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REPORT
SERIES**

PETROGRAPHY, MINERALOGY AND GEOCHEMISTRY OF SOIL AND LAG OVERLYING THE LIGHTS OF ISRAEL GOLD MINE, DAVYHURST, WESTERN AUSTRALIA

Volume 2 - Appendices

I.D.M. Robertson and M.F.J. Tenhaeff

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September 1998

(CSIRO Division of Exploration Geoscience Report 232R, 1992.
Second impression 1998)

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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 31) is a first revision of CSIRO, Division of Exploration Geoscience Restricted Report 232R, first issued in 1992, which formed part of the CSIRO/AMIRA Projects P240A and P241A.

Copies of this publication can be obtained from:

The Publication Officer, CRC LEME, CSIRO Exploration and Mining, PMB, Wembley, WA 6014, Australia. Information on other publications in this series may be obtained from the above or from <http://leme.anu.edu.au/>

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APPENDIX 1

Tabulated Soil Geochemistry

COMPLETE SOIL

Field No	Lab No	Lib No	Co-ordinates		XRF(f)	XRF(f)	XRF(f)*	XRF(p)	XRF(f)	XRF(f)	XRF(f)	XRF(f)	XRF(f)*	XRF(p)	XRF(f)	XRF(p)
Complete soil		-	North	East	SiO2	Al2O3	Fe2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	TiO2	P2O5	S
Unit	-	-	m	m	%	%	%	%	%	%	%	%	%	%	%	%
Detn Lim	-	-	-	-	0.01	0.02	0.01	0.10	0.02	0.01	0.02	0.01	0.01	0.01	0.005	0.005
LIC 51	L08-1568	08-1565	1200	1050	43.31	18.45	13.14	13.87	1.32	1.65	0.23	0.81	1.01	1.05	0.068	0.079
LIC 52	L08-1571	08-1566	1200	1075	49.77	13.92	24.25	23.88	0.66	0.59	0.24	0.58	1.23	1.32	0.055	0.037
LIC 53	L08-1565	08-1567	1200	1100	50.55	15.79	18.49	18.44	1.02	0.78	0.21	0.66	1.05	1.12	0.040	0.027
LIC 54	L08-1569	08-1568	1200	1125	54.90	11.74	22.67	22.45	0.56	0.44	0.22	0.48	1.11	1.18	0.049	0.025
LIC 55	L08-1576	08-1569	1200	1150	54.46	13.62	15.85	16.30	1.10	1.01	0.27	0.80	0.98	1.03	0.055	0.033
LIC 56	L08-1577	08-1570	1200	1175	49.75	13.93	13.51	14.15	1.44	4.17	0.31	0.88	0.91	0.96	0.063	0.041
LIC 57	L08-1572	08-1571	1200	1200	47.88	9.98	15.82	15.30	1.50	7.45	0.83	0.65	0.86	0.85	0.049	0.043
LIC 58	L08-1579	08-1572	1200	1225	48.98	9.55	10.87	11.58	1.75	8.96	0.76	0.79	0.69	0.71	0.047	0.070
LIC 59	L08-1573	08-1573	1200	1250	47.78	9.87	22.40	21.02	1.27	5.22	0.20	0.73	1.00	1.03	0.051	0.024
LIC 60	L08-1578	08-1574	1200	1275	49.97	10.32	17.29	16.73	1.41	5.44	0.23	0.84	0.82	0.84	0.049	0.044
LIC 61	L08-1574	08-1575	1200	1300	48.50	9.99	13.24	13.15	1.63	7.95	0.36	0.86	0.70	0.73	0.054	0.040
LIC 62	L08-1575	08-1576	1200	1325	50.42	9.63	14.47	14.30	1.61	7.18	0.19	0.85	0.73	0.76	0.055	0.032
LIC 70	L08-1570	08-1577	1925	1060	57.18	13.70	14.09	14.44	1.37	0.59	0.65	0.92	0.88	0.91	0.049	0.021
LIC 71	L08-1567	08-1578	600	850	48.21	12.05	28.22	26.59	0.63	0.48	0.18	0.41	1.43	1.49	0.041	0.019

>600 µm FRACTION

LI3 51	L08-1595	08-1581	1200	1050	20.49	7.86	67.45	60.62	0.24	0.53	0.04	0.04	1.77	2.13	0.067	0.023
LI3 52	L08-1589	08-1582	1200	1075	24.83	12.06	55.57	51.90	0.32	0.34	0.08	0.07	1.81	2.04	0.080	0.018
LI3 53	L08-1585	08-1583	1200	1100	26.38	10.26	56.58	53.04	0.26	0.35	0.09	0.06	1.84	2.12	0.063	0.013
LI3 54	L08-1586	08-1584	1200	1125	26.74	11.67	53.34	49.61	0.28	0.29	0.07	0.06	1.76	1.97	0.080	0.014
LI3 55	L08-1582	08-1585	1200	1150	30.91	10.53	50.12	47.75	0.39	0.60	0.07	0.14	1.69	1.90	0.081	0.013
LI3 56	L08-1583	08-1586	1200	1175	28.72	8.76	46.77	45.18	0.52	4.47	0.07	0.11	1.51	1.69	0.059	0.026
LI3 57	L08-1592	08-1587	1200	1200	18.18	8.45	66.32	59.76	0.43	1.66	0.15	0.04	2.02	2.35	0.048	0.021
LI3 58	L08-1594	08-1588	1200	1225	24.29	7.92	60.81	55.90	0.47	1.08	0.17	0.09	1.83	2.12	0.051	0.021
LI3 59	L08-1588	08-1589	1200	1250	19.46	8.20	66.87	60.19	0.37	1.13	0.05	0.08	2.05	2.36	0.056	0.014
LI3 60	L08-1591	08-1590	1200	1275	17.61	7.60	70.23	63.05	0.32	0.87	0.07	0.07	2.20	2.55	0.051	0.021
LI3 61	L08-1593	08-1591	1200	1300	18.79	7.61	70.09	62.62	0.32	0.90	0.09	0.06	1.98	2.33	0.047	0.016
LI3 62	L08-1590	08-1592	1200	1325	19.66	7.41	67.29	62.19	0.32	0.70	0.00	0.07	2.04	2.43	0.047	0.010
LI3 70	L08-1587	08-1593	1925	1060	37.95	6.21	51.36	48.04	0.25	0.29	0.11	0.06	1.24	1.38	0.072	0.011
LI3 71	L08-1584	08-1594	600	850	26.44	10.25	56.12	56.33	0.28	0.36	0.09	0.06	1.84	2.42	0.064	0.014

COMPLETE SOIL

Field No Complete s Unit Detn Lim	ICP/MS Ag ppm 0.1	INAA As ppm 2	INAA Au ppb 5	XRF(f) Ba ppm 20	XRF(p)* Ba ppm 15	ICP/MS Bi ppm 0.1	ICP/MS Cd ppm 0.1	INAA* Ce ppm 2	XRF(f) Ce ppm 15	XRF(p) Ce ppm 10	INAA* Co ppm 1	XRF(f) Co ppm 20	INAA* Cr ppm 5	XRF(f) Cr ppm 20	XRF(f) Cu ppm 10	XRF(p)* Cu ppm 5
LIC 51	0.3	6	36	188	213	0.2	0.2	28	31	29	34	33	256	256	65	110
LIC 52	0.5	9	9	230	234	0.2	0.1	29	27	40	33	29	355	348	90	114
LIC 53	0.4	7	29	212	232	0.2	0.1	32	38	34	32	26	313	380	91	116
LIC 54	0.5	9	22	180	211	0.3	0.1	26	29	33	28	21	338	346	81	104
LIC 55	0.2	11	226	248	249	0.3	0.2	30	31	37	33	30	280	293	77	115
LIC 56	0.4	6	68	238	247	0.2	0.1	32	34	33	33	31	254	267	77	110
LIC 57	0.4	10	223	204	203	0.2	0.1	34	36	42	23	21	259	247	72	106
LIC 58	0.4	7	360	159	193	0.2	0.1	32	50	30	26	20	207	202	74	112
LIC 59	0.3	9	59	199	214	0.2	0.1	43	49	54	32	23	307	284	97	123
LIC 60	0.2	7	41	180	215	0.2	0.1	43	40	47	30	26	273	277	94	131
LIC 61	0.5	6	49	172	187	0.1	0.2	41	49	47	32	26	262	310	80	127
LIC 62	0.4	7	32	184	193	0.2	0.2	44	54	55	35	34	253	276	83	130
LIC 70	0.3	6	5	200	210	0.2	0.1	36	37	38	41	36	242	231	72	104
LIC 71	0.2	8	9	265	296	0.2	0.1	21	27	27	26	13	490	469	62	80

>600 µm FRACTION

LI3 51	0.2	22	9	182	206	0.3	0.3	38	44	68	21	7	660	740	71	90
LI3 52	0.3	20	5	146	193	0.3	0.2	44	63	75	37	23	628	646	123	167
LI3 53	0.2	20	10	152	222	0.3	0.2	46	64	64	31	9	647	625	107	145
LI3 54	0.2	21	9	150	204	0.4	0.2	39	54	70	36	21	615	599	116	170
LI3 55	0.4	21	51	243	246	0.3	0.2	40	50	71	38	28	552	543	108	158
LI3 56	0.5	17	44	272	311	0.1	0.2	63	75	94	39	25	538	534	98	148
LI3 57	0.4	26	101	266	289	0.4	0.1	65	80	102	36	20	647	660	117	157
LI3 58	0.1	24	99	283	311	0.3	0.2	86	105	129	43	33	584	676	123	163
LI3 59	0.2	20	223	264	355	0.4	0.3	81	111	140	44	23	682	707	128	175
LI3 60	0.4	23	203	234	344	0.4	0.3	80	85	126	44	19	671	685	137	184
LI3 61	0.3	25	17	241	339	0.1	0.3	79	107	123	42	24	668	706	155	181
LI3 62	0.4	18	5	298	384	0.4	0.3	84	94	142	47	31	670	673	131	172
LI3 70	0.1	13	90	133	157	0.4	0.2	60	86	88	43	34	522	543	78	116
LI3 71	0.5	18	5	133	375	0.3	0.1	20	63	44	34	22	908	642	144	108

COMPLETE SOIL

Field No	XRF(f)	XRF(p)*	XRF(p)	ICP/MS	INAA*	XRF(f)	XRF(p)	INAA	XRF(f)	XRF(p)*	XRF(f)	XRF(p)*	XRF(f)	XRF(p)*	XRF(f)	XRF(p)*
Complete s	Ga	Ga	Ge	In	La	La	Mn	Mo	Nb	Nb	Ni	Ni	Pb	Pb	Rb	Rb
Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detn Lim	5	5	3	0.05	0.5	50	20	5	5	5	10	10	10	5	10	5
LIC 51	24	23	1	0.10	14.6	14	1251	3	8	9	122	106	8	9	34	35
LIC 52	22	24	1	0.13	17.7	16	1220	4	6	6	136	98	8	8	26	27
LIC 53	22	24	2	0.10	16.9	11	1209	3	6	6	143	112	10	7	33	36
LIC 54	18	20	1	0.12	15.7	9	989	3	7	6	120	91	11	7	21	23
LIC 55	20	20	1	0.11	16.0	18	1369	3	7	5	126	104	13	6	32	38
LIC 56	18	20	1	0.08	17.7	9	1306	3	6	6	124	103	10	1	37	40
LIC 57	18	17	2	0.09	19.0	17	1124	3	5	8	105	83	13	9	26	30
LIC 58	14	14	1	0.08	18.6	13	1339	3	7	8	109	91	15	12	34	37
LIC 59	21	22	0	0.09	24.7	23	1727	4	5	6	127	110	17	16	27	35
LIC 60	17	19	1	0.10	24.1	26	1609	4	6	7	129	114	14	10	36	38
LIC 61	13	15	1	0.02	23.1	18	1661	3	6	7	138	111	10	10	38	40
LIC 62	15	15	1	0.09	25.8	24	1743	3	10	5	144	121	18	11	35	41
LIC 70	17	20	1	0.09	20.6	25	1674	4	8	10	125	108	14	7	50	56
LIC 71	23	24	0	0.11	11.5	10	760	3	1	7	130	102	7	7	20	21

