"MAGSAM 2000" - MAGNETIC SAMPLER

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This Rare Earth Magnetic sampler is housed in a stainless steel casing to provide a robust and convenient sampling method. The long shaft and retracting magnetic plunger result in a clean sample that does not contaminate the following sample. The magnetic lag fraction can be easily deposited into a conventional kraft soil sample packet. Magnetic lags represent a standard geochemical method, commonly used in stream sediment sampling programmes with potential applications to regional soil/MAGLAG sampling.

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MAGSAM - Magnetic Sampler. Dimensions - 20 cm long X 3 cm diameter barrel. Strength of internal rare earth magnet - 2000 gauss.

Major Advantages Include:

- Compact size and increased field strength compared with conventional magnets.
- Samples a common medium (maghemite and associated Fe hydroxides) across a changing regolith terrain.
- Potentially increases anomaly size and decreases geochemical "noise" affording confidence in a much wider sample spacing, i.e 1 to 2 samples/km^2.
- Potential applications to partial digestion techniques analysing for Au plus a multielement suite.
- Small sample size required - 10 to 20 gm (even for low level Au analyses) helping to minimise freight costs and potential customs/quarantine problems for overseas jobs.
- Can be used underwater in stream sediment sampling programmes.
- Relatively low cost - $280 excluding sales tax.

Plate 2
Typical sample collection method involves depositing the magnetic soil or stream sediment fraction into a geochem sample packet by pulling up the handle or plunger.

SAMPLING IN TROPICAL TERRAINS

The "MAGSAM 2000" can be used to sample in creeks/rivers in a tropical environment. Enough magnetic material can be collected to a fill small, robust geochem sample packet that will dry easily in the sun or under laboratory conditions.

Plate 3 Collection of magnetic material from a shallow creek, Narai Is, Fiji.

Plate 4 The sample is deposited into a geochem sample packet by pulling up the plunger and using the packet to scrape off the wet sample. "MAGSAM" is robust and can be regarded as being virtually fieldy proof.

INTRODUCTION

Various orientation programmes undertaken in Australia, Africa and in tropical areas such as Fiji and the Philippines confirms the effectiveness of sampling and analysing the ferruginous magnetic fraction as an exploration method to locate gold and base metal mineralisation. Standard mixed acid and aqua regia digests as well as innovative partial digests have been applied to the samples collected by the "MAGSAM 2000".

The Mini Aqua Regia (AR) digest, using only a 4 gm sample mass, has proved to be very effective in areas of relatively shallow cover such as the Central Victorian Goldfields where Au values up to 6380 ppb have been achieved.

Partial Concentrated HCl (Cc) and Micro Cyanide Leach (MCL) digests developed by Ultra Trace Laboratories in Perth only require small sample masses and have the advantage of low detection limits (ie 10 ppt Au for the MCL digest). Both of these digests have proved to be very effective in areas of deep cover typified by the regolith mantling the Archaean Yilgarn Province of Western Australia. An example is provided by the Kirgella Gift prospect, east of Kalgoorlie, where shear – hosted epigenetic gold mineralisation has been found below several metres of transported sands bordering the Lake Rebecca playa lake system. The Concentrated HCl digest has the advantage of analysing for Au plus a multi-element trace element suite at ppb levels and can be used to potentially vector into both gold and base metal mineralisation.

The following case histories using the MAGSAM 2000 are presented and represent the initial studies that will be added to as more areas are investigated.

Case Histories - Australia:

1. Nabberu Basin, WA - Base Metal Prospect

Target: A circular magnetic feature occurring within Paleoproterozoic shelf facies sediments including laminated limestones provided the target for a regional soil geochemical programme. Later drilling has confirmed the presence of both residual bituminous hydrocarbons as well as minor sulphides including chalcopyrite and sphalerite within the limestone host.

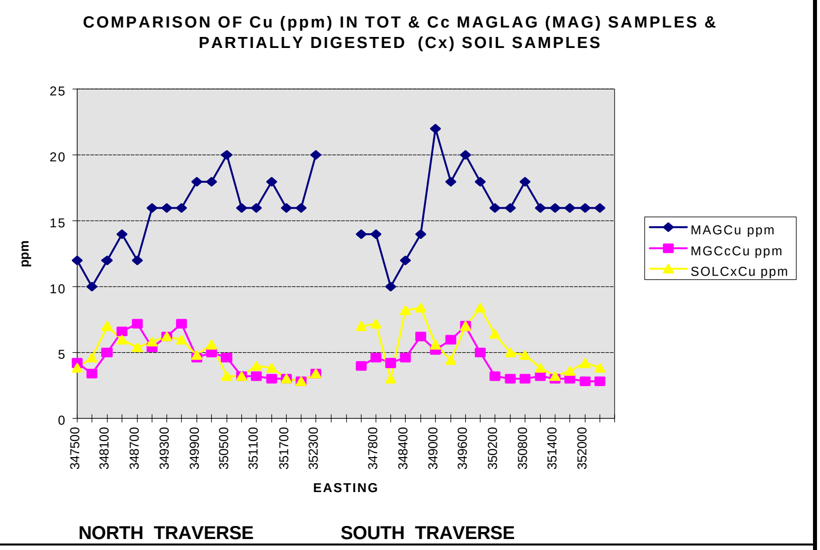
Regolith: Colluvial soils with localised areas overlain by transported aeolian sands. Ferruginous lag.

Geochemistry: An orientation survey trialing MAGLAG samples on two traverses 1000 m apart (North & South Traverses) has shown that the MAGLAG samples taken at a wide spacing (300 to 500 m intervals) and digested by a partial concentrated HCl (Cc) digest may provide a potential alternative to conventional and fine fraction soil sampling, particularly as a regional technique in the Nabberu Basin, WA.

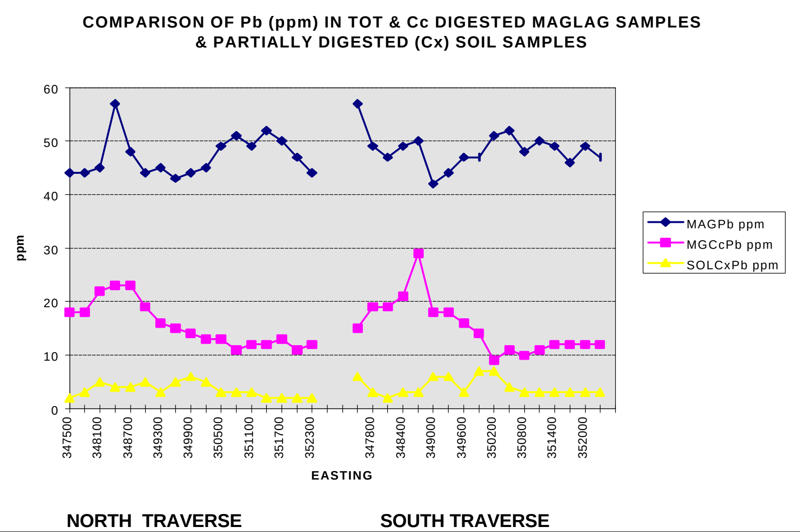
The MAGLAG anomalies for Cu, Pb, Zn & Mo are more strongly developed and more coherent than the soil equivalents. The width of the anomalies on both traverses is

Figure 1 Nabberu Basin - Comparative MAGLAG & Fine Fraction Soil (-75mm) Survey.

