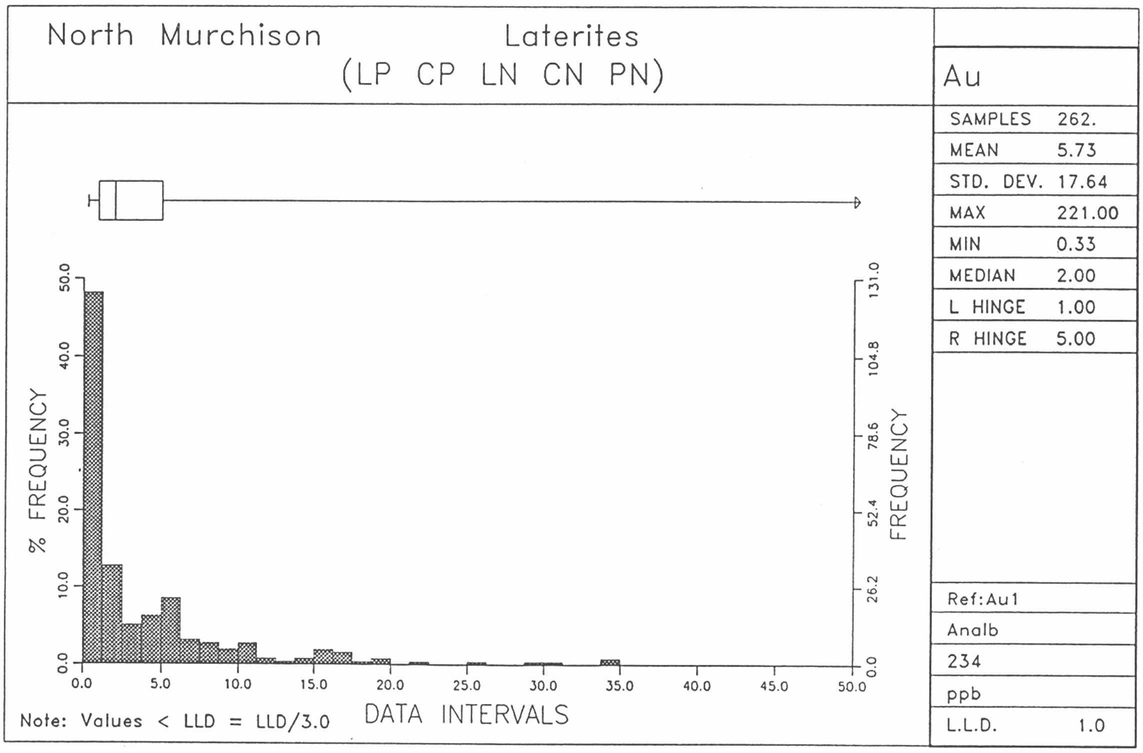


Figure 33a

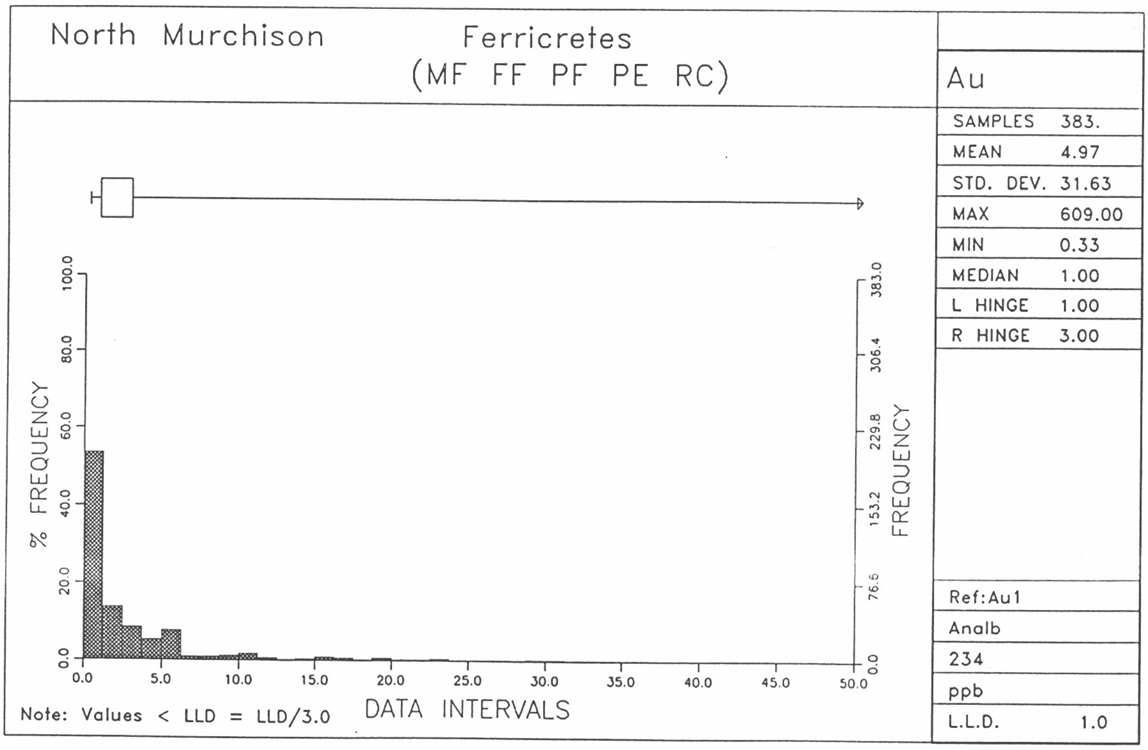


Figure 33b

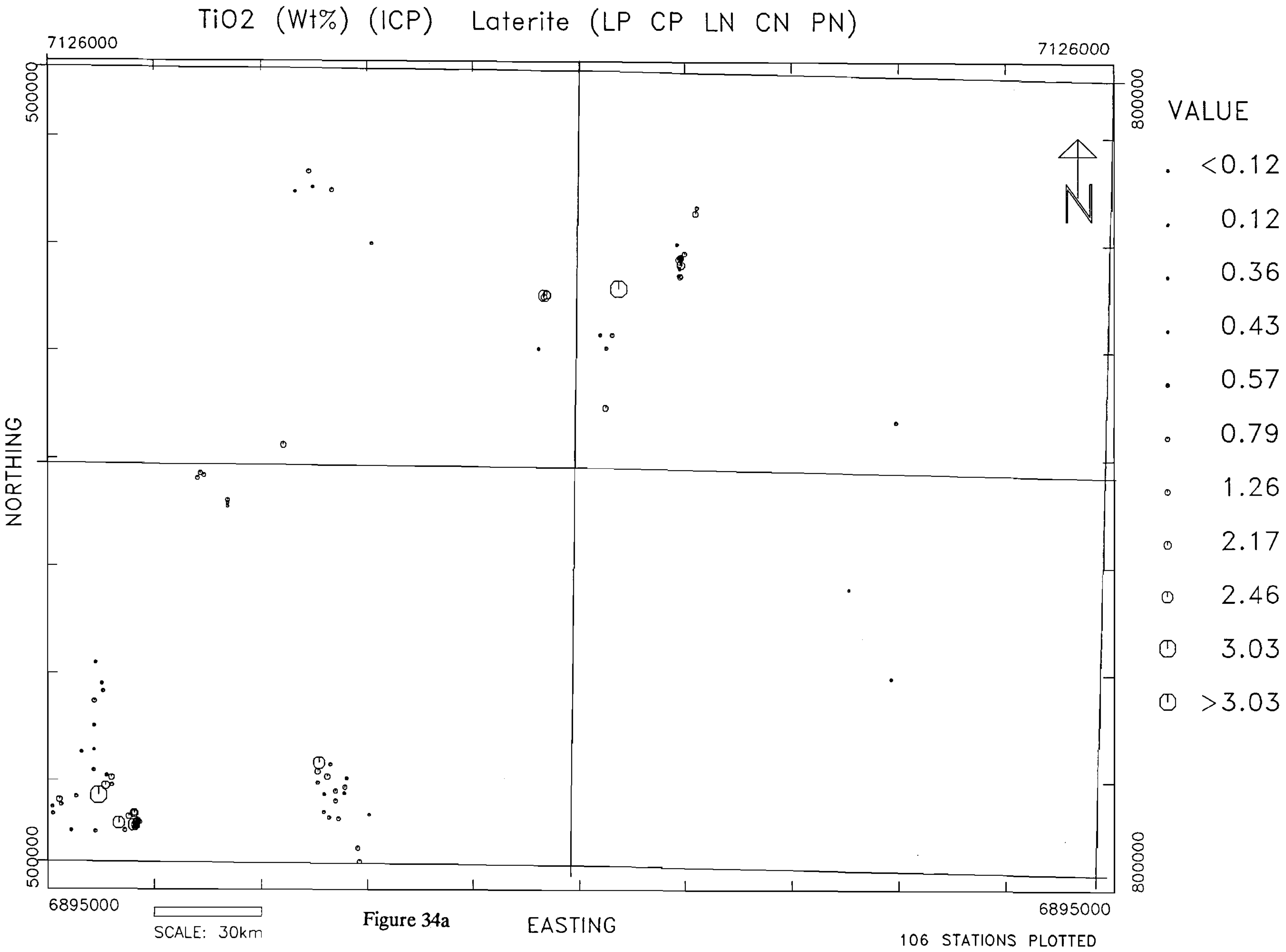
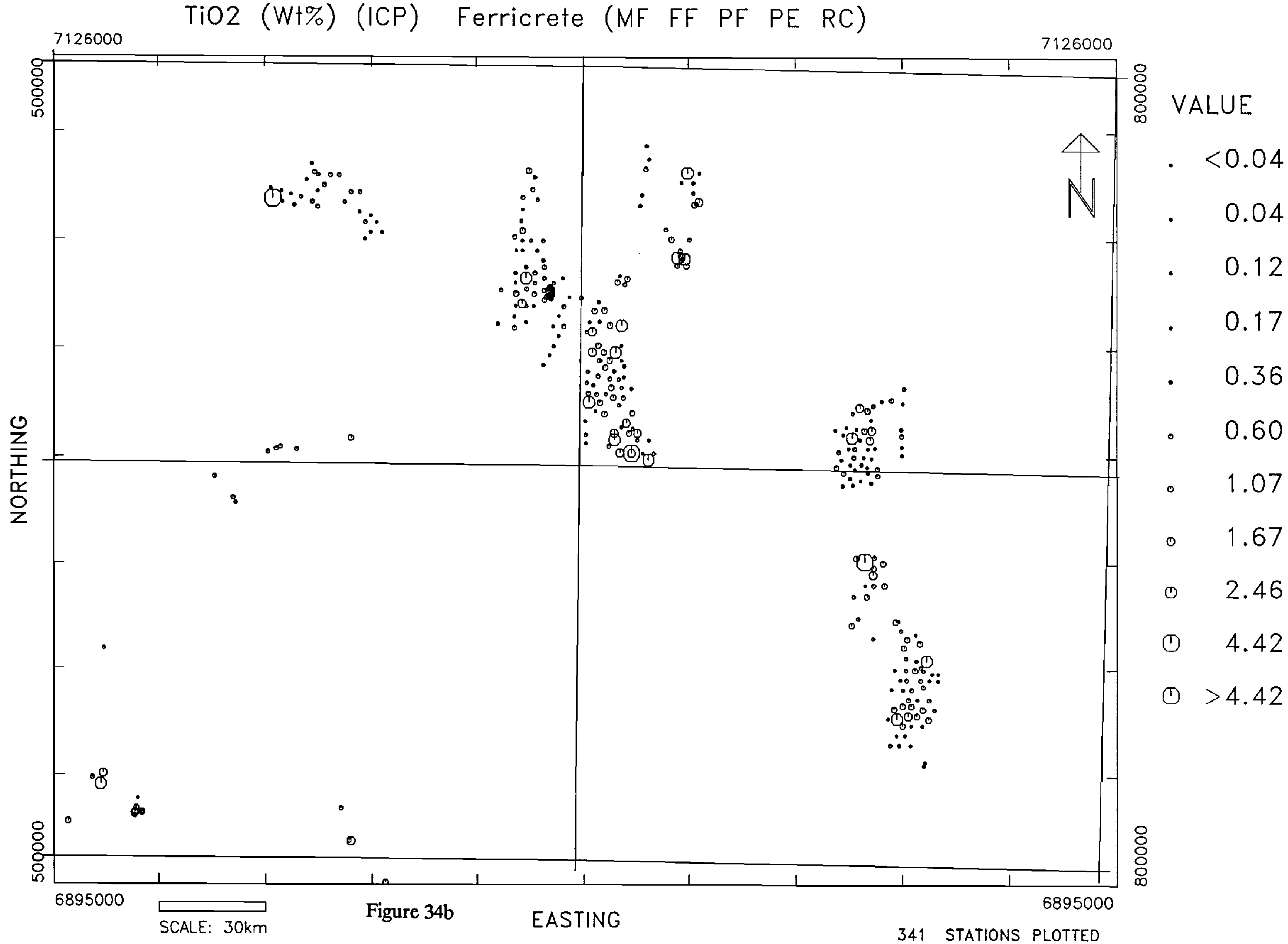

TiO2 (Wt%) (ICP) Laterite (LP CP LN CN PN)
7126000
7126000
500000
500000
800000
800000
NORTHING
6895000
6895000
SCALE: 30km
EASTING
106 STATIONS PLOTTED
VALUE
<0.12
0.12
0.36
0.43
0.57
0.79
1.26
2.17
2.46
3.03
>3.03
N

Figure 34a



TiO2 (Wt%) (ICP) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
500000
800000
VALUE
<0.04
0.04
0.12
0.17
0.36
0.60
1.07
1.67
2.46
4.42
>4.42
N
6895000
6895000
SCALE: 30km
EASTING
341 STATIONS PLOTTED

Figure 34b

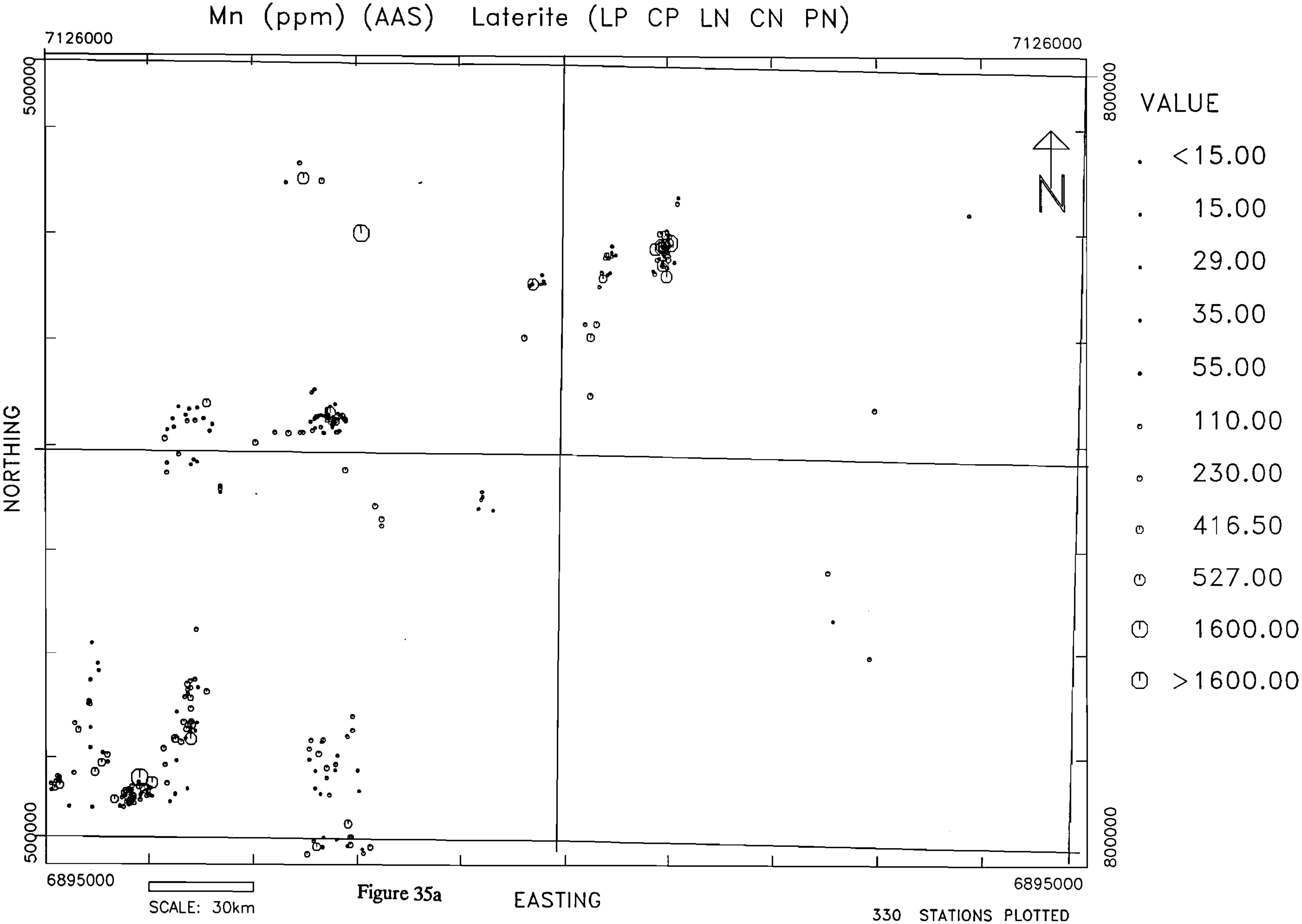
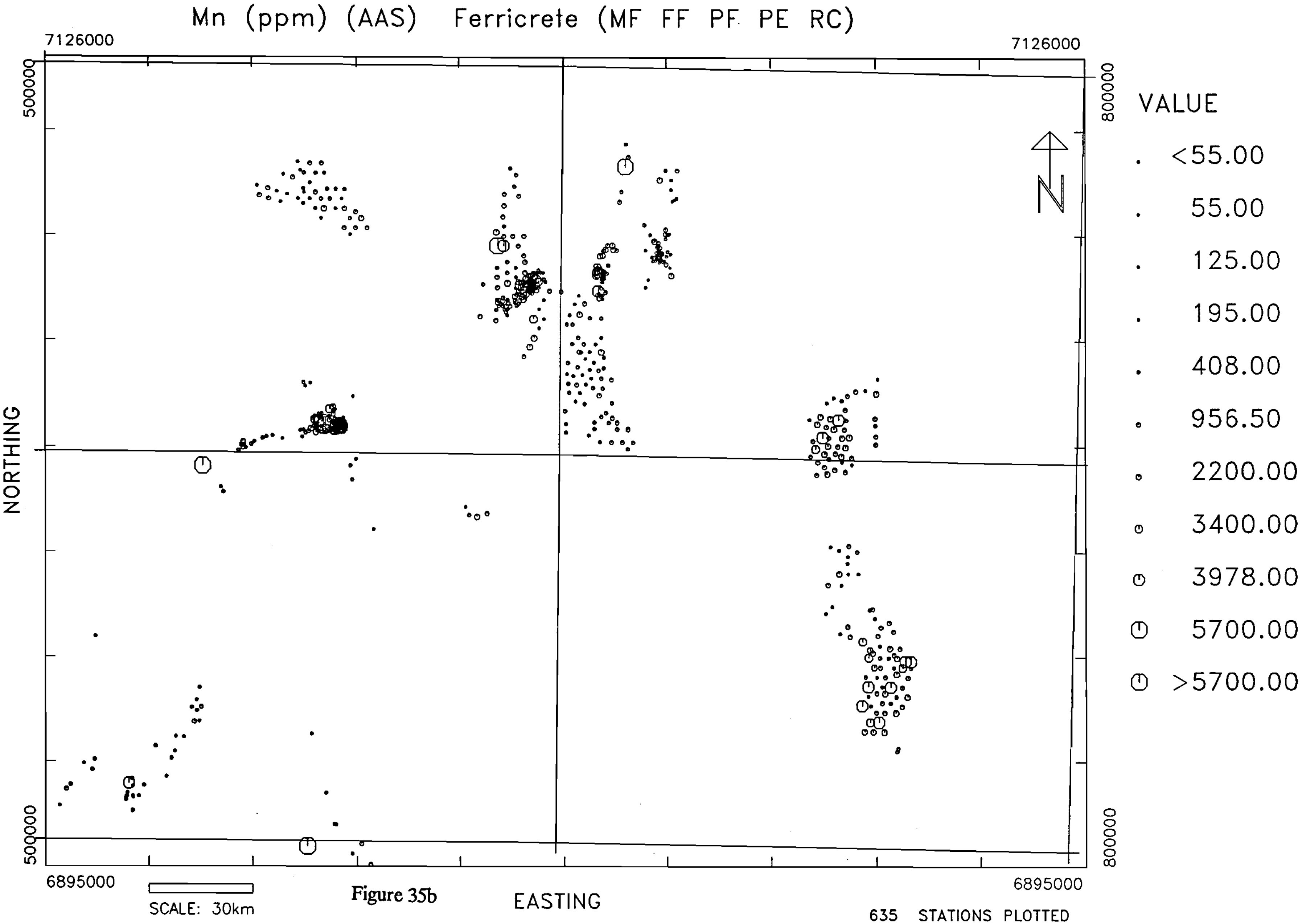

Mn (ppm) (AAS) Laterite (LP CP LN CN PN)
7126000
7126000
500000
500000
800000
800000
NORTHING
EASTING
6895000
6895000
SCALE: 30km
N
VALUE
<15.00
15.00
29.00
35.00
55.00
110.00
230.00
416.50
527.00
1600.00
>1600.00
330 STATIONS PLOTTED

Figure 35a



Mn (ppm) (AAS) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
VALUE
<55.00
55.00
125.00
195.00
408.00
956.50
2200.00
3400.00
3978.00
5700.00
>5700.00
500000
800000
6895000
6895000
SCALE: 30km
EASTING
635 STATIONS PLOTTED

Figure 35b

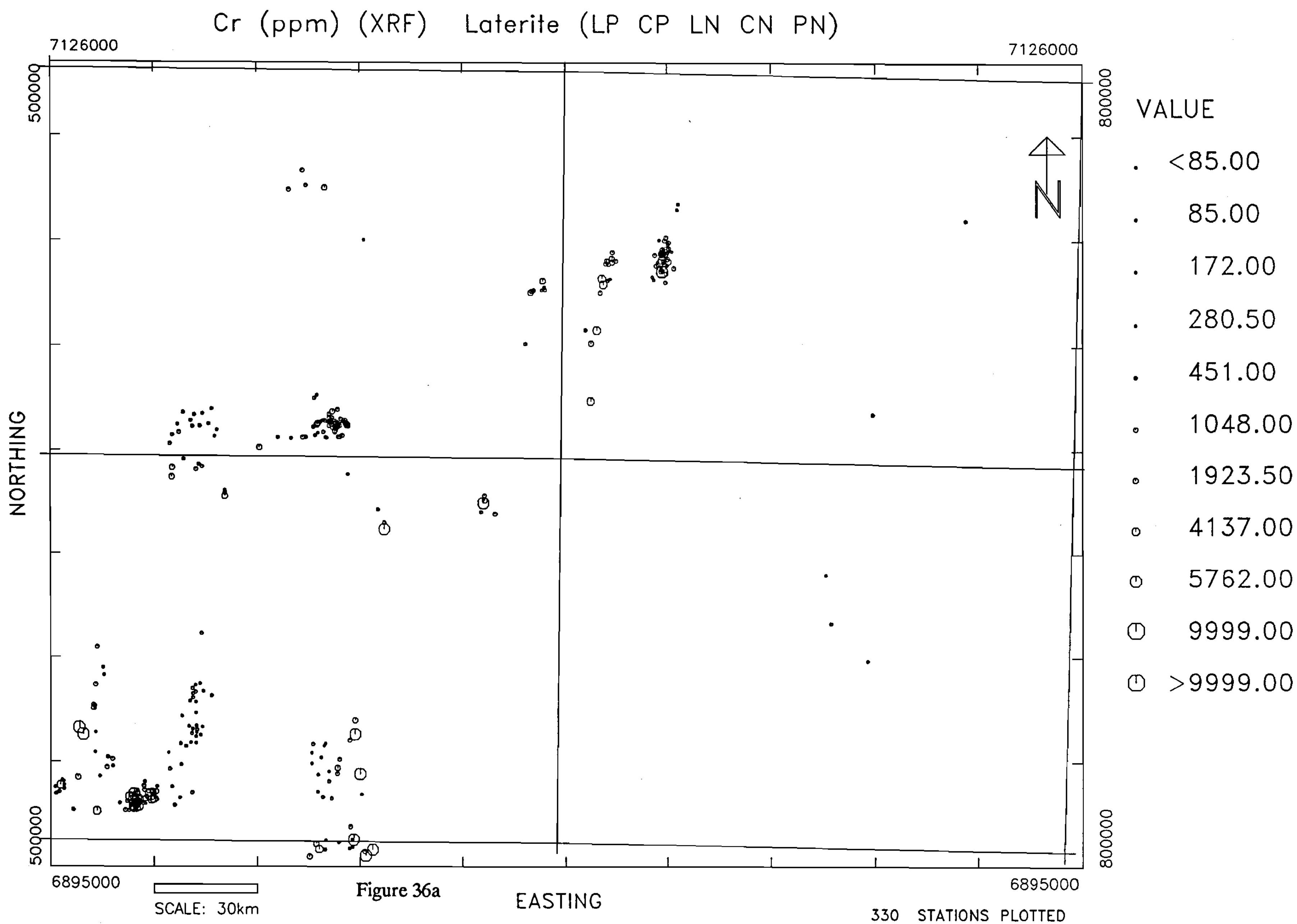
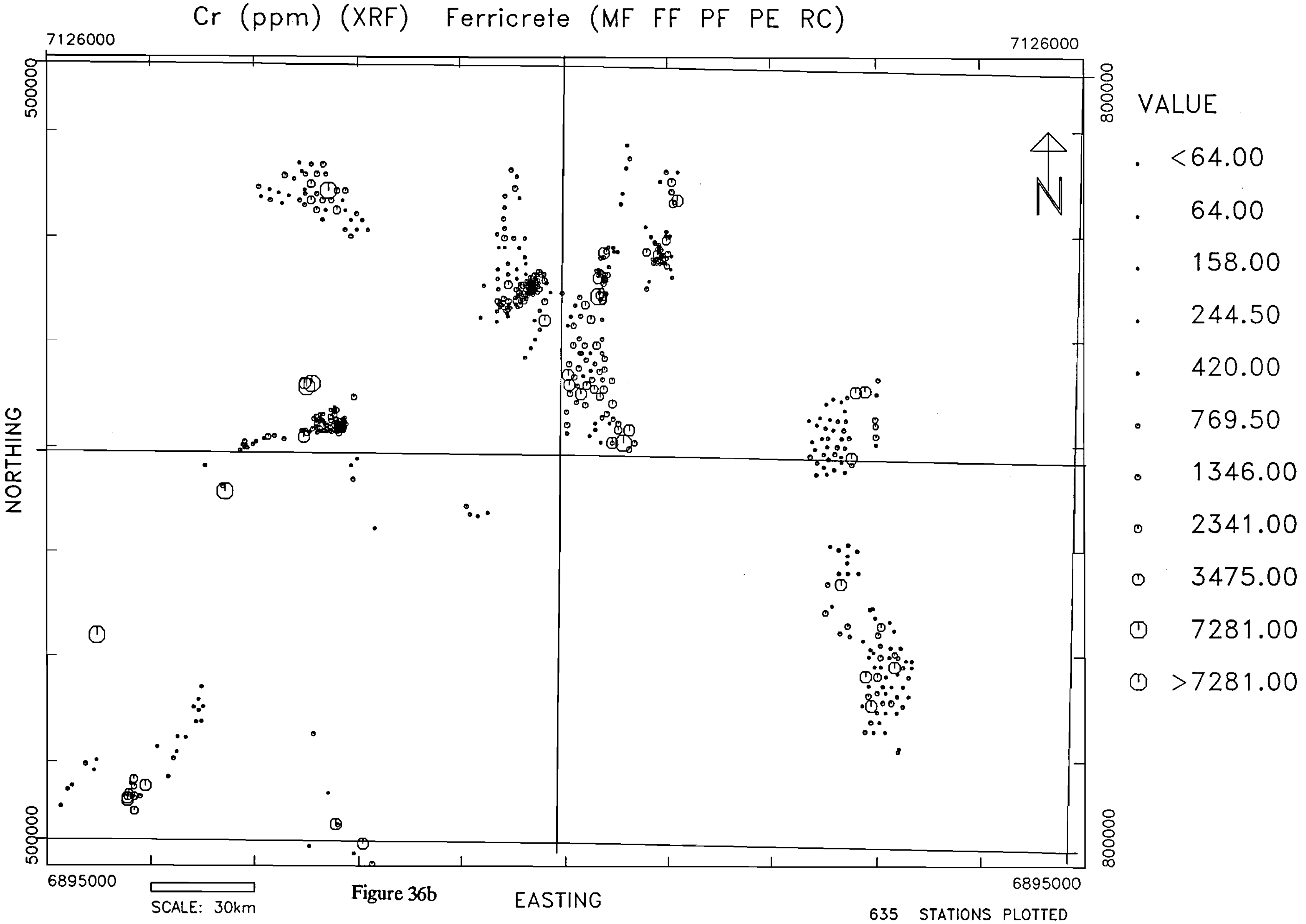

Cr (ppm) (XRF) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
EASTING
SCALE: 30km
N
VALUE
<85.00
85.00
172.00
280.50
451.00
1048.00
1923.50
4137.00
5762.00
9999.00
>9999.00
330 STATIONS PLOTTED

Figure 36a



Cr (ppm) (XRF) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
500000
800000
NORTHING
EASTING
6895000
6895000
N
VALUE
<64.00
64.00
158.00
244.50
420.00
769.50
1346.00
2341.00
3475.00
7281.00
>7281.00
SCALE: 30km
635 STATIONS PLOTTED

Figure 36b

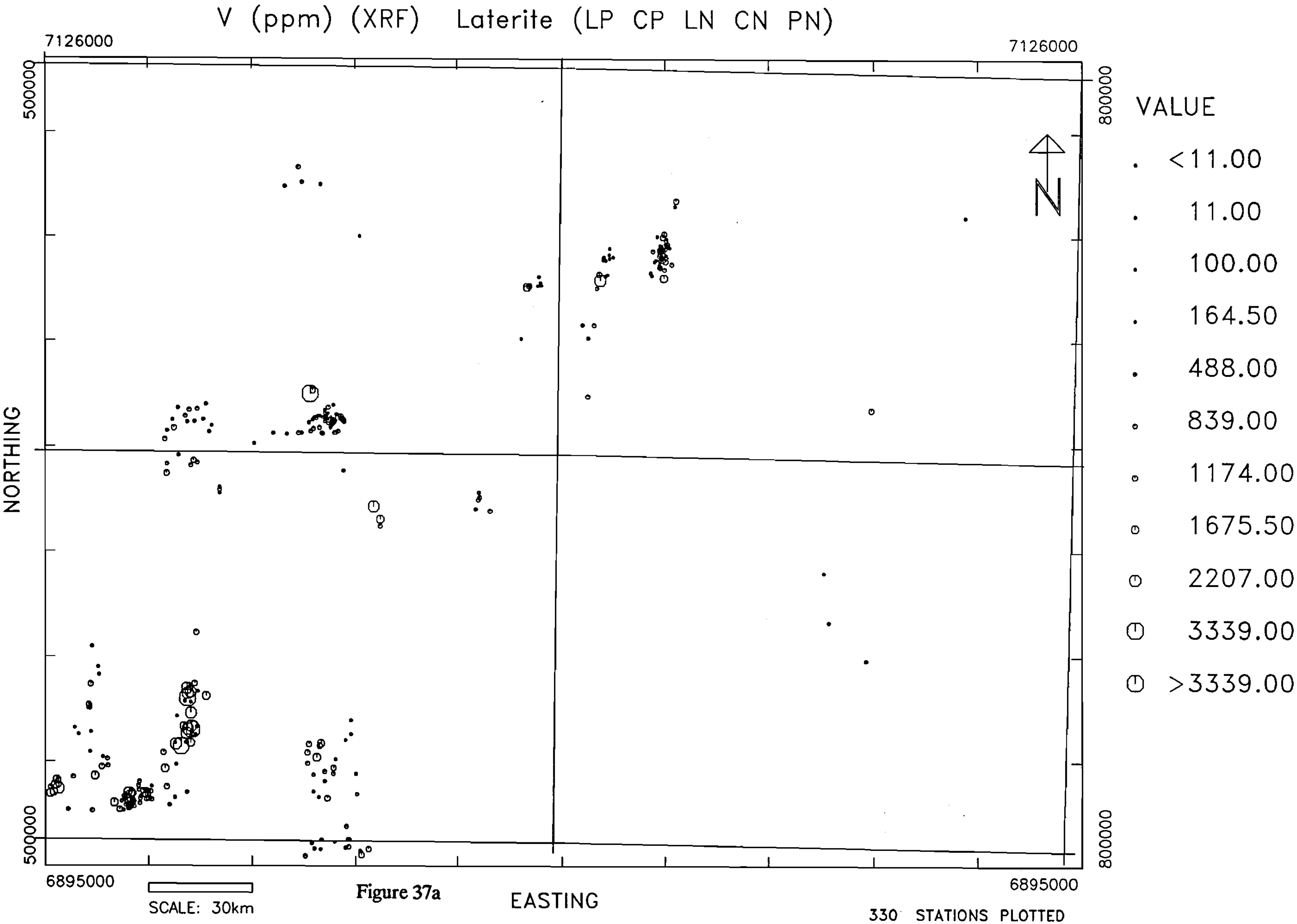
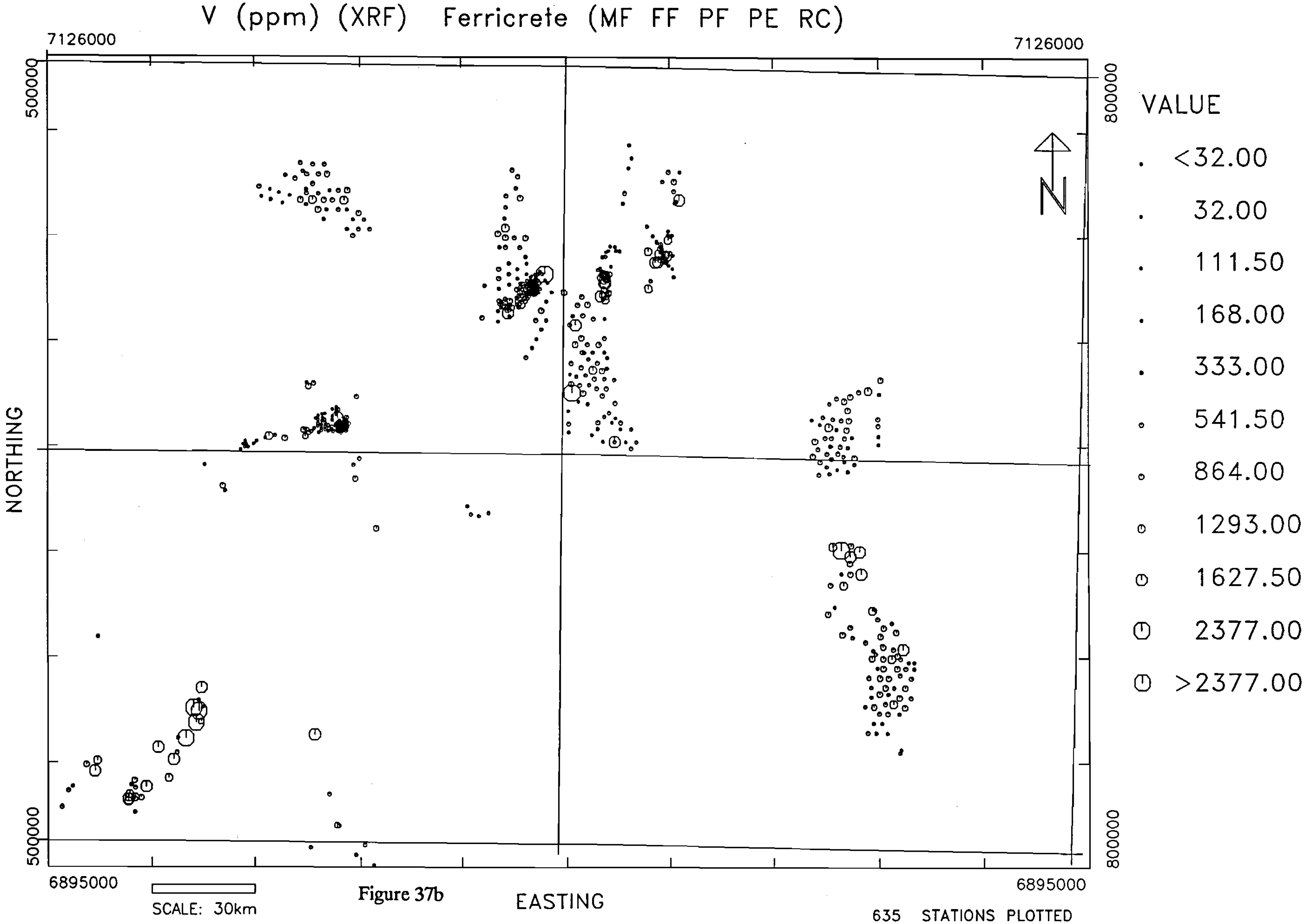