>600 µm FRACTION

LI3 51	40	34	1	0.20	22.5	21	1585	5	5	6	145	90	7	16	3	0
LI3 52	32	30	0	0.22	33.4	31	1348	4	5	4	172	135	10	18	4	4
LI3 53	31	31	2	0.22	38.6	44	1230	5	4	7	158	120	14	20	4	3
LI3 54	32	31	0	0.22	29.1	37	1138	5	6	7	174	123	1	16	4	3
LI3 55	24	29	1	0.18	30.7	22	1482	5	7	5	167	124	12	10	8	1
LI3 56	26	28	1	0.12	41.9	47	2325	5	11	6	179	129	13	19	8	4
LI3 57	41	37	1	0.25	38.3	45	2900	4	13	3	170	121	32	32	11	1
LI3 58	38	37	0	0.19	45.1	43	3506	5	12	7	231	146	27	30	4	4
LI3 59	45	39	0	0.22	52.6	55	3759	5	3	10	204	151	34	37	4	2
LI3 60	42	38	1	0.25	55.4	59	3792	5	12	6	193	139	25	32	4	1
LI3 61	44	38	2	0.16	52.6	51	3798	5	3	4	204	141	24	29	6	0
LI3 62	35	36	0	0.21	59.2	50	4209	5	6	6	210	160	35	37	12	3
LI3 70	23	23	1	0.18	46.7	45	2590	5	6	6	192	139	19	23	4	1
LI3 71	29	32	0	0.19	14.2	36	747	5	10	5	163	136	12	10	15	1

COMPLETE SOIL

Field No	INAA	ICP/MS	XRF(f)	XRF(p)*	XRF(f)*	XRF(p)	INAA	XRF(f)	XRF(p)*	XRF(f)*	XRF(p)	XRF(f)*	XRF(p)
Complete s	Sb	Sn	Sr	Sr	V	V	W	Y	Y	Zn	Zn	Zr	Zr
Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detn Lim	0.2	0.5	10	3	15	10	5	5	3	5	5	10	4
LIC 51	0.5	1.4	68	75	266	303	2	20	19	91	103	123	136
LIC 52	1.0	1.3	52	50	479	603	2	20	20	86	84	150	132
LIC 53	0.6	1.4	57	57	355	417	2	20	21	91	94	141	138
LIC 54	0.8	1.2	43	40	433	542	4	18	19	79	76	138	120
LIC 55	0.7	1.8	66	66	304	364	2	20	22	100	108	125	133
LIC 56	0.6	1.1	82	85	260	303	2	22	23	89	97	137	133
LIC 57	0.7	1.2	119	121	329	382	2	17	19	66	69	128	122
LIC 58	0.3	1.2	146	153	205	263	2	20	21	70	77	115	124
LIC 59	0.8	1.3	74	78	422	484	2	25	26	85	92	141	129
LIC 60	0.5	1.1	82	85	302	349	2	29	29	98	109	129	131
LIC 61	0.4	1.3	109	115	239	278	2	25	26	84	91	126	126
LIC 62	0.5	1.1	97	101	263	306	2	28	31	87	97	125	122
LIC 70	0.5	1.4	50	55	285	344	2	20	22	99	109	129	133
LIC 71	0.9	1.1	54	54	538	639	2	13	13	60	55	158	153

>600 µm FRACTION

LI3 51	1.7	1.5	50	33	1245	1678	1	18	15	80	64	119	98
LI3 52	1.6	1.3	49	36	1138	1533	2	29	32	112	100	136	116
LI3 53	1.9	1.2	48	39	1156	1534	9	32	32	102	94	142	113
LI3 54	1.8	1.3	48	35	1086	1457	6	28	32	105	96	126	108
LI3 55	1.6	1.5	55	45	1020	1335	2	29	33	117	105	128	110
LI3 56	1.8	1.3	90	80	948	1225	5	26	27	104	99	119	106
LI3 57	2.2	2.3	91	72	1383	1847	8	18	19	113	99	159	122
LI3 58	1.9	1.4	109	89	1221	1626	2	19	20	136	119	148	121
LI3 59	2.1	1.8	71	55	1328	1783	4	25	23	120	107	157	128
LI3 60	2.3	1.2	72	53	1332	1828	2	25	26	121	110	168	128
LI3 61	2.3	1.3	73	57	1372	1859	5	19	22	123	107	153	125
LI3 62	2.0	1.5	65	53	1266	1764	8	23	29	131	117	161	131
LI3 70	1.2	0.8	50	43	976	1246	5	31	34	149	135	111	92
LI3 71	1.9	1.3	47	44	1141	1578	2	29	14	115	69	143	117

<75 µm FRACTION

Field No	Lab No	Lib No	Co-ordinates		XRF(f)	XRF(f)	XRF(f)*	XRF(p)	XRF(f)	XRF(f)	XRF(f)	XRF(f)	XRF(f)*	XRF(p)	XRF(f)	XRF(p)
Unit	-	-	North	East	SiO2	Al2O3	Fe2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	TiO2	P2O5	S
Detn Lim	-	-	m	m	%	%	%	%	%	%	%	%	%	%	%	%
					0.01	0.02	0.01	0.10	0.02	0.01	0.02	0.01	0.01	0.01	0.005	0.005
L75 51	L08-1608	08-1597	1200	1050	45.95	20.19	12.59	13.58	1.40	1.57	0.42	0.90	1.25	1.30	0.063	0.079
L75 52	L08-1602	08-1598	1200	1075	42.89	13.30	7.82	13.30	2.43	11.09	0.29	1.27	0.84	1.56	0.070	0.050
L75 53	L08-1597	08-1599	1200	1100	48.30	19.54	11.86	13.15	1.35	1.04	0.35	0.91	1.21	1.22	0.042	0.023
L75 54	L08-1610	08-1600	1200	1125	54.63	16.96	12.53	13.15	0.97	0.86	0.56	0.96	1.80	1.77	0.047	0.039
L75 55	L08-1611	08-1601	1200	1150	51.72	17.44	11.90	12.72	1.47	1.36	0.55	1.13	1.33	1.29	0.056	0.047
L75 56	L08-1603	08-1602	1200	1175	48.70	15.43	10.94	11.72	1.60	4.34	0.44	1.10	1.19	1.20	0.061	0.030
L75 57	L08-1600	08-1603	1200	1200	43.29	13.22	8.92	9.72	2.20	11.47	0.33	1.04	0.98	0.94	0.055	0.045
L75 58	L08-1606	08-1604	1200	1225	44.31	12.22	7.74	8.44	2.31	12.04	0.35	1.16	0.98	0.91	0.060	0.048
L75 59	L08-1607	08-1605	1200	1250	45.19	13.83	8.48	9.29	2.05	9.67	0.34	1.23	0.99	0.97	0.063	0.039
L75 60	L08-1605	08-1606	1200	1275	45.71	14.42	8.44	9.29	2.19	8.65	0.29	1.31	0.98	0.96	0.061	0.042
L75 61	L08-1601	08-1607	1200	1300	43.44	13.00	7.55	8.29	2.27	11.40	0.32	1.22	0.90	0.85	0.064	0.048
L75 62	L08-1604	08-1608	1200	1325	51.01	19.21	12.74	8.44	1.11	0.94	0.43	0.99	1.57	0.82	0.052	0.044
L75 70	L08-1599	08-1609	1925	1060	51.23	19.45	11.61	12.72	1.99	0.77	0.39	1.32	1.13	1.11	0.058	0.010
L75 71	L08-1609	08-1610	600	850	55.31	16.04	12.77	13.44	1.08	0.81	0.48	0.77	1.65	1.55	0.037	0.012

<4 µm FRACTION

LI4 51	L08-1625	08-1613	1200	1050	42.83	23.66	13.20	14.15	1.68	0.99	0.12	0.87	0.94	0.99	0.079	0.051
LI4 52	L08-1613	08-1614	1200	1075	42.81	24.13	13.63	14.44	1.39	0.71	0.12	0.86	1.00	1.06	0.070	0.033
LI4 53	L08-1620	08-1615	1200	1100	43.16	22.98	12.81	14.15	1.58	0.86	0.14	0.81	0.91	1.01	0.047	0.018
LI4 54	L08-1627	08-1616	1200	1125	43.34	23.54	13.82	14.87	1.44	0.77	0.16	0.79	1.06	1.13	0.058	0.033
LI4 55	L08-1626	08-1617	1200	1150	44.17	22.15	13.43	14.44	1.95	1.00	0.17	1.11	0.98	1.04	0.079	0.038
LI4 56	L08-1623	08-1618	1200	1175	43.45	21.70	13.03	13.87	2.23	1.90	0.17	1.12	0.97	1.03	0.090	0.037
LI4 57	L08-1617	08-1619	1200	1200	40.04	19.70	11.35	11.58	3.00	3.78	1.01	1.24	0.90	0.84	0.088	0.042
LI4 58	L08-1618	08-1620	1200	1225	39.68	17.75	9.60	10.44	3.22	7.03	0.39	1.33	0.74	0.77	0.091	0.057
LI4 59	L08-1619	08-1621	1200	1250	43.25	21.19	10.94	12.01	2.94	2.13	0.13	1.47	0.81	0.85	0.098	0.019
LI4 60	L08-1614	08-1622	1200	1275	43.14	20.99	10.45	11.29	3.06	2.17	0.11	1.54	0.79	0.83	0.097	0.038
LI4 61	L08-1624	08-1623	1200	1300	44.05	20.15	10.31	11.29	3.16	1.71	0.15	1.48	0.77	0.81	0.107	0.049
LI4 62	L08-1616	08-1624	1200	1325	44.63	20.32	10.44	11.44	3.33	1.38	0.14	1.51	0.78	0.81	0.117	0.024
LI4 70	L08-1622	08-1625	1925	1060	46.10	22.04	13.38	14.15	2.21	0.66	0.43	1.29	1.03	1.06	0.070	0.012
LI4 71	L08-1621	08-1626	600	850	45.90	20.54	14.04	15.15	1.44	0.73	0.12	0.56	0.75	0.81	0.043	0.005

<75 µm FRACTION

Field No	ICP/MS	INAA	INAA	XRF(f)	XRF(p)*	ICP/MS	ICP/MS	INAA*	XRF(f)	XRF(p)	INAA*	XRF(f)	INAA*	XRF(f)	XRF(f)	XRF(p)*
Unit	Ag	As	Au	Ba	Ba	Bi	Cd	Ce	Ce	Ce	Co	Co	Cr	Cr	Cu	Cu
Detn Lim	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	0.1	2	5	20	15	0.1	0.1	2	15	10	1	20	5	20	10	5
L75 51	0.4	5	31	246	256	0.2	0.2	31	38	28	38	36	265	296	74	115
L75 52	0.4	5	28	185	306	0.2	0.2	36	51	27	42	38	308	211	103	114
L75 53	0.2	5	34	230	233	0.2	0.1	26	29	28	31	34	260	271	83	128
L75 54	0.1	6	38	301	316	0.2	0.1	37	42	31	40	32	311	316	72	112
L75 55	0.5	8	300	314	322	0.3	0.2	36	48	37	42	41	278	296	90	129
L75 56	0.5	6	63	303	303	0.2	0.1	33	36	33	34	33	239	239	76	118
L75 57	0.3	8	244	418	333	0.2	0.2	35	46	27	24	21	239	232	80	112
L75 58	0.4	7	432	273	238	0.2	0.1	36	44	35	28	26	233	231	84	124
L75 59	0.4	5	88	239	237	0.2	0.1	41	44	37	33	31	232	252	93	144
L75 60	0.5	6	65	235	224	0.2	0.1	43	39	35	36	33	237	229	105	151
L75 61	0.7	5	64	194	197	0.2	0.1	41	46	33	31	32	221	203	99	146
L75 62	0.6	6	50	296	202	0.2	0.1	47	37	35	40	38	211	301	87	157
L75 70	0.1	6	8	230	229	0.1	0.1	42	47	34	45	40	251	250	87	127
L75 71	0.2	4	12	236	254	0.2	0.1	29	42	26	33	29	319	327	52	82

<4 µm FRACTION

LI4 51	0.2	7	34	166	174	0.2	0.1	28	41	24	38	31	269	269	82	113
LI4 52	0.4	5	31	195	204	0.2	0.2	30	40	28	43	38	268	266	93	126
LI4 53	0.3	5	50	134	176	0.1	0.1	20	26	25	29	29	240	259	100	143
LI4 54	0.1	6	46	222	231	0.2	0.1	31	29	29	44	38	275	271	96	137
LI4 55	0.1	13	469	204	251	0.5	0.1	30	42	33	45	38	271	279	103	153
LI4 56	0.2	7	110	188	190	0.2	0.1	34	40	33	40	38	237	245	109	146
LI4 57	0.2	10	531	149	168	0.2	0.1	37	49	28	27	28	216	233	117	164
LI4 58	0.4	6	748	156	161	0.2	0.2	34	48	44	27	37	147	200	122	193
LI4 59	0.2	7	155	170	166	0.2	0.1	44	45	49	42	40	221	236	149	190
LI4 60	0.5	7	102	119	148	0.3	0.1	46	52	50	42	42	219	230	128	185
LI4 61	0.3	6	115	115	137	0.3	0.1	55	59	47	41	41	197	215	140	213
LI4 62	0.5	4	60	139	144	0.3	0.2	41	55	59	39	56	153	233	157	211
LI4 70	0.2	6	24	136	157	0.3	0.1	45	55	39	37	37	227	248	107	145
LI4 71	0.2	4	12	160	176	0.2	0.1	12	29	21	19	24	220	296	64	98