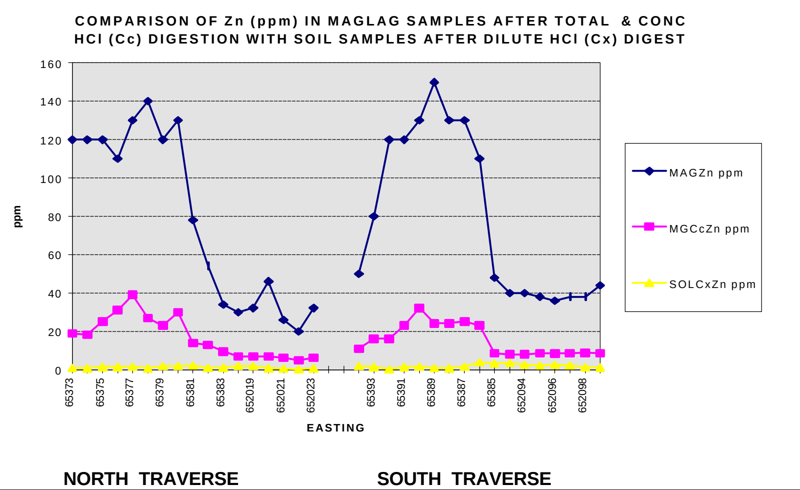
Cu (ppm) showing a broad coherent anomalies that mimick the soil geochemistry. The totally digested MAG samples appear to reflect an anomalous gradient extending to the east and does not define the anomaly as effectively.



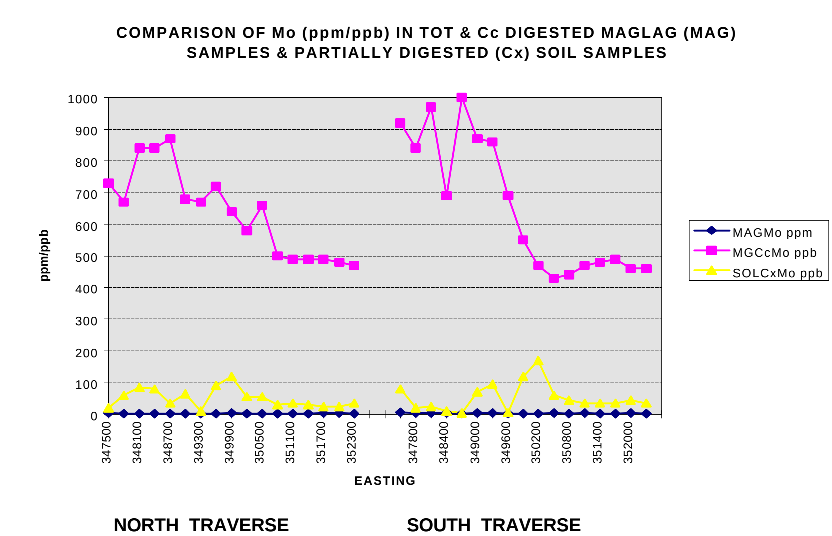
Pb (ppm) showing more discrete MAG anomalies after concentrated HCl digest (MGCcPb) and not reflected well by either the soil samples. An easterly gradient , similar to that for Cu, is apparent for the totally digested MAG samples.



Zn (ppm) showing strong anomalism for totally and partially (concentrated HCl - Cc) digested MAG samples. The soil geochemistry has given a weak response.



Mo (ppb) provides a good example of the usefulness of the pathfinder elelments in the partially digested (concentrated HCl - Cc) MAG samples. The MAG anomaly extends over a width of at least 2000 m. In contrast, the soil geochemistry appears to have provided more discrete anomalies.



impressive extending up to at least 1800 m width for Cu, Zn & Mo (**Figure 1**). Similar anomalies have been achieved for Cd, Hg Ti, Mn and Ba (not shown) and confirm that broad primary and secondary geochemical dispersions have been effectively defined by the method (**Figure 1**). These strong coincident anomalies resulting from the partial concentrated HCl digest of MAGLAG samples affords confidence in using the method as a regional tool where samples can be collected at 500 m to 1 km intervals at a sample density of 1 to 2 samples/km^2. Based on these results the Cc digestion of the MAGLAG samples followed by ICP - MS analysis represents the preferred analytical approach.

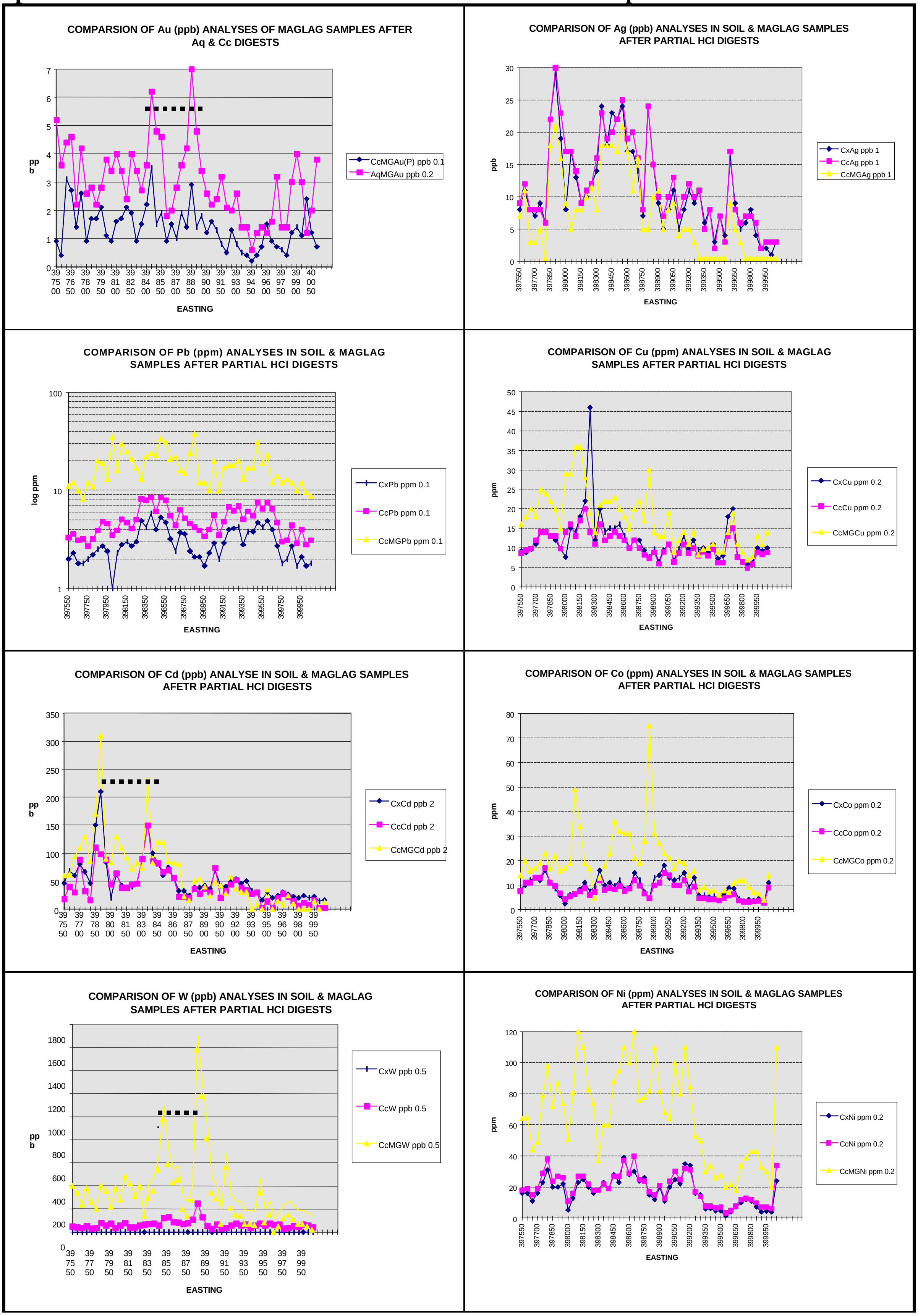
2. Lake Cowan - Eastern Goldfields, WA - Gold

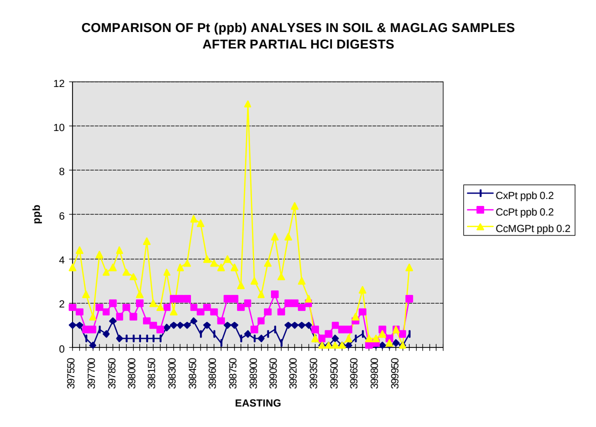
Target: Gold mineralisation is associated with high Mg basalts and komatiites in a structurally complex environment and would appear to be genetically related to high level, more fractionated phases of a major E - W trending Proterozoic dolerite dyke intimately associated with the mineralisation. The mineralisation can be regarded as epigenetic with presence of a relatively high temperature contact metasomatic - skarn assemblage that includes secondary clinopyroxene - diopside ± tremolite ± garnet ± phlogopite/biotite plus sulphides.