V (ppm) (XRF) Laterite (LP CP LN CN PN)
7126000
7126000
500000
500000
800000
800000
6895000
6895000
NORTHING
EASTING
VALUE
<11.00
11.00
100.00
164.50
488.00
839.00
1174.00
1675.50
2207.00
3339.00
>3339.00
N
SCALE: 30km
330 STATIONS PLOTTED

Figure 37a



V (ppm) (XRF) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
VALUE
<32.00
32.00
111.50
168.00
333.00
541.50
864.00
1293.00
1627.50
2377.00
>2377.00
N
500000
800000
6895000
6895000
SCALE: 30km
EASTING
635 STATIONS PLOTTED

Figure 37b

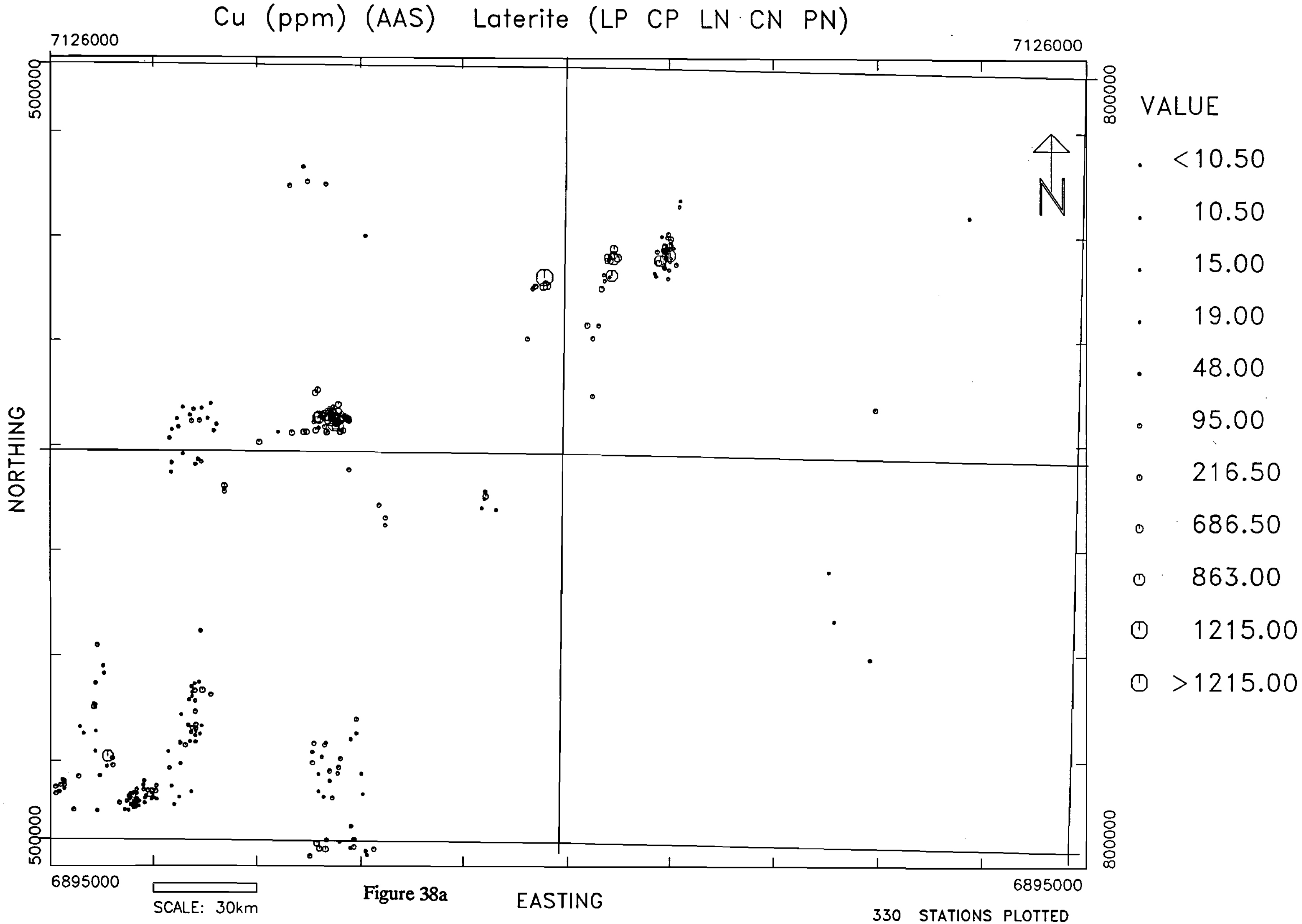

Cu (ppm) (AAS) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
330 STATIONS PLOTTED
N
VALUE
<10.50
10.50
15.00
19.00
48.00
95.00
216.50
686.50
863.00
1215.00
>1215.00

Figure 38a

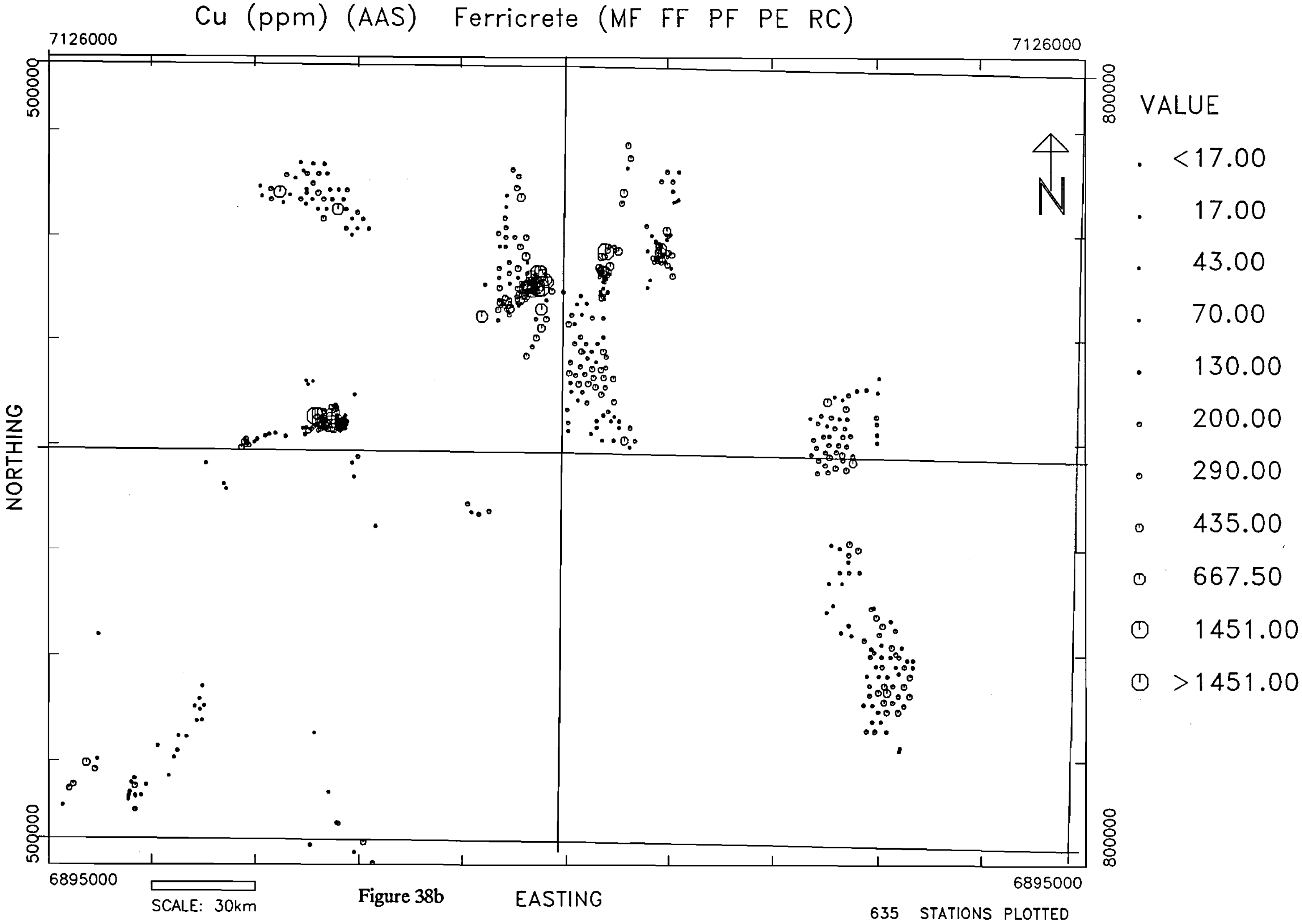

Cu (ppm) (AAS) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
500000
800000
800000
6895000
6895000
NORTHING
EASTING
SCALE: 30km
VALUE
<17.00
17.00
43.00
70.00
130.00
200.00
290.00
435.00
667.50
1451.00
>1451.00
N
635 STATIONS PLOTTED

Figure 38b

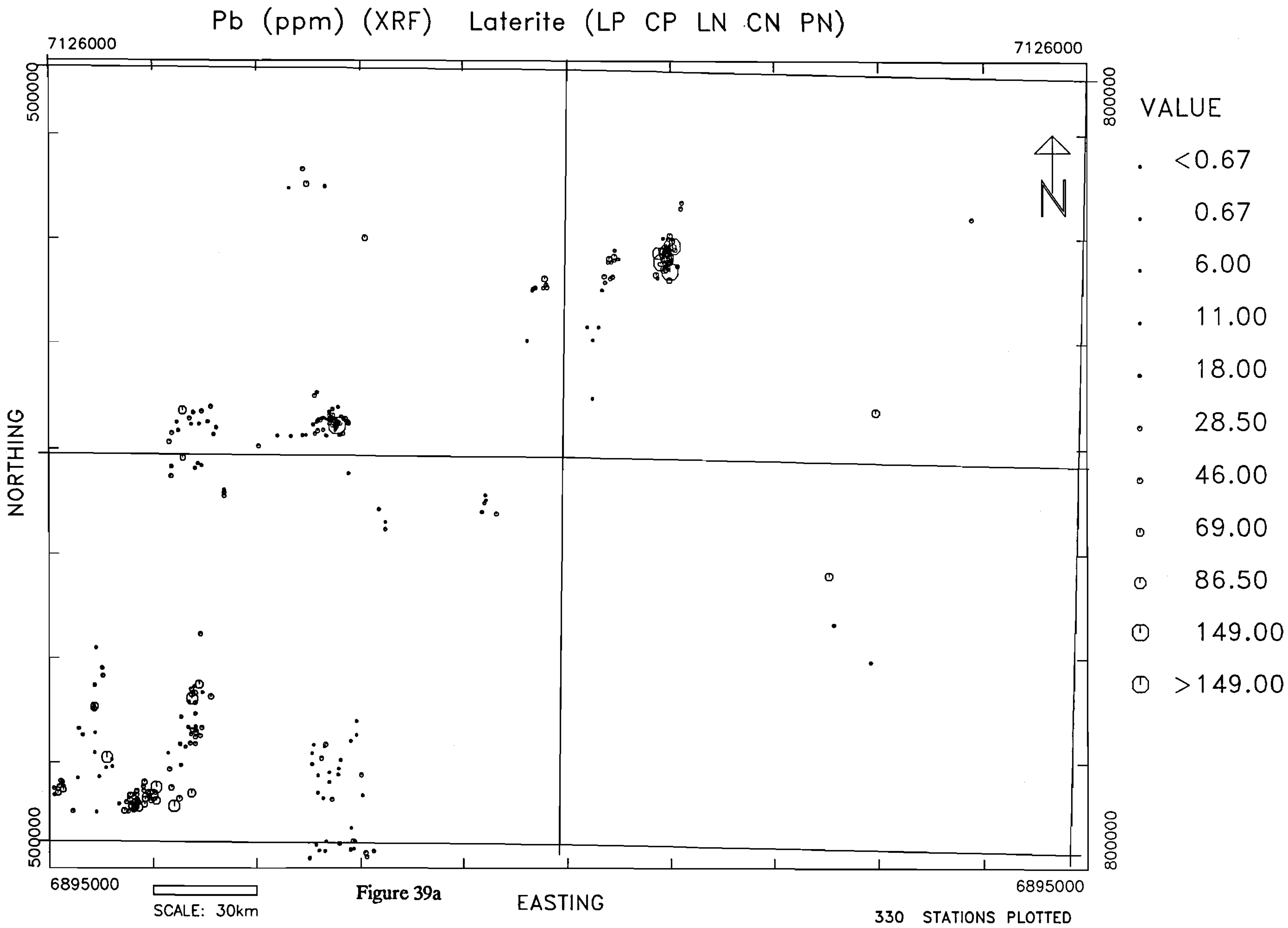

Pb (ppm) (XRF) Laterite (LP CP LN CN PN)
7126000
7126000
500000
500000
800000
800000
NORTHING
VALUE
<0.67
0.67
6.00
11.00
18.00
28.50
46.00
69.00
86.50
149.00
>149.00
N
6895000
6895000
SCALE: 30km
EASTING
330 STATIONS PLOTTED

Figure 39a

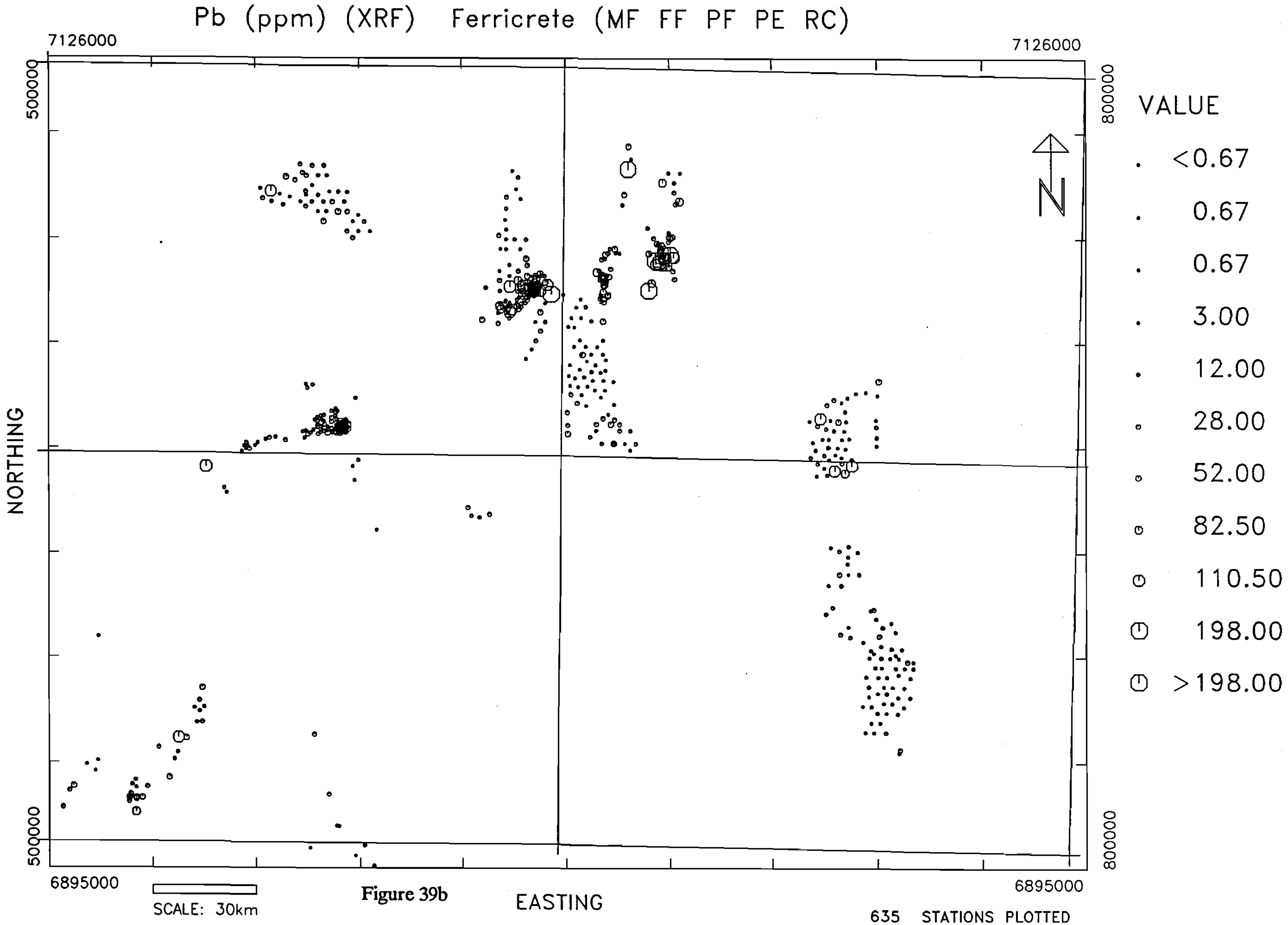

Pb (ppm) (XRF) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
EASTING
500000
800000
6895000
6895000
SCALE: 30km
635 STATIONS PLOTTED
N
VALUE
<0.67
0.67
0.67
3.00
12.00
28.00
52.00
82.50
110.50
198.00
>198.00

Figure 39b

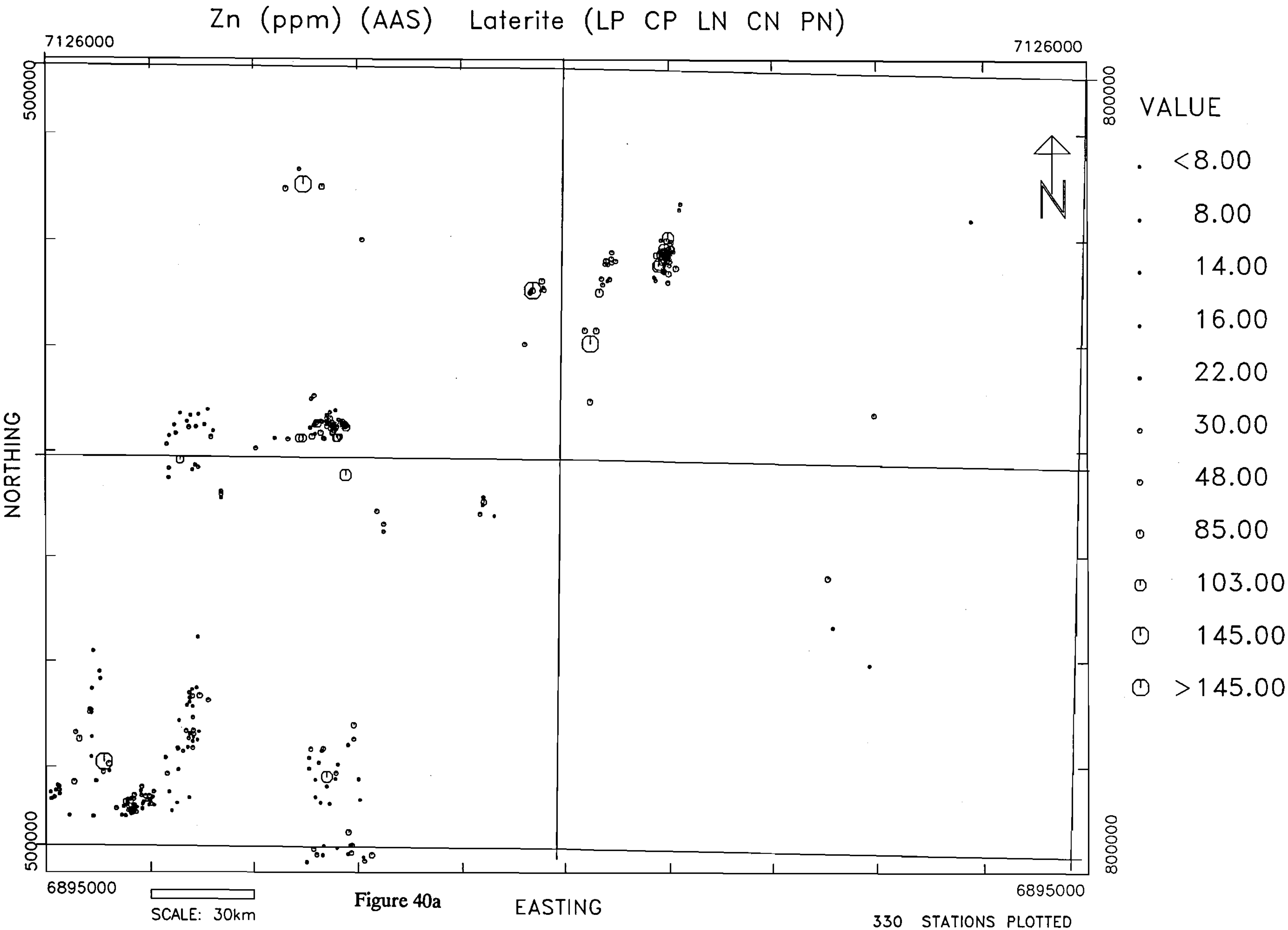

Zn (ppm) (AAS) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
VALUE
<8.00
8.00
14.00
16.00
22.00
30.00
48.00
85.00
103.00
145.00
>145.00
N
500000
800000
6895000
6895000
SCALE: 30km
EASTING
330 STATIONS PLOTTED

Figure 40a

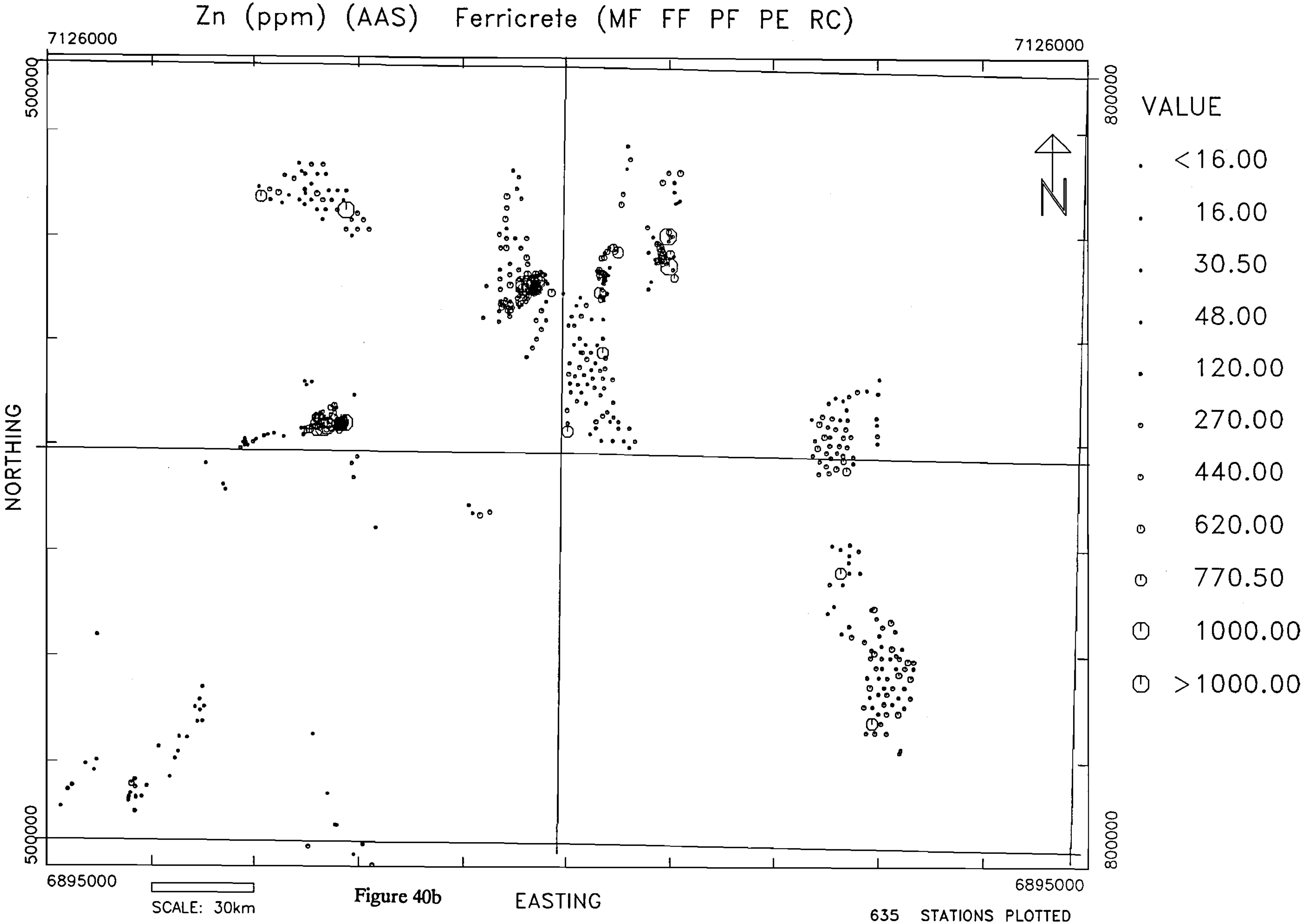

Zn (ppm) (AAS) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
VALUE
<16.00
16.00
30.50
48.00
120.00
270.00
440.00
620.00
770.50
1000.00
>1000.00
N
500000
800000
6895000
6895000
SCALE: 30km
EASTING
635 STATIONS PLOTTED

Figure 40b

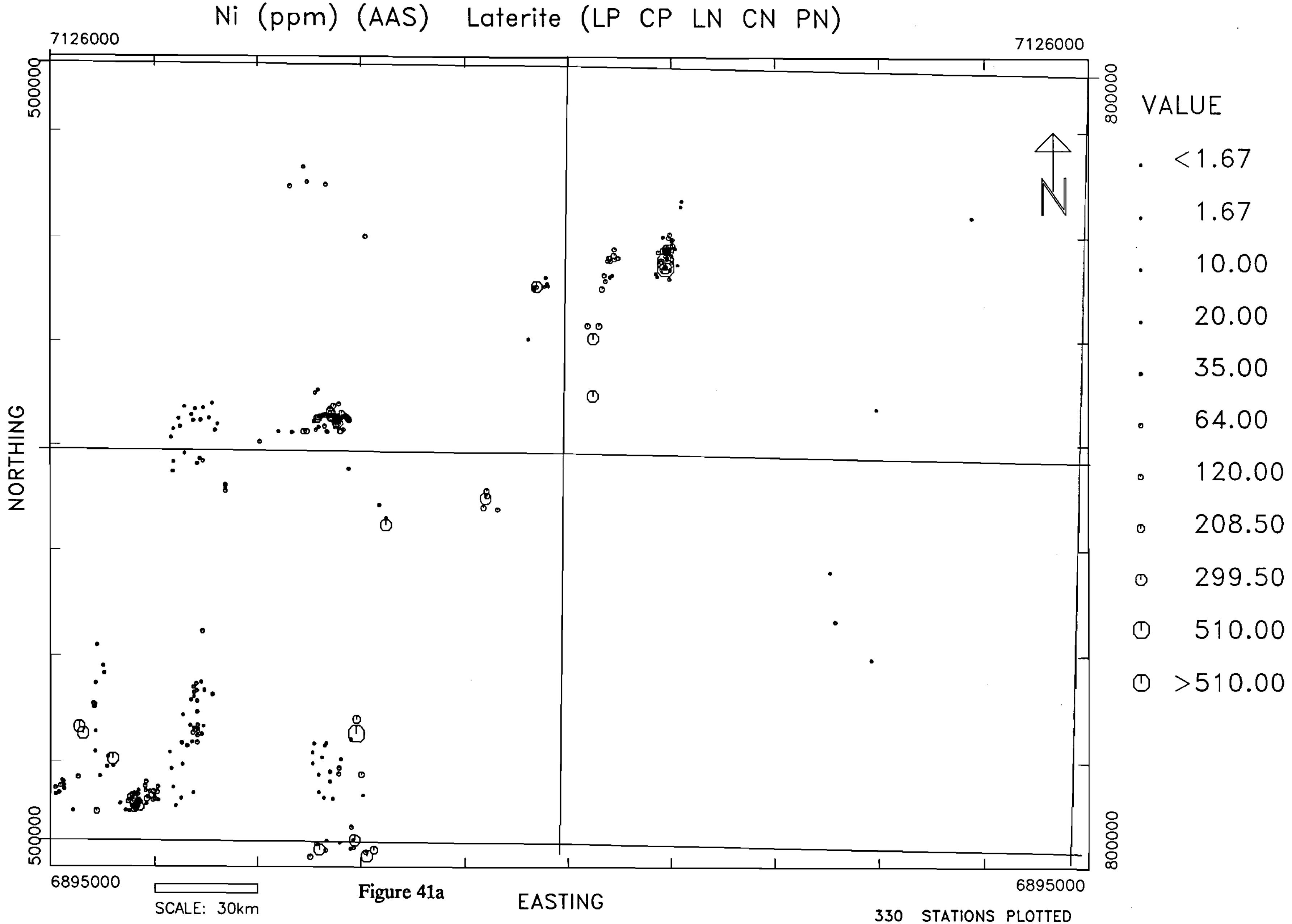
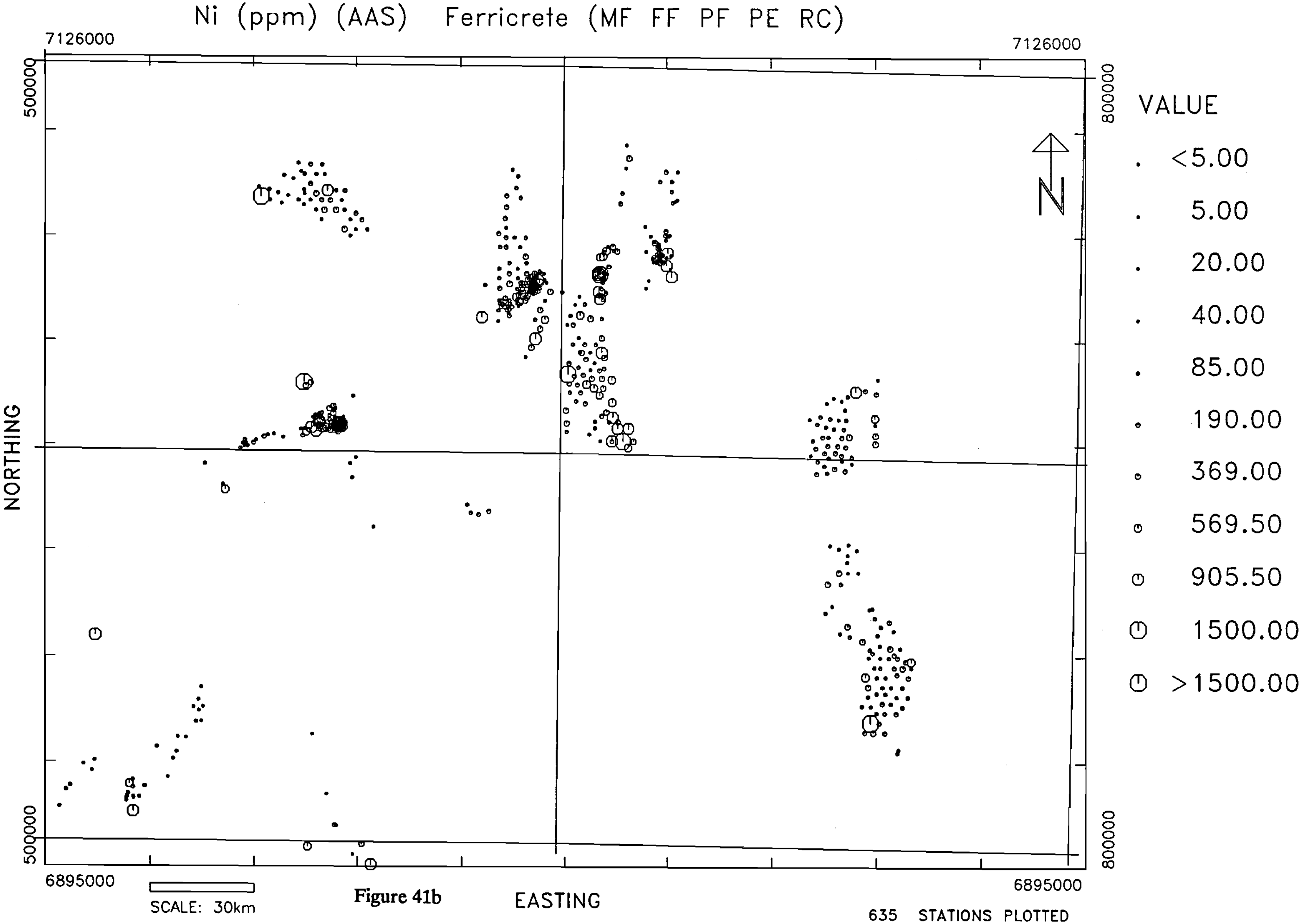