<75 μ m FRACTION

Field No	XRF(f)	XRF(p)*	XRF(p)	ICP/MS	INAA*	XRF(f)	XRF(p)	INAA	XRF(f)	XRF(p)*	XRF(f)	XRF(p)*	XRF(f)	XRF(p)*	XRF(f)	XRF(p)*
Unit	Ga	Ga	Ge	In	La	La	Mn	Mo	Nb	Nb	Ni	Ni	Pb	Pb	Rb	Rb
Detn Lim	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	5	5	3	0.05	0.5	50	20	5	5	5	10	10	10	5	10	5
L75 51	23	26	1	0.13	15.1	11	1483	3	9	9	150	112	10	6	40	42
L75 52	17	24	2	0.12	16.2	20	1557	4	7	9	144	109	12	4	53	45
L75 53	22	25	2	0.10	14.0	12	1164	3	9	10	134	114	7	7	46	48
L75 54	21	23	1	0.10	16.6	17	1658	3	9	11	123	100	12	7	45	48
L75 55	21	23	1	0.05	16.4	16	1756	3	9	9	146	113	12	11	44	52
L75 56	17	21	1	0.11	16.4	17	1414	3	10	9	128	109	12	6	47	47
L75 57	15	16	0	0.08	19.1	14	866	3	7	9	107	89	7	4	43	44
L75 58	15	16	2	0.08	21.3	18	1141	3	8	9	119	96	12	2	45	49
L75 59	18	18	1	0.09	22.1	17	1524	3	8	10	140	119	12	7	47	54
L75 60	17	18	2	0.10	23.2	23	1581	3	9	9	140	122	11	8	53	53
L75 61	14	17	0	0.09	22.4	19	1363	3	8	9	128	114	7	10	52	54
L75 62	24	19	0	0.09	24.9	14	1534	3	7	9	136	129	9	12	41	59
L75 70	23	25	1	0.11	21.4	19	1599	4	10	11	147	129	11	11	76	82
L75 71	18	21	1	0.10	14.6	15	1089	3	10	11	130	109	7	6	34	38

<4 μ m FRACTION

LI4 51	28	29	2	0.12	15.7	17	1085	2	7	10	145	122	11	6	38	43
LI4 52	28	29	1	0.12	14.7	11	1480	4	9	8	147	132	14	7	41	43
LI4 53	27	29	2	0.07	13.0	12	903	3	7	9	141	123	14	3	46	48
LI4 54	30	29	1	0.12	15.5	12	1509	2	3	9	148	131	13	6	45	44
LI4 55	27	29	1	0.11	16.0	9	1419	2	3	8	156	142	11	11	45	49
LI4 56	28	26	2	0.12	18.2	12	1225	2	8	9	162	137	9	6	50	52
LI4 57	24	22	1	0.10	20.8	17	867	4	10	10	142	122	7	5	51	55
LI4 58	23	22	1	0.10	19.0	30	1351	3	6	8	150	132	8	7	52	57
LI4 59	24	27	2	0.10	24.2	29	1583	4	9	9	187	170	14	7	61	66
LI4 60	25	27	1	0.13	26.3	17	1492	4	9	11	182	175	12	11	63	72
LI4 61	22	25	1	0.13	26.5	30	1522	2	7	10	181	169	13	12	65	70
LI4 62	28	26	2	0.12	20.9	33	1741	3	10	11	210	189	12	11	70	75
LI4 70	30	29	2	0.13	23.0	18	1286	2	8	12	164	137	15	9	77	82
LI4 71	26	27	1	0.10	9.0	8	633	1	7	6	148	128	4	3	33	35

<75 μm FRACTION

Field No	INAA	ICP/MS	XRF(f)	XRF(p)*	XRF(f)*	XRF(p)	INAA	XRF(f)	XRF(p)*	XRF(f)*	XRF(p)	XRF(f)*	XRF(p)
Unit	Sb	Sn	Sr	Sr	V	V	W	Y	Y	Zn	Zn	Zr	Zr
Detn Lim	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	0.2	0.5	10	3	15	10	5	5	3	5	5	10	4
L75 51	0.5	1.4	71	77	249	307	2	18	20	102	112	151	153
L75 52	0.6	1.2	138	69	144	309	2	40	22	107	106	209	220
L75 53	0.5	1.3	65	70	228	276	2	19	19	98	112	185	195
L75 54	0.5	0.7	71	74	255	302	2	21	24	100	101	278	275
L75 55	0.6	1.4	86	89	228	275	5	23	25	118	127	207	229
L75 56	0.4	1.4	95	101	202	252	2	24	28	95	103	240	242
L75 57	0.4	1.1	170	177	186	223	2	27	26	79	82	245	230
L75 58	0.2	1.2	193	208	154	187	2	26	31	80	87	256	258
L75 59	0.4	1.4	118	126	154	182	2	30	32	95	104	229	238
L75 60	0.4	1.4	116	125	148	187	2	32	35	99	108	225	214
L75 61	1.1	1.2	146	157	146	168	2	34	33	94	102	235	235
L75 62	0.3	1.6	74	145	250	161	2	19	42	102	116	230	211
L75 70	0.5	1.3	61	65	260	312	2	26	27	126	141	207	211
L75 71	0.5	0.9	72	73	234	268	2	14	21	59	62	268	254

<4 μm FRACTION

LI4 51	0.5	1.6	47	50	270	303	1	20	19	113	126	121	133
LI4 52	0.4	1.7	51	54	280	316	2	18	21	114	125	128	138
LI4 53	0.6	1.5	54	59	244	294	1	17	22	108	127	105	122
LI4 54	0.6	1.5	55	60	270	325	2	19	19	111	129	125	134
LI4 55	0.6	1.8	64	65	266	312	7	22	22	148	171	120	128
LI4 56	0.7	1.5	49	53	237	284	2	28	29	126	142	109	121
LI4 57	0.5	1.6	72	74	223	242	2	28	28	113	124	103	113
LI4 58	0.2	3.2	110	120	195	222	2	37	39	120	134	108	110
LI4 59	0.4	1.6	42	44	189	214	2	34	40	150	167	115	119
LI4 60	0.6	2.1	47	46	177	208	1	37	40	140	158	109	119
LI4 61	0.3	2.0	41	43	190	224	1	41	45	150	168	112	123
LI4 62	0.2	1.8	33	37	183	210	2	52	54	166	191	110	121
LI4 70	0.5	1.8	52	54	299	353	1	27	29	140	153	146	155
LI4 71	0.4	1.4	61	64	237	267	1	13	15	68	74	105	113

STANDARDS

Field No	Lab No	Lib No	Co-ordinates		XRF(f)	XRF(f)	XRF(f)*	XRF(p)	XRF(f)	XRF(f)	XRF(f)	XRF(f)	XRF(f)*	XRF(p)	XRF(f)	XRF(p)
Unit	-	-	North	East	SiO2	Al2O3	Fe2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	TiO2	P2O5	S
Detn Lim	-	-	m	m	%	%	%	%	%	%	%	%	%	%	%	%
STD 08	L08-1566	08-1579	-	-	44.82	21.36	17.41	11.15	0.99	0.27	1.78	4.90	0.50	0.24	0.173	0.262
STD 08	L08-1580	08-1580	-	-	44.72	21.37	17.41	12.30	1.00	0.27	1.75	4.92	0.51	0.29	0.176	0.352
STD 08	L08-1598	08-1611	-	-	44.77	21.39	17.45	14.30	1.00	0.27	1.75	4.97	0.51	0.40	0.177	0.238
STD 08	L08-1612	08-1612	-	-	44.81	21.48	17.52	13.87	1.00	0.27	1.75	5.03	0.51	0.37	0.177	0.382
STD 08	L08-1615	08-1627	-	-	44.93	21.43	17.52	12.44	1.00	0.28	1.79	5.03	0.51	0.30	0.180	0.347
STD 08	L08-1628	08-1628	-	-	44.74	21.40	17.52	14.15	0.98	0.27	1.77	4.98	0.51	0.39	0.174	0.221
Mean	-	-	-	-	44.80	21.41	17.47	13.03	1.00	0.27	1.77	4.97	0.51	0.33	0.176	0.300
2s	-	-	-	-	0.15	0.09	0.11	2.53	0.02	0.01	0.04	0.11	0.01	0.13	0.005	0.136
Pre Val	-	-	-	-	45.05	21.20	16.52	16.52	1.09	0.28	1.73	4.81	0.53	0.53	0.080	0.159

STD 09	L08-1581	08-1595	-	-	13.64	7.47	72.61	67.05	0.14	0.10	0.03	0.18	0.57	0.68	0.193	0.051
STD 09	L08-1596	08-1596	-	-	13.74	7.55	73.41	66.34	0.15	0.10	0.01	0.18	0.58	0.68	0.194	0.047
Mean	-	-	-	-	13.69	7.51	73.01	66.70	0.15	0.10	0.02	0.18	0.58	0.68	0.194	0.049
2s	-	-	-	-	0.14	0.11	1.13	1.01	0.01	0.00	0.03	0.00	0.01	0.00	0.001	0.006
Pre Val	-	-	-	-	13.78	7.54	65.05	65.05	0.15	0.13	0.04	0.20	0.70	0.70	0.050	0.041

STANDARDS

Field No	ICP/MS	INAA	INAA	XRF(f)	XRF(p)*	ICP/MS	ICP/MS	INAA*	XRF(f)	XRF(p)	INAA*	XRF(f)	INAA*	XRF(f)	XRF(f)	XRF(p)*
Unit	Ag	As	Au	Ba	Ba	Bi	Cd	Ce	Ce	Ce	Co	Co	Cr	Cr	Cu	Cu
Detn Lim	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	0.1	2	5	20	15	0.1	0.1	2	15	10	1	20	5	20	10	5
STD 08	0.6	1092	5481	3329	1744	41.2	0.1	103	197	50	166	152	133	148	176	166
STD 08	0.7	1107	5506	3289	2109	43.5	0.2	103	228	68	169	159	139	150	187	186
STD 08	0.4	1060	5459	3290	2764	40.0	0.1	105	221	67	159	162	136	147	178	211
STD 08	0.6	1081	5347	3294	2549	44.2	0.1	106	202	73	164	157	136	146	173	208
STD 08	0.6	1084	5534	3304	2244	39.4	0.2	108	207	63	163	157	137	146	173	193
STD 08	0.5	1075	5605	3265	2830	39.2	0.1	103	206	79	162	158	133	146	177	212
Mean	0.6	1083	5489	3295	2373	41.3	0.1	105	210	67	164	158	136	147	177	196
2s	0.2	32	172	42	837	4.3	0.1	4	24	20	7	7	5	3	10	36
Pre Val	0.9	1121	5497	3244	3244	47.2	0.2	119	119	119	175	175	138	138	212	212
STD 09	0.4	366	56	283	376	0.9	0.3	18	54	46	17	9	390	499	129	159
STD 09	0.4	371	97	302	383	1.0	0.3	17	49	40	17	0	391	496	121	163
Mean	0.4	368	77	293	380	1.0	0.3	17	52	43	17	5	390	498	125	161
2s	0.0	7	59	27	10	0.1	0.0	2	7	8	0	13	2	4	11	6
Pre Val	0.8	438	87	354	354	1.3	0.5	18	18	18	19	19	471	471	141	141