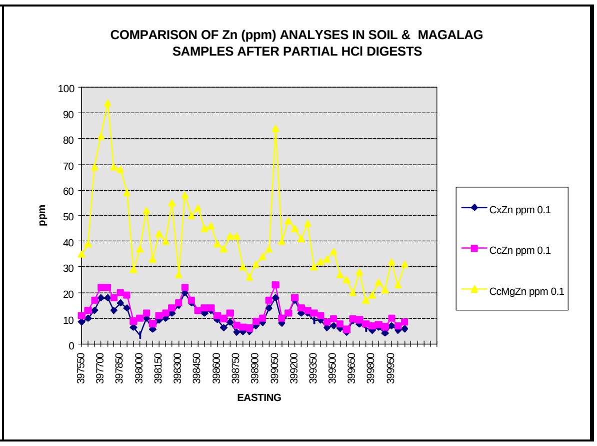
Regolith: Colluvial soils with localised areas overlain by transported aeolian sands. Ferruginous lag plus residual soils developed on a stripped saprolitic profile over greenschist facies metamorphosed mafic and ultramafic rocks.

Geochemistry: The multielement geochemistry of the MAGLAG samples taken at close sample spacings of 50 m has outlined several gold peaks in the centre of the traverse that are supported by anomalous Ag, W, Cu and possibly Pt values. Note the presence of discrete MAGLAG Co & Pt anomalies within a broad MAGLAG Ni anomalous zone over interpreted ultramafic - komatiite units in the middle and western portions of the traverse (**Figure 2**).

Figure 2 Comparative MAGLAG & Fine Fraction Soil Geochemistry over a suite of mafic and ultramafic rocks in the Eastern Goldfields, WA. Dashed lines show possible "rabbit ears" anomalies over reduced bodies at depth.







3. Detailed soil/MAGLAG sampling, Mt Monger, Eastern Goldfields, WA - Gold

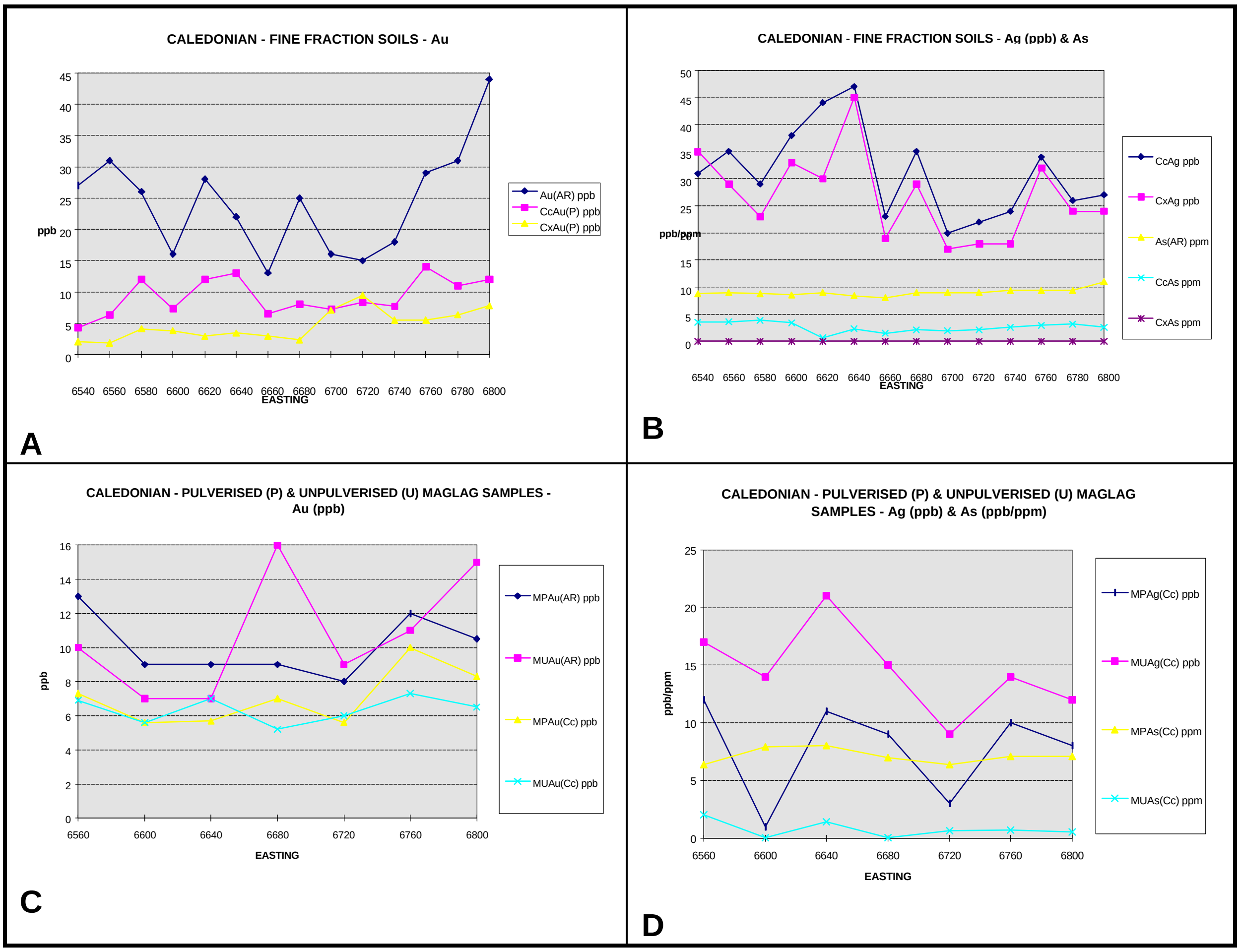
Target: Epigenetic gold mineralisation represented by a series of quartz vein ore shoots hosted by a quartz feldspar porphyry intrusion occurs within an intermediate volcaniclastic suite that includes debris flows and possible epiclastic lithologies. The mineralisation occurs at the Caledonian Mine, 43 km southeast of Kalgoorlie. Potential extensions to the mineralisation have been investigated using detailed grid - based fine fraction soils and MAGLAG samples.

Regolith: Depositional colluvial soils mask potential northern extensions to the mineralisation and overly a stripped saprolitic lateritic profile. Anomalies may be expected to be relatively narrow. Fine grained ironstone lag is associated with the colluvial material that is thought to be approximately 1 to 2 m thick. A creek and associated alluvial sediments cut the sampled area. Historic mining and reworking of old tailings provide potential areas of contamination in the southern and eastern portions of the sampled area.

Geochemistry: The fine fraction soils have been analysed for Au after using Aqua Regia, Conc and dilute HCl digests. Both pulverised and unpulverised MAGLAG samples have been analysed after using Aqua Regia and partial Conc HCl digest. Both the fine fraction soils and MAGLAG samples have been analysed for a multi-element suite after using partial HCl digests.

The orientation traverse was conducted over colluvial soils with known gold mineralisation at 6540E and 6680E. The baseline Au values for all digests are high with the Aqua Regia Au results effectively highlighting the mineralisation although the data is "spiky" (**Figure 2A**). In this case, the partial digests have produced comparatively lower anomalies although the results may reflect relatively weak mineralisation in this area.