Ni (ppm) (AAS) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
VALUE
<1.67
1.67
10.00
20.00
35.00
64.00
120.00
208.50
299.50
510.00
>510.00
500000
800000
6895000
6895000
SCALE: 30km
EASTING
330 STATIONS PLOTTED

Figure 41a



Ni (ppm) (AAS) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
VALUE
<5.00
5.00
20.00
40.00
85.00
190.00
369.00
569.50
905.50
1500.00
>1500.00
500000
800000
6895000
6895000
SCALE: 30km
EASTING
635 STATIONS PLOTTED
N

Figure 41b

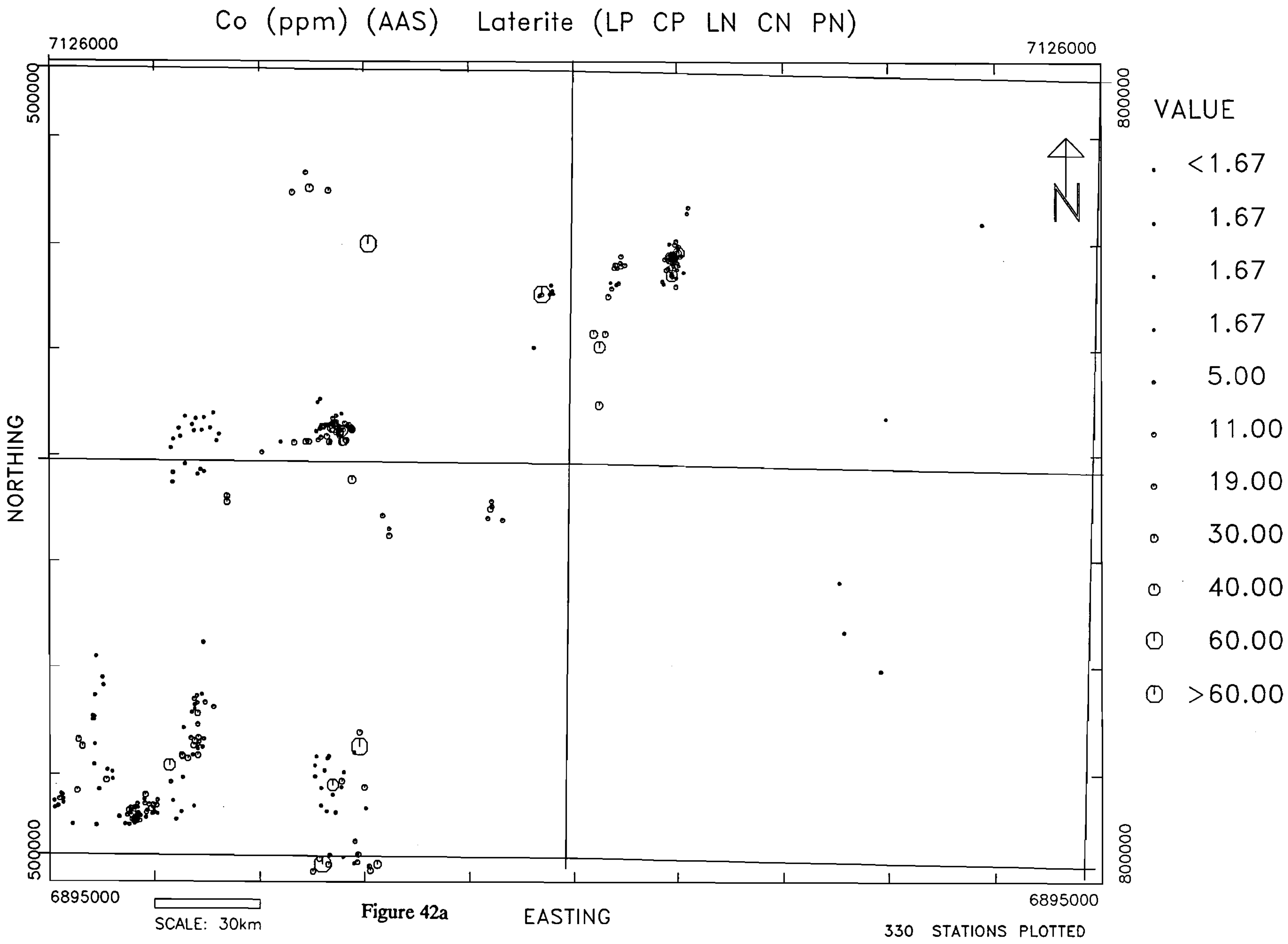

Co (ppm) (AAS) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
VALUE
<1.67
1.67
1.67
1.67
5.00
11.00
19.00
30.00
40.00
60.00
>60.00
500000
800000
6895000
6895000
SCALE: 30km
EASTING
330 STATIONS PLOTTED

Figure 42a

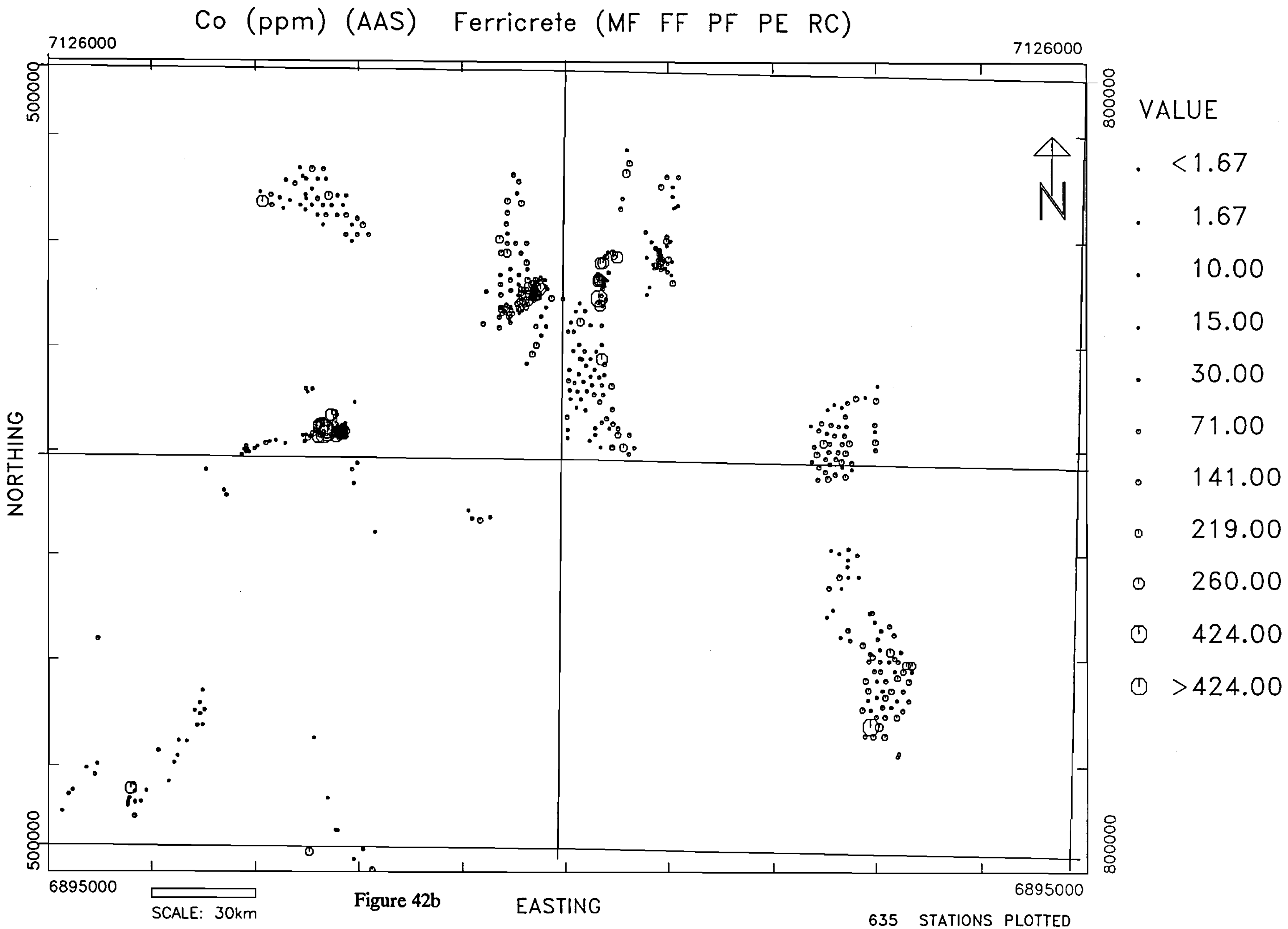

Co (ppm) (AAS) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
500000
800000
800000
6895000
6895000
NORTHING
EASTING
N
VALUE
<1.67
1.67
10.00
15.00
30.00
71.00
141.00
219.00
260.00
424.00
>424.00
SCALE: 30km
635 STATIONS PLOTTED

Figure 42b

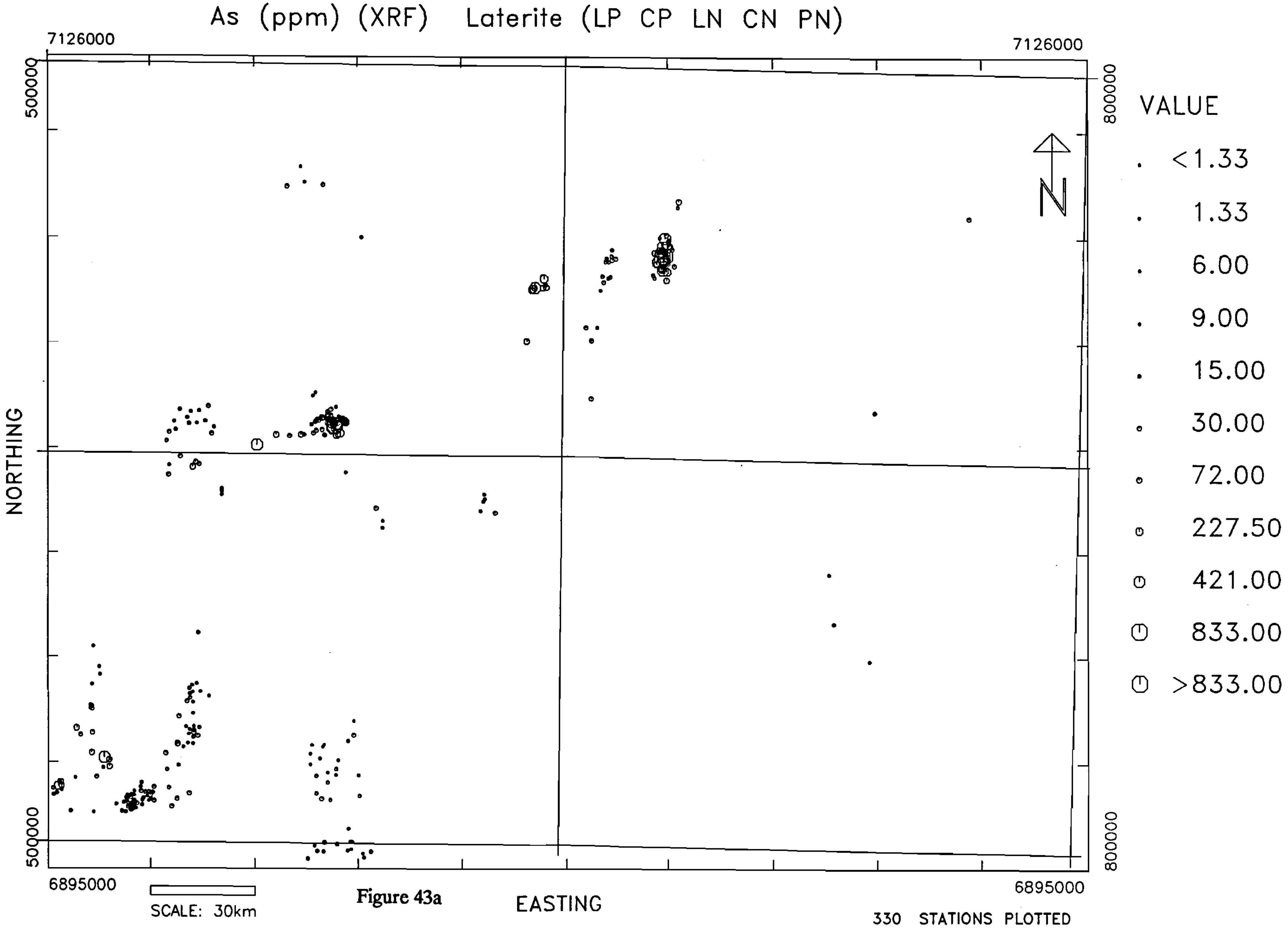

As (ppm) (XRF) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
330 STATIONS PLOTTED
N
VALUE
<1.33
1.33
6.00
9.00
15.00
30.00
72.00
227.50
421.00
833.00
>833.00

Figure 43a

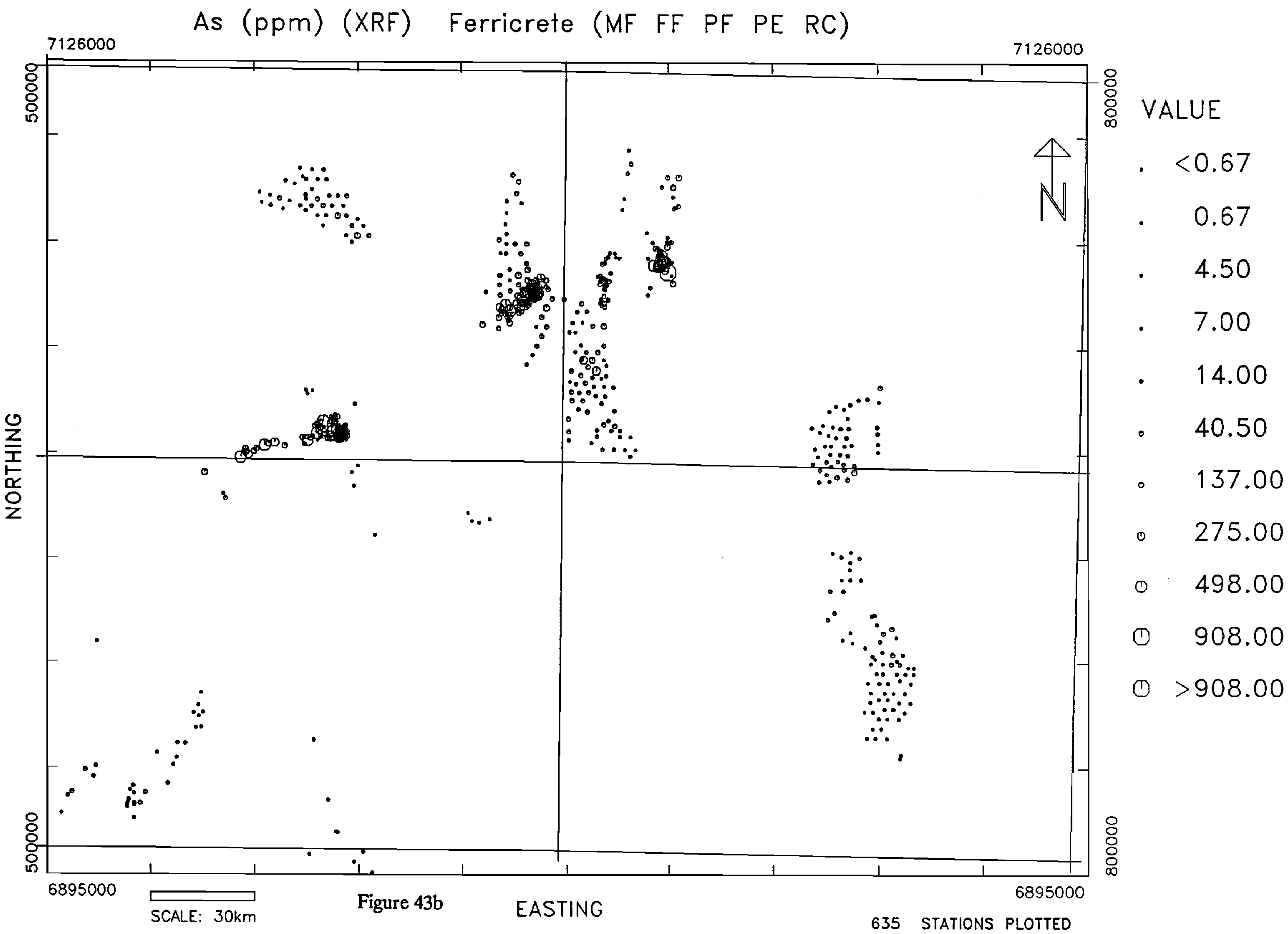

As (ppm) (XRF) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
VALUE
<0.67
0.67
4.50
7.00
14.00
40.50
137.00
275.00
498.00
908.00
>908.00
N
500000
800000
6895000
6895000
SCALE: 30km
EASTING
635 STATIONS PLOTTED

Figure 43b

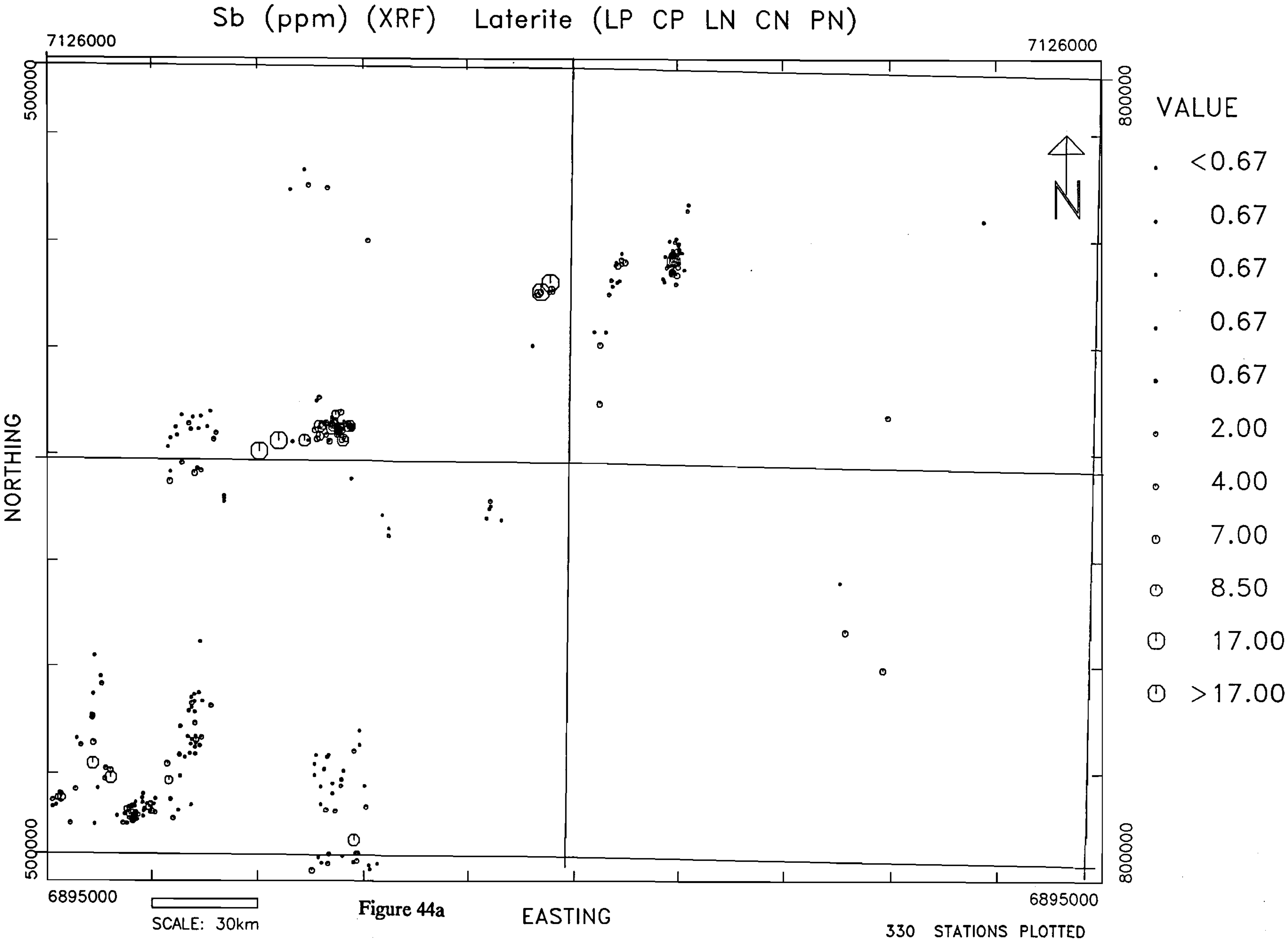
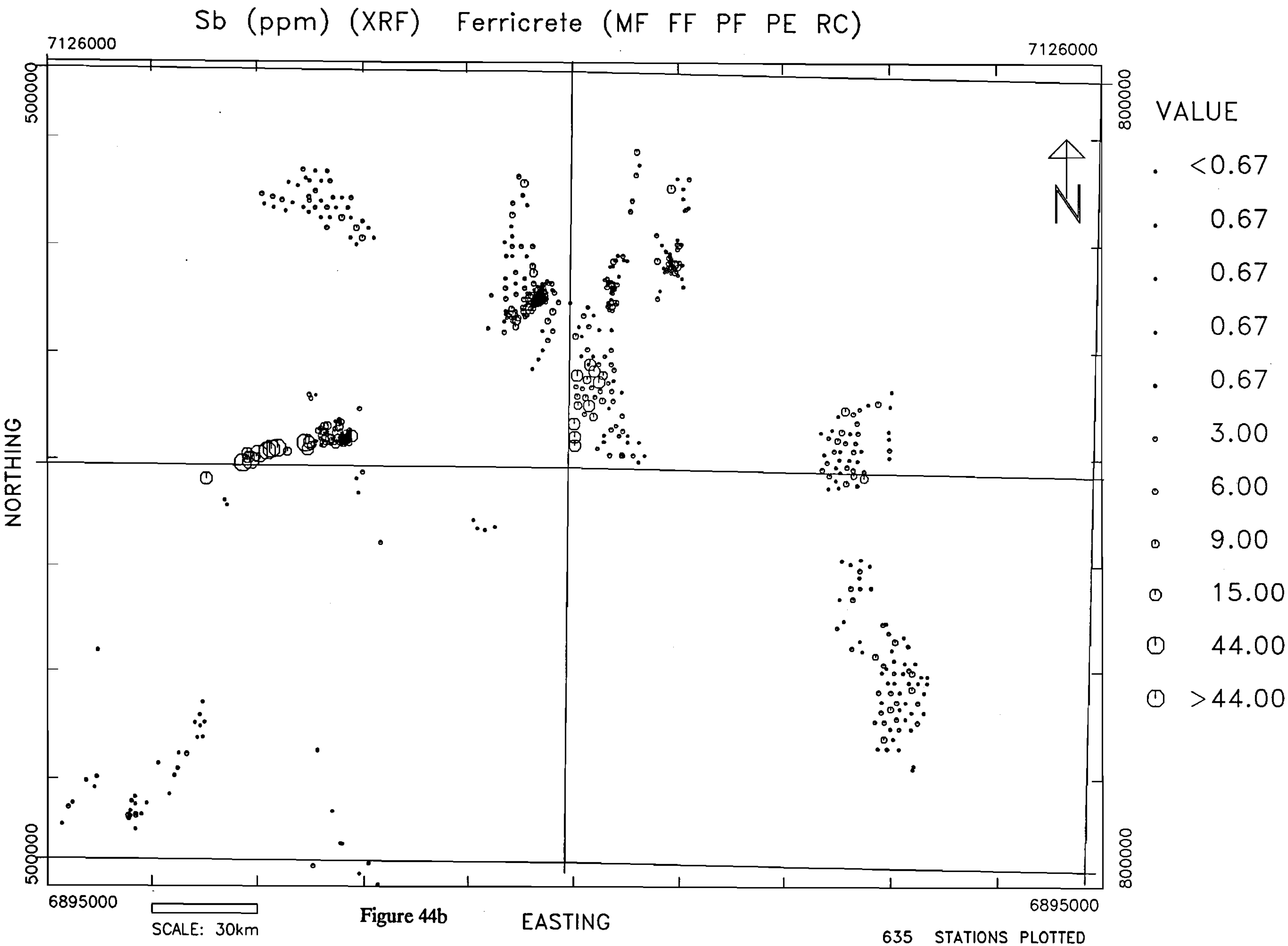

Sb (ppm) (XRF) Laterite (LP CP LN CN PN)
7126000
7126000
500000
500000
800000
800000
6895000
6895000
NORTHING
EASTING
SCALE: 30km
VALUE
<0.67
0.67
0.67
0.67
0.67
2.00
4.00
7.00
8.50
17.00
>17.00
N
330 STATIONS PLOTTED

Figure 44a



Sb (ppm) (XRF) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
635 STATIONS PLOTTED
N
VALUE
<0.67
0.67
0.67
0.67
0.67
3.00
6.00
9.00
15.00
44.00
>44.00

Figure 44b

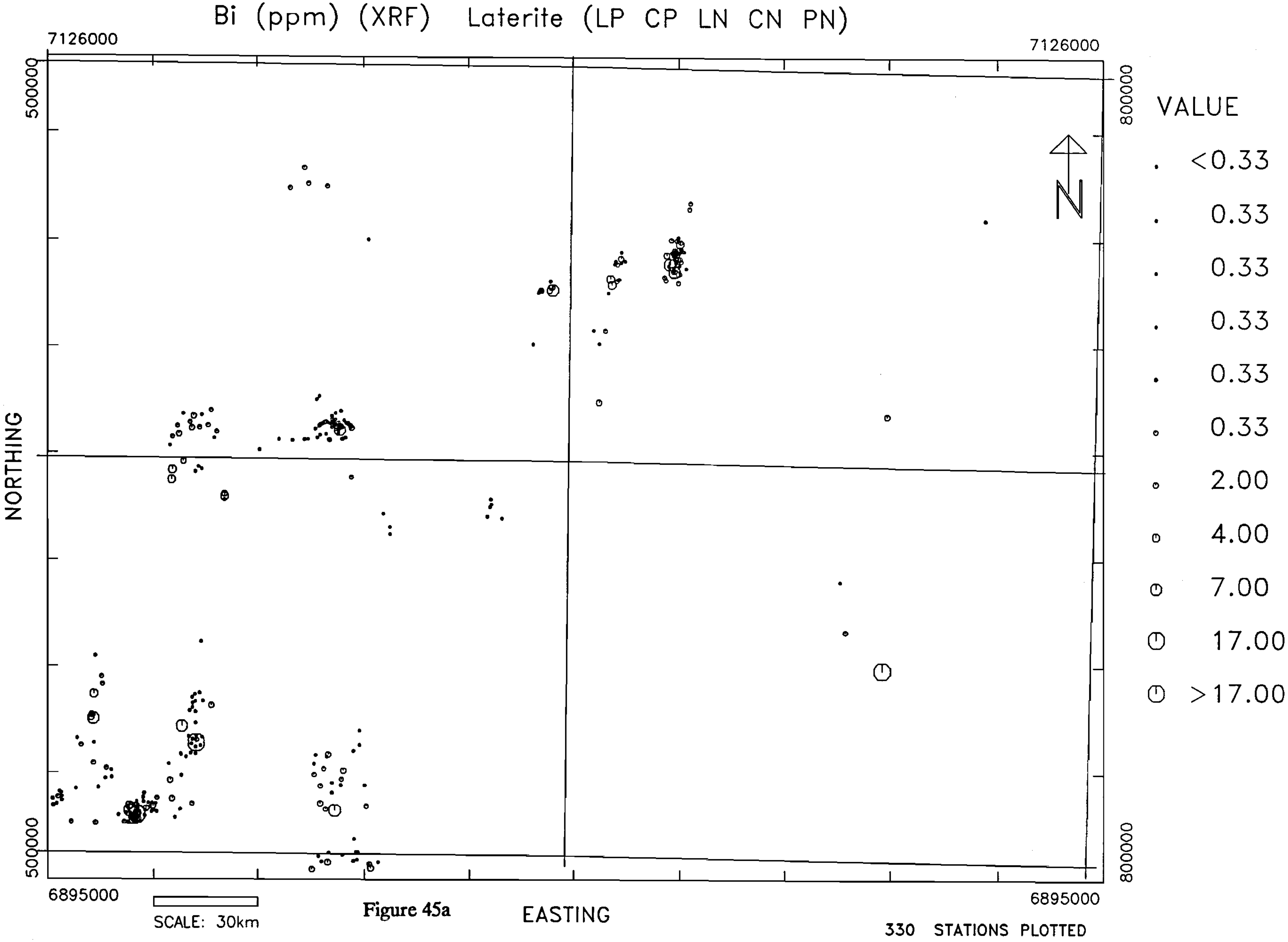
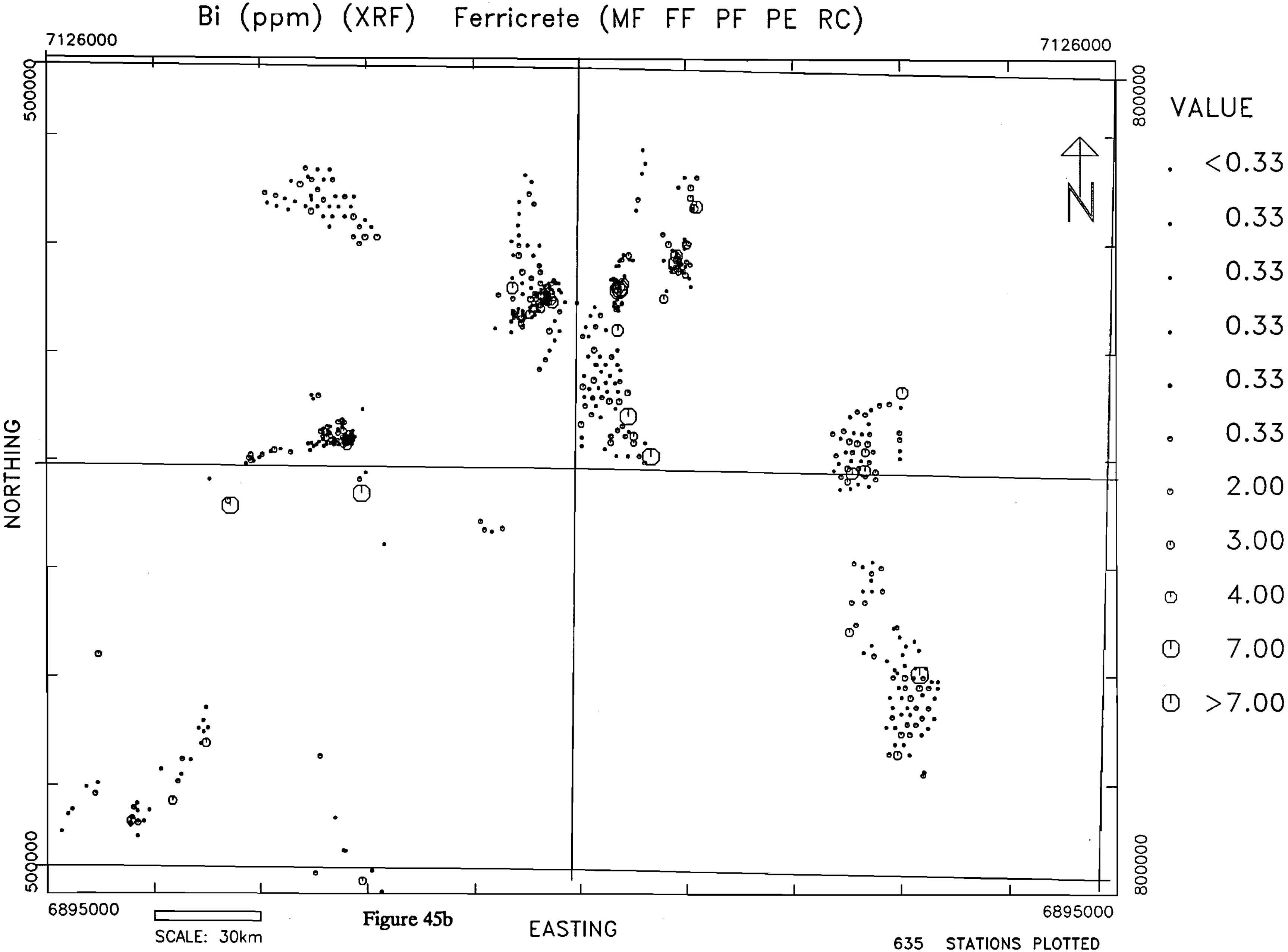

