



**TECHNICAL BULLETIN - SIZE FRACTION
ANALYSIS ON MMI SAMPLES**

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Background:

The influence of specific size fractions on element responses from MMI analyses has been investigated. The data presented below is derived from a report for MERIWA Project M219 – Mechanism of Formation of Mobile Metal Ion Anomalies by A.W. Mann et al, September 1995.

A bulk sample of unsieved near surface soil material was collected from four sites (3 gold target areas and 1 base metal area). Three samples were quartered using a riffle splitter and the fourth, the base metal test area, was done manually because of the high proportion of organic litter.

One-kilogram samples were extracted from each of the four aliquots split from the original bulk sample. These were sieved into various size fractions. Organic material, where present, was manually collected for testing. The results of MMI analyses for each size fraction plus the organic component is shown in Table 1.

Summary

While the work cannot be regarded as exhaustive, it demonstrated, and reconfirmed previous work, that the nine commodity elements tested by MMI analyses, at these locations, have different distributions within varying size fractions. In the specific terrain, climatic conditions, geological settings and soil profiles tested by this study, the conclusion is that an almost unsieved soil sample, sub 5 mm gives the highest level of confidence covering the range of variations observed for the nine MMI elements within each fraction.

Table 1 Individual Size Fraction Analyses

Fraction	Weight % Of Sieved Material	Ni (ppb)	Ag (ppb)	Au (ppb)	Co (ppb)
Sample 1					
Unsieved	-	1,420	102	64	-
+2mm	12.0%	480	77	49	-
-2mm +422 µm	16.4%	1,540	103	59	-
-422 µm	71.6%	1,600	108	58	-
Organic		1,420	37	21	-
Sample 2					
Unsieved	-	200	7	4	50
+2mm	0.8%	600	6	7	260
-2mm +422 µm	28.0%	100	4	3	25
-422 µm	71.2%	220	8	6	65
Sample 3 - Anomaly					
Unsieved	-	40,160	13	3	70
+2mm	5.4%	53,240	7	2	170
-2mm +422 µm	20.8%	38,840	9	1	70
-422 µm	73.8%	37,200	13	3	75
Organic		51,860	1	< 1	150
Sample 3 - Background					
Unsieved	-	1,200	24	5	15
+2mm	19.4%	1,700	38	9	30
-2mm +422 µm	24.3%	740	13	4	< 1
-422 µm	56.3%	980	22	5	5
Organic		1,940	12	2	120

Fraction	Weight % Of Sieved Material	Cu (ppb)	Pb (ppb)	Zn (ppb)	Cd (ppb)
Sample 4					
Unsieved	-	91	2,950	3,193	75
+2mm	64.0%	60	2,588	2,500	61
-2mm +422 µm	22.7%	55	3,388	3,867	102
-422 µm	13.3%	96	3,000	3,154	81
Organic		60	4,222	8,339	265

Data from MERIWA Project M219 – Mechanism of Formation of Mobile Metal Ion Anomalies – A.W. Mann et al, Sept. 1995.