STANDARDS

Field No	XRF(f)	XRF(p)*	XRF(p)	ICP/MS	INAA*	XRF(f)	XRF(p)	INAA	XRF(f)	XRF(p)*	XRF(f)	XRF(p)*	XRF(f)	XRF(p)*	XRF(f)	XRF(p)*
Unit	Ga	Ga	Ge	In	La	La	Mn	Mo	Nb	Nb	Ni	Ni	Pb	Pb	Rb	Rb
Detn Lim	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	5	5	3	0.05	0.5	50	20	5	5	5	10	10	10	5	10	5
STD 08	27	23	0	0.42	43.0	40	228	5	3	8	129	66	17	12	111	118
STD 08	28	26	1	0.45	44.3	43	248	5	2	7	132	77	23	8	109	113
STD 08	28	29	1	0.40	41.2	46	303	5	6	6	127	85	19	11	112	122
STD 08	30	26	1	0.41	41.8	44	287	5	5	6	126	86	19	10	114	123
STD 08	26	26	1	0.39	41.3	35	267	5	7	5	126	76	19	6	113	116
STD 08	29	28	1	0.35	41.4	46	308	5	9	5	127	83	16	11	115	121
Mean	28	26	1	0.40	42.2	42	274	5	5	6	128	79	19	10	112	119
2s	3	4	1	0.07	2.5	8	63	0	5	2	5	15	5	5	4	8
Pre Val	29	29	2	0.49	47.2	47	323	6	6	6	94	94	14	14	127	127

STD 09	24	25	1	0.19	10.3	5	1575	5	3	6	94	46	36	40	12	4
STD 09	23	25	1	0.20	10.8	13	1606	6	6	5	87	40	56	42	7	5
Mean	24	25	1	0.20	10.5	9	1591	5	5	6	91	43	46	41	10	5
2s	1	0	0	0.01	0.6	11	44	0	4	1	10	8	28	3	7	1
Pre Val	25	25	1	0.26	11.7	12	1543	5	2	2	30	30	53	53	6	6

STANDARDS

Field No	INAA	ICP/MS	XRF(f)	XRF(p)*	XRF(f)*	XRF(p)	INAA	XRF(f)	XRF(p)*	XRF(f)*	XRF(p)	XRF(f)*	XRF(p)
Unit	Sb	Sn	Sr	Sr	V	V	W	Y	Y	Zn	Zn	Zr	Zr
Detn Lim	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	0.2	0.5	10	3	15	10	5	5	3	5	5	10	4
STD 08	7.1	1.4	101	92	98	55	32	17	16	103	73	146	135
STD 08	7.4	1.5	96	92	101	68	31	20	15	100	76	148	131
STD 08	7.2	1.4	99	95	100	80	29	18	15	105	88	148	155
STD 08	7.6	1.5	101	92	94	82	33	19	14	100	86	158	139
STD 08	7.5	1.4	101	89	102	73	27	19	14	103	82	155	134
STD 08	7.0	1.4	101	93	101	90	31	22	15	101	84	155	133
Mean	7.3	1.4	100	92	99	75	31	19	15	102	82	152	138
2s	0.5	0.1	4	4	6	25	5	3	2	4	12	10	18
Pre Val	7.8	2.1	100	100	103	103	34	16	16	95	95	158	158

STD 09	0.6	0.7	21	14	689	938	7	13	13	353	315	115	85
STD 09	1.3	0.7	24	19	695	948	6	13	13	364	315	112	85
Mean	1.0	0.7	23	17	692	943	7	13	13	359	315	114	85
2s	1.0	0.0	4	7	8	14	2	0	0	16	0	4	0
Pre Val	0.6	1.1	12	12	932	932	9	13	13	295	295	88	88

APPENDIX 2

Tabulated Lag Geochemistry

LIGHTS OF ISRAEL

COARSE LAGS

Orig Fld No	Field No	Lab Seq	Lib No	Co-ordinates		ICP SiO2	ICP Al2O3	ICP Fe2O3	XRF Fe2O3	ICP MgO	ICP CaO	ICP TiO2	XRF TiO2	INAA As	INAA Au	ICP Ba
3	03 LOI	356	08 - 356	1200	1050	14.30	7.14	69.70	62.48	0.42	2.04	2.54	2.93	16.8	5.8	249
5	04 LOI	376	08 - 357	1200	1075	20.20	8.84	62.00	56.76	0.36	0.39	4.07	4.78	25.3	7.0	420
7	05 LOI	371	08 - 358	1200	1100	13.30	5.74	72.10	66.91	0.33	0.60	1.32	1.63	24.0	22.0	330
9	06 LOI	379	08 - 359	1200	1125	28.60	6.05	56.70	54.90	0.37	0.29	0.52	0.66	27.5	102.3	240
11	07 LOI	366	08 - 360	1200	1150	12.60	5.66	72.90	68.63	0.32	0.61	0.87	1.04	21.0	565.5	321
13	08 LOI	361	08 - 361	1200	1175	9.68	4.90	75.80	70.20	0.51	2.04	0.70	0.92	19.9	9.6	330
15	09 LOI	373	08 - 362	1200	1200	8.02	3.90	77.60	68.48	0.62	2.48	1.64	1.87	21.8	6.9	199
17	10 LOI	377	08 - 363	1200	1225	13.00	4.90	75.60	66.48	0.61	2.96	0.59	0.69	15.8	726.2	171
19	11 LOI	370	08 - 364	1200	1250	8.21	3.97	73.40	68.63	0.39	5.00	0.89	1.08	10.7	38.8	150
21	12 LOI	368	08 - 365	1200	1275	8.78	5.11	73.70	69.91	0.30	2.37	1.16	1.45	27.5	6.7	191
23	13 LOI	360	08 - 366	1200	1300	12.20	10.10	62.30	61.05	1.81	1.68	0.69	0.93	11.1	4.7	99
25	14 LOI	367	08 - 367	1200	1325	13.30	5.02	70.40	65.77	0.41	2.30	1.66	2.07	8.3	6.6	351
				Min	1200 1050	8.02	3.90	56.70	54.90	0.30	0.29	0.52	0.66	8.3	4.7	99
				Max	1200 1325	28.60	10.10	77.60	70.20	1.81	5.00	4.07	4.78	27.5	726.2	420

FINE LAGS

Orig Fld No	Field No	Lab Seq	Lib No	Co-ordinates		ICP SiO2	ICP Al2O3	ICP Fe2O3	XRF Fe2O3	ICP MgO	ICP CaO	ICP TiO2	XRF TiO2	INAA As	INAA Au	ICP Ba
4	15 LOI	374	08 - 368	1200	1050	16.90	10.50	63.30	59.05	0.38	1.05	1.92	2.46	36.7	58.0	198
6	16 LOI	362	08 - 369	1200	1075	22.20	11.80	54.50	52.76	0.28	0.31	1.79	2.27	20.6	12.2	117
8	17 LOI	372	08 - 370	1200	1100	22.20	12.00	56.40	52.76	0.27	0.28	1.77	2.20	16.7	11.3	119
10	18 LOI	357	08 - 371	1200	1125	19.60	11.10	61.00	57.05	0.27	0.25	2.09	2.61	21.4	20.5	116
12	19 LOI	375	08 - 372	1200	1150	17.80	9.86	66.40	60.19	0.26	0.29	2.01	2.46	24.7	5.7	160
14	20 LOI	359	08 - 373	1200	1175	18.40	8.89	62.40	59.33	0.43	0.84	1.83	2.33	24.6	17.9	291
16	21 LOI	369	08 - 374	1200	1200	18.10	9.21	63.60	58.76	0.46	1.96	1.92	2.40	26.9	212.2	314
18	22 LOI	364	08 - 375	1200	1225	10.60	7.78	70.60	67.34	0.31	0.59	2.09	2.79	23.7	144.1	237
20	23 LOI	380	08 - 376	1200	1250	14.30	8.58	69.20	63.19	0.35	0.84	2.01	2.55	22.8	67.9	274
22	24 LOI	381	08 - 377	1200	1275	14.90	8.57	68.50	64.05	0.33	0.56	1.97	2.56	23.7	21.2	226
24	25 LOI	378	08 - 378	1200	1300	9.76	7.84	74.50	69.05	0.30	0.58	2.25	2.97	25.1	19.7	187
26	26 LOI	358	08 - 379	1200	1325	15.30	8.38	68.20	63.05	0.37	0.77	1.99	2.52	26.6	81.3	220
				Min	1200 1050	9.76	7.78	54.50	52.76	0.26	0.25	1.77	2.20	16.7	5.7	116
				Max	1200 1325	22.20	12.00	74.50	69.05	0.46	1.96	2.25	2.97	36.7	212.2	314

* .22 Cartridge Case

COARSE LAGS

Field No	ICP Be	INAA Ce	INAA Co	ICP Cr	INAA Cr	ICP Cu	XRF Cu	XRF Ga	XRF Ge	INAA La	ICP Mn	XRF Mn	INAA Mo	XRF Nb	ICP Ni	XRF Ni
03 LOI	0	14.1	58	378	324	247	209	21	0	10.3	2658	2113	1.1	6	156	125
04 LOI	0	22.2	77	387	352	217	182	24	0	15.5	2068	1693	12.0	11	164	133
05 LOI	0	37.2	36	200	559	292	235	9	2	29.7	3528	2971	4.9	5	227	188
06 LOI	0	33.4	138	228	204	227	200	9	0	24.1	3215	2817	4.9	0	227	175
07 LOI	0	30.4	158	303	266	281	238	13	0	22.5	3503	2882	2.2	0	260	201
08 LOI	0	26.1	121	270	211	171	155	13	2	19.9	4600	3897	1.9	1	256	199
09 LOI	0	32.5	34	252	634	268	236	9	0	29.4	1398	1106	5.0	3	185	153
10 LOI	0	15.1	79	250	192	288	257	10	0	14.0	3204	2609	4.7	3	212	164
11 LOI	0	24.3	309	187	153	264	239	9	0	19.6	4861	4114	4.8	2	351	305
12 LOI	0	33.6	101	329	304	279	249	13	0	30.4	4371	3645	2.1	0	217	187
13 LOI	0	11.3	42	248	140	240	178	22	1	9.4	2788	2476	1.5	0	119	100
14 LOI	0	52.4	170	742	696	329	288	23	0	36.4	8759	7396	2.2	4	313	262
Min	0	11.3	34	187	140	171	155	9	0	9.4	1398	1106	1.1	0	119	100
Max	0	52.4	309	742	696	329	288	24	2	36.4	8759	7396	12.0	11	351	305

FINE LAGS

Field No	ICP Be	INAA Ce	INAA Co	ICP Cr	INAA Cr	ICP Cu	XRF Cu	XRF Ga	XRF Ge	INAA La	ICP Mn	XRF Mn	INAA Mo	XRF Nb	ICP Ni	XRF Ni
15 LOI	0	21.2	46	807	190	148	137	31	0	11.6	2579	2225	4.6	5	131	110
16 LOI	0	34.2	34	642	608	160	146	34	0	28.9	1278	1146	2.0	3	125	109
17 LOI	0	29.3	155	647	162	157	150	34	1	20.9	1221	1059	4.9	8	117	111
18 LOI	0	34.2	33	658	636	209	145	39	0	27.5	1263	1087	2.0	5	121	103
19 LOI	0	58.3	40	650	775	223	149	37	0	37.2	1779	1485	5.2	6	113	99
20 LOI	0	56.0	46	631	644	137	129	29	1	44.8	2764	2434	2.2	5	135	114
21 LOI	0	56.6	37	686	650	150	139	41	1	39.0	3118	2686	2.2	3	117	106
22 LOI	0	70.8	39	781	780	159	138	42	0	51.1	4000	3560	2.2	6	128	103
23 LOI	0	85.8	44	753	705	175	155	36	3	60.4	4694	3973	5.7	4	159	132
24 LOI	0	90.4	45	755	727	176	157	38	3	68.6	4907	4221	5.8	7	159	133
25 LOI	0	83.3	45	886	874	1107	314	44	0	59.8	4495	3825	5.7	6	150	132
26 LOI	0	88.9	52	744	735	166	147	42	0	69.3	5046	4357	2.4	9	168	138
Min	0	21.2	33	631	162	137	129	29	0	11.6	1221	1059	2.0	3	113	99
Max	0	90.4	155	886	874	1107	314	44	3	69.3	5046	4357	5.8	9	168	138