Bi (ppm) (XRF) Laterite (LP CP LN CN PN)
7126000
7126000
500000
500000
800000
800000
NORTHING
6895000
6895000
SCALE: 30km
EASTING
330 STATIONS PLOTTED
N
VALUE
<0.33
0.33
0.33
0.33
0.33
0.33
2.00
4.00
7.00
17.00
>17.00

Figure 45a



Bi (ppm) (XRF) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
635 STATIONS PLOTTED
N
VALUE
<0.33
0.33
0.33
0.33
0.33
0.33
2.00
3.00
4.00
7.00
>7.00

Figure 45b

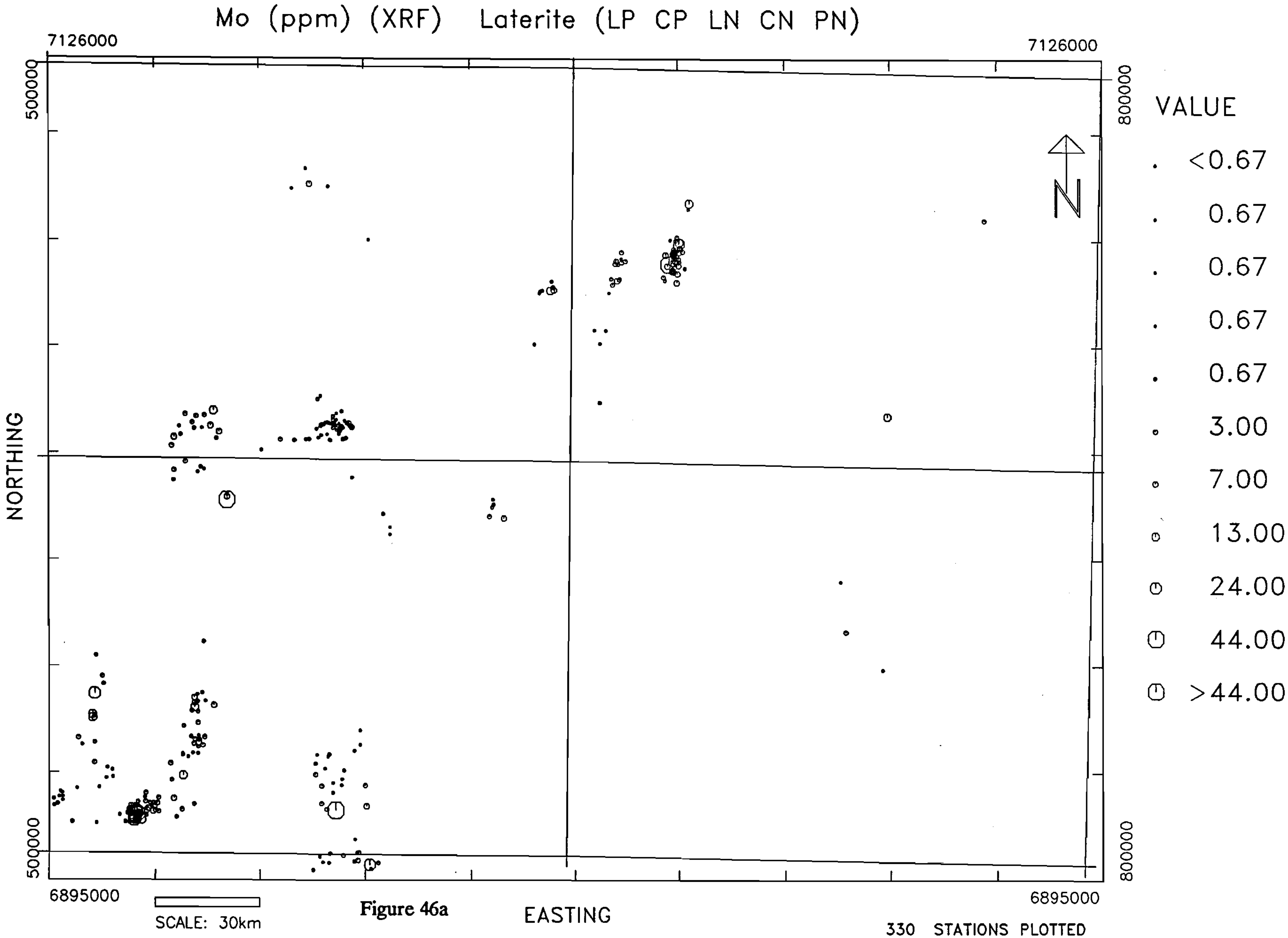

Mo (ppm) (XRF) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
EASTING
SCALE: 30km
N
VALUE
<0.67
0.67
0.67
0.67
0.67
3.00
7.00
13.00
24.00
44.00
>44.00
330 STATIONS PLOTTED

Figure 46a

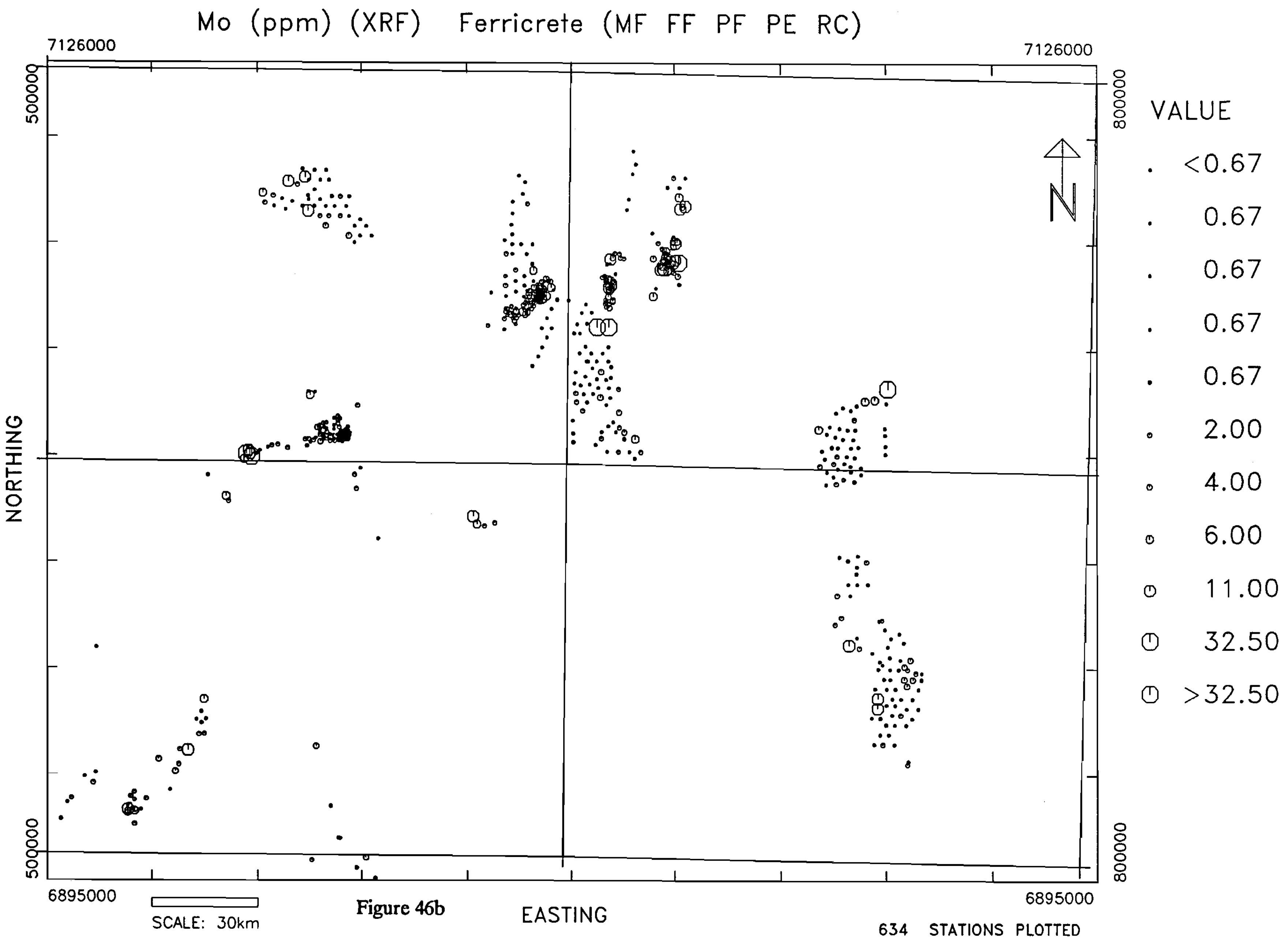

Mo (ppm) (XRF) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
500000
800000
6895000
6895000
NORTHING
EASTING
SCALE: 30km
N
VALUE
<0.67
0.67
0.67
0.67
0.67
2.00
4.00
6.00
11.00
32.50
>32.50
634 STATIONS PLOTTED

Figure 46b

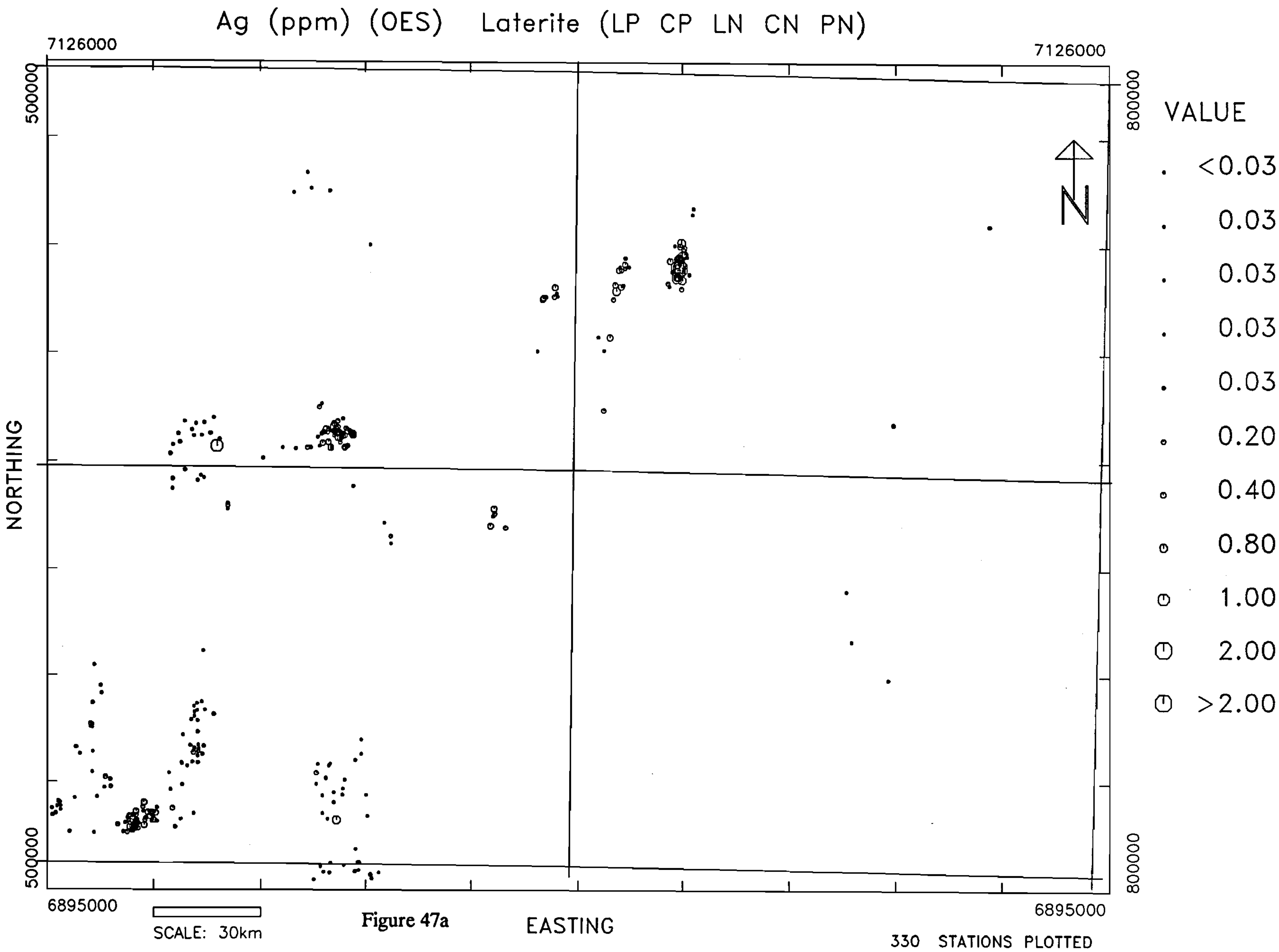
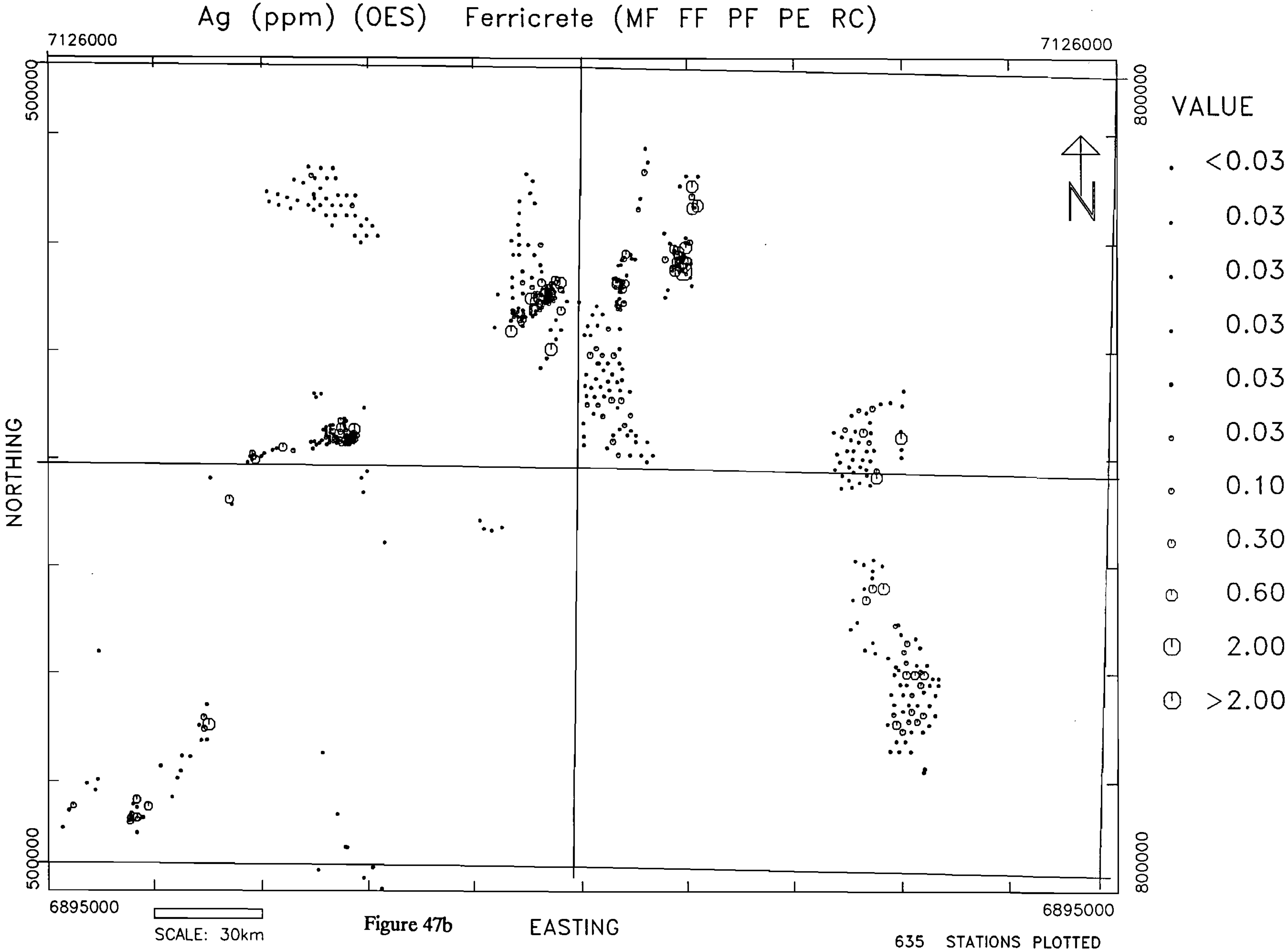

Ag (ppm) (OES) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
330 STATIONS PLOTTED
N
VALUE
<0.03
0.03
0.03
0.03
0.03
0.20
0.40
0.80
1.00
2.00
>2.00

Figure 47a



Ag (ppm) (OES) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
500000
800000
800000
NORTHING
EASTING
6895000
6895000
N
VALUE
<0.03
0.03
0.03
0.03
0.03
0.03
0.10
0.30
0.60
2.00
>2.00
SCALE: 30km
635 STATIONS PLOTTED

Figure 47b

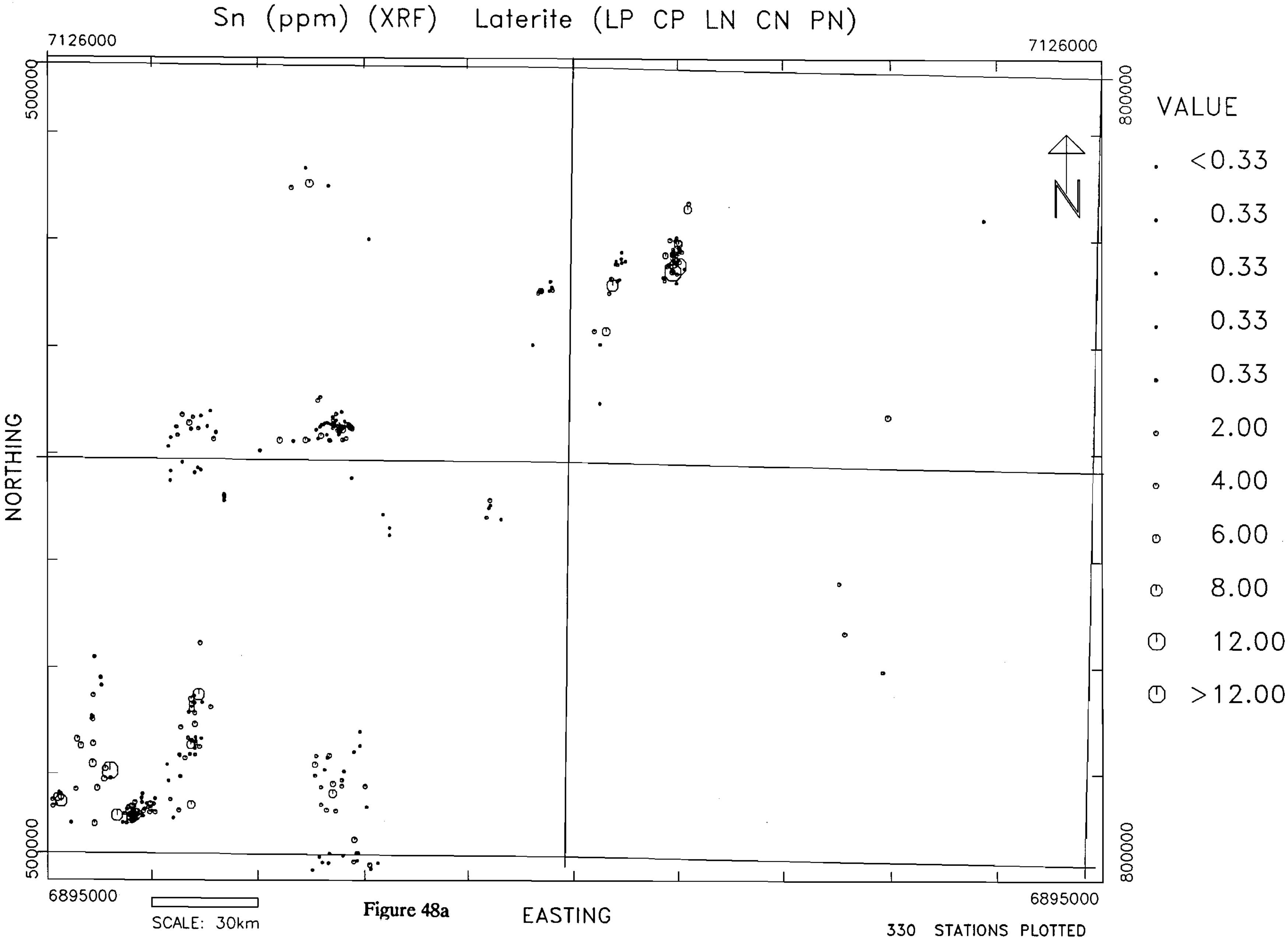

Sn (ppm) (XRF) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
VALUE
<0.33
0.33
0.33
0.33
0.33
2.00
4.00
6.00
8.00
12.00
>12.00
500000
800000
6895000
6895000
SCALE: 30km
EASTING
330 STATIONS PLOTTED

Figure 48a

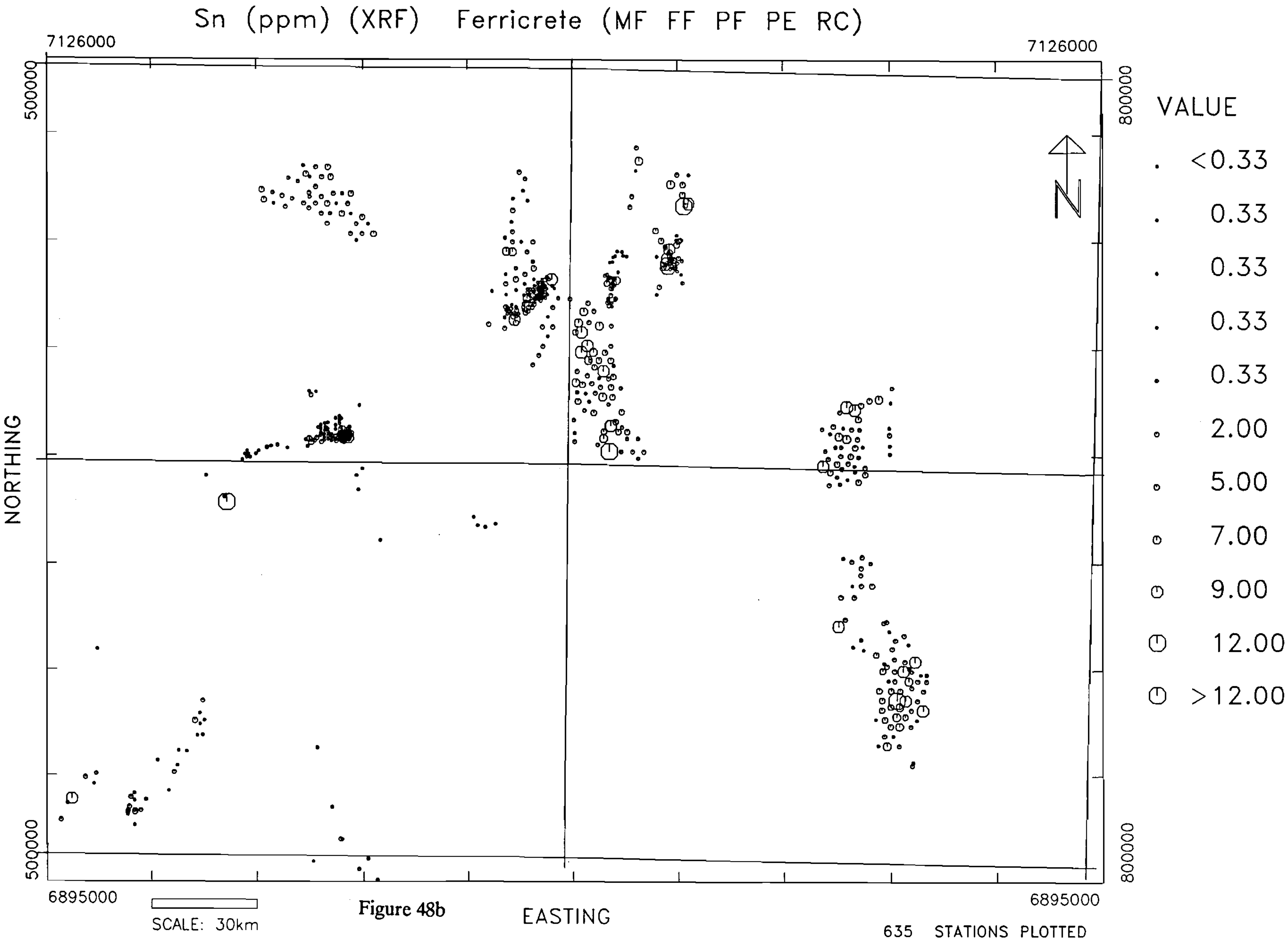

Sn (ppm) (XRF) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
VALUE
<0.33
0.33
0.33
0.33
0.33
2.00
5.00
7.00
9.00
12.00
>12.00
N
500000
800000
6895000
6895000
SCALE: 30km
EASTING
635 STATIONS PLOTTED

Figure 48b

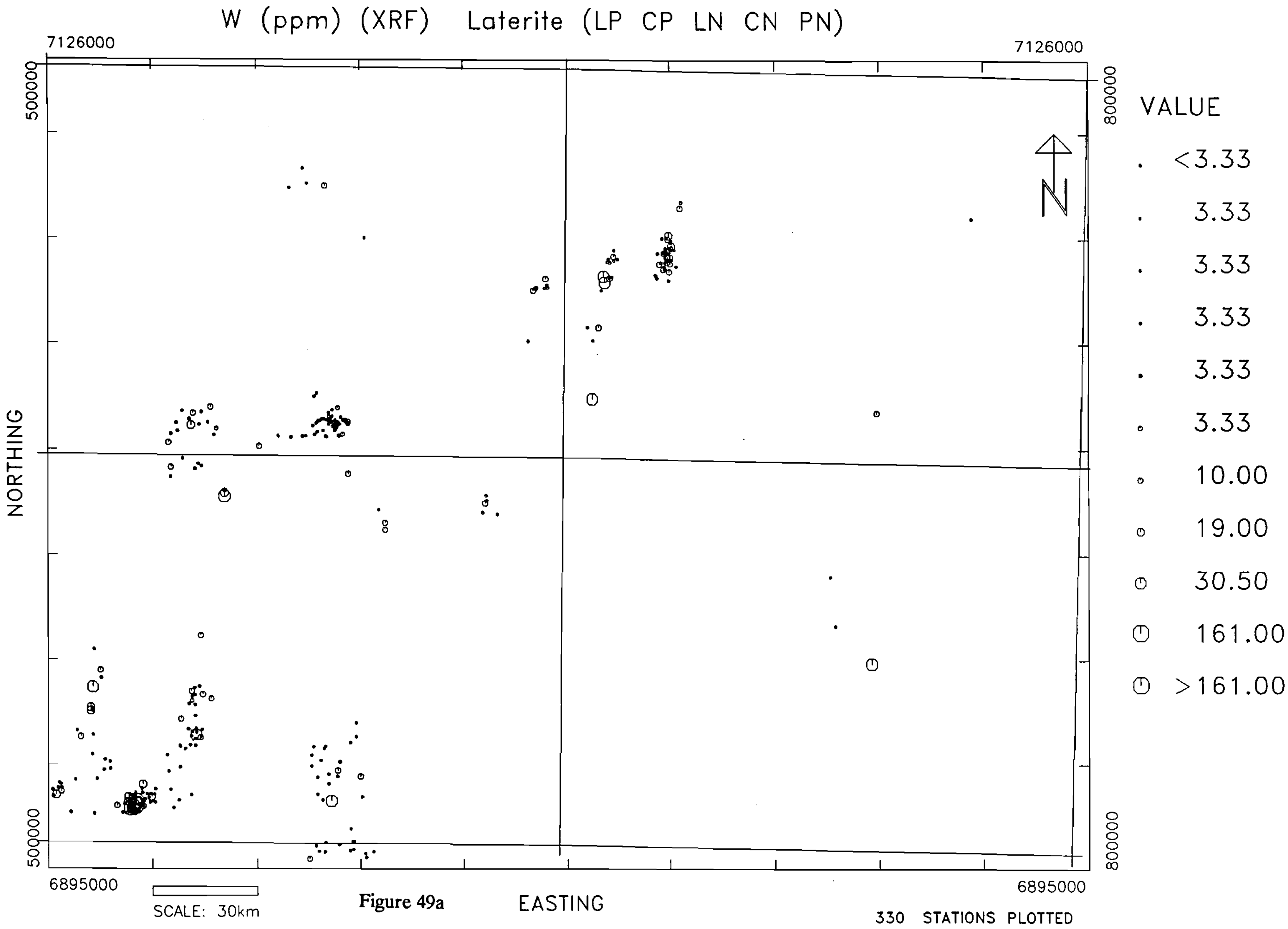

W (ppm) (XRF) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
330 STATIONS PLOTTED
VALUE
<3.33
3.33
3.33
3.33
3.33
3.33
10.00
19.00
30.50
161.00
>161.00

Figure 49a

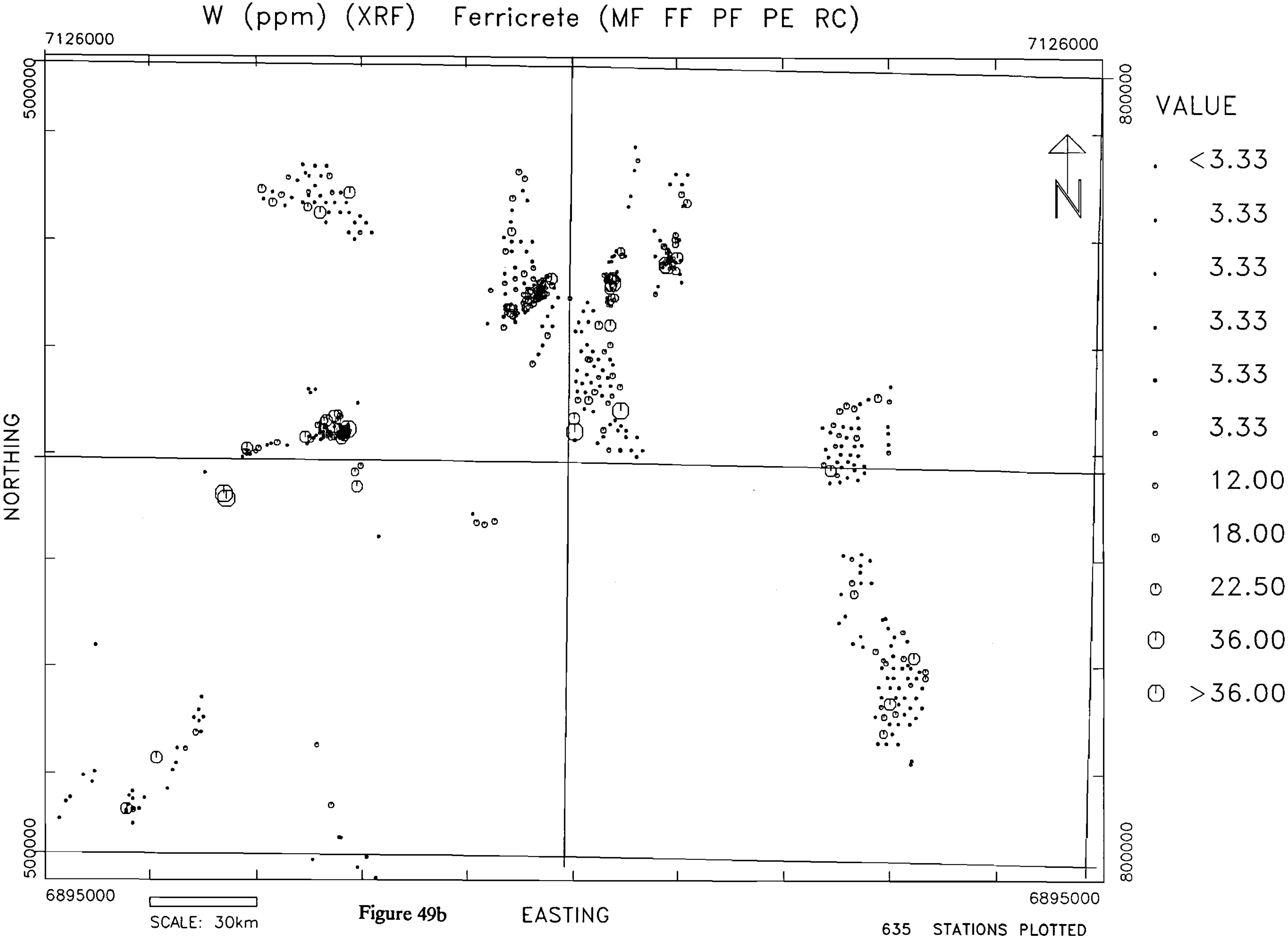

W (ppm) (XRF) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
500000
800000
800000
6895000
6895000
NORTHING
EASTING
VALUE
<3.33
3.33
3.33
3.33
3.33
3.33
12.00
18.00
22.50
36.00
>36.00
N
SCALE: 30km
635 STATIONS PLOTTED