Figure 3 Comparison of Au(AR) & Au(P) (ppb) as well as Ag & As in fine fraction (-75mm) soils and pulverised and unpulverised MAGLAG samples in an orientation traverse at the Caledonian Mine, Mt. Monger.



Significantly, the unpulverised and pulverised MAGLAG Au values provide contrasting patterns with anomalous unpulverised MAGLAG Au (AR) values outlining the mineralised zone at 6680E in contrast to the relatively flat Au (Cc) values (**Figure 2C**). The pulverised MAGLAG Au (AR) and Au (Cc) values exhibit similar patterns with the Au (Cc) values defining subtle anomalies associated with mineralised trends at 6540E, 6680E and the eastern end of the line. Trace elements including Ag and As are examined with both the fine fraction soils and MAGLAG samples outlining a potential Ag anomaly in the western portion of the traverse (**Figure 2B**). Surprisingly the unpulverised MAGLAG Ag values are higher than the pulverised values (**Figure 2D**.

Conclusions: Fine fraction soil samples analysed for Au after an Aqua Regia digest provide the highest absolute values although the partial Conc HCl digest Au results coupled with the multi-element data potentially provide a method of prioritising the anomalies. Anomalous Ag (Cc) and Ag (Cx) values correspond with the anomalous Au (Cc) values. MAGLAG samples represent an additional sampling technique in the area and may help to validate portions of the grid that are subject to potential contamination.

4. Stream Sediment Geochemistry, East Kimberley - Base Metals

Target: The Paleo - Proterozoic East Kimberley (Sandiego, Banjo Bore and Ilmars-Little Mt. Isa) hosts VHMS - style base metal and gold mineralisation occurs within the Koongie Park intermediate to felsic volcanic and volcaniclastic units as well as the underlying Biscay Formation. Various partial digestion methods have been applied to both the fine fraction (-63µm) overbank stream sediment samples as well as the active stream magnetic fraction (MAG) samples.

Regolith: Contrasting topographies and regolith terranes are apparent at Halls Creek. The area north of Halls Creek exhibits a more incised physiography with relatively high energy creeks and a thin weathering regime. In contrast the area south of the town is typified by a much more subdued topography with islands of outcropping felsic volcanic/volcaniclastic rocks (eg Sandiego area). The lateritic profile and depth of weathering is much better developed in this area with the more mature creeks tending to meander in areas of either low topography or in depositional plains comprising relatively deep loamy soils ("black soils") that are interpreted to be locally transported. These landforms confirm a more mature drainage regime.

Geochemistry: Fine fraction overbank and magnetic fraction (MAG) stream sediment samples were collected at a sample density of 2 samples/km^2 in the Halls Creek area. The samples were analysed for a multi-element suite after using a partial Conc HCl (Cc) digest. Both sample media respond well to partial digest methods with the potential to analyse for Au plus a suite of important pathfinder elements including As, Sb, Mo, Sn, W & Ba in addition to Cu, Pb and Zn.

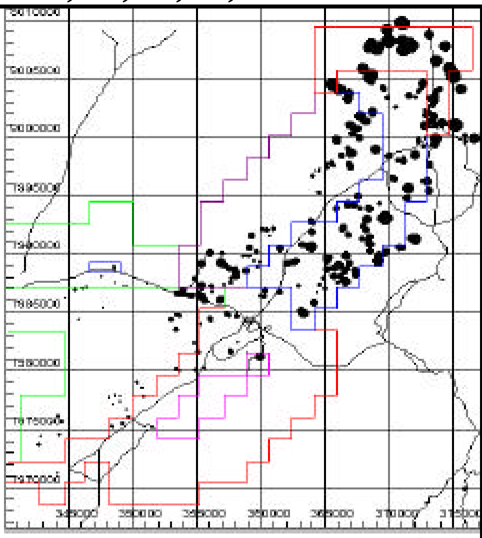
The presence of anomalies in the fine fraction stream sediments, particularly for precious metals and pathfinder elements potentially associated with mineralisation, probably reflect hydromorphic dispersion from potentially larger endogenic haloes related to mineralisation whereas anomalous base metal values probably reflect the physical dispersion of gossanous material. The more incised northern portion of the sampled area has been effectively sampled using the fine fraction stream sediment samples and would appear to be strongly regolith dependent. This is exemplified by anomalous Cu, Zn and Pb stream sediment values (**Figures 4A, B & C**) in the northern part of the area compared to low levels to the south where important mineralisation at Onedin and Sandiego has not been highlighted by the method. In contrast, the MAG stream sediment samples have produced unique anomalies for both the target chalcophile elements (**Figures 4A, B & C**) and the pathfinder elements (**Figures 4D, E & F**) in creeks draining the main prospects in changing regolith terranes. The physical dispersion of potential gossanous material is targeted by the MAG stream sediment samples that would appear to be less affected by dramatic changes in the regolith proceeding from north to south of Halls Creek.

Conclusions: The MAG stream sediment samples are more effectively analysed by using the stronger Conc HCl or total mixed acid digests that effectively liberate the chalcophile and pathfinder elements producing longer downstream anomalies as a product of physical dispersion. The overbank fine fraction stream samples respond to different dispersion

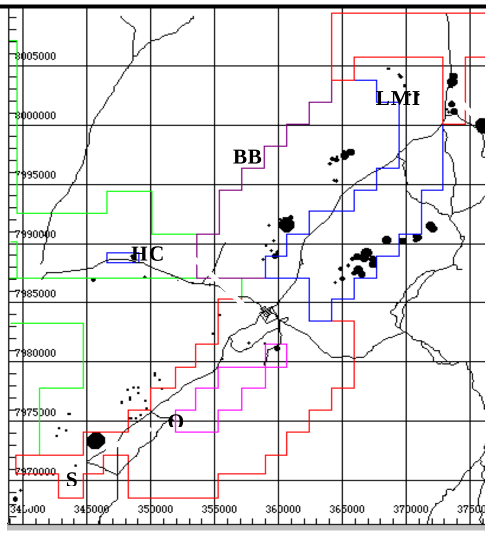
Figure 4 - Stream Sediment Dispersions for MAG and Fine Fraction (-75 mm) Overbank samples in the Halls Creek area - East Kimberley, WA showing that the

Fine Fraction Overbank samples are more strongly affected by the regolith than the MAG samples for Cu, Zn, Pb, Sb, Sn & Mo.

Fig. 4A Cu (ppm) showing that the fine fraction stream sediments are generally enhanced north of Halls Creek but have not highlighted the main prospects. In contrast, anomalous MAG samples correspond with the main prospects at Little Mt Isa (LMI), Banjo Bore (B), and Onedin (O).

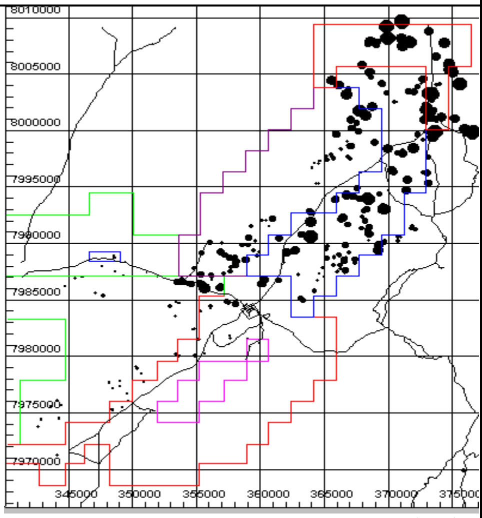


FINE FRACTION STREAM SEDIMENTS - Cc Cu (ppm)

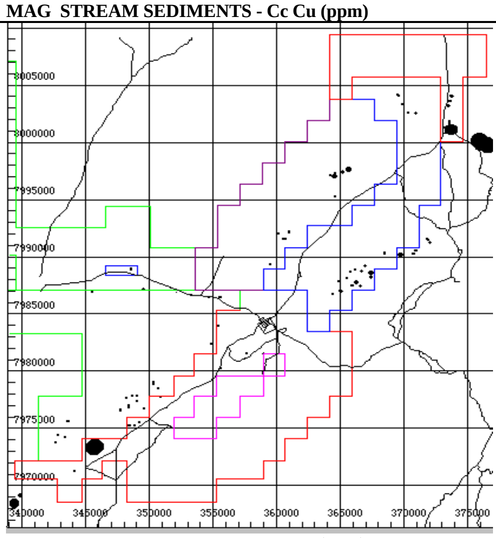


MAG STREAM SEDIMENTS - Cc Cu (ppm)

Fig. 4B Zn (ppm) showing a similar pattern to Cu with the fine fraction stream sediments being enhanced north of Halls Creek and highlighting the main prospects in that area including Banjo Bore (BB) and Little Mt Isa (LMI). Anomalous MAG samples correspond with the main prospects at Little Mt Isa (LMI), Onedin (O), Sandiego and weakly at Banjo Bore (BB).