COARSE LAGS

Field No	XRF Pb	XRF Pb	INAA Sb	XRF Sr	ICP V	XRF V	INAA W	XRF Y	XRF Zn	ICP Zr	XRF Zr
03 LOI	19	2	1.17	62	1123	1302	4.7	20	286	168	136
04 LOI	20	0	2.33	57	1289	1676	9.5	30	217	220	184
05 LOI	16	2	2.15	47	755	832	4.3	56	432	62	59
06 LOI	14	2	1.24	40	638	747	2.7	45	362	101	100
07 LOI	21	2	0.82	54	920	1040	8.1	50	335	52	56
08 LOI	13	2	0.61	74	856	1009	27.9	44	269	32	42
09 LOI	19	1	1.97	58	786	867	3.6	45	221	75	77
10 LOI	16	2	0.54	54	876	1003	8.7	32	168	15	40
11 LOI	24	3	0.92	58	832	918	6.2	31	472	51	45
12 LOI	22	3	1.01	50	1024	1218	6.5	39	218	75	67
13 LOI	16	1	0.71	88	1045	1322	0.7	14	165	10	33
14 LOI	26	3	1.02	68	926	1073	6.3	51	340	130	102
Min	13	0	0.54	40	638	747	0.7	14	165	10	33
Max	26	3	2.33	88	1289	1676	27.9	56	472	220	184

FINE LAGS

Field No	XRF Pb	XRF Pb	INAA Sb	XRF Sr	ICP V	XRF V	INAA W	XRF Y	XRF Zn	ICP Zr	XRF Zr
15 LOI	35	2	0.68	51	1422	1906	17.4	23	77	137	133
16 LOI	28	4	1.74	27	1264	1678	2.9	27	83	116	121
17 LOI	21	0	1.48	28	1290	1711	2.1	26	88	120	122
18 LOI	29	5	2.17	24	1384	1828	4.0	21	84	140	136
19 LOI	38	4	2.44	33	1463	1901	3.7	25	99	135	130
20 LOI	35	3	2.16	55	1360	1767	7.6	29	106	138	125
21 LOI	46	4	2.16	63	1441	1843	6.3	20	84	141	128
22 LOI	45	0	2.35	42	1585	2167	7.9	20	82	163	142
23 LOI	54	3	2.35	47	1502	1965	7.8	27	105	154	136
24 LOI	56	1	2.40	44	1492	1986	2.9	29	106	153	138
25 LOI	64	2	3.15	40	1628	2218	8.4	25	111	179	150
26 LOI	48	4	2.88	54	1481	1942	8.3	27	497	170	143
Min	21	0	0.68	24	1264	1678	2.1	20	77	116	121
Max	64	5	3.15	63	1628	2218	17.4	29	497	179	150

LIGHTS OF ISRAEL

FINE LAGS - NON-MAGNETIC FRACTION

Orig Fld No	Field No	Lab Seq	Lib No	Co-ordinates		ICP SiO2	ICP Al2O3	ICP Fe2O3	XRF Fe2O3	ICP MgO	ICP CaO	ICP TiO2	XRF TiO2	INAA As	INAA Au	ICP Ba
4	27 LOI	409	08 - 382	1200	1050	20.70	11.50	49.40	51.61	0.35	1.24	1.52	2.04	24.9	6.0	167
6	28 LOI	400	08 - 383	1200	1075	25.80	12.70	47.80	46.89	0.28	0.27	1.55	1.93	21.8	6.5	107
8	29 LOI	396	08 - 384	1200	1100	26.20	12.60	49.80	47.89	0.25	0.24	1.58	1.99	24.2	317.5	105
10	30 LOI	412	08 - 385	1200	1125	21.70	11.30	51.00	52.04	0.25	0.22	1.55	2.06	24.1	43.1	120
12	31 LOI	394	08 - 386	1200	1150	23.50	11.00	56.90	53.47	0.26	0.32	1.52	1.89	26.6	61.7	152
14	32 LOI	398	08 - 387	1200	1175	24.00	10.40	51.80	51.18	0.51	1.00	1.45	1.83	22.8	62.2	237
16	33 LOI	390	08 - 388	1200	1200	25.40	10.30	50.70	47.61	0.55	2.72	1.37	1.67	30.1	529.5	316
18	34 LOI	397	08 - 389	1200	1225	19.00	9.32	62.70	59.19	0.29	0.80	1.57	2.04	28.0	344.3	298
20	35 LOI	385	08 - 390	1200	1250	23.50	9.94	55.70	53.76	0.32	0.95	1.47	1.89	31.9	165.8	286
22	36 LOI	402	08 - 391	1200	1275	21.70	9.70	52.20	53.76	0.27	0.62	1.39	1.89	23.5	24.6	234
24	37 LOI	386	08 - 392	1200	1300	18.90	9.16	61.60	58.90	0.30	0.83	1.75	2.27	26.0	387.9	201
26	38 LOI	404	08 - 393	1200	1325	24.40	8.46	46.10	50.90	0.28	0.71	1.37	1.97	23.0	54.8	207
			Min	1200	1050	18.90	8.46	46.10	46.89	0.25	0.22	1.37	1.67	21.8	6.0	105
* .22 Cartridge Case			Max	1200	1325	26.20	12.70	62.70	59.19	0.55	2.72	1.75	2.27	31.9	529.5	316

FINE LAGS - MAGNETIC FRACTION

Orig Fld No	Field No	Lab Seq	Lib No	Co-ordinates		ICP SiO2	ICP Al2O3	ICP Fe2O3	XRF Fe2O3	ICP MgO	ICP CaO	ICP TiO2	XRF TiO2	INAA As	INAA Au	ICP Ba
4	39 LOI	410	08 - 394	1200	1050	7.57	6.78	68.20	70.34	0.35	0.51	2.25	3.24	19.3	6.1	194
6	40 LOI	388	08 - 395	1200	1075	10.10	7.64	70.70	68.77	0.28	0.33	2.36	3.28	17.3	5.8	159
8	41 LOI	395	08 - 396	1200	1100	10.90	8.14	72.00	66.62	0.30	0.32	2.42	3.19	19.4	7.1	145
10	42 LOI	399	08 - 397	1200	1125	8.20	7.17	69.80	69.91	0.25	0.28	2.49	3.48	19.5	6.3	127
12	43 LOI	389	08 - 398	1200	1150	7.31	6.94	76.30	71.77	0.25	0.31	2.67	3.62	22.0	22.9	151
14	44 LOI	413	08 - 399	1200	1175	7.52	6.75	71.40	71.77	0.31	0.47	2.17	3.08	21.1	7.8	237
16	45 LOI	383	08 - 400	1200	1200	6.64	6.76	80.80	72.63	0.38	0.67	2.68	3.59	21.7	87.3	318
18	46 LOI	382	08 - 401	1200	1225	5.74	6.74	85.20	72.91	0.34	0.54	2.80	3.64	18.8	53.6	228
20	47 LOI	403	08 - 402	1200	1250	5.95	6.19	68.80	73.77	0.34	0.51	2.23	3.33	20.7	27.6	230
22	48 LOI	405	08 - 403	1200	1275	6.44	6.46	75.60	72.06	0.38	0.49	2.30	3.21	20.7	7.5	208
24	49 LOI	392	08 - 404	1200	1300	5.32	6.18	83.80	74.92	0.33	0.48	2.54	3.45	21.8	24.4	183
26	50 LOI	411	08 - 405	1200	1325	6.68	6.44	74.00	70.91	0.40	0.62	2.14	3.00	20.8	156.3	206
			Min	1200	1050	5.32	6.18	68.20	66.62	0.25	0.28	2.14	3.00	17.3	5.8	127
* .22 Cartridge Case			Max	1200	1325	10.90	8.14	85.20	74.92	0.40	0.67	2.80	3.64	22.0	156.3	318

FINE LAGS - NON-MAGNETIC FRACTION

Field No	ICP Be	INAA Ce	INAA Co	ICP Cr	INAA Cr	ICP Cu	XRF Cu	XRF Ga	XRF Ge	INAA La	ICP Mn	XRF Mn	INAA Mo	XRF Nb	ICP Ni	XRF Ni
27 LOI	0	47.5	37	650	700	141	144	30	1	38.2	2094	1972	5.4	0	109	107
28 LOI	0	28.4	32	595	550	154	169	29	2	26.1	1032	881	4.7	4	113	107
29 LOI	0	29.3	33	603	592	177	166	29	0	27.8	968	854	5.0	0	123	101
30 LOI	0	28.1	30	610	623	153	159	28	2	26.5	976	836	5.2	5	97	83
31 LOI	0	33.5	37	587	541	194	171	29	0	29.6	1380	1193	4.9	5	124	103
32 LOI	0	45.2	39	565	555	142	150	27	3	41.5	2420	2134	5.3	1	122	103
33 LOI	0	45.7	35	570	515	178	177	25	0	34.3	2605	2367	4.6	0	116	105
34 LOI	0	60.9	35	750	724	177	163	30	2	54.1	3778	3455	5.6	3	123	106
35 LOI	0	77.9	44	630	620	194	180	27	1	66.0	4172	3811	5.7	5	140	118
36 LOI	0	76.2	39	622	624	157	174	27	0	70.1	4168	3914	5.4	4	123	117
37 LOI	0	72.3	37	798	771	375	173	27	0	64.0	4108	3719	5.7	4	128	111
38 LOI	0	75.6	43	576	621	137	171	25	0	67.4	4035	4120	5.5	1	123	121
Min	0	28.1	30	565	515	137	144	25	0	26.1	968	836	4.6	0	97	83
Max	0	77.9	44	798	771	375	180	30	3	70.1	4172	4120	5.7	5	140	121

FINE LAGS - MAGNETIC FRACTION

Field No	ICP Be	INAA Ce	INAA Co	ICP Cr	INAA Cr	ICP Cu	XRF Cu	XRF Ga	XRF Ge	INAA La	ICP Mn	XRF Mn	INAA Mo	XRF Nb	ICP Ni	XRF Ni
39 LOI	0	73.3	49	844	907	92	88	45	0	40.9	3053	2670	5.7	7	132	128
40 LOI	0	53.4	41	745	724	96	90	47	0	34.4	2105	1836	5.3	9	140	110
41 LOI	0	56.9	39	751	720	99	81	49	0	35.0	2059	1729	5.3	3	139	108
42 LOI	0	51.2	35	749	781	80	72	56	0	32.3	1806	1542	5.7	7	105	83
43 LOI	0	55.0	41	711	709	95	74	53	0	37.2	2294	1956	5.4	4	124	94
44 LOI	0	70.3	49	745	779	91	100	48	0	45.8	3297	2748	5.7	8	136	122
45 LOI	0	77.2	46	810	786	138	100	56	0	43.5	3946	3290	5.8	6	141	115
46 LOI	0	74.6	41	882	825	129	119	53	5	47.0	4314	3398	5.7	10	137	102
47 LOI	0	92.4	49	734	771	119	123	48	0	58.5	4545	4248	5.8	5	156	151
48 LOI	0	94.6	48	792	765	119	130	45	1	62.1	5024	4315	5.7	5	169	157
49 LOI	0	87.3	46	846	816	149	127	47	0	55.5	4678	3828	5.5	8	165	133
50 LOI	0	95.7	58	766	788	131	136	45	3	64.5	5310	4480	6.0	3	173	156
Min	0	51.2	35	711	709	80	72	45	0	32.3	1806	1542	5.3	3	105	83
Max	0	95.7	58	882	907	149	136	56	5	64.5	5310	4480	6.0	10	173	157

FINE LAGS - NON-MAGNETIC FRACTION

Field No	XRF Pb	XRF Rb	INAA Sb	XRF Sr	ICP V	XRF V	INAA W	XRF Y	XRF Zn	ICP Zr	XRF Zr
27 LOI	28	0	1.61	53	1218	1740	2.7	22	71	106	118
28 LOI	23	4	1.48	26	1154	1552	4.8	27	78	109	107
29 LOI	21	1	1.50	22	1185	1575	5.1	27	79	102	109
30 LOI	23	0	2.15	26	1234	1741	5.4	27	80	103	112
31 LOI	22	2	1.47	33	1298	1715	2.9	31	107	107	114
32 LOI	25	3	1.78	58	1239	1674	3.2	32	94	115	106
33 LOI	35	4	1.48	71	1194	1523	5.2	18	85	92	101
34 LOI	40	1	2.02	50	1439	1930	8.0	24	73	123	118
35 LOI	45	0	2.13	54	1327	1789	8.5	30	80	117	115
36 LOI	45	2	2.04	49	1256	1796	3.2	29	75	122	113
37 LOI	71	5	2.76	49	1484	2045	3.0	26	96	134	127
38 LOI	45	1	2.05	52	1113	1688	7.5	29	357	117	122
Min	21	0	1.47	22	1113	1523	2.7	18	71	92	101
Max	71	5	2.76	71	1484	2045	8.5	32	357	134	127