Figure 49b

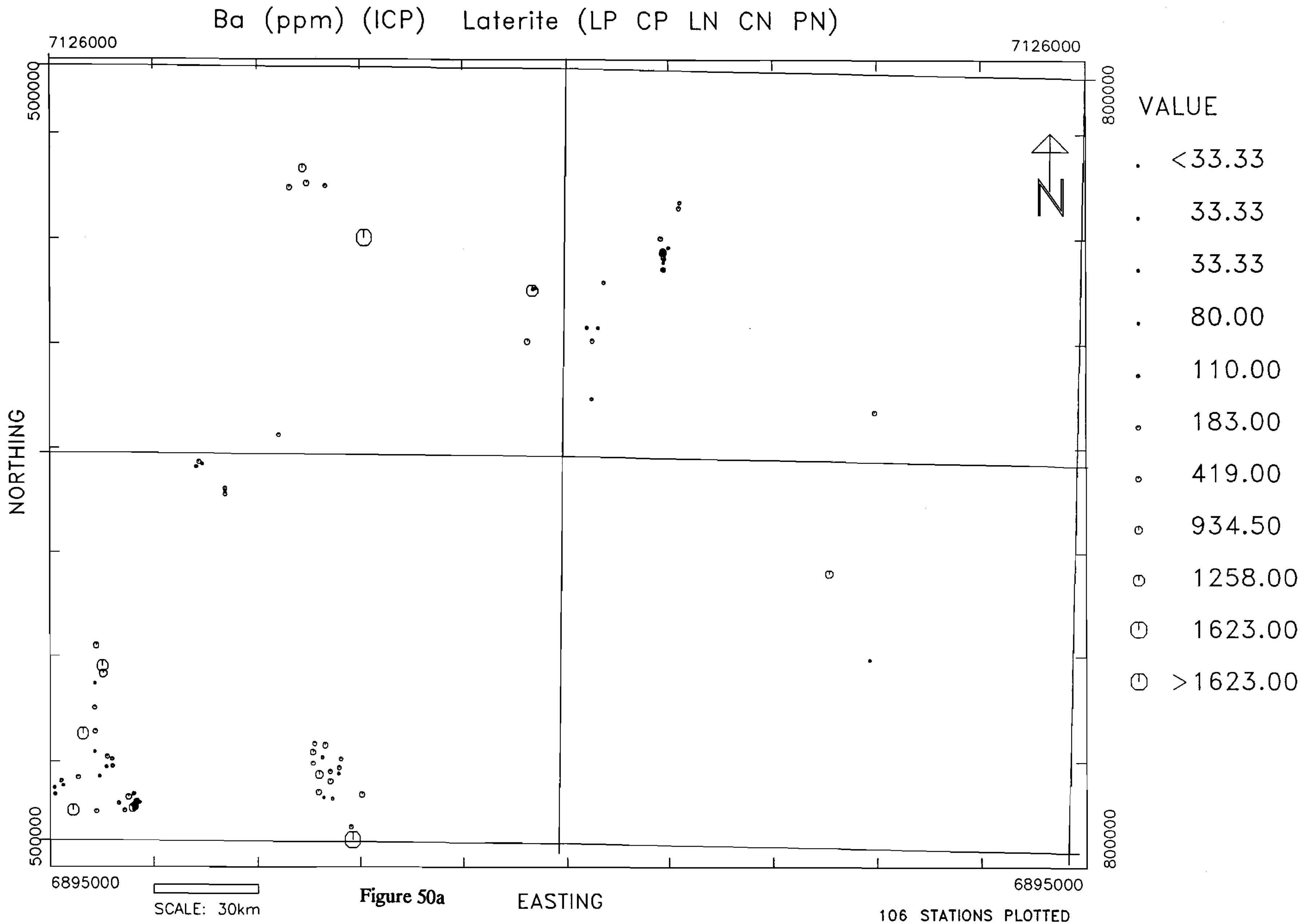
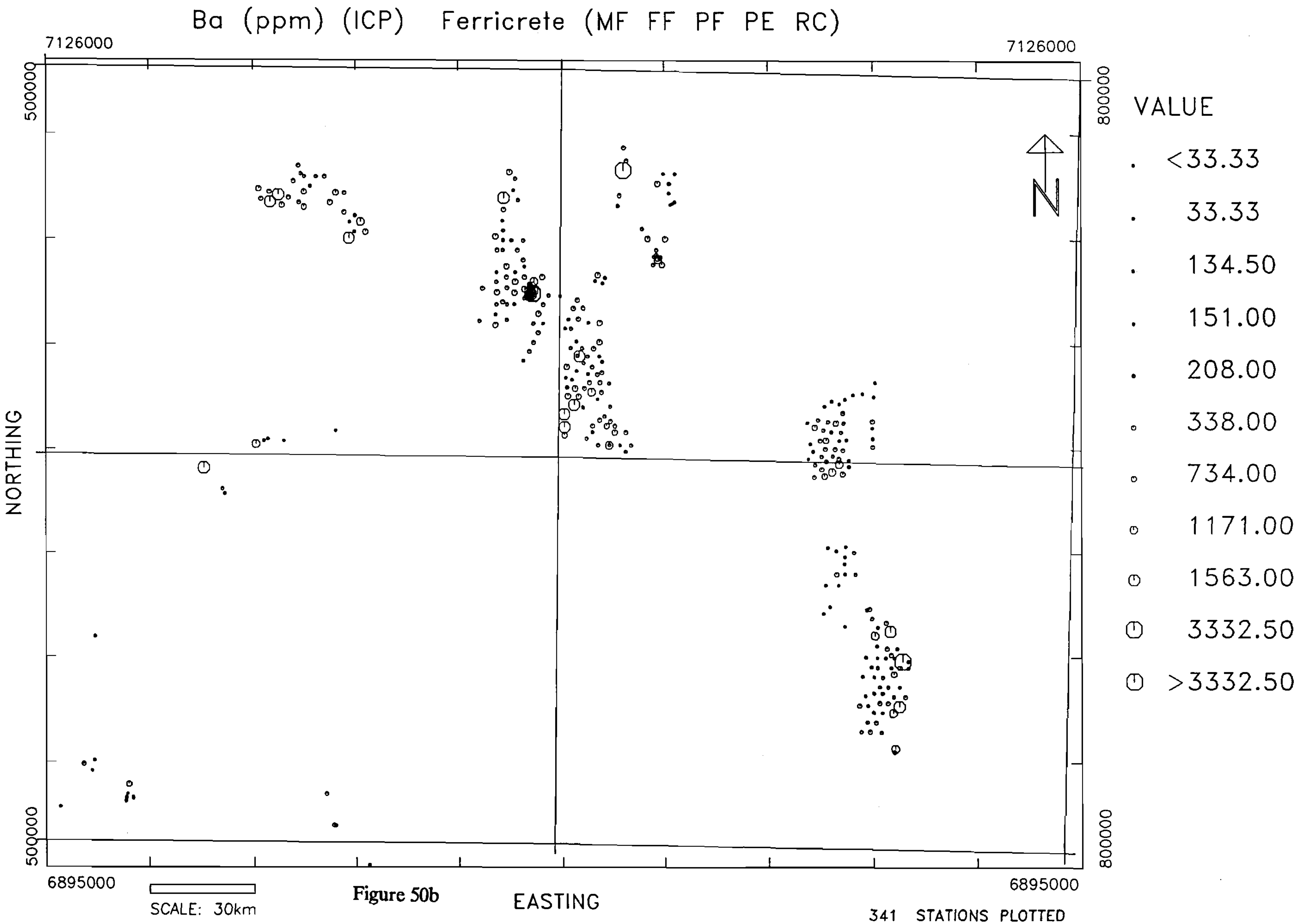

Ba (ppm) (ICP) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
106 STATIONS PLOTTED
N
VALUE
<33.33
33.33
33.33
80.00
110.00
183.00
419.00
934.50
1258.00
1623.00
>1623.00

Figure 50a



Ba (ppm) (ICP) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
500000
800000
VALUE
<33.33
33.33
134.50
151.00
208.00
338.00
734.00
1171.00
1563.00
3332.50
>3332.50
6895000
6895000
SCALE: 30km
EASTING
341 STATIONS PLOTTED

Figure 50b

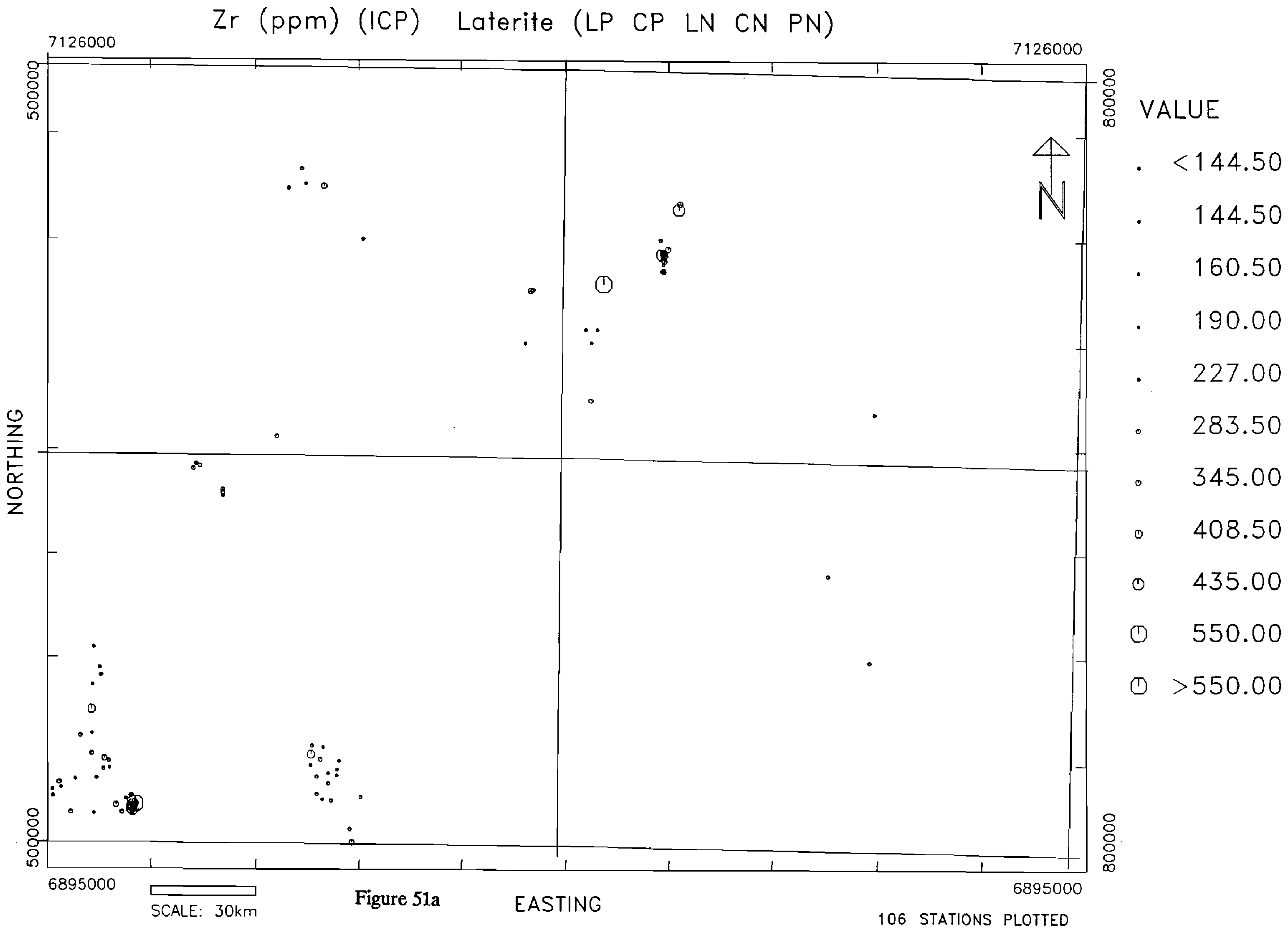

Zr (ppm) (ICP) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
106 STATIONS PLOTTED
N
VALUE
<144.50
144.50
160.50
190.00
227.00
283.50
345.00
408.50
435.00
550.00
>550.00

Figure 51a

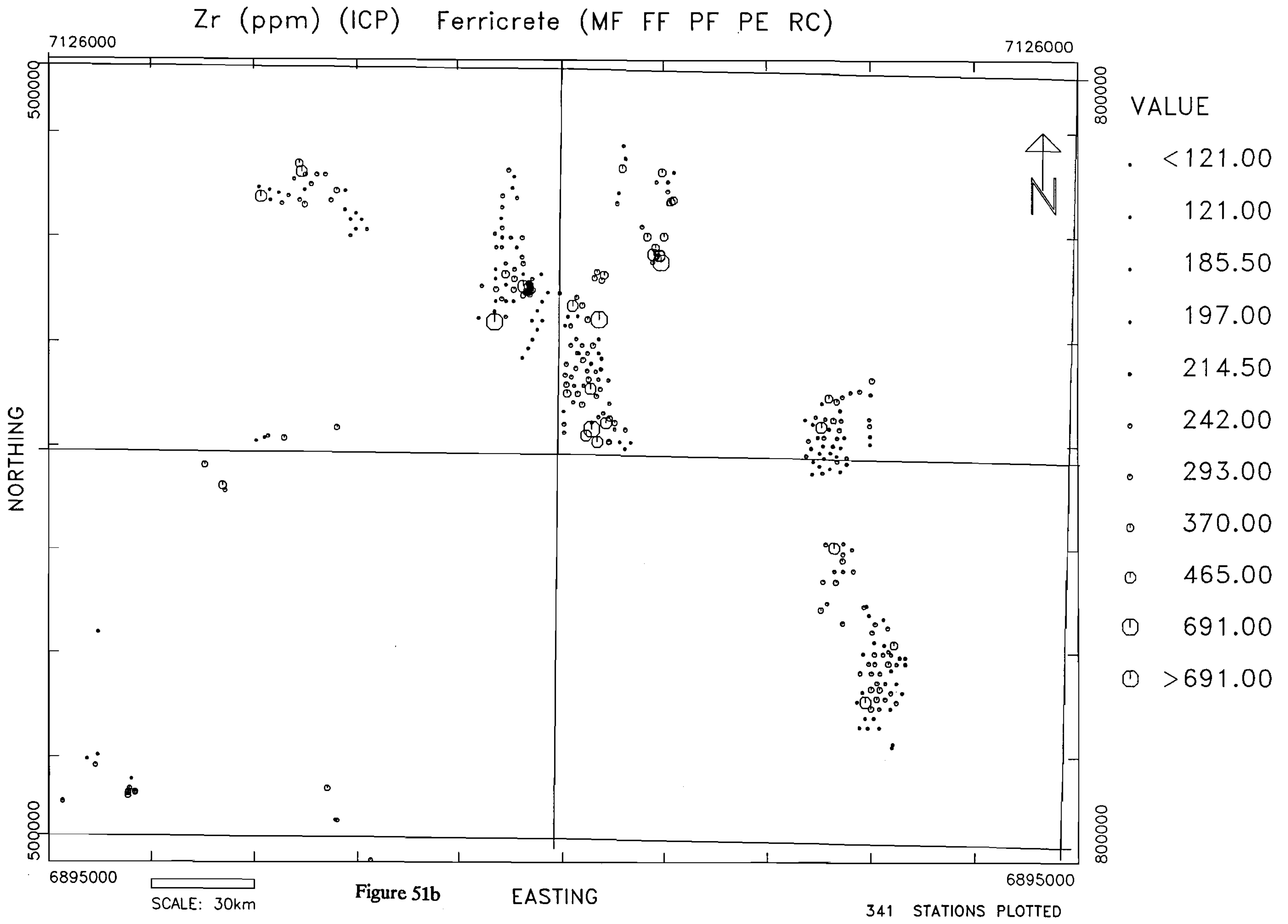

Zr (ppm) (ICP) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
500000
800000
6895000
6895000
NORTHING
EASTING
VALUE
<121.00
121.00
185.50
197.00
214.50
242.00
293.00
370.00
465.00
691.00
>691.00
SCALE: 30km
341 STATIONS PLOTTED

Figure 51b

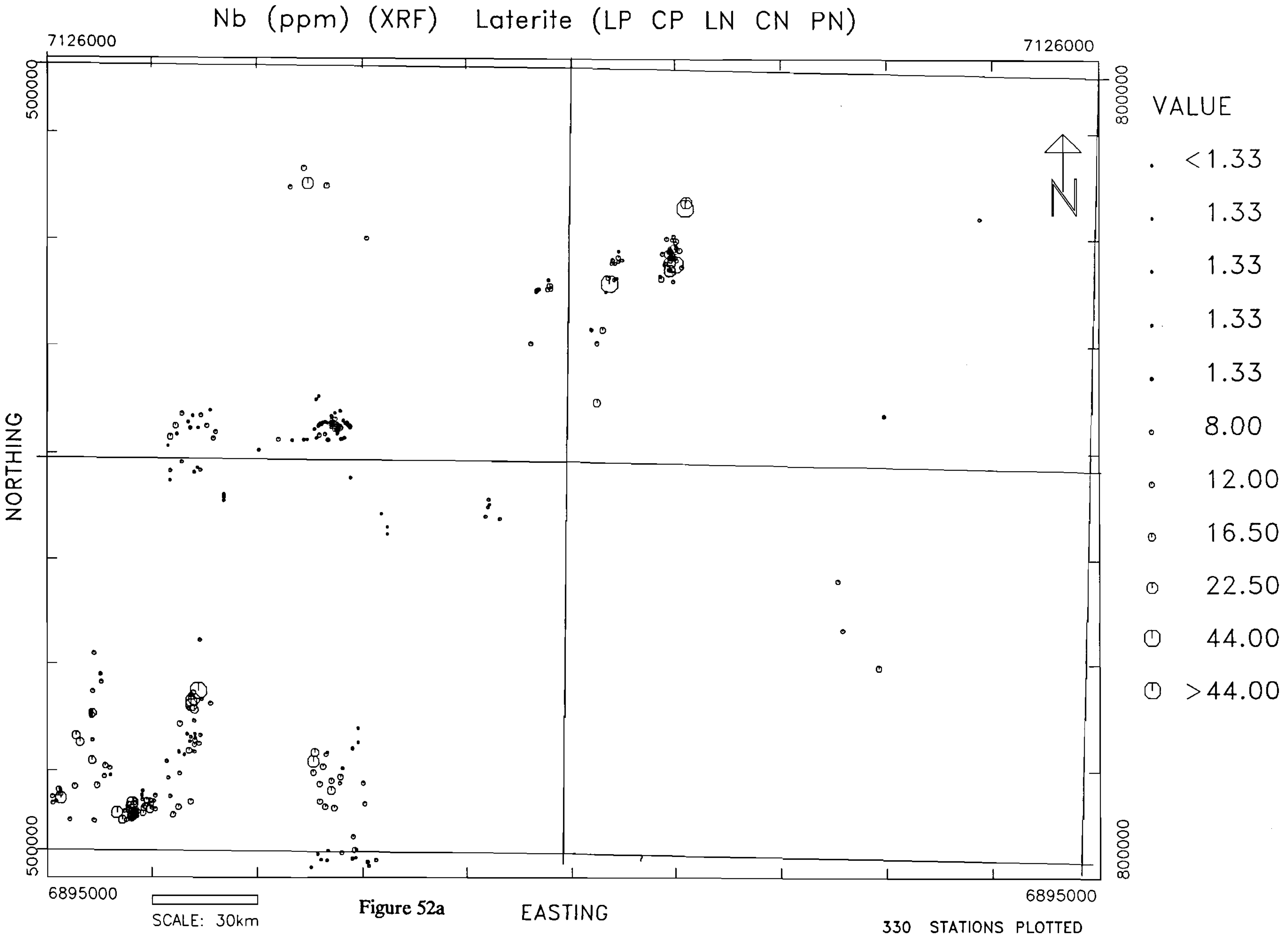
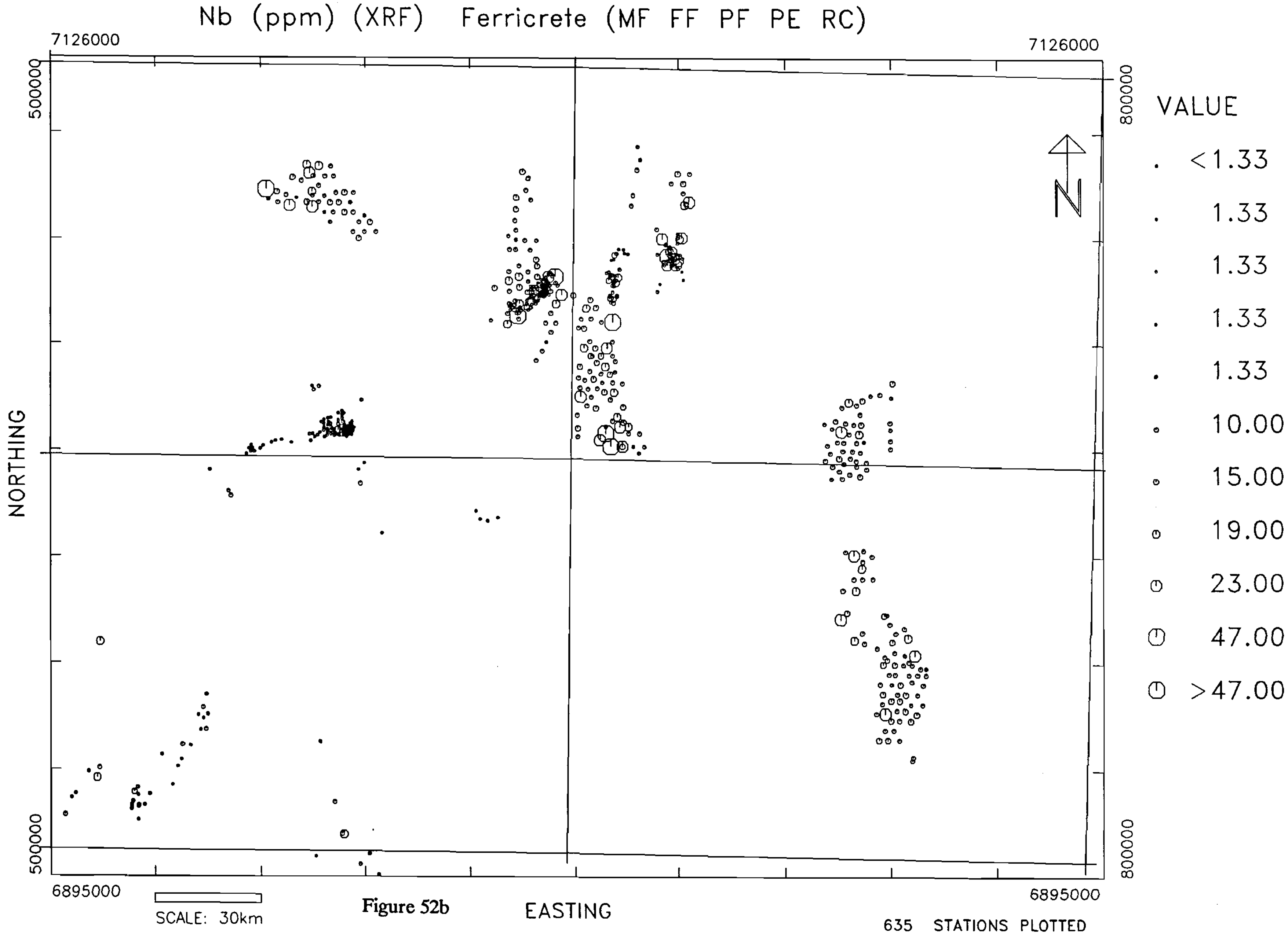
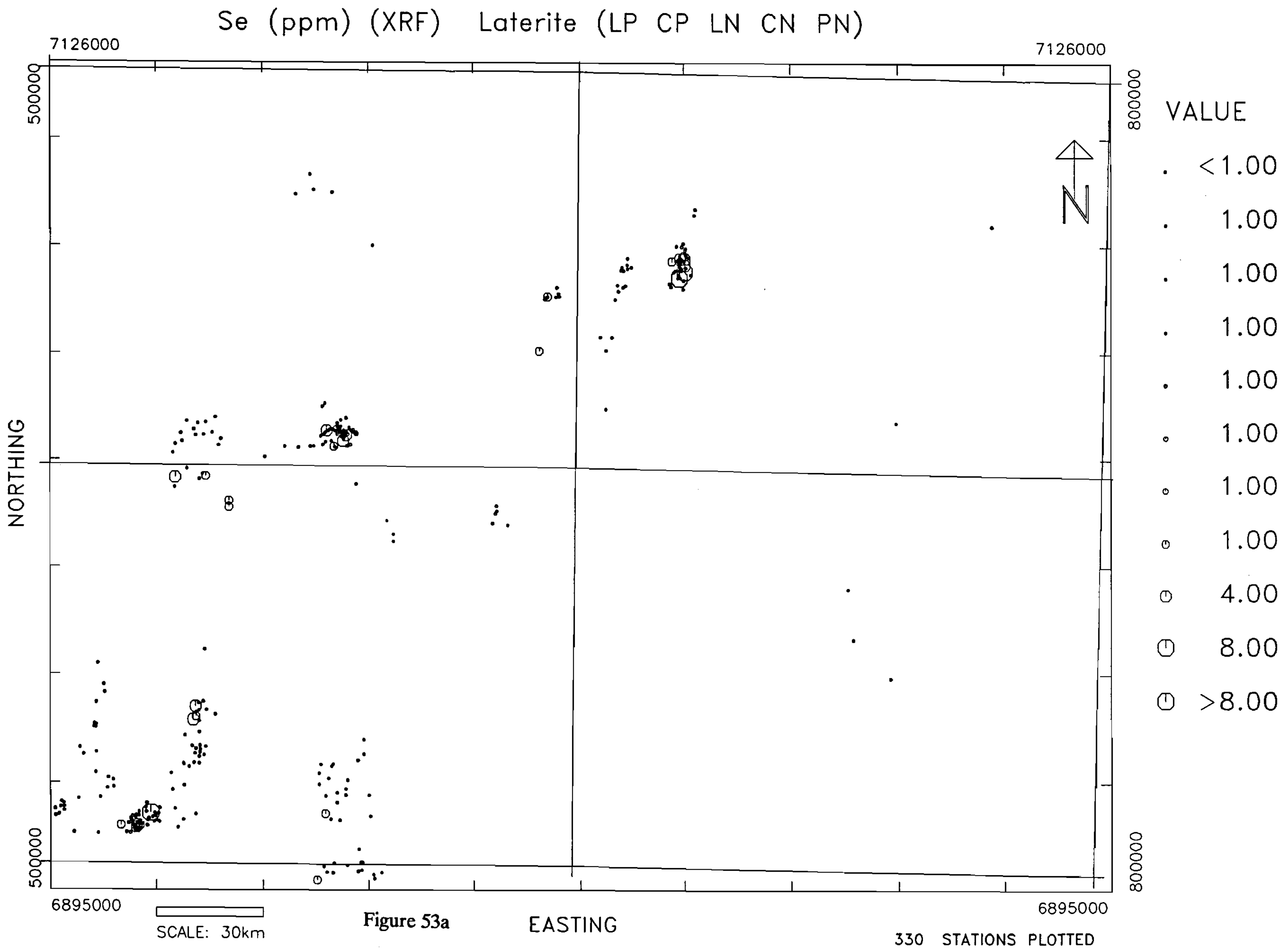

Nb (ppm) (XRF) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
VALUE
. <1.33
. 1.33
. 1.33
. 1.33
. 1.33
8.00
12.00
16.50
22.50
44.00
>44.00
N
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
330 STATIONS PLOTTED

Figure 52a



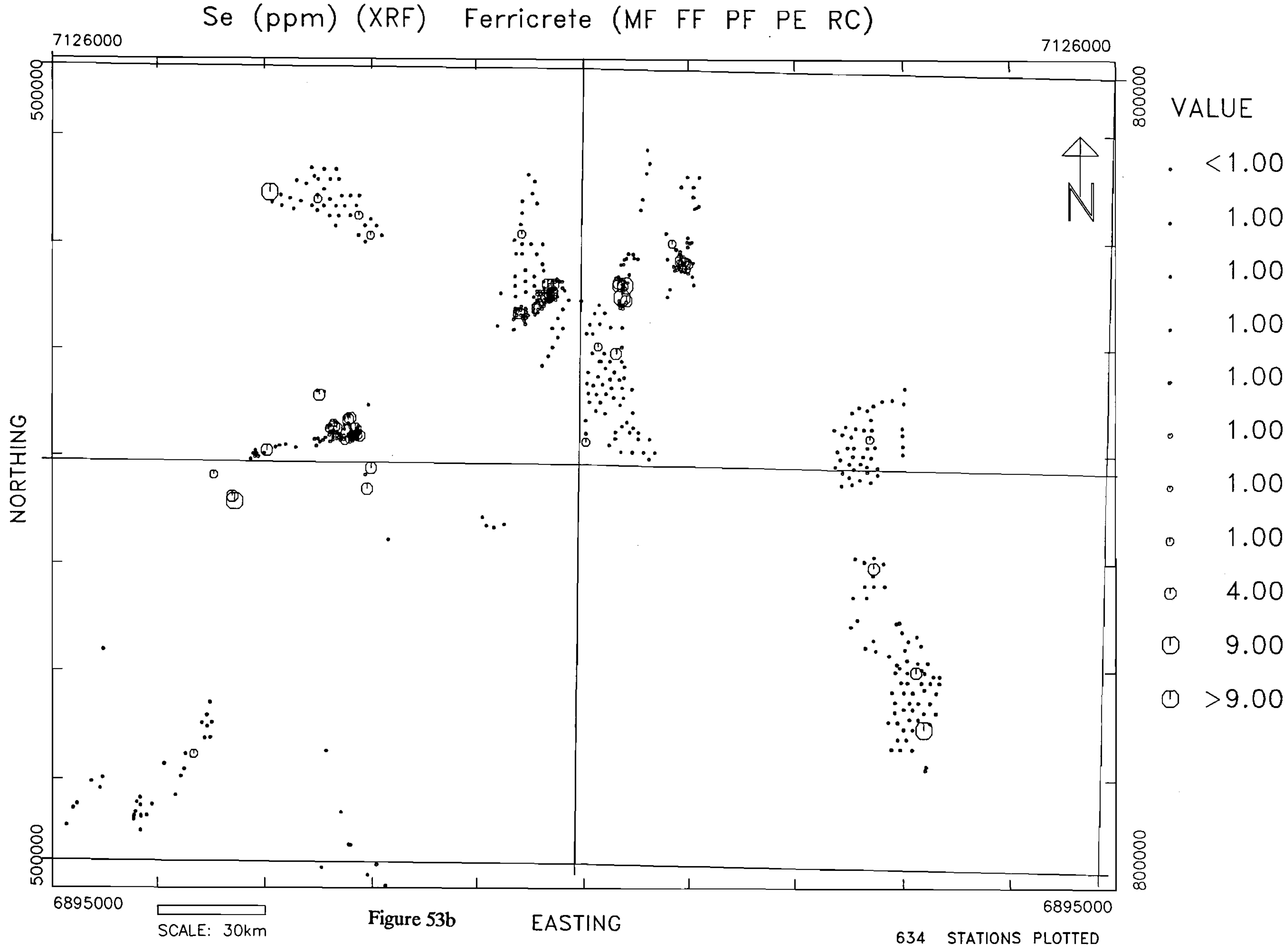
Nb (ppm) (XRF) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
VALUE
<1.33
1.33
1.33
1.33
1.33
10.00
15.00
19.00
23.00
47.00
>47.00
500000
800000
6895000
6895000
SCALE: 30km
EASTING
635 STATIONS PLOTTED

Figure 52b



Se (ppm) (XRF) Laterite (LP CP LN CN PN)
7126000
7126000
500000
500000
800000
800000
6895000
6895000
NORTHING
EASTING
N
VALUE
<1.00
1.00
1.00
1.00
1.00
1.00
1.00
1.00
4.00
8.00
>8.00
SCALE: 30km
330 STATIONS PLOTTED

Figure 53a



Se (ppm) (XRF) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
NORTHING
500000
800000
VALUE
<1.00
1.00
1.00
1.00
1.00
1.00
1.00
1.00
4.00
9.00
>9.00
N
6895000
6895000
SCALE: 30km
EASTING
634 STATIONS PLOTTED