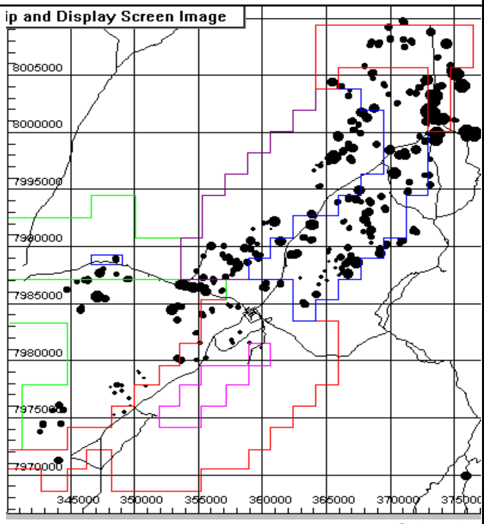


FINE FRACTION STREAM SEDIMENTS - Cc Zn (ppm)

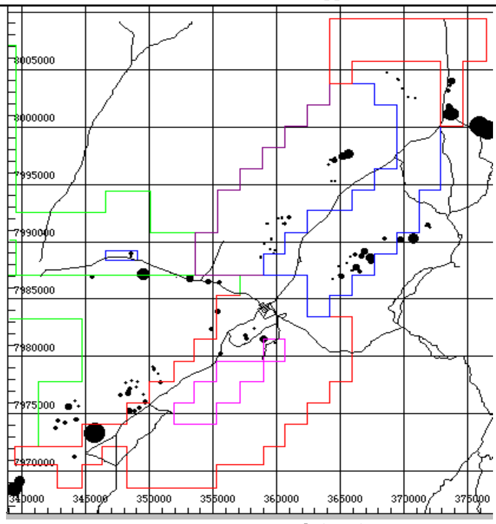


MAG STREAM SEDIMENTS - Cc Zn (ppm)

Fig. 4C Pb (ppm) showing a similar pattern to both Cu and Zn with fine fraction stream sediment anomalies associated with prospects at Little Mt Isa (LMI), Banjo Bore (BB) and only weakly at Onedin (O) and Sandiego (S). Anomalous MAG samples have high-lighted all of the main prospects areas at Little Mt Isa (LMI), Onedin (O), Sandiego (S)and weakly at Banjo Bore (BB).

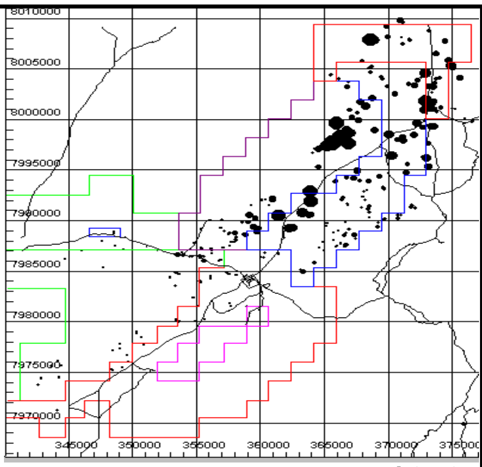


FINE FRACTION STREAM SEDIMENTS - Cc Pb (ppm)

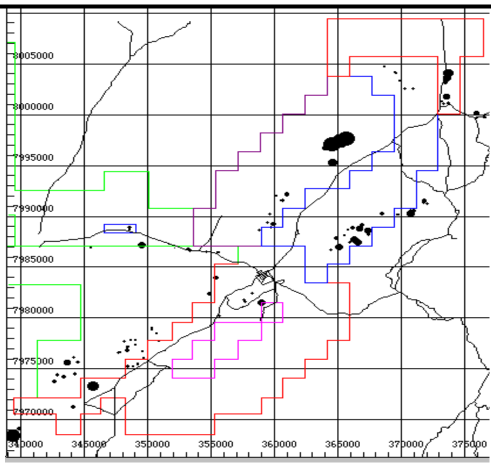


MAG STREAM SEDIMENTS - Cc Pb (ppm)

Fig. 4D Sb (ppm) has highlighted the Banjo Bore (BB) prospect north of Halls Creek in the fine fraction stream sediments while the anomalous MAG samples have similarly highlighted Banjo Bore in addition to Sandiego (S) and weakly at Onedin (O).

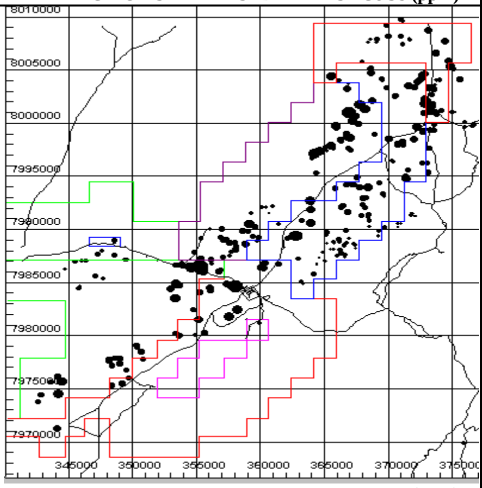


FINE FRACTION STREAM SEDIMENTS - Cc Sb (ppm)

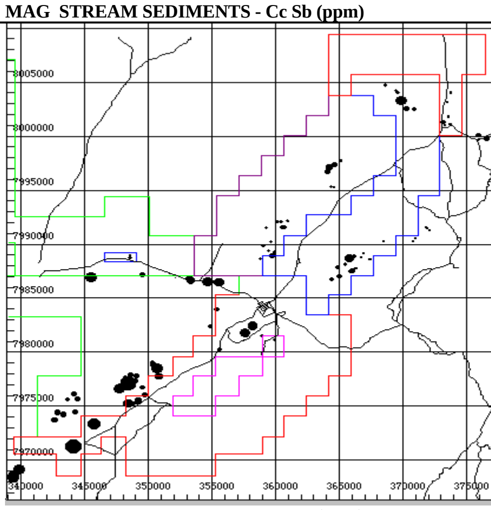


MAG STREAM SEDIMENTS - Cc Sb (ppm)

Fig. 4E Sn (ppb/ppm) provides a more coherent pattern for the fine fraction stream sediments and has highlighted the main base metal trend. More discrete anomalies are provided by the anomalous MAG samples that have highlighted the main prospects south of Halls Creek including the Onedin (O) to Sandiego (S) mineralised trend.