FINE LAGS - MAGNETIC FRACTION

Field No	XRF Pb	XRF Rb	INAA Sb	XRF Sr	ICP V	XRF V	INAA W	XRF Y	XRF Zn	ICP Zr	XRF Zr
39 LOI	38	1	2.51	47	1406	2090	3.4	19	102	174	160
40 LOI	36	2	2.65	34	1397	1965	7.8	24	100	170	158
41 LOI	39	1	2.39	34	1435	1916	8.5	25	104	178	152
42 LOI	41	5	2.64	30	1444	2110	7.6	23	86	202	165
43 LOI	45	2	2.84	36	1597	2204	10.8	27	106	194	169
44 LOI	44	2	2.64	49	1451	2097	6.9	29	112	173	156
45 LOI	44	4	2.73	45	1660	2309	12.6	17	110	186	165
46 LOI	48	0	2.97	41	1746	2323	10.2	21	89	188	161
47 LOI	55	5	2.76	46	1401	2195	7.8	25	126	192	158
48 LOI	63	4	2.42	45	1452	2122	8.2	28	134	181	162
49 LOI	59	2	2.97	39	1650	2271	10.2	21	177	198	167
50 LOI	57	3	2.94	45	1418	2078	8.6	29	227	171	149
Min	36	0	2.39	30	1397	1916	3.4	17	86	170	149
Max	63	5	2.97	49	1746	2323	12.6	29	227	202	169

BACKGROUND DATA : COARSE LAGS

Orig Fld No	Field No	Lab Seq	Lib No	Co-ordinates		ICP SiO2	ICP Al2O3	ICP Fe2O3	XRF Fe2O3	ICP MgO	ICP CaO	ICP TiO2	XRF TiO2	INAA As	INAA Au	ICP Ba
70	71 LOI	391	08 - 406	1925	1060	10.80	3.52	75.90	71.49	0.33	0.76	0.57	0.70	13.0	5.7	266
71	72 LOI	384	08 - 407	600	850	8.26	4.62	75.20	70.34	0.28	0.30	3.85	5.08	10.8	6.4	184
G.Mean				-	-	9.44	4.03	75.55	70.91	0.30	0.48	1.48	1.89	11.8	6.0	221

BACKGROUND DATA : FINE LAGS

Orig Fld No	Field No	Lab Seq	Lib No	Co-ordinates		ICP SiO2	ICP Al2O3	ICP Fe2O3	XRF Fe2O3	ICP MgO	ICP CaO	ICP TiO2	XRF TiO2	INAA As	INAA Au	ICP Ba
70	73 LOI	407	08 - 408	1925	1060	28.00	6.33	52.60	53.47	0.23	0.23	1.26	1.68	15.1	6.7	91
71	74 LOI	408	08 - 409	600	850	16.20	10.40	55.40	58.33	0.26	0.26	1.86	2.64	17.2	5.3	191
G.Mean				-	-	21.30	8.11	53.98	55.85	0.25	0.24	1.53	2.11	16.1	6.0	131

BACKGROUND DATA : FINE LAGS - NON-MAGNETIC

Orig Fld No	Field No	Lab Seq	Lib No	Co-ordinates		ICP SiO2	ICP Al2O3	ICP Fe2O3	XRF Fe2O3	ICP MgO	ICP CaO	ICP TiO2	XRF TiO2	INAA As	INAA Au	ICP Ba
70	75 LOI	401	08 - 410	1925	1060	45.60	6.80	36.50	36.74	0.18	0.17	0.88	1.09	14.1	4.9	66
71	76 LOI	416	08 - 411	600	850	21.20	12.30	53.10	52.04	0.29	0.27	1.86	2.35	16.3	6.7	183
G.Mean				-	-	31.09	9.15	44.02	43.73	0.23	0.21	1.28	1.60	15.2	5.7	110

BACKGROUND DATA : FINE LAGS MAGNETIC

Orig Fld No	Field No	Lab Seq	Lib No	Co-ordinates		ICP SiO2	ICP Al2O3	ICP Fe2O3	XRF Fe2O3	ICP MgO	ICP CaO	ICP TiO2	XRF TiO2	INAA As	INAA Au	ICP Ba
70	77 LOI	393	08 - 412	1925	1060	7.96	6.03	77.00	73.20	0.31	0.29	1.85	2.50	16.8	6.0	124
71	78 LOI	414	08 - 413	600	850	9.00	8.26	68.20	69.34	0.27	0.32	2.37	3.36	20.3	6.0	250
G.Mean				-	-	8.46	7.06	72.47	71.24	0.29	0.31	2.09	2.90	18.5	6.0	176

STANDARDS

Orig Fld No	Field No	Lab Seq	Lib No	Co-ordinates		ICP SiO2	ICP Al2O3	ICP Fe2O3	XRF Fe2O3	ICP MgO	ICP CaO	ICP TiO2	XRF TiO2	INAA As	INAA Au	ICP Ba
-	STD 9	406	08 - 414	-	-	12.60	7.01	62.00	63.62	0.15	0.12	0.50	0.71	439.0	73.5	223
-	STD 9	387	08 - 415	-	-	13.20	7.41	67.30	62.76	0.16	0.13	0.51	0.70	447.4	80.5	236
-	STD 9	363	08 - 380	-	-	13.70	7.59	67.90	62.91	0.16	0.12	0.54	0.69	445.9	100.9	224
-	STD 9	365	08 - 381	-	-	13.90	7.76	72.00	63.62	0.18	0.14	0.56	0.71	449.0	90.2	264
Mean				-	-	13.35	7.44	67.30	63.23	0.16	0.13	0.53	0.70	445.3	86.3	237
2s				-	-	1.16	0.64	8.21	0.92	0.02	0.01	0.05	0.02	8.8	23.8	38
Preferred Value				-	-	13.78	7.54	65.05	65.05	0.15	0.13	0.70	0.70	438.0	87.0	354

BACKGROUND DATA : COARSE LAGS

Field No	ICP Be	INAA Ce	INAA Co	ICP Cr	INAA Cr	ICP Cu	XRF Cu	XRF Ga	XRF Ge	INAA La	ICP Mn	XRF Mn	INAA Mo	XRF Nb	ICP Ni	XRF Ni
71 LOI	0	44.3	177	149	117	283	234	7	0	36.1	8520	7034	5.2	0	304	233
72 LOI	0	11.6	47	466	433	79	61	33	0	5.7	1175	934	4.6	5	117	90
G.Mean	0	22.7	91	264	225	150	119	15	0	14.3	3164	2563	4.9	1	189	145

BACKGROUND DATA : FINE LAGS

Field No	ICP Be	INAA Ce	INAA Co	ICP Cr	INAA Cr	ICP Cu	XRF Cu	XRF Ga	XRF Ge	INAA La	ICP Mn	XRF Mn	INAA Mo	XRF Nb	ICP Ni	XRF Ni
73 LOI	0	49.8	41	560	562	88	104	26	2	39.7	2717	2473	5.0	0	124	119
74 LOI	0	17.5	29	836	834	231	84	33	2	12.3	929	833	4.8	4	113	118
G.Mean	0	29.5	34	684	685	142	93	29	2	22.1	1589	1435	4.9	1	118	118

BACKGROUND DATA : FINE LAGS - NON-MAGNETIC

Field No	ICP Be	INAA Ce	INAA Co	ICP Cr	INAA Cr	ICP Cu	XRF Cu	XRF Ga	XRF Ge	INAA La	ICP Mn	XRF Mn	INAA Mo	XRF Nb	ICP Ni	XRF Ni
75 LOI	0	35.9	23	429	425	89	103	19	0	34.7	1566	1482	4.4	1	76	73
76 LOI	0	14.6	33	803	818	94	100	33	0	13.1	944	762	4.8	0	127	107
G.Mean	0	22.9	27	587	589	91	101	25	0	21.3	1216	1063	4.6	1	98	88

BACKGROUND DATA : FINE LAGS MAGNETIC

Field No	ICP Be	INAA Ce	INAA Co	ICP Cr	INAA Cr	ICP Cu	XRF Cu	XRF Ga	XRF Ge	INAA La	ICP Mn	XRF Mn	INAA Mo	XRF Nb	ICP Ni	XRF Ni
77 LOI	0	67.8	66	770	746	116	93	30	2	48.0	4157	3492	5.5	1	206	173
78 LOI	0	21.8	27	1022	1076	47	56	43	0	14.3	1132	959	5.4	4	104	88
G.Mean	0	38.4	42	887	896	74	72	36	1	26.2	2169	1830	5.4	2	146	123

STANDARDS

Field No	ICP Be	INAA Ce	INAA Co	ICP Cr	INAA Cr	ICP Cu	XRF Cu	XRF Ga	XRF Ge	INAA La	ICP Mn	XRF Mn	INAA Mo	XRF Nb	ICP Ni	XRF Ni
STD 9	0	17.4	18	442	476	129	151	29	4	11.9	1699	1567	1.3	0	39	32
STD 9	0	15.8	18	478	474	155	141	25	1	11.9	1724	1608	5.9	0	52	27
STD 9	0	17.1	18	479	470	160	134	25	0	11.7	1805	1597	5.4	1	53	28
STD 9	0	19.0	17	500	465	156	147	25	0	12.1	1734	1595	5.6	3	51	28
Mean	0	17.3	18	475	471	150	143	26	1	11.9	1741	1592	4.6	1	49	29
2s	0	2.6	1	48	9	28	15	4	4	0.4	91	35	4.4	3	13	4
Pre Val	0	18.0	19	471	471	141	141	25	1	11.7	1543	1543	5.0	2	30	30

BACKGROUND DATA : COARSE LAGS

Field No	XRF Pb	XRF Pb	INAA Sb	XRF Sr	ICP V	XRF V	INAA W	XRF Y	XRF Zn	ICP Zr	XRF Zr
71 LOI	33	4	0.48	64	914	1094	2.3	48	367	47	40
72 LOI	14	2	1.16	40	1401	1882	5.5	11	101	193	160
G.Mean	21	3	0.75	51	1132	1435	3.6	23	193	96	80

BACKGROUND DATA : FINE LAGS

Field No	XRF Pb	XRF Pb	INAA Sb	XRF Sr	ICP V	XRF V	INAA W	XRF Y	XRF Zn	ICP Zr	XRF Zr
73 LOI	34	4	1.59	26	1055	1474	4.3	25	120	106	108
74 LOI	20	0	1.40	40	1191	1770	3.0	10	68	122	130
G.Mean	26	1	1.49	32	1121	1615	3.6	16	90	114	118

BACKGROUND DATA : FINE LAGS - NON-MAGNETIC

Field No	XRF Pb	XRF Pb	INAA Sb	XRF Sr	ICP V	XRF V	INAA W	XRF Y	XRF Zn	ICP Zr	XRF Zr
75 LOI	23	2	1.24	22	856	1118	2.6	23	67	73	78
76 LOI	33	2	1.42	34	1220	1633	3.2	12	72	110	112
G.Mean	28	2	1.33	27	1022	1351	2.9	17	69	89	93