Figure 53b

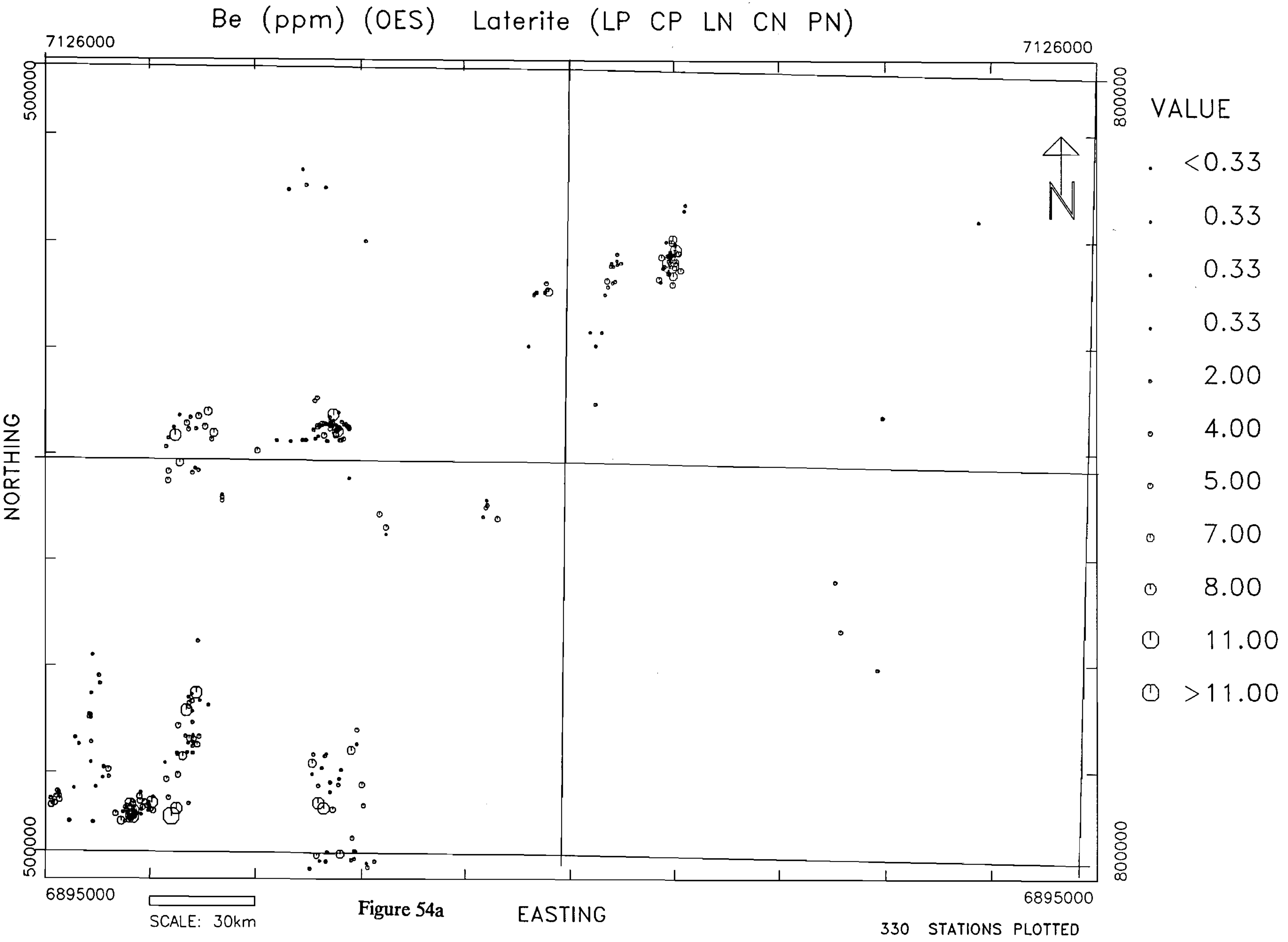
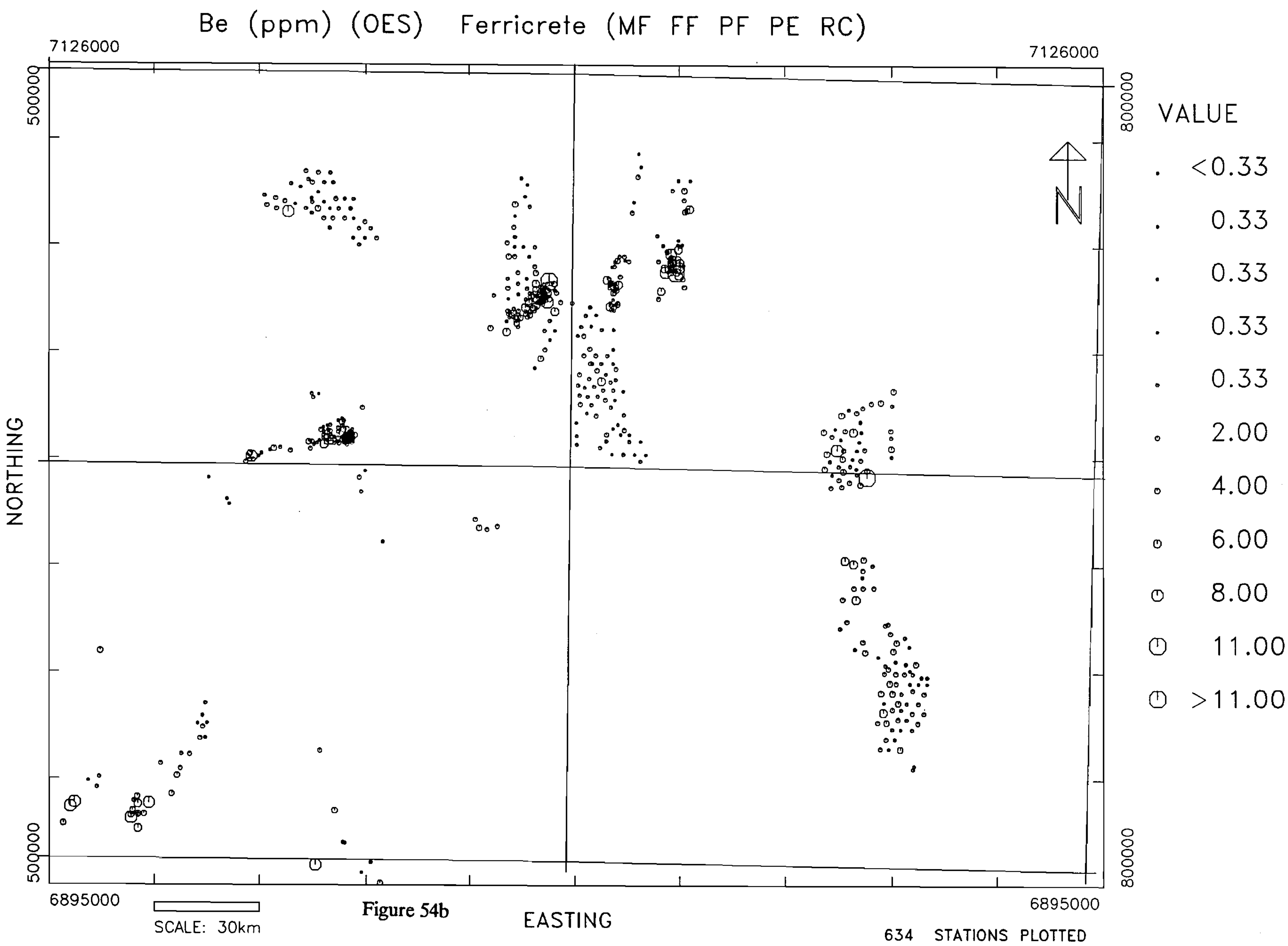

Be (ppm) (OES) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
VALUE
. <0.33
. 0.33
. 0.33
. 0.33
. 2.00
4.00
5.00
7.00
8.00
11.00
>11.00
500000
800000
6895000
6895000
SCALE: 30km
EASTING
330 STATIONS PLOTTED

Figure 54a



Be (ppm) (OES) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
800000
500000
800000
6895000
6895000
NORTHING
EASTING
SCALE: 30km
N
VALUE
<0.33
0.33
0.33
0.33
0.33
2.00
4.00
6.00
8.00
11.00
>11.00
634 STATIONS PLOTTED

Figure 54b

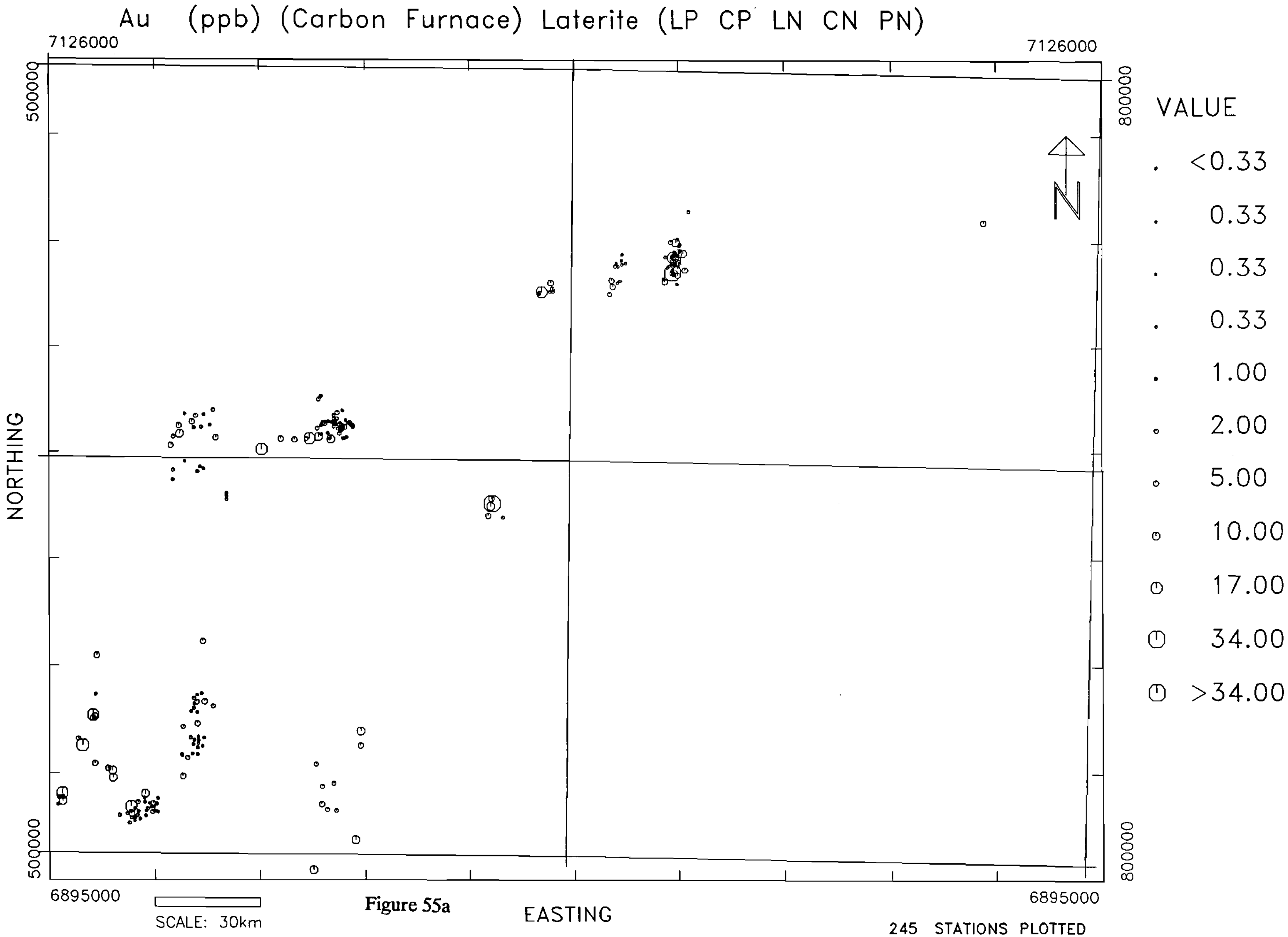
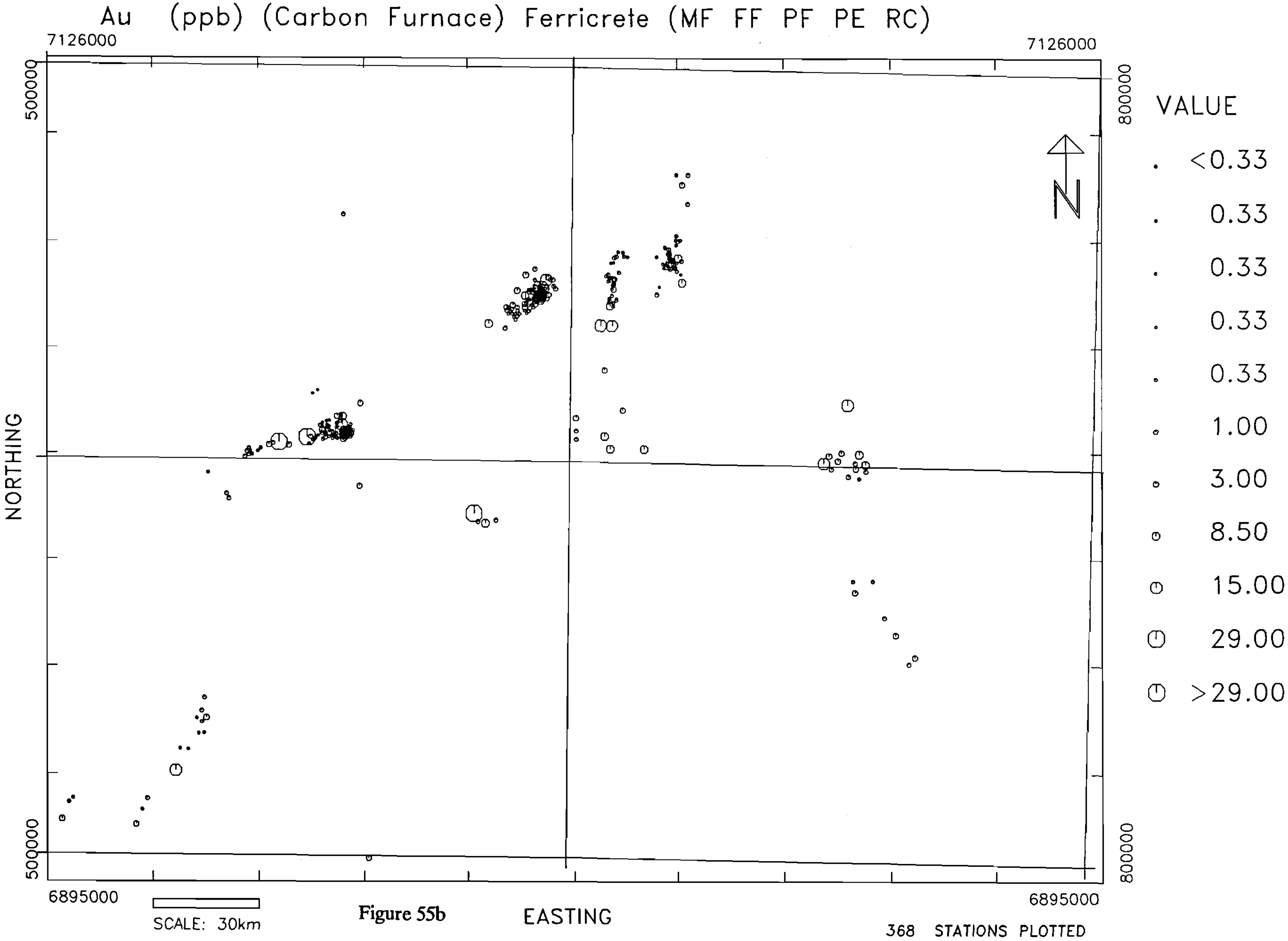

Au (ppb) (Carbon Furnace) Laterite (LP CP LN CN PN)
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
EASTING
SCALE: 30km
VALUE
<0.33
0.33
0.33
0.33
1.00
2.00
5.00
10.00
17.00
34.00
>34.00
245 STATIONS PLOTTED

Figure 55a



Au (ppb) (Carbon Furnace) Ferricrete (MF FF PF PE RC)
7126000
7126000
500000
500000
800000
800000
NORTHING
EASTING
6895000
6895000
N
VALUE
<0.33
0.33
0.33
0.33
0.33
1.00
3.00
8.50
15.00
29.00
>29.00
SCALE: 30km
368 STATIONS PLOTTED

Figure 55b

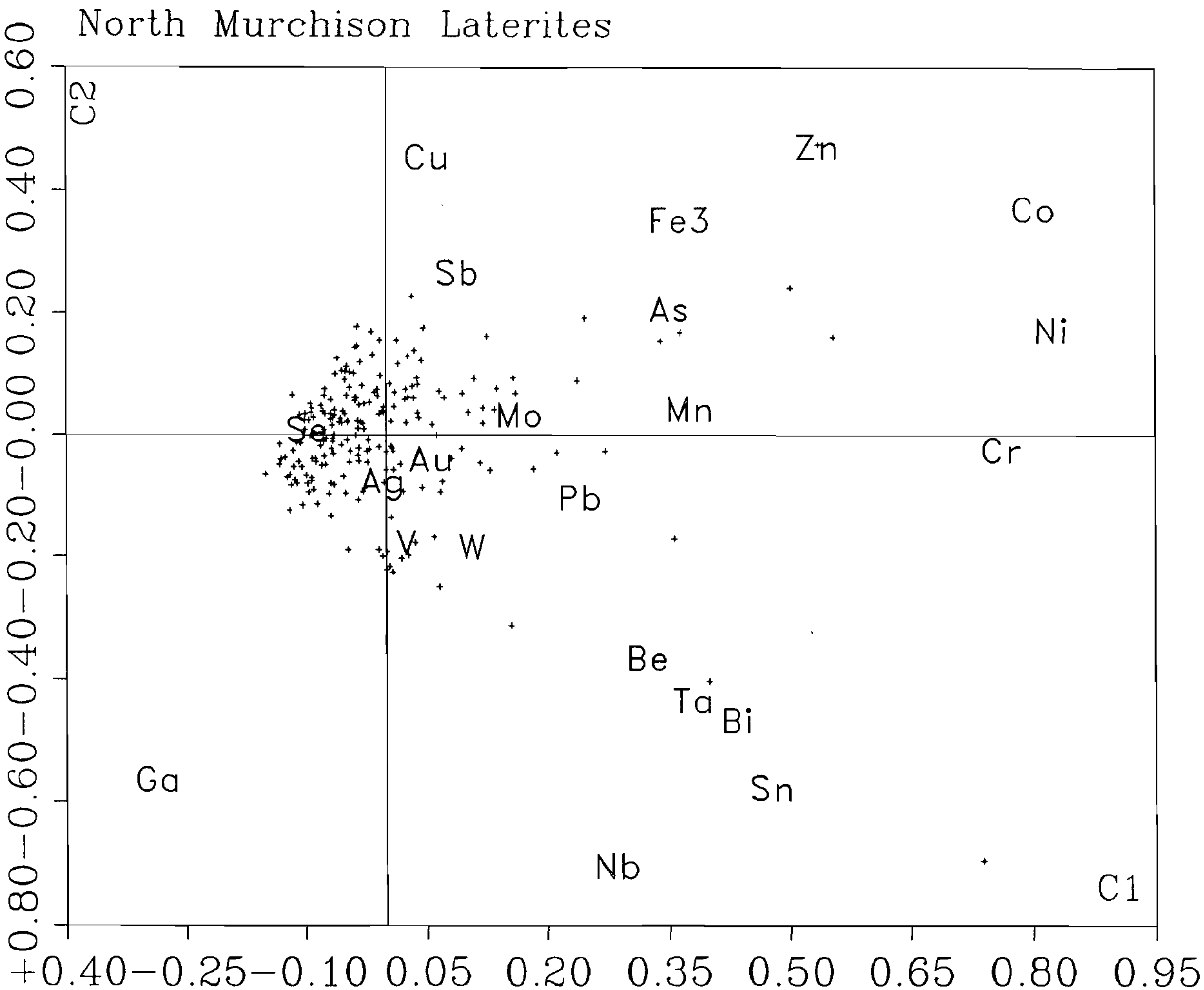
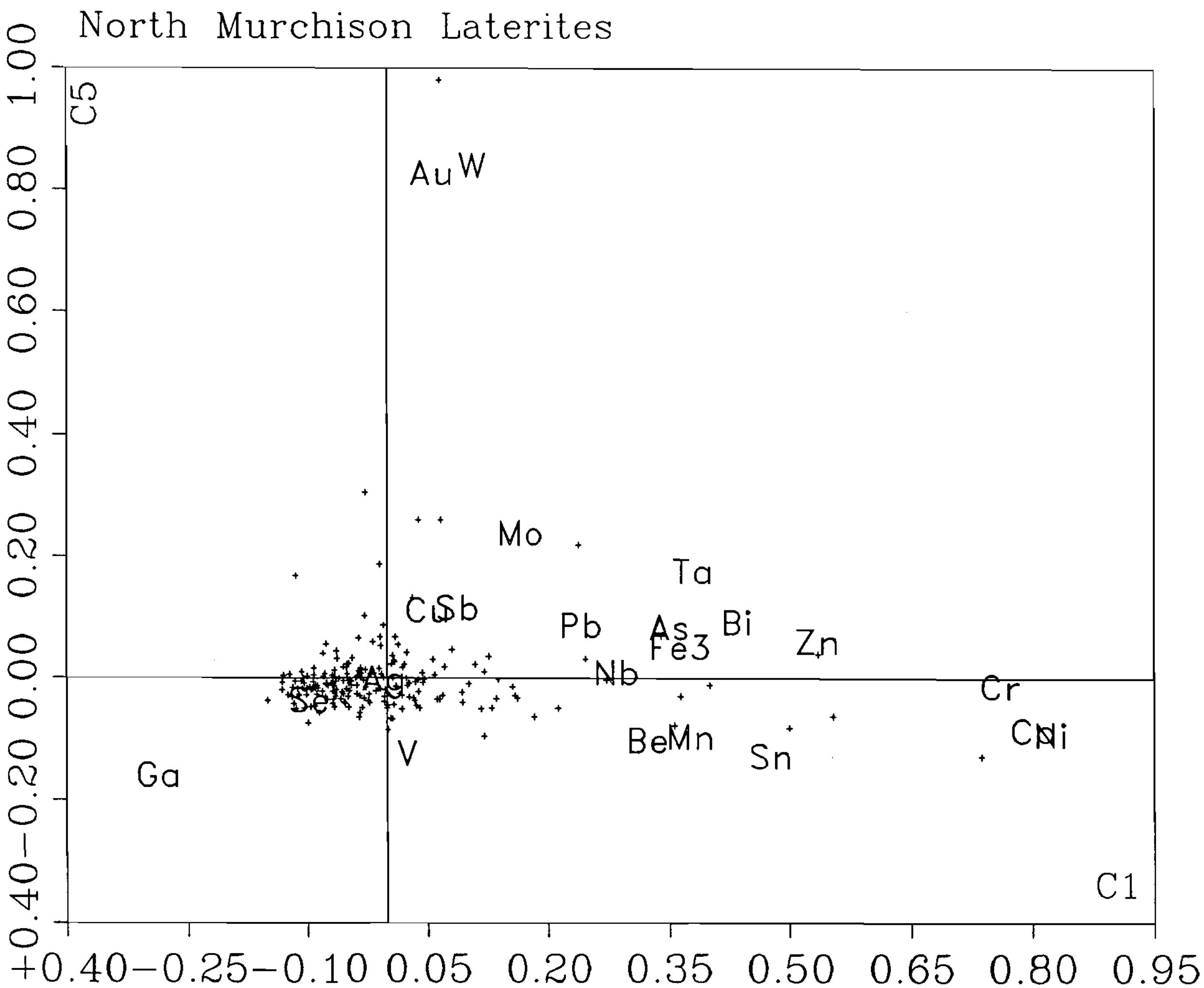

North Murchison Laterites
C2
C1
Cu
Zn
Co
Fe3
Sb
As
Ni
Mo
Mn
Se
Au
Cr
Ag
Pb
V
W
Be
Ta
Bi
Ga
Sn
Nb
0.60
0.40
0.20
0.00
-0.00
-0.20
-0.40
-0.60
-0.80
-0.40
-0.25
-0.10
0.05
0.20
0.35
0.50
0.65
0.80
0.95

Figure 56a



North Murchison Laterites
C5
C1
AuW
Mo
Ta
CuSb
Pb
As
Fe3
Bi
Zn
Nb
Ag
Se
Cr
Co
Ni
BeMn
Sn
V
Ga
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
-0.40
-0.40
-0.25
-0.10
0.05
0.20
0.35
0.50
0.65
0.80
0.95

Figure 56b

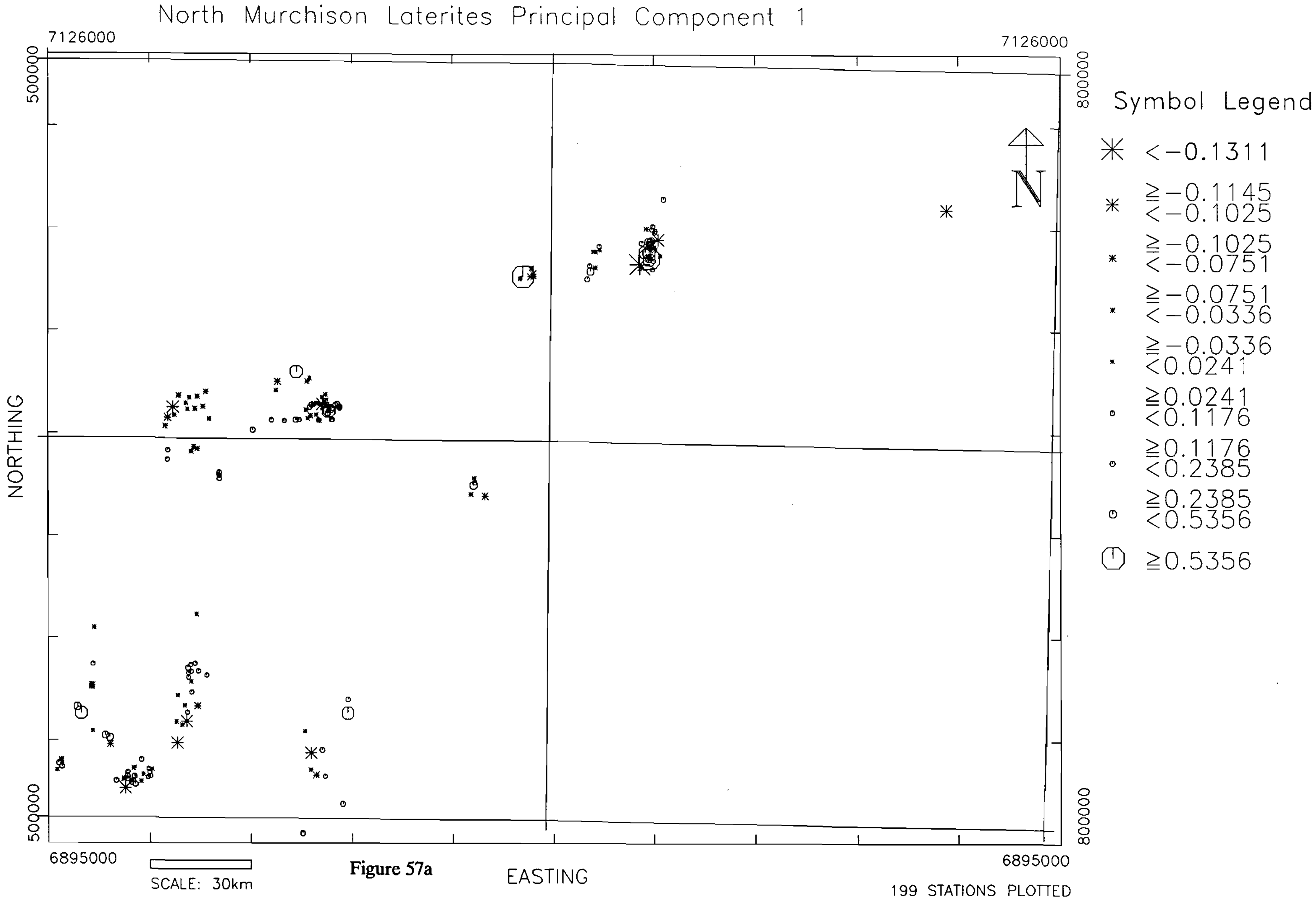

North Murchison Laterites Principal Component 1
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
199 STATIONS PLOTTED
N
Symbol Legend
<−0.1311
≧−0.1145
<−0.1025
≧−0.1025
<−0.0751
≧−0.0751
<−0.0336
≧−0.0336
<0.0241
≧0.0241
<0.1176
≧0.1176
<0.2385
≧0.2385
<0.5356
≧0.5356

Figure 57a

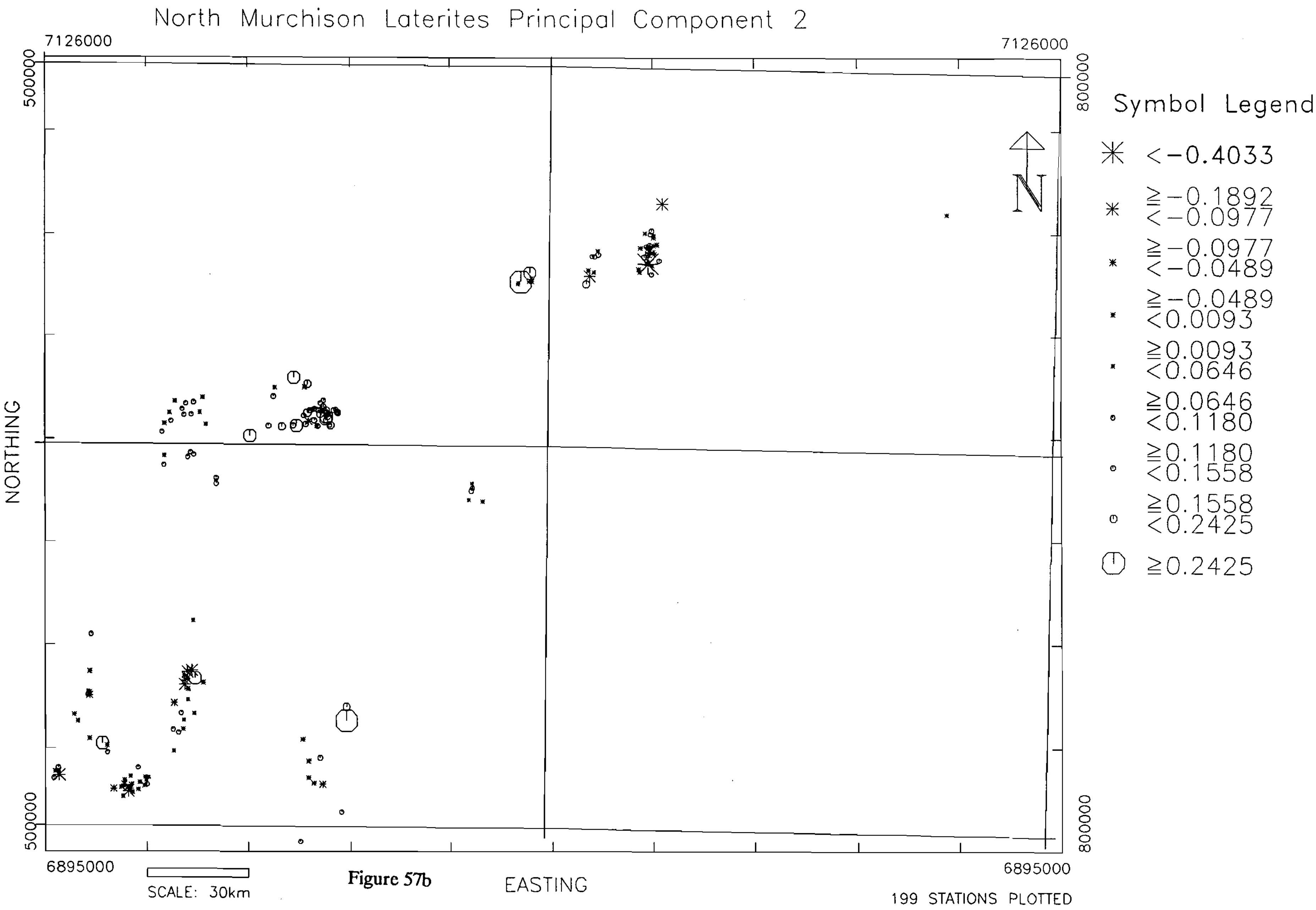

North Murchison Laterites Principal Component 2
7126000
7126000
500000
800000
NORTHING
N
Symbol Legend
<-0.4033
≥-0.1892 <-0.0977
≥-0.0977 <-0.0489
≥-0.0489 <0.0093
≥0.0093 <0.0646
≥0.0646 <0.1180
≥0.1180 <0.1558
≥0.1558 <0.2425
≥0.2425
500000
800000
6895000
6895000
SCALE: 30km
EASTING
199 STATIONS PLOTTED

Figure 57b

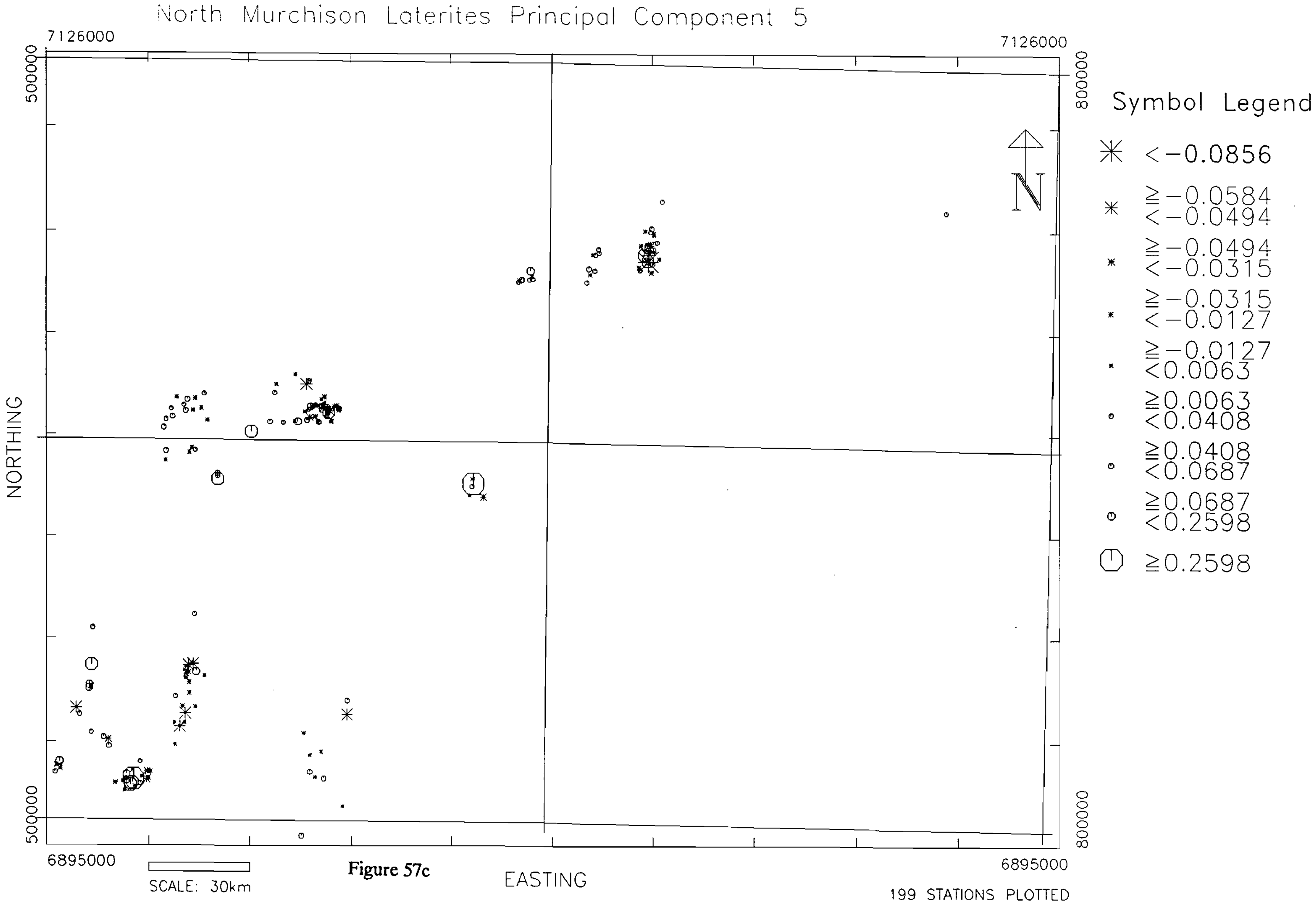

North Murchison Laterites Principal Component 5
7126000
7126000
500000
800000
500000
800000
6895000
6895000
NORTHING
EASTING
SCALE: 30km
199 STATIONS PLOTTED
N
Symbol Legend
<−0.0856
≧−0.0584 <−0.0494
≧−0.0494 <−0.0315
≧−0.0315 <−0.0127
≧−0.0127 <0.0063
≧0.0063 <0.0408
≧0.0408 <0.0687
≧0.0687 <0.2598
≧0.2598