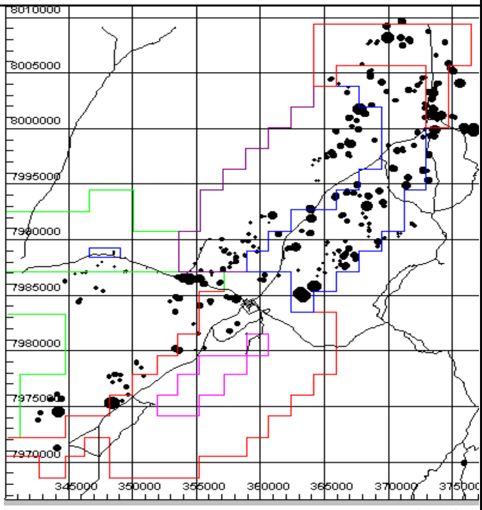


FINE FRACTION STREAM SEDIMENTS - Cc Sn (ppm)

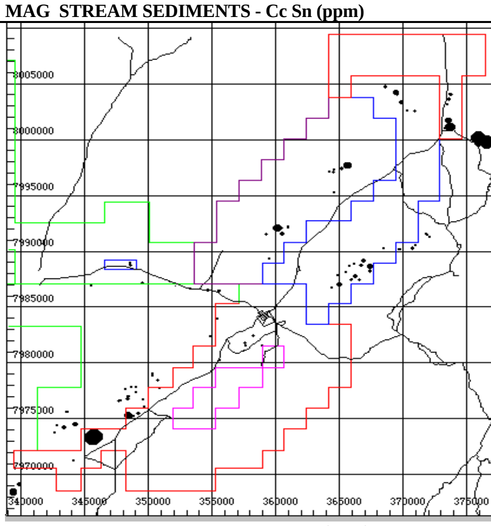


MAG STREAM SEDIMENTS - Cc Sn (ppm)

Fig. 4F Mo (ppm) again provides a more coherent pattern for the fine fraction stream sediments with the main mineralised trends highlighted. In contrast, anomalous MAG samples have highlighted the main prospects at Little Mt Isa (LMI) and weakly at Banjo Bore (BB) north of Halls Creek and Onedin (O) and Sandiego (S) to the south.



FINE FRACTION STREAM SEDIMENTS -Cc Mo (ppm)



MAG STREAM SEDIMENTS - Cc Mo (ppm)

processes that also represent useful additional information. Both sampling methods are clearly useful and should be used in tandem. MAG sampling has potential as a regional exploration method highlighting broad areas of base metal anomalism while fine fraction overbank stream sediment sampling may help to pin-point the mineralised source. The following figures show the contrasting responses for fine fraction stream sediments and MAG samples analysed for Cu, Pb, Zn as well as pathfinder elements Sb, Sn & Mo.

Case Histories - Philippines:

Refer to the attached spreadsheet showing multi-element values for magnetic fraction - MAG stream sediment samples collected from porphyry Cu - Au, epithermal Au and volcanogenic massive sulphide deposits in the Philippines. The examples provided represent analyses after using total mixed acid (TOT), Aqua Regia for Au (AR) and partial concentrated HCl digests (Cc). The analyses also show the potential of the MAG samples of defining potential anomalies well down stream from the source. The various deposits exhibit anomalous trace element suites that are consistent with the style of mineralisation, as follows:

- ***Porphyry Cu - Au mineralisation*** Guizo Prospect, Southern Leyete and the King King Project in Mindanao - is associated with anomalous TOT**Cu** (up to 52 ppm & 330 ppm respectively), **Au** (Aqua Regia) (up to 18 ppb & 130 ppb respectively), Cc**Ag** (64 ppb & 180 ppb respectively), TOT**Pb** (up to 38 ppm at Guizo), TOT**Zn** (up to 170 ppm & 250 ppm respectively), TOT**Mo** (up to 46 ppm at King King) & TOT**W** (4.5 & 5 ppm). Note that an ultramafic complex at Guizo is associated with strongly anomalous Pt (up to 10 ppb), TOT**Ni** (2500 ppm) & TOT**Cr** (3400 ppm).
- ***VHMS Cu - Zn - Au mineralisation*** at Canatuan, Mindanao and Cu - Zn - Pb - Au - Ag mineralisation at Rapu Rapu - is associated with anomalous TOT**Cu** (up to 39 ppm & 510 ppm respectively), TOT**Pb** (up to 420 ppm at Rapu Rapu), TOT**Zn** (up to 190 ppm & 730 ppm respectively), TOT**Sn** (up to 280 ppm at Rapu Rapu), TOT**Sb** (up to 10 ppm at Rapu Rapu, **Au** (Aqua Regia) (up to 260 ppb at Rapu Rapu), Cc**Ag** (36 ppb & 470 ppb respectively) & TOT**Mo** (up to 28 ppm at Rapu Rapu).

- ***Epithermal Au mineralisation*** at Panoroan Prospect and Hija Deposit, Mindanao - is associated with anomalous **Au** (Aqua Regia) (up to 28 ppb & 140 ppb respectively), at Cc**Ag** (up to 93 ppb at Panoroan), TOT**Cu** (up to 250 ppm at Panoroan), TOT**Pb** (up to 42 ppm at Panoroan), TOT**Zn** (up to 450 ppm & 320 ppm respectively), TOT**As** (up to 160 ppm at Hija), TOT**Sn** (up to 29 ppm at Hija), TOT**Sb** (up to 12 ppm at Hija), Cc**Hg** (up to 20 ppb & 870 ppb respectively), TOT**Mo** (up to 5.4 ppm & 25 ppm respectively) & TOT**W** (up to 8.5 ppm at Hija).

COMPARISON OF MULTIELEMENT ANALYSES OF MAGNETIC FRACTION STREAM SEDIMENT SAMPLES TAKEN FROM VARIOUS EPITHERMAL, PORPHYRY & VMS - STYLE DEPOSITS IN THE PHILIPPINES

SAMPLE	DEPOSIT STYLE	PROSPECT/DEPOSIT	SAMPLE LOCATION
P 350346	Porphyry Au-Cu	Southern Leyete - Guizo Prospect	Stream near prospect shaft
P 350347			500m downstream from shaft
P 350348	VMS Cu-Zn-Au(oxidised)	Western Mindanao - Canatuan Deposit	Stream draining prospect area
P 350349	Epithermal Au-Ag	Mindanao - Panoroan Prospect	Stream draining prospect area
P 350350			Upstream from propsect area
P 350351	Possible porphyry Au-Cu	Mindanao - North Panoroan Prosp.	Stream draining cp-py vein in alt. diorite
P 350352	Epithermal Au (Manto style)	Mindanoa - Hija open cut	Stream draining into open cut
P 350353	Porphyry Au-Cu	Mindanao - Kingking Deposit	Stream draining main deposit - near drillers camp
P 350354			Background stream - approx. 5km from deposit
P 350355	VMS Cu-Zn-Pb-Au-Ag	Southern Luzon - Rapu Rapu	Stream draining Malabago deposit
P 350356			Stream draining Hixbar Mine - Spanish Area

Sample	Au(AR)	CcAu(P)	Pt(AR)	CcAg	TOTAg	CcCu	TOTCu	CcPb	TOTPb	CcZn	TOTZn	CcSb	TOTSb
	ppb	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm
P 350346	6	4.4	10	64	-0.5	24	52	32	38	99	170	370	1
P 350347	18	15	6	64	-0.5	45	81	21	22	25	100	2100	7
P 350348	1	1.9	-1	36	-0.5	19	39	12	11	89	190	690	1.4
P 350349	28	2.3	4	83	-0.5	63	140	9.8	17	75	140	150	0.4
P 350350	15	2.4	4	93	-0.5	120	250	42	52	210	450	210	0.4
P 350351	5	3.2	3	33	-0.5	49	120	11	11	180	340	180	0.4
P 350352	140	93	5	25	-0.5	44	83	13	13	180	320	9800	12
P 350353	130	4.5	-1	180	-0.5	110	330	8	13	65	160	820	1.4
P 350354	6	3.8	5	33	-0.5	52	110	6.8	10	140	250	290	0.4
P 350355	11	2.1	3	80	-0.5	83	170	430	420	430	730	4400	7
P 350356	260	21	4	470	0.5	280	510	130	130	270	430	6600	10