BACKGROUND DATA : FINE LAGS MAGNETIC

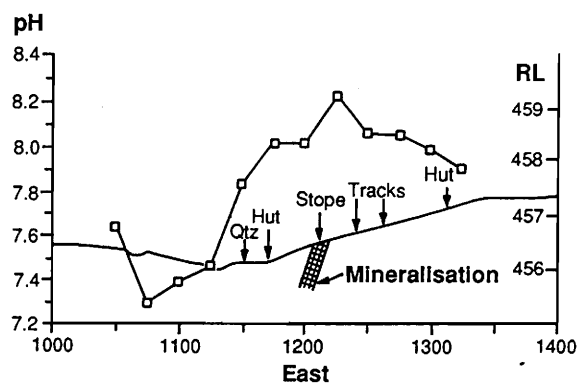
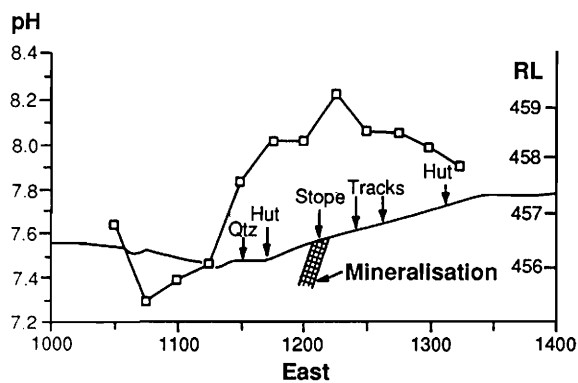
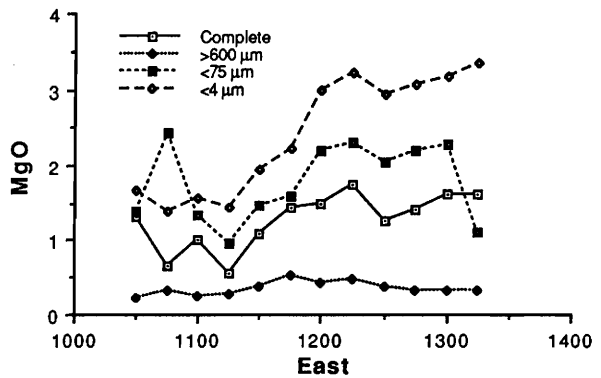
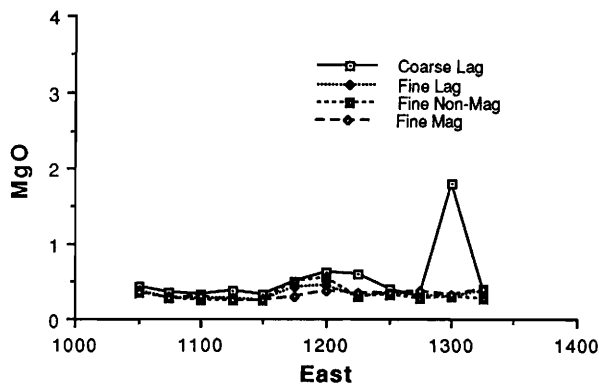
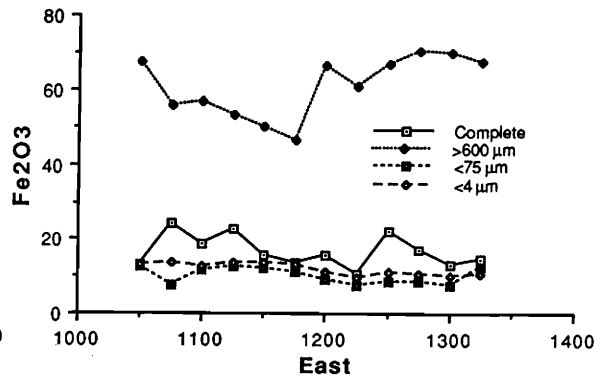
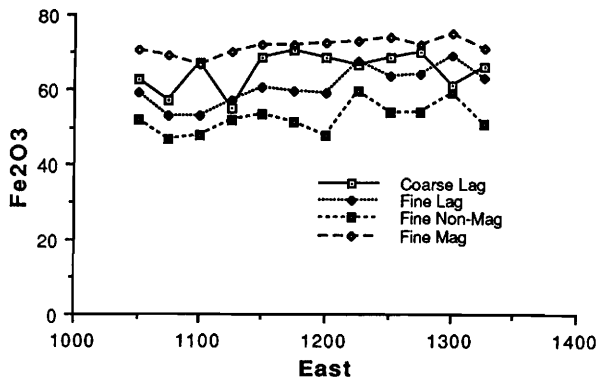
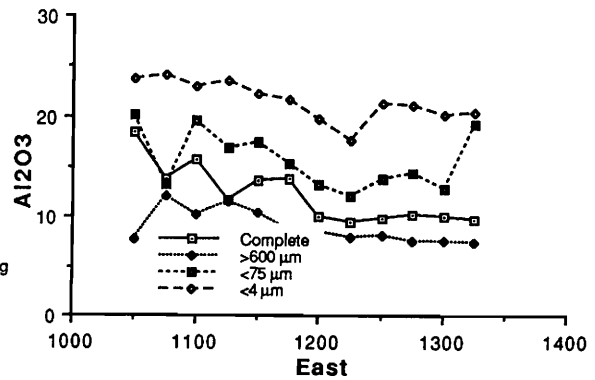
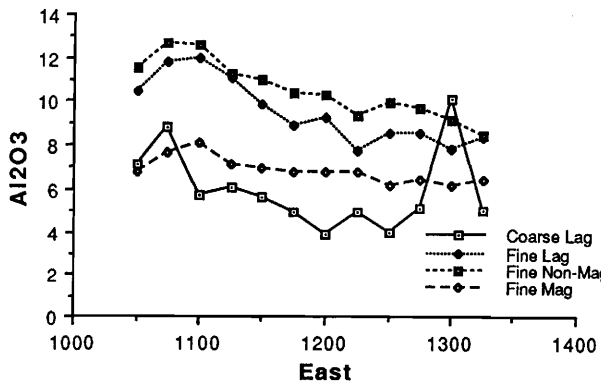
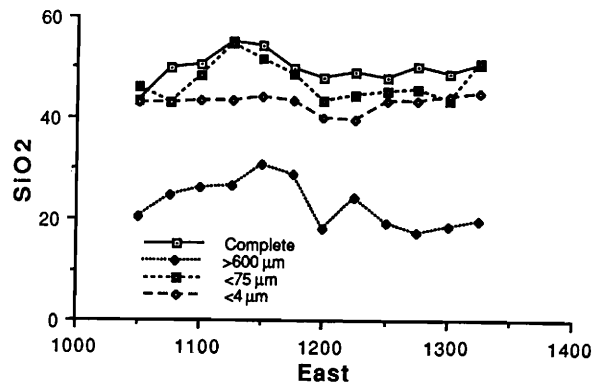
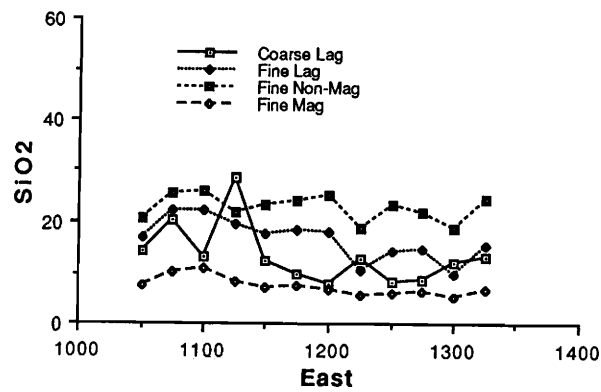
Field No	XRF Pb	XRF Pb	INAA Sb	XRF Sr	ICP V	XRF V	INAA W	XRF Y	XRF Zn	ICP Zr	XRF Zr
77 LOI	45	5	2.12	33	1421	1912	8.4	30	177	162	140
78 LOI	43	3	2.31	41	1354	1964	3.5	12	49	170	154
G.Mean	44	4	2.21	37	1387	1938	5.4	19	93	166	147

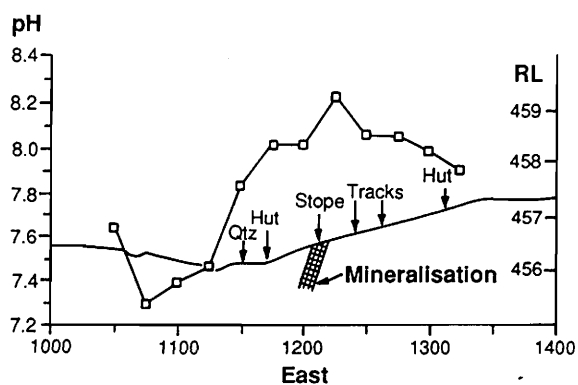
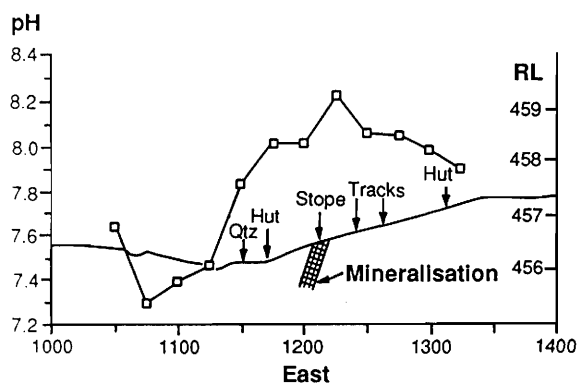
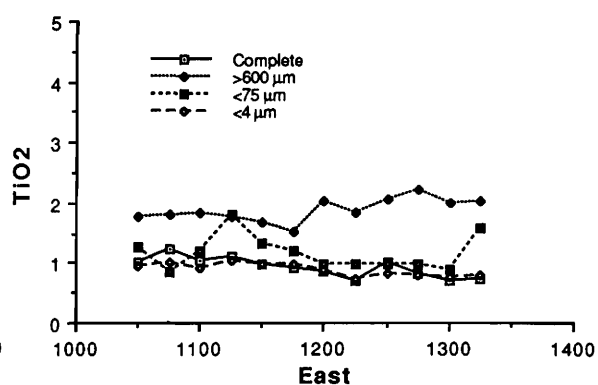
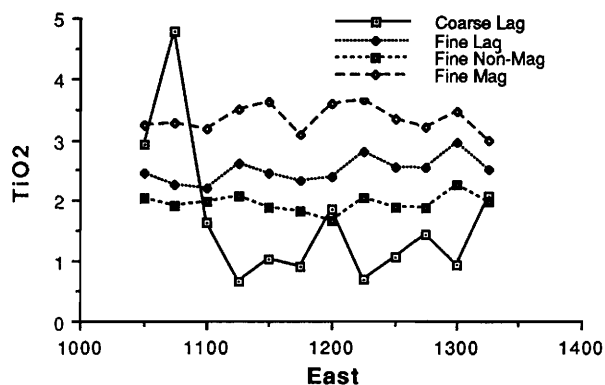
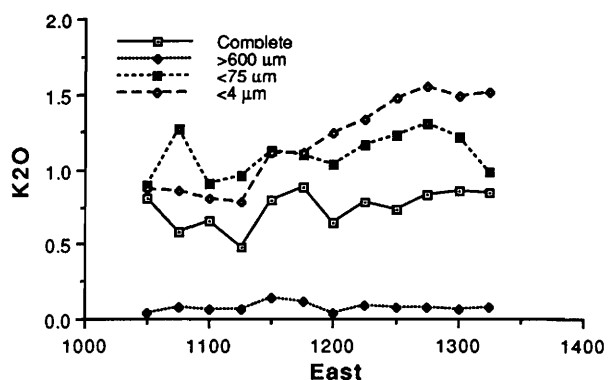
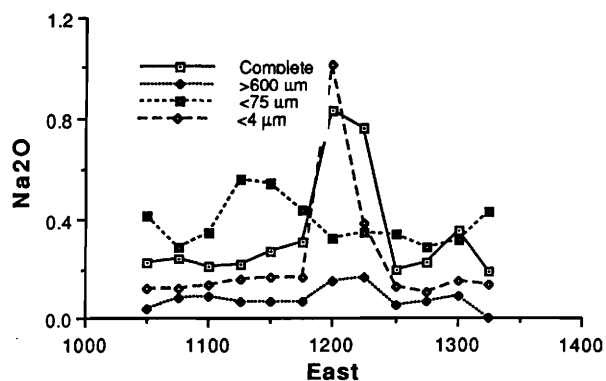
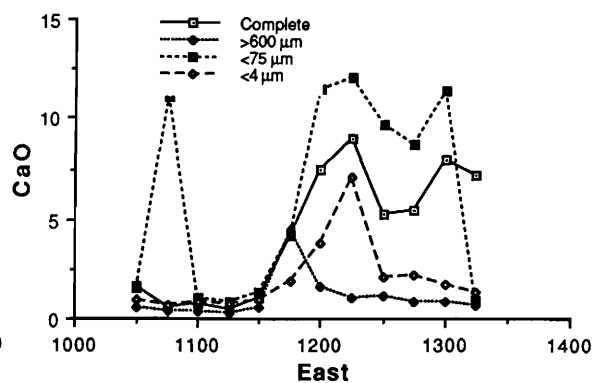
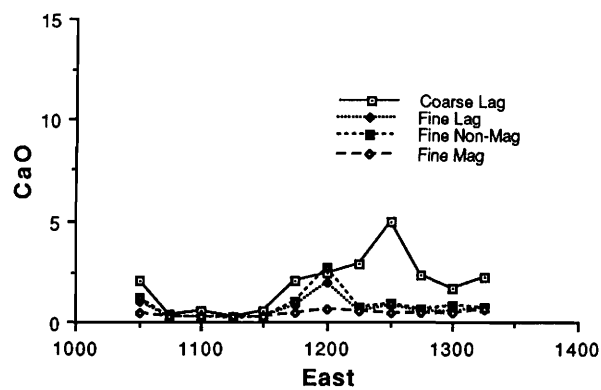
STANDARDS