Figure 57c

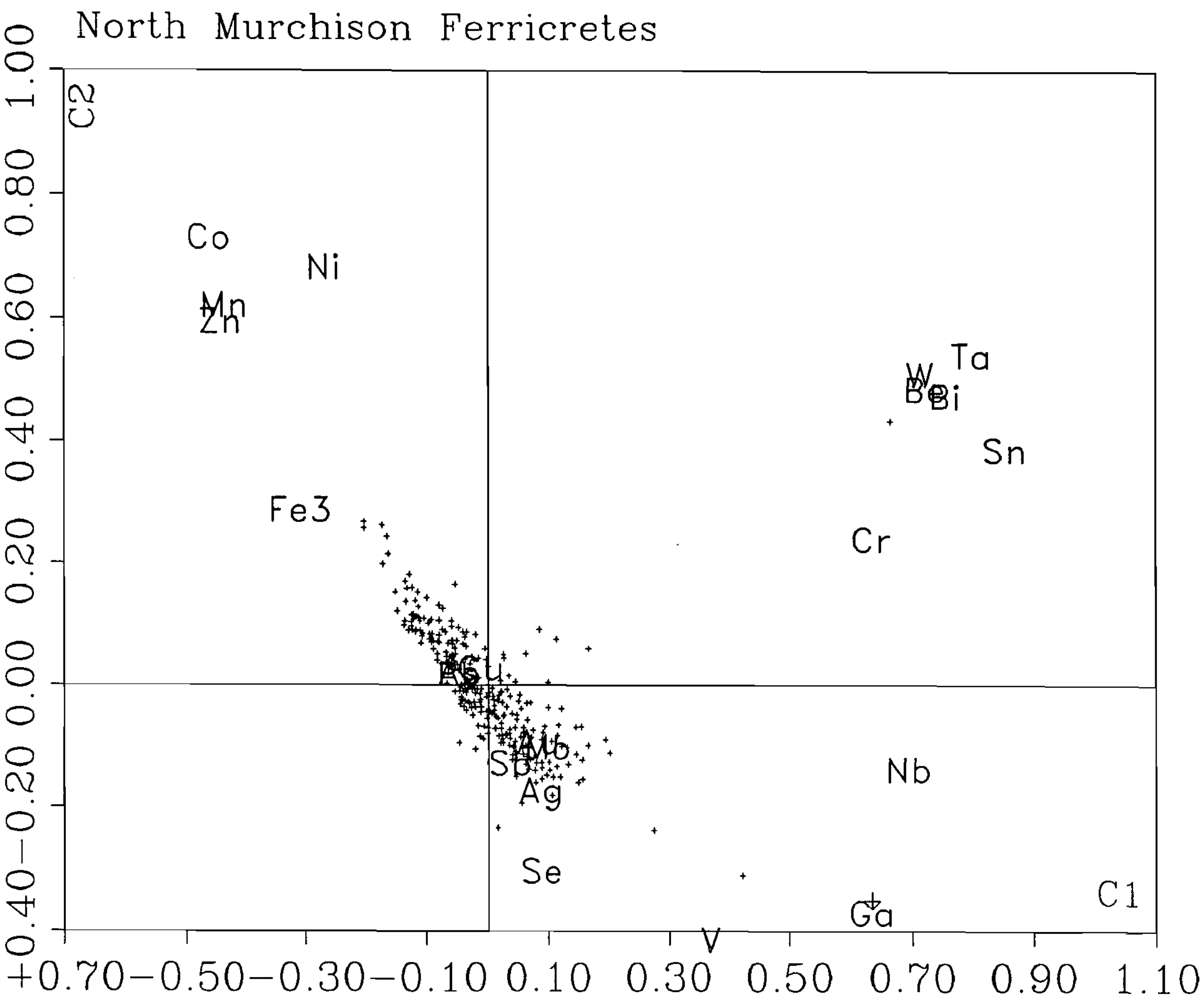

North Murchison Ferricretes
C2
C1
Co
Ni
Mn
Zn
Fe3
Ta
W
Be
Bi
Sn
Cr
Nb
Sb
Ag
Se
Ga
V
1.00
0.80
0.60
0.40
0.20
0.00
−0.20
−0.40
−0.70
−0.50
−0.30
−0.10
0.10
0.30
0.50
0.70
0.90
1.10

Figure 58a

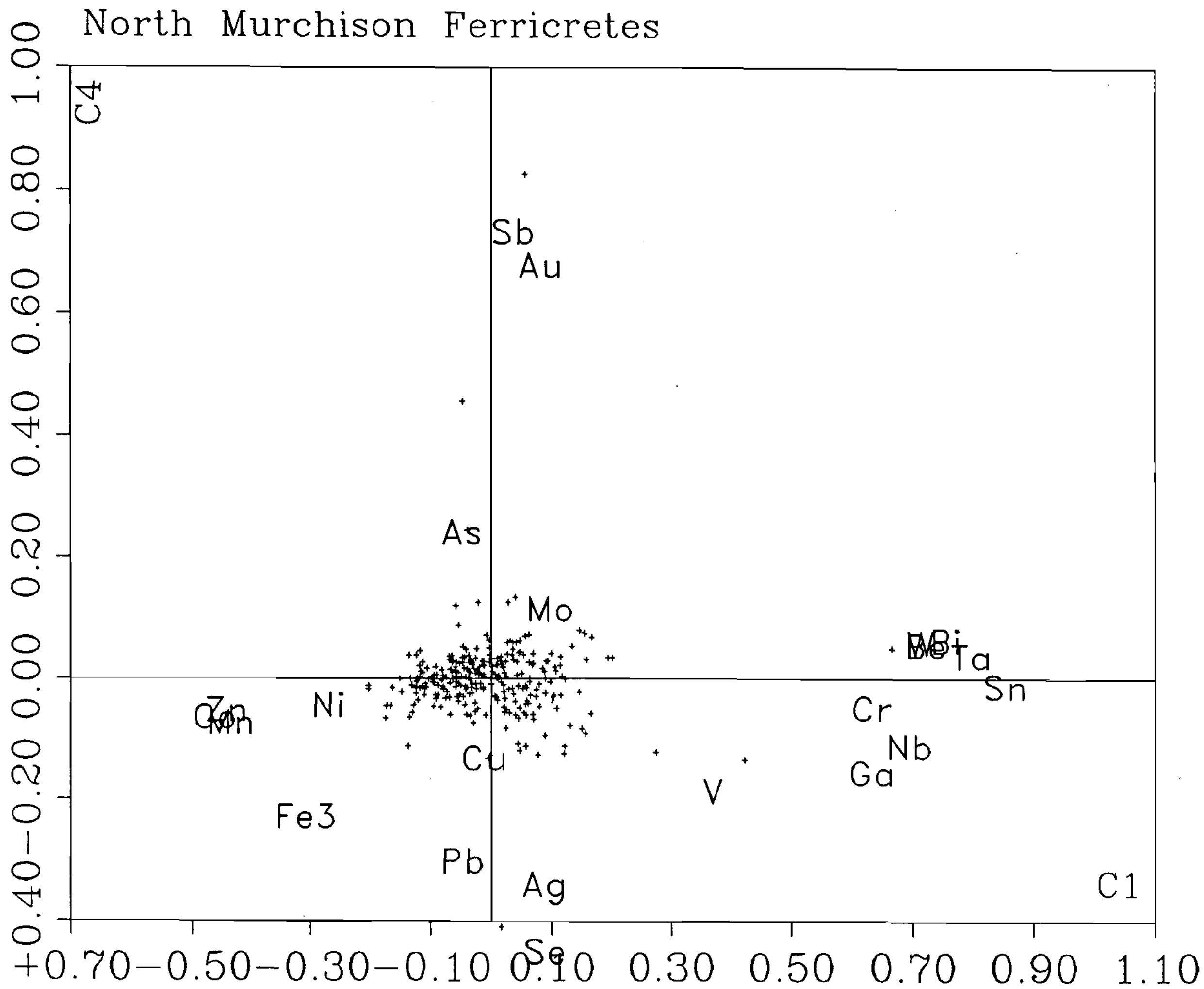
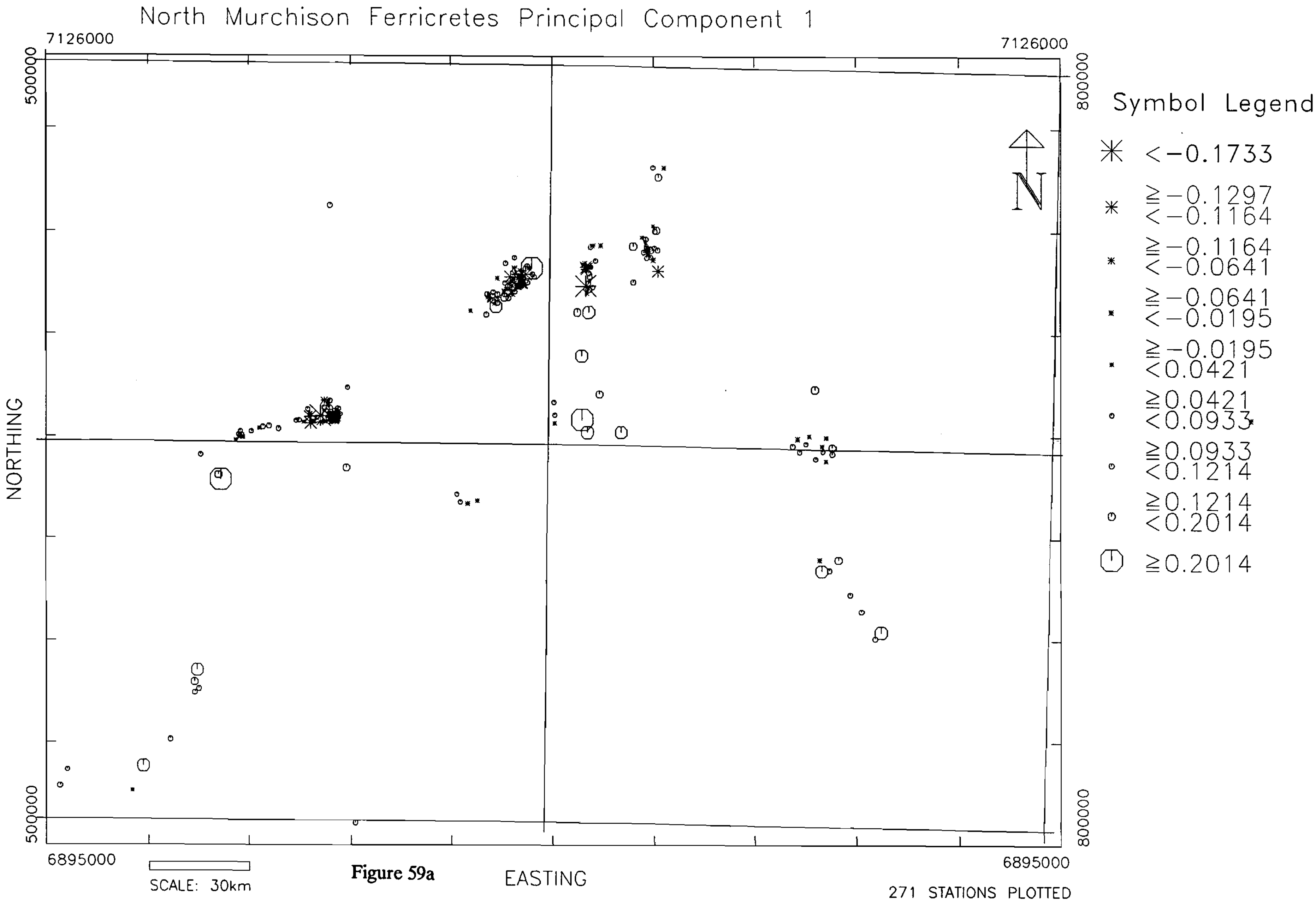

North Murchison Ferricretes
C4
C1
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
-0.40
-0.70
-0.50
-0.30
-0.10
0.10
0.30
0.50
0.70
0.90
1.10
Sb
Au
As
Mo
Bi
Ta
Sn
Cr
Nb
Ga
V
Ni
Zn
Mn
Fe3
Cu
Pb
Ag
Se

Figure 58b



North Murchison Ferricretes Principal Component 1
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
271 STATIONS PLOTTED
N
Symbol Legend
< -0.1733
≥ -0.1297
< -0.1164
≥ -0.1164
< -0.0641
≥ -0.0641
< -0.0195
≥ -0.0195
< 0.0421
≥ 0.0421
< 0.0933
≥ 0.0933
< 0.1214
≥ 0.1214
< 0.2014
≥ 0.2014

Figure 59a

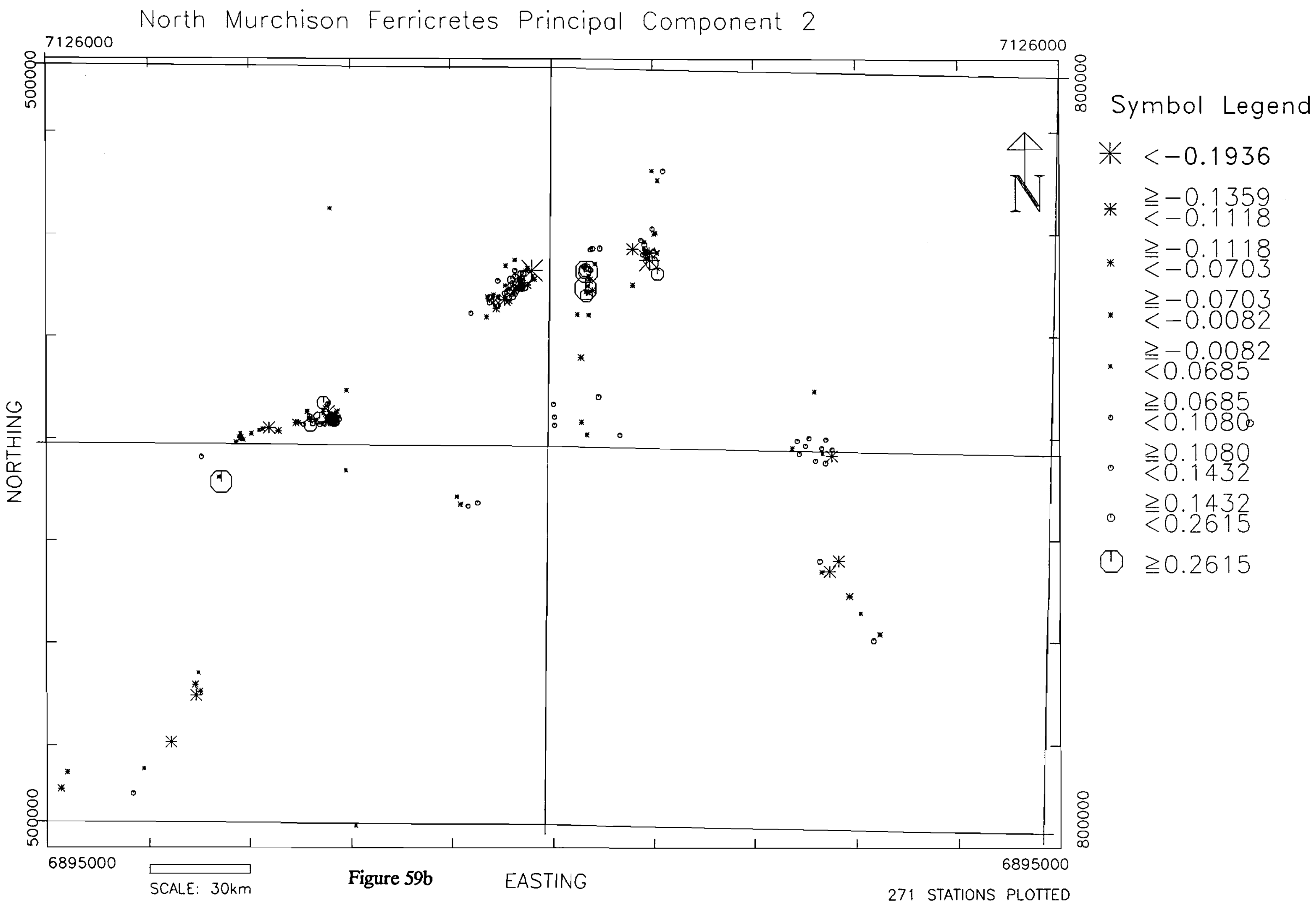

North Murchison Ferricretes Principal Component 2
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
271 STATIONS PLOTTED
Symbol Legend
<−0.1936
≧−0.1359
<−0.1118
≧−0.1118
<−0.0703
≧−0.0703
<−0.0082
≧−0.0082
<0.0685
≧0.0685
<0.1080
≧0.1080
<0.1432
≧0.1432
<0.2615
≧0.2615
N

Figure 59b

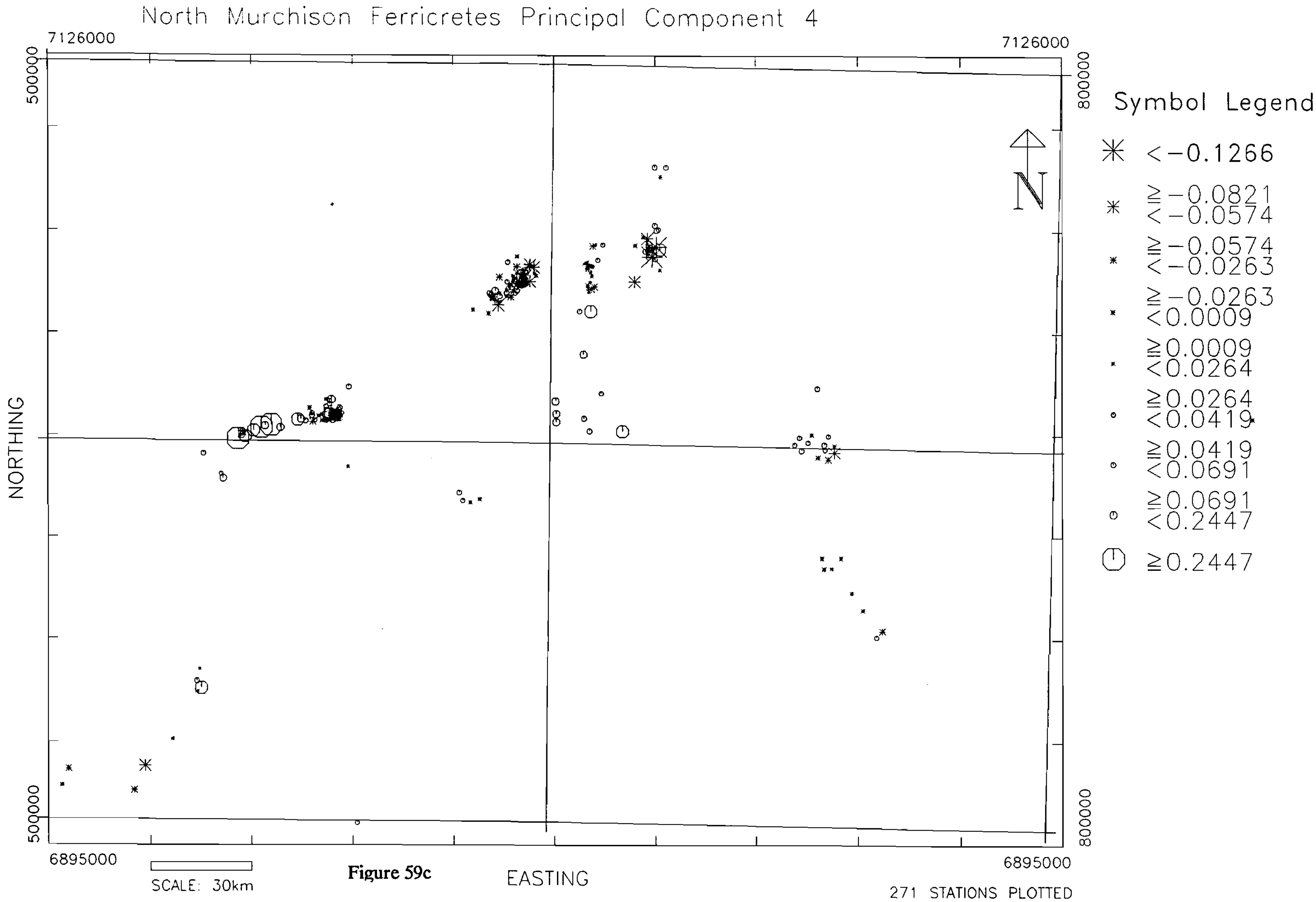

North Murchison Ferricretes Principal Component 4
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
EASTING
SCALE: 30km
271 STATIONS PLOTTED
N
Symbol Legend
< -0.1266
≧ -0.0821
< -0.0574
≧ -0.0574
< -0.0263
≧ -0.0263
< 0.0009
≧ 0.0009
< 0.0264
≧ 0.0264
< 0.0419
≧ 0.0419
< 0.0691
≧ 0.0691
< 0.2447
≧ 0.2447

Figure 59c

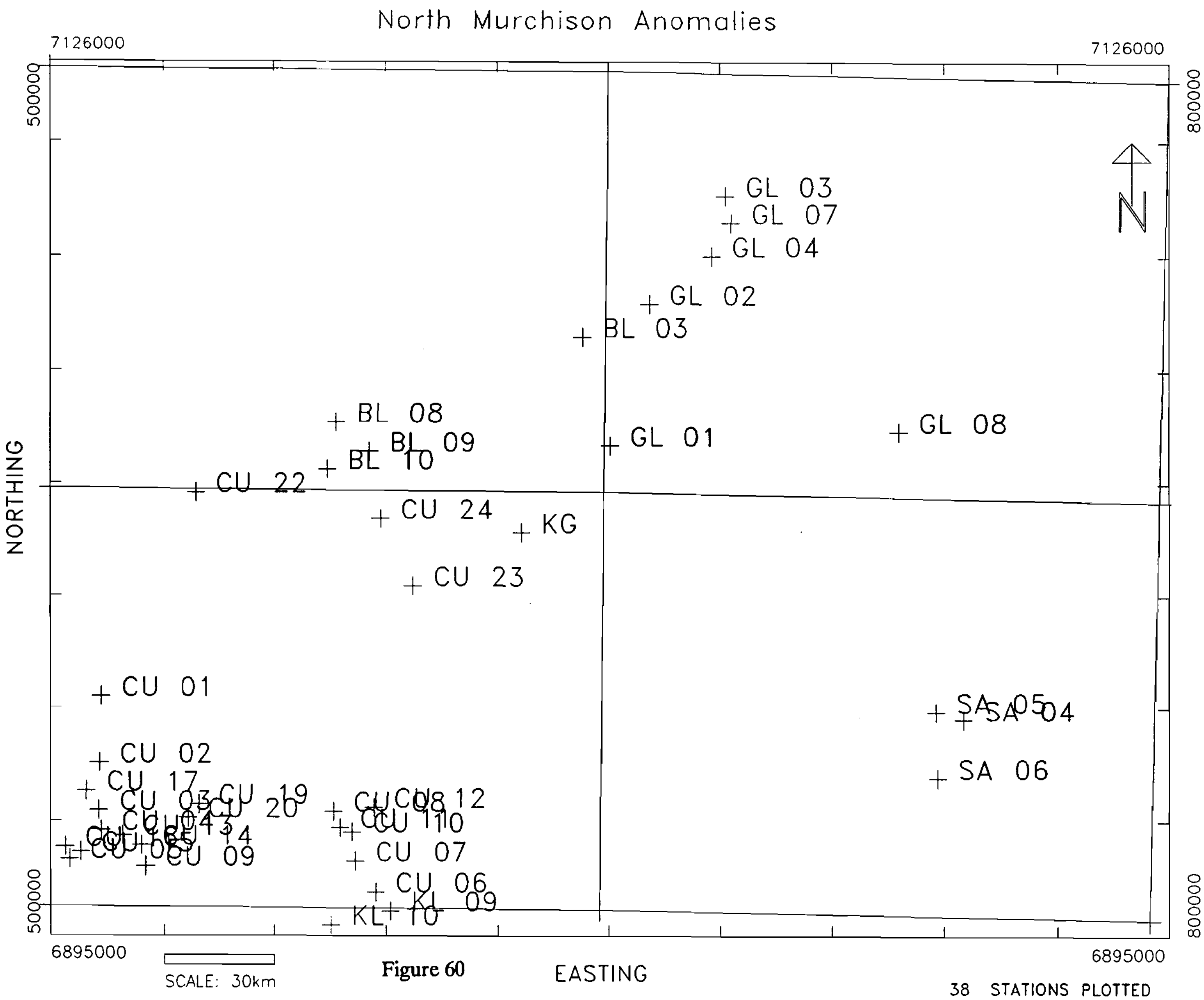

North Murchison Anomalies
7126000
7126000
500000
800000
NORTHING
GL 03
GL 07
GL 04
GL 02
BL 03
BL 08
BL 09
BL 10
GL 01
GL 08
CU 22
CU 24
KG
CU 23
CU 01
SA 05
SA 04
SA 06
CU 02
CU 17
CU 19
CU 20
CU 12
CU 10
CU 14
CU 09
CU 07
CU 06
KL 09
KL 10
500000
800000
6895000
6895000
SCALE: 30km
EASTING
38 STATIONS PLOTTED

Figure 60

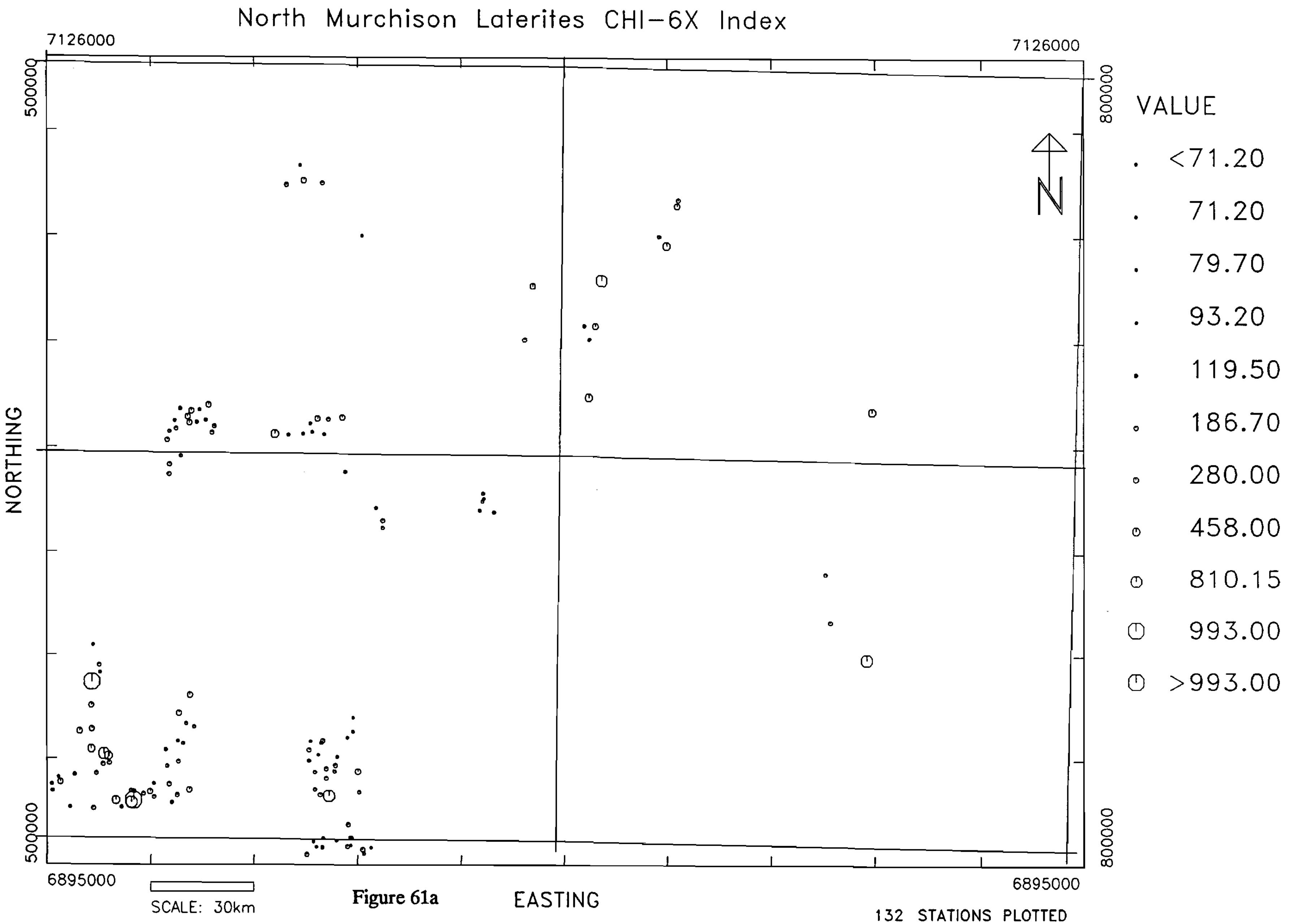

North Murchison Laterites CHI-6X Index
7126000
7126000
500000
800000
500000
800000
NORTHING
EASTING
6895000
6895000
SCALE: 30km
N
VALUE
<71.20
71.20
79.70
93.20
119.50
186.70
280.00
458.00
810.15
993.00
>993.00
132 STATIONS PLOTTED

Figure 61a

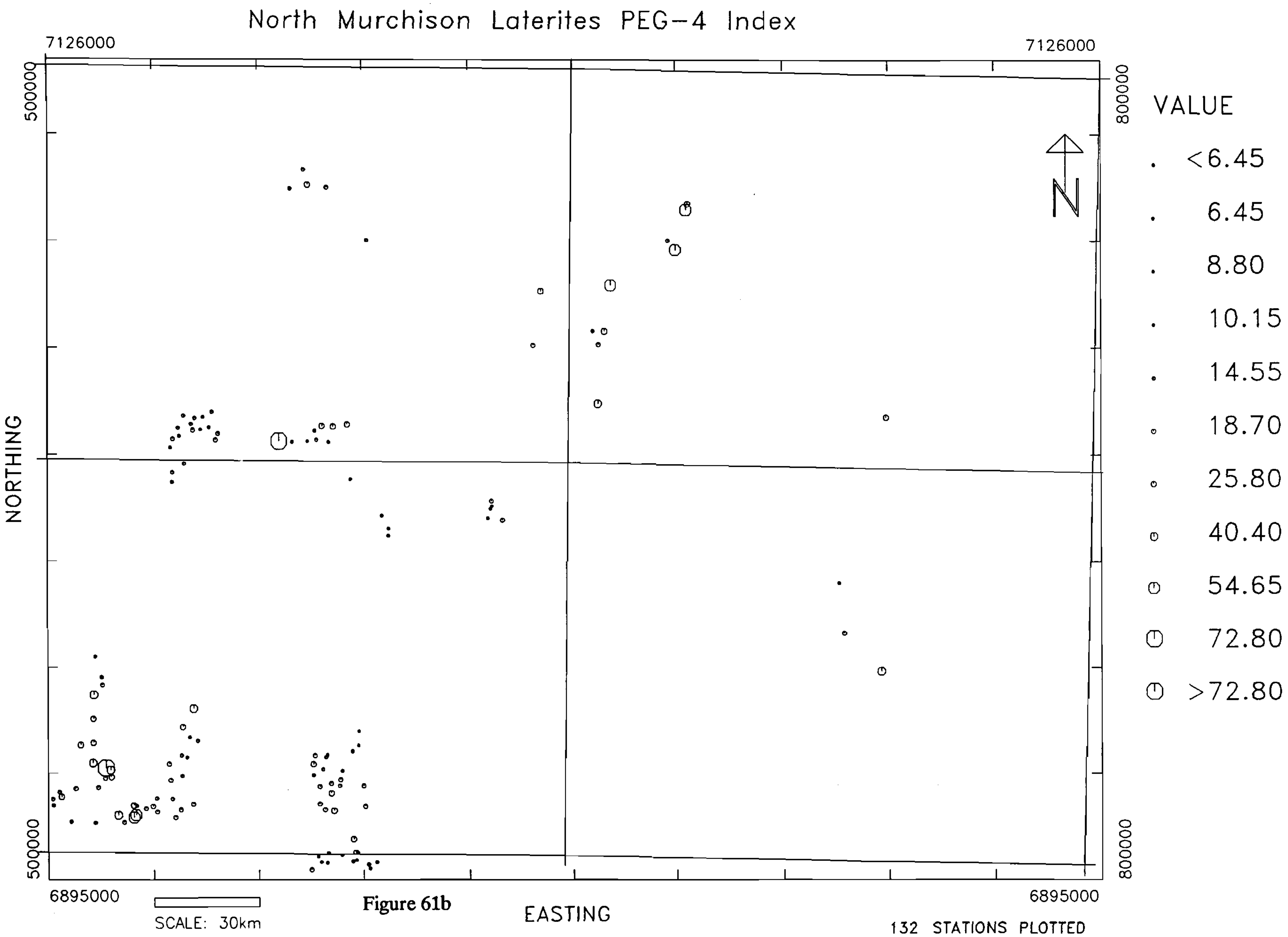

North Murchison Laterites PEG-4 Index
7126000
7126000
500000
800000
500000
800000
NORTHING
EASTING
6895000
6895000
SCALE: 30km
132 STATIONS PLOTTED
N
VALUE
<6.45
6.45
8.80
10.15
14.55
18.70
25.80
40.40
54.65
72.80
>72.80