Sample	CcAs	TOTAs	CcMo	TOTMo	CcW	TOTW	CcCo	TOTCo	CcNi	TOTNi	CcCr	TOTCr	CcBa
	ppm	ppm	ppb	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
P 350346	8.2	17	200	0.4	100	-0.5	38	67	450	1800	320	1900	8
P 350347	18	44	490	0.8	3600	4.5	66	98	620	2500	400	3400	17
P 350348	2.1	4.5	930	1.4	140	-0.5	12	20	16	10	31	55	14
P 350349	2.7	5	4800	5.4	750	1.5	11	19	14	35	65	240	44
P 350350	2.8	5.5	3100	3.2	600	1	23	42	18	42	94	190	35
P 350351	2.9	6	1700	1.8	260	0.5	26	53	14	33	120	240	49
P 350352	110	160	36000	25	2100	8.5	28	56	98	250	160	960	35
P 350353	11	22	46000	46	2000	5	17	37	30	66	170	580	13
P 350354	4.8	9.5	3300	1.6	260	-0.5	27	44	22	40	89	150	76
P 350355	18	33	6600	6.4	610	0.5	21	46	25	51	140	230	37
P 350356	130	200	29000	28	1900	1.5	54	97	65	130	260	920	30

Sample	TOTBa	CcSn	TOTSn	CcHg	TOTHg	CcFe	TOTFe	CcMn	TOTMn	CcU	TOTU
	ppm	ppm	ppm	ppb	ppb	%	%	ppm	ppm	ppb	ppm
P 350346	24	100	-1	5	-1	4.6	6.5	340	730	21	-0.05
P 350347	59	200	-1	23	-1	9.1	11	940	1400	180	0.25
P 350348	54	720	1	8	-1	33	41	900	1400	200	0.25
P 350349	390	830	2	9	-1	13	15	920	1800	190	1.2
P 350350	260	1000	2	20	-1	15	20	1400	2400	230	0.75
P 350351	260	770	2	11	-1	22	28	2200	3400	340	0.85
P 350352	140	26000	29	870	240	17	22	1400	2200	350	0.7
P 350353	150	1500	2	33	-1	30	40	850	1400	310	0.5
P 350354	180	1300	2	36	-1	15	19	1600	2300	240	0.6
P 350355	120	200000	280	5	-1	35	44	810	1400	84	0.15
P 350356	100	59000	75	150	-1	45	54	1700	2300	170	0.25

Case Histories - Africa:

Magnetic fraction (MAG) stream sediment samples taken over Ni - Cu & Au prospects in NE Botswana has confirmed the presence of MAG Aqua Regia Au and MAG partial concentrated HCl (Cc) Cu, Ni, Cr and Co values up to 6 X background (**Figure 5**). The anomalies are also supported by pathfinder elements including Ag, As, Sb, Bi, Te and Mo in the MAG samples. This compares with relatively subdued values achieved for fine fraction stream sediment samples (-180µm & -75µm fractions) analysed after using a similar concentrated HCl digest. The dispersion trains produced by the fine fraction stream sediment samples are also smaller than those achieved by the MAG samples (up to 1.5 km).

Conclusions

The magnetic fraction - MAG of the active stream sediment samples have provided the strongest contrasts, particularly for the target chalcophile elements - Cu, Co & Ni, and best developed dispersion trains to afford confidence in using this technique in a regional exploration programme. The recommended sample density of 1 sample per km^2 will effectively outline potential Ni/Cu and Au mineralisation within the tenements. Sample stations can be accurately located using a DGPS surveying methods coupled with the sample collection.

The analysis of the MAG samples only require a small sample mass, i.e 50 g and can be cheaply air freighted back to Australia for various partial Aqua Regia and concentrated HCl digests by Ultra Trace laboratories in Perth. The partial concentrated HCl digest ensures low detection (ppb) levels for the important pathfinder elements - Sb, As, Te & W.

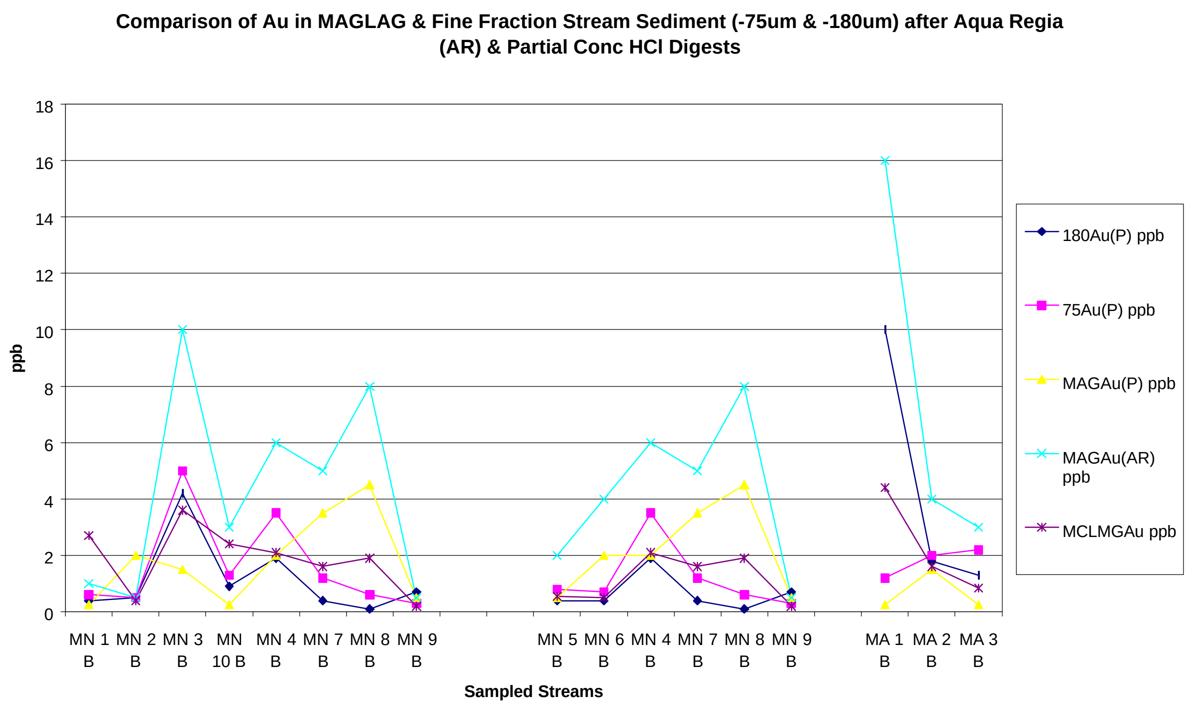


Figure 5a compares Au (ppb) in MAG & Fine Fraction Overbank (-75um & -180um) Stream Sediment Samples after using Aqua Regia (AR) & Conc HCl Digests in Botswana.