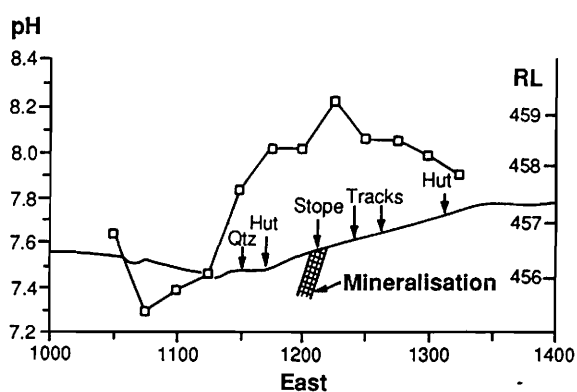
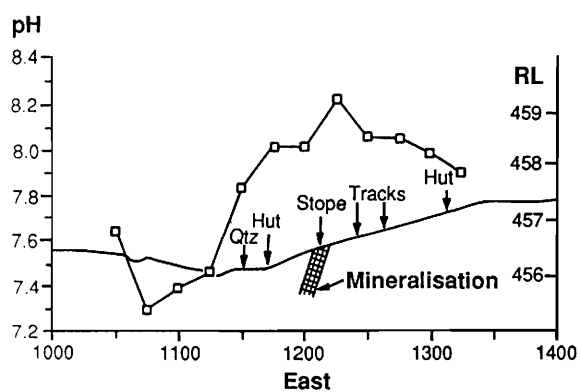
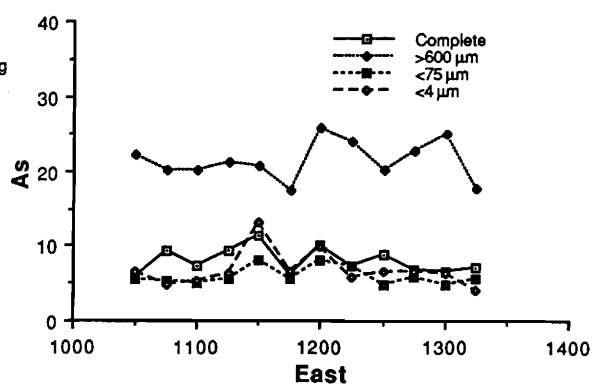
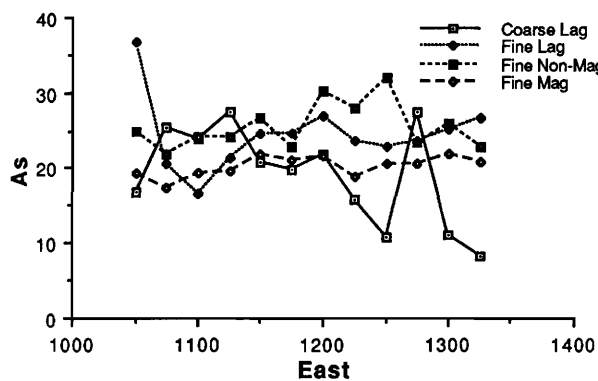
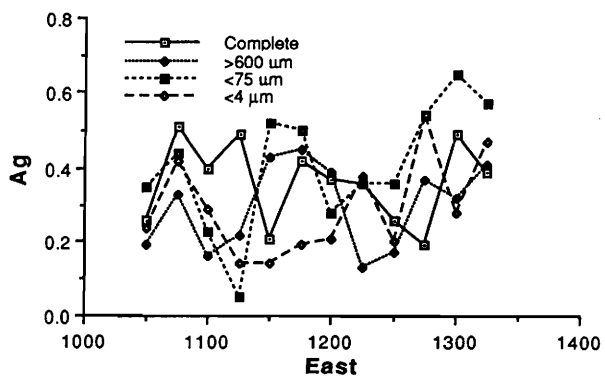
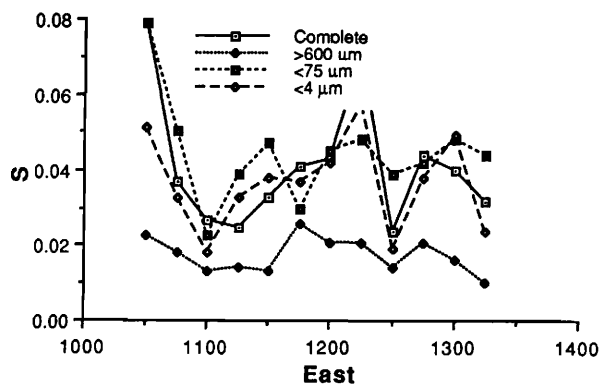
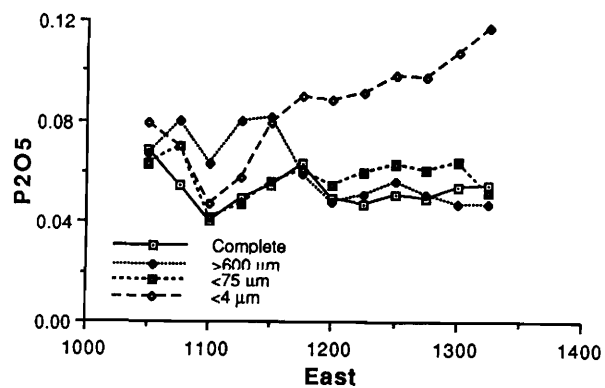
Field No	XRF Pb	XRF Pb	INAA Sb	XRF Sr	ICP V	XRF V	INAA W	XRF Y	XRF Zn	ICP Zr	XRF Zr
STD 9	61	3	0.48	11	664	928	9.4	12	299	88	84
STD 9	58	3	0.83	13	795	936	14.1	13	295	83	86
STD 9	54	4	0.99	12	831	931	6.2	13	296	86	85
STD 9	56	7	0.72	12	838	938	9.0	14	296	64	86
Mean	57	4	0.76	12	782	933	9.7	13	297	80	85
2s	6	4	0.43	2	162	9	6.6	2	3	22	2
Pre Val	53	6	0.60	12	932	932	9.0	13	295	88	88

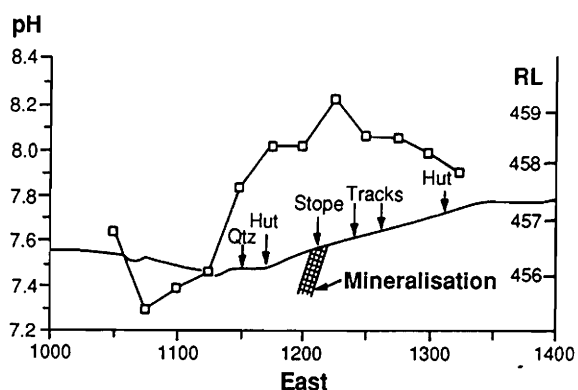
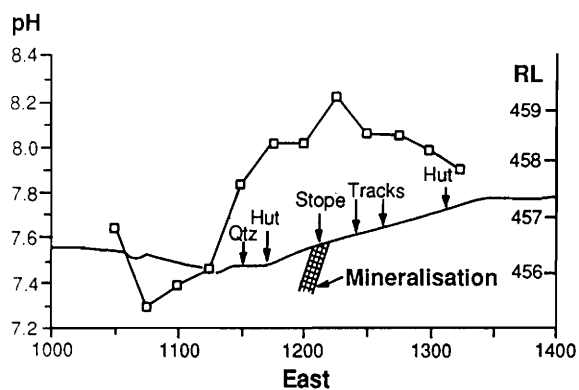
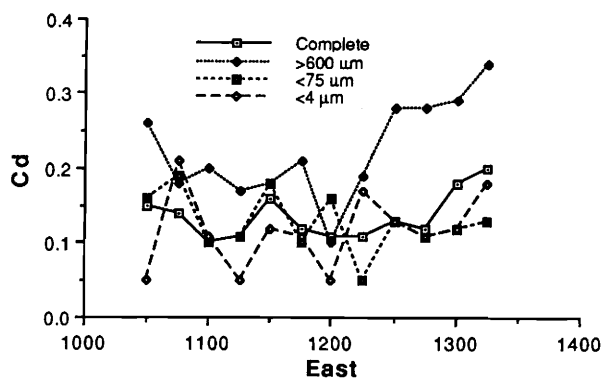
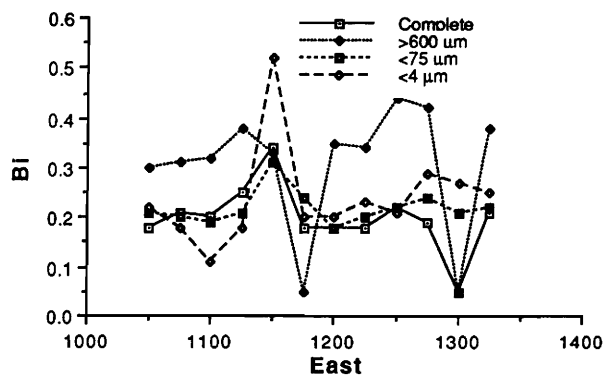
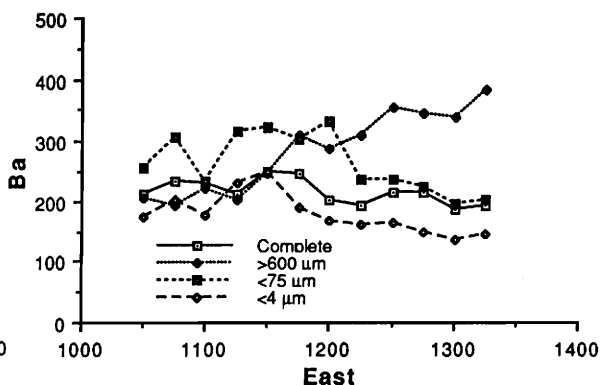
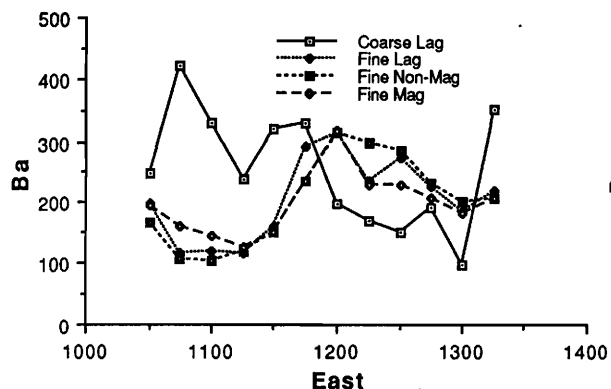
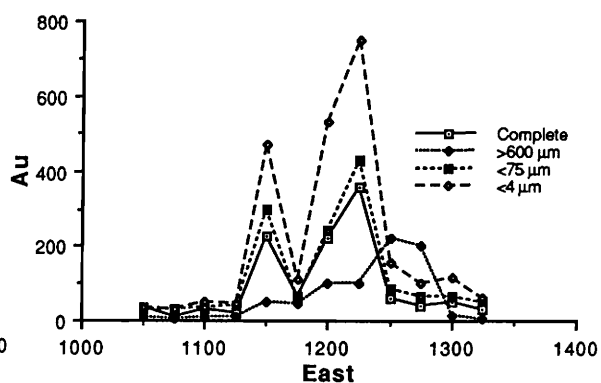
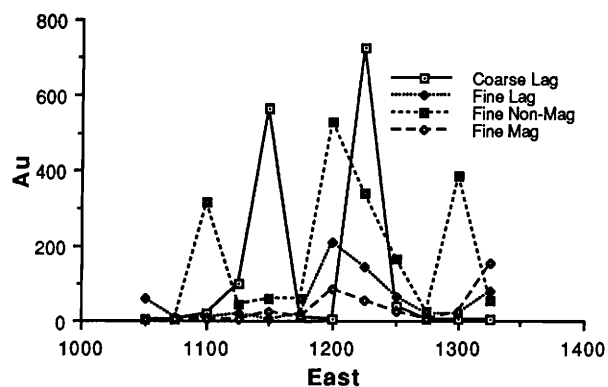
APPENDIX 3

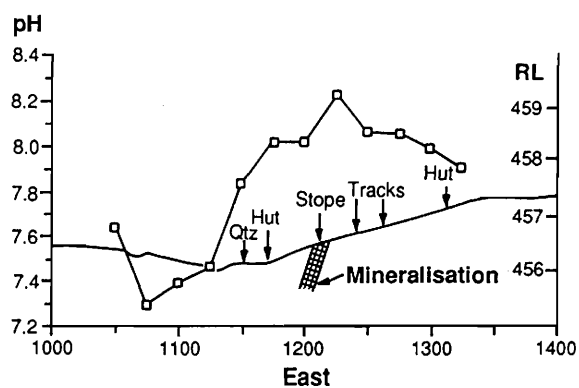