Figure 61b

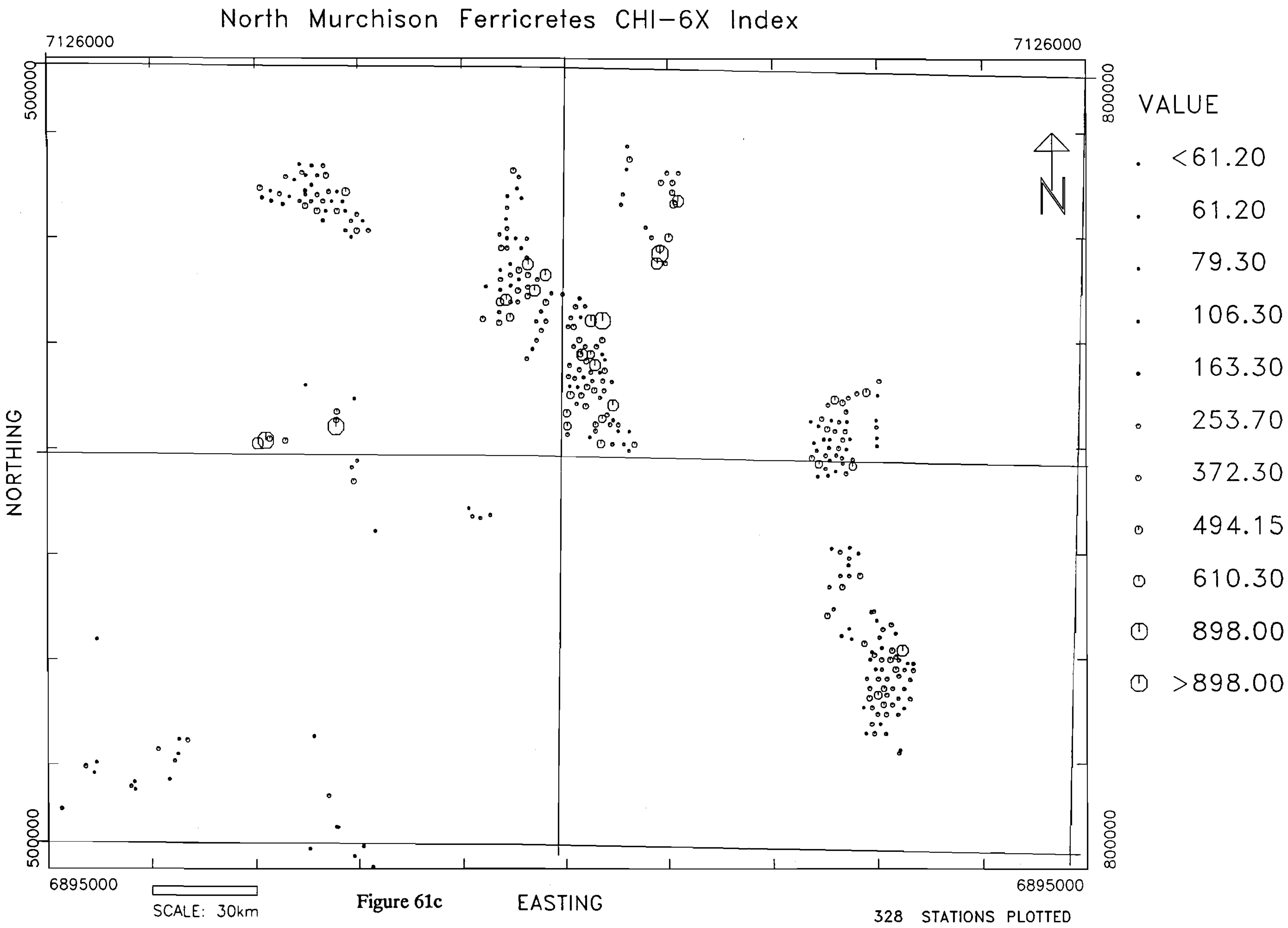
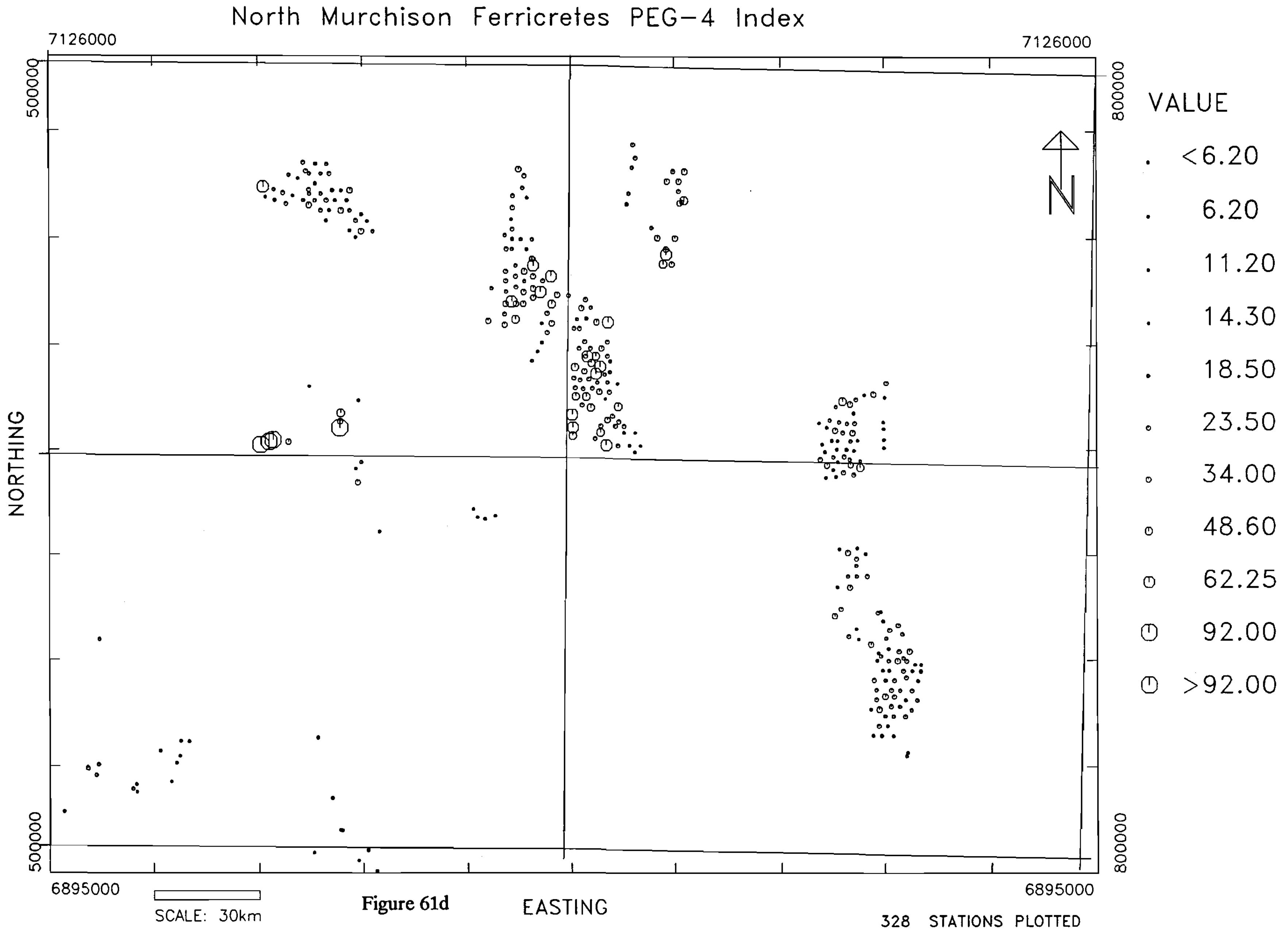
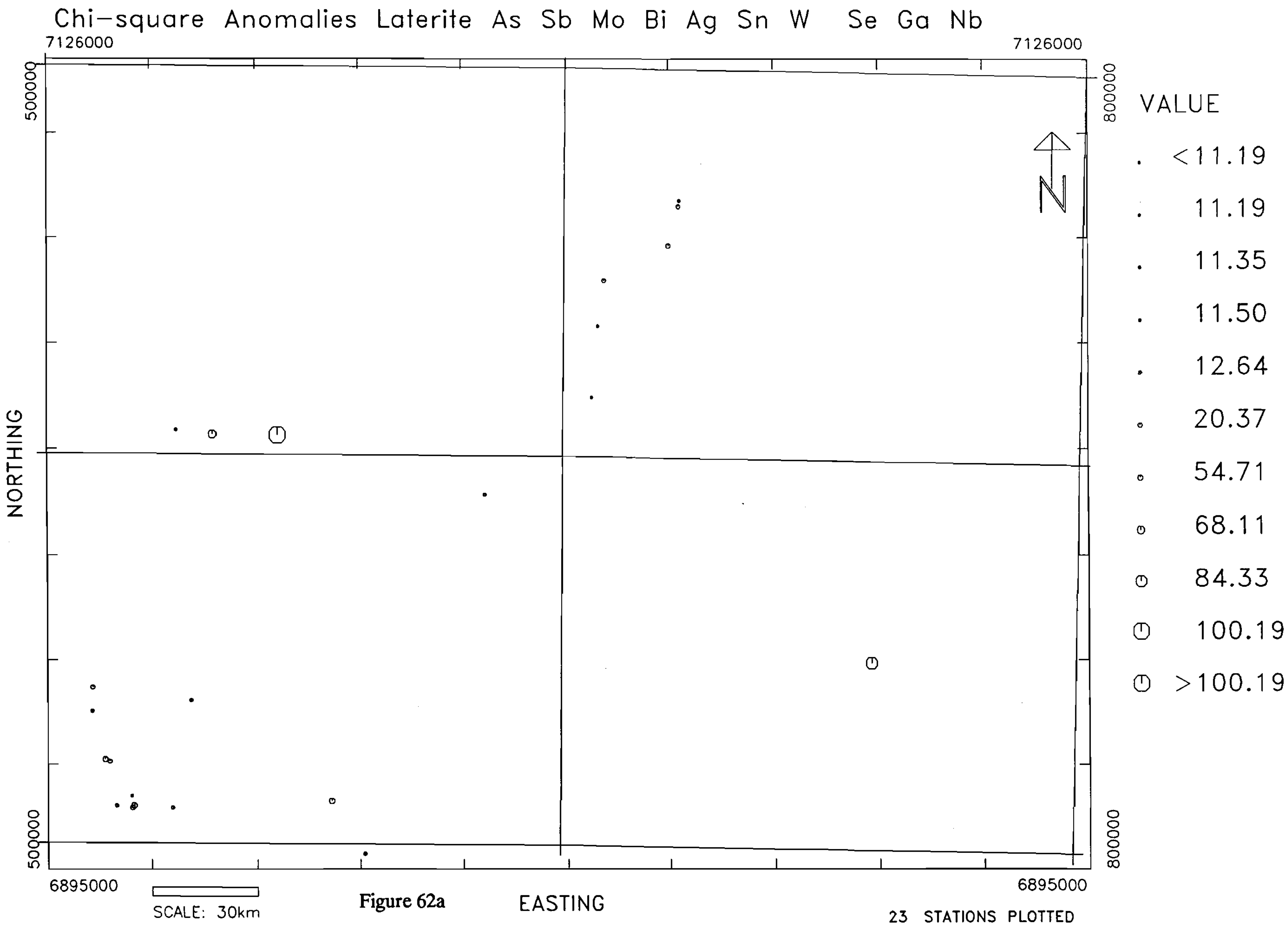

North Murchison Ferricretes CHI-6X Index
7126000
7126000
500000
500000
800000
800000
6895000
6895000
NORTHING
EASTING
SCALE: 30km
N
VALUE
<61.20
61.20
79.30
106.30
163.30
253.70
372.30
494.15
610.30
898.00
>898.00
328 STATIONS PLOTTED

Figure 61c



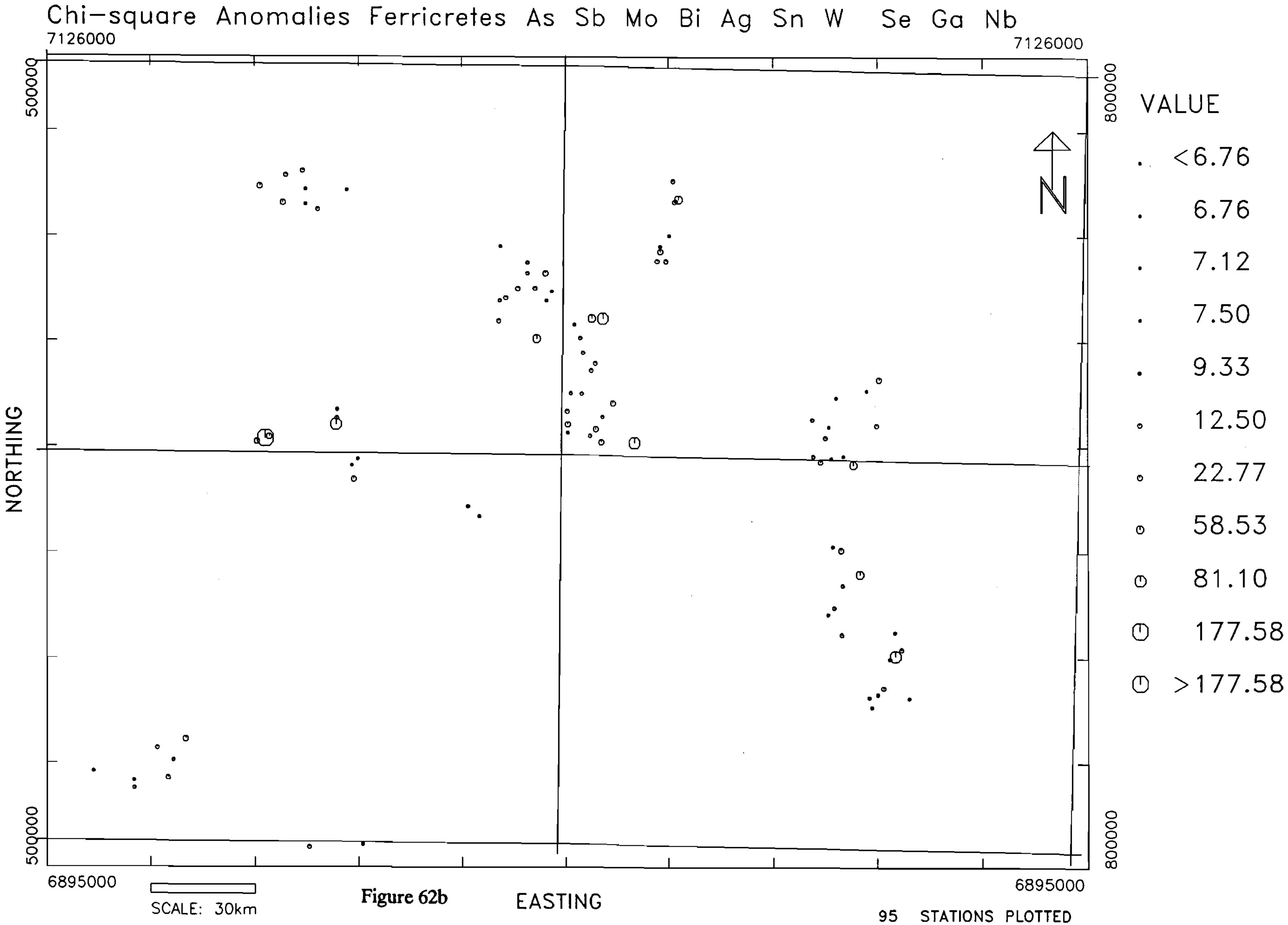
North Murchison Ferricretes PEG-4 Index
7126000
7126000
500000
800000
NORTHING
500000
800000
6895000
6895000
SCALE: 30km
EASTING
328 STATIONS PLOTTED
N
VALUE
<6.20
6.20
11.20
14.30
18.50
23.50
34.00
48.60
62.25
92.00
>92.00

Figure 61d



Chi-square Anomalies Laterite As Sb Mo Bi Ag Sn W Se Ga Nb
7126000
7126000
500000
800000
NORTHING
VALUE
<11.19
11.19
11.35
11.50
12.64
20.37
54.71
68.11
84.33
100.19
>100.19
N
500000
800000
6895000
6895000
SCALE: 30km
EASTING
23 STATIONS PLOTTED

Figure 62a



Chi-square Anomalies Ferricretes As Sb Mo Bi Ag Sn W Se Ga Nb
7126000
7126000
500000
500000
800000
800000
NORTHING
EASTING
6895000
6895000
SCALE: 30km
95 STATIONS PLOTTED
N
VALUE
<6.76
6.76
7.12
7.50
9.33
12.50
22.77
58.53
81.10
177.58
>177.58

Figure 62b

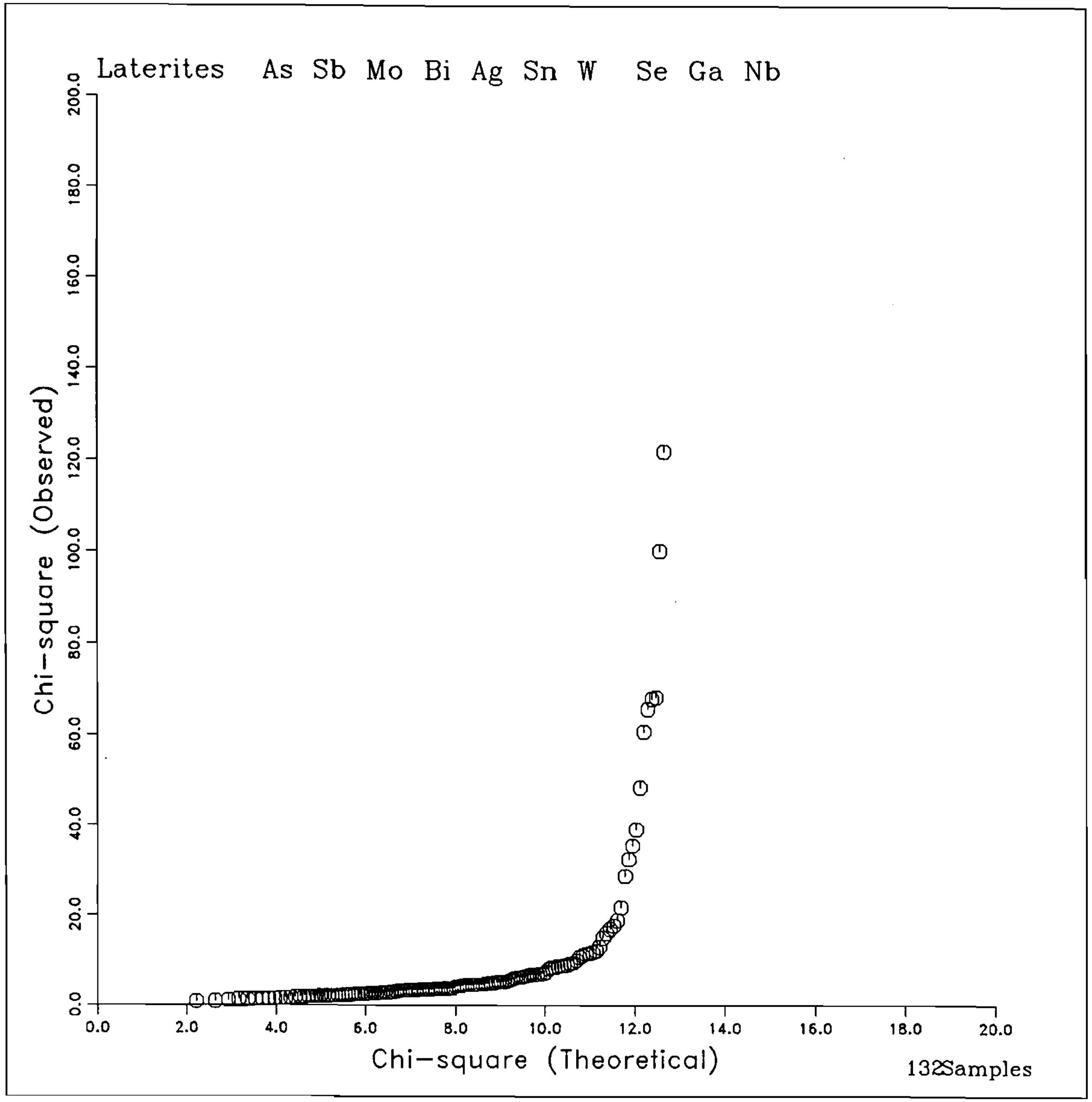

Laterites As Sb Mo Bi Ag Sn W Se Ga Nb
Chi-square (Observed)
200.0
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
20.0
Chi-square (Theoretical)
132Samples

Figure 63a

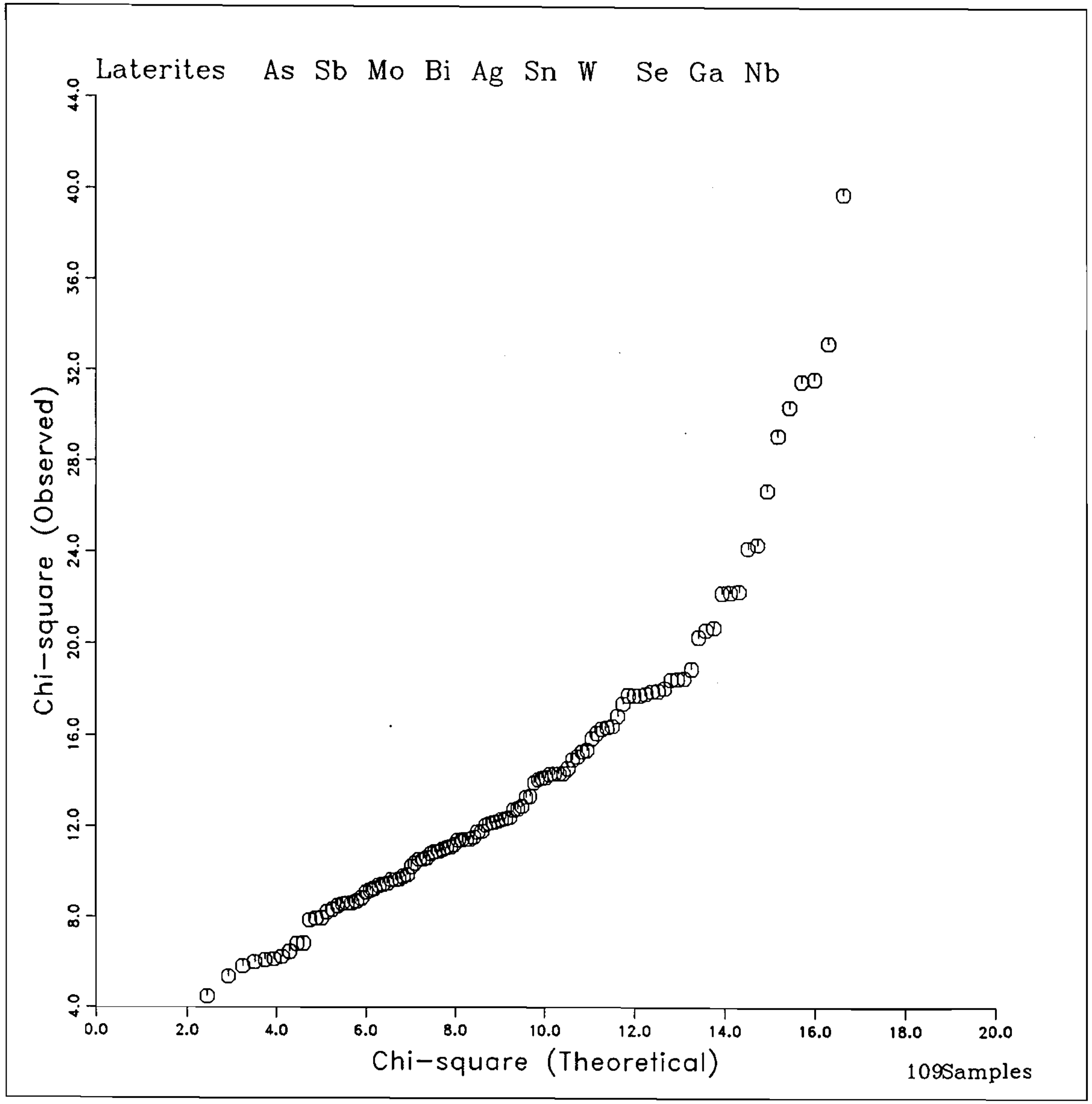
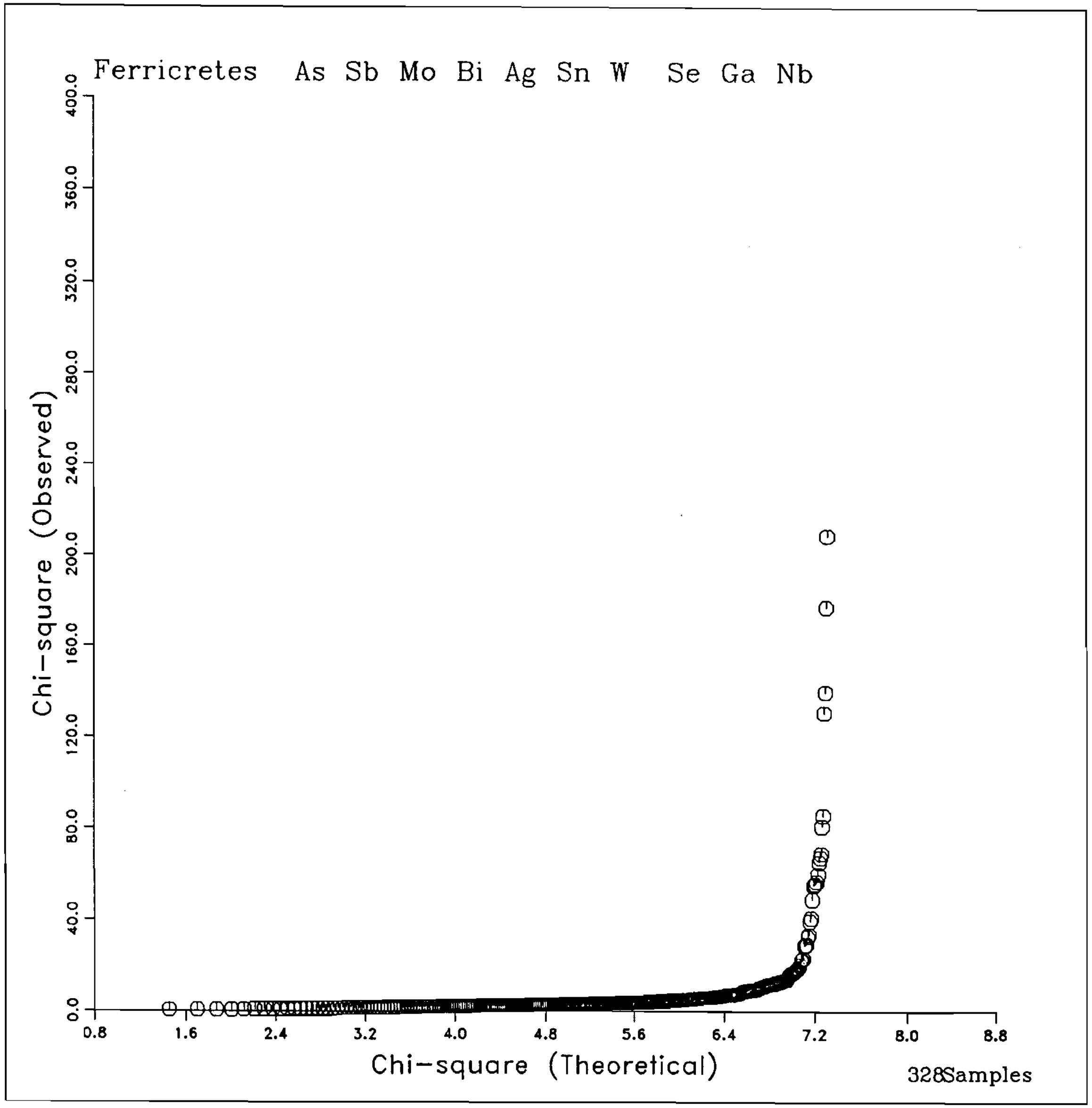

Laterites As Sb Mo Bi Ag Sn W Se Ga Nb
Chi-square (Observed)
44.0
40.0
36.0
32.0
28.0
24.0
20.0
16.0
12.0
8.0
4.0
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
20.0
Chi-square (Theoretical)
109Samples

Figure 63b



Ferricretes As Sb Mo Bi Ag Sn W Se Ga Nb
Chi-square (Observed)
Chi-square (Theoretical)
0.0
40.0
80.0
120.0
160.0
200.0
240.0
280.0
320.0
360.0
400.0
0.8
1.6
2.4
3.2
4.0
4.8
5.6
6.4
7.2
8.0
8.8
328Samples

Figure 64a

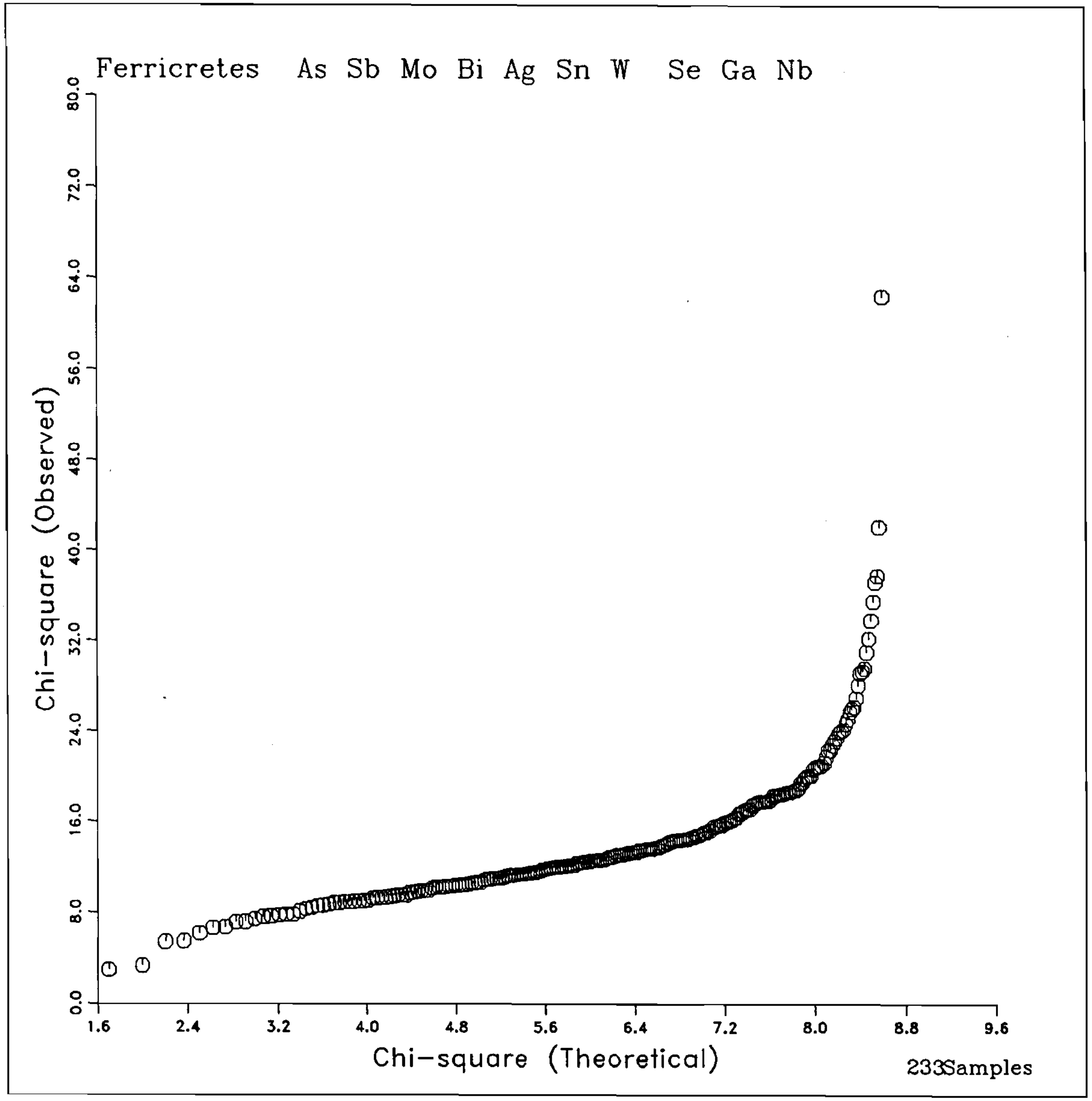

Ferricretes As Sb Mo Bi Ag Sn W Se Ga Nb
Chi-square (Observed)
0.0
8.0
16.0
24.0
32.0
40.0
48.0
56.0
64.0
72.0
80.0
1.6
2.4
3.2
4.0
4.8
5.6
6.4
7.2
8.0
8.8
9.6
Chi-square (Theoretical)
233Samples

Figure 64b