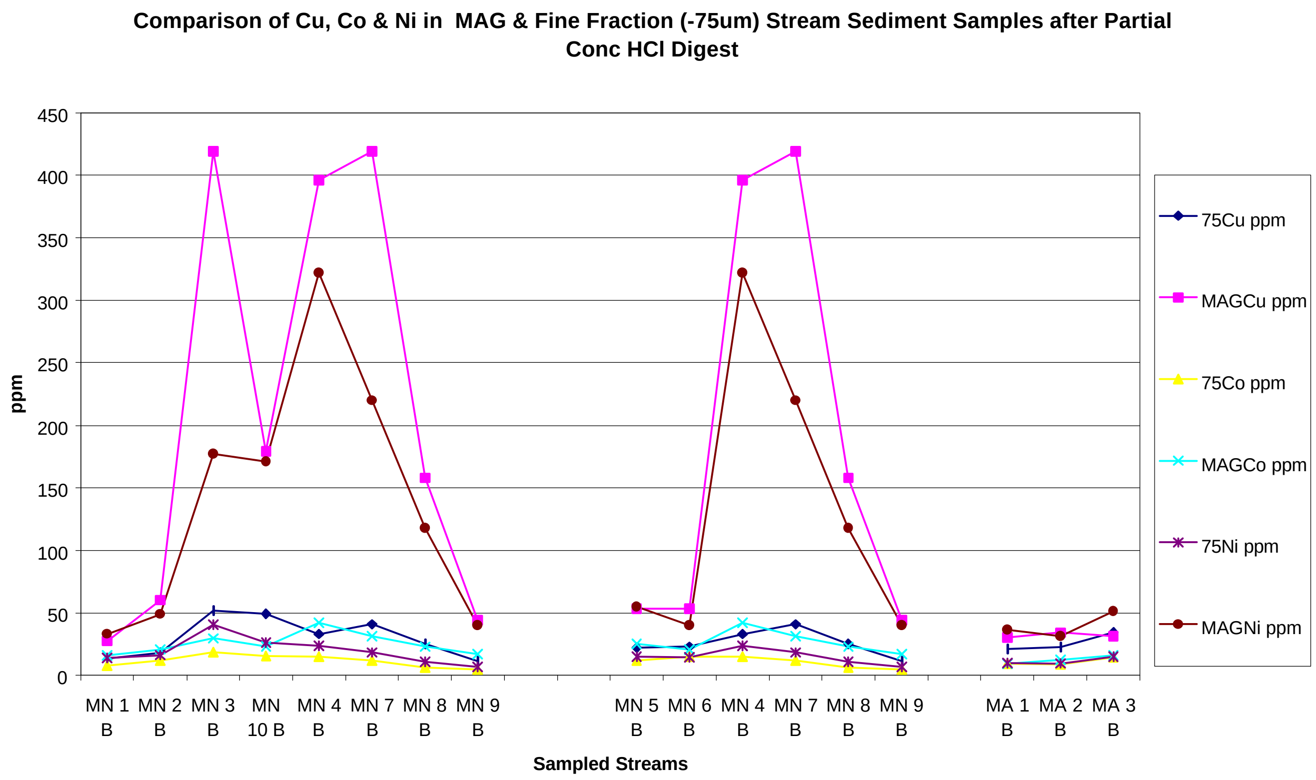


Figure 5b compares Cu, Co & Ni in MAG & Fine Fraction O/B (-75um) Stream Sediment Samples after using a Conc HCl Digest in Botswana.

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Additional Successes – Kirgella Gift (Gold), Eastern Goldfields, WA.

Target: Epigenetic shear - related gold mineralisation possibly representing an extension of the Anglo Saxon lode, approximately 12 km south of the Anglo Saxon Mine at Pinjin. The discovery RAB drill hole, directly below the MAGLAG anomaly, returned 32 m grading 2.61 g/t Au from 13 m.

Regolith: The project area occurs on the margin of the Lake Rebecca playa lake system and is mantled by 2 to 3m of transported aeolian sand that supports a low mulga/saltbush scrub. Sporadic outcrop is apparent although the gridded area covering the prospect is totally masked by transported cover. RAB/RC drilling has confirmed the presence of a stripped lateritic profile, although pockets of laterite have been preserved. The calcrete horizon apparent in the drill holes occurs at depths of 3 to 4 m.

Geochemistry: The Kirgella Gift Prospect was found by initial regional MAG geochemical sampling based on sample stations at 100 m intervals and traverses varying from 400 to 800 m apart. The MAGLAG samples were analysed for a limited suite including Au, Pt, Ag, As, W & Te after using a partial Conc. HCl digest by Ultra Trace Laboratories, Perth. The original MAGLAG programme achieved peak values of 30 & 9 ppb Au at the Kirgella Gift and Millennium prospects respectively, with the latter anomaly found on broadly spaced 800 m interval traverses in less stabilised sands. Earlier BLEG soil sampling by BHP did locate weakly anomalous values (3 – 4 ppb Au) values approximately 400 m away from Kirgella Gift although the method did not effectively pin-point the mineralisation.

The multi-element MAG geochemistry confirms a close association of the anomalous Au values with anomalous As, Te, Pt & W that would appear to represent valid pathfinders for this style of mineralisation. A broad MAG As anomaly covering a 2.5 km x 1 km area coincides with the Kirgella Gift prospect. Figure 6 confirms the close correlation of anomalous Au with the gold mineralisation. The MAG As dispersion has potentially developed "rabbit ears" halo anomalies on traverses 6659700N & 6659600N.

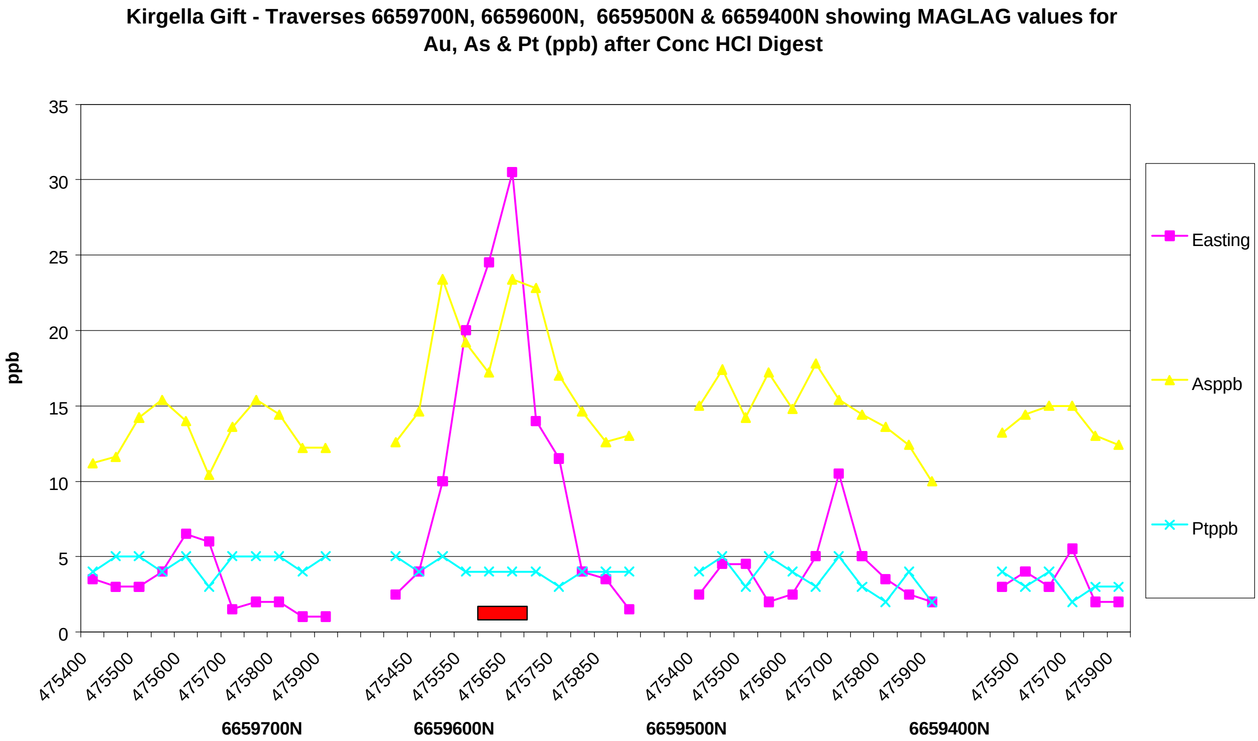

Figure 6 Kirgella Gift - 6659700N, 6659600N, 6659500N & 6659400N MAGLAG Traverses showing Au, As & Pt values after using a partial Conc HCl digest.

Conclusions: The regional MAGLAG sampling programme, combined with the partial Conc. HCl digest, effectively highlighted the Kirgella Gift prospect as an apical Au (30 ppb) anomaly directly above the mineralisation. The broad, 200 to 300 m dispersion Au halo mirrors the secondary dispersion developed within the regolith below the transported sand cover. The development of distinctive As "rabbit-ears" anomalies coinciding with the Au anomaly strongly re-inforces the anomalous MAGLAG geochemistry. The discovery at Kirgella Gift is even more remarkable because a surface geochemical method has located mineralisation occurring below several metres of transported sand in a salt lake environment where conventional BLEG and auger geochemical sampling failed to highlight the target.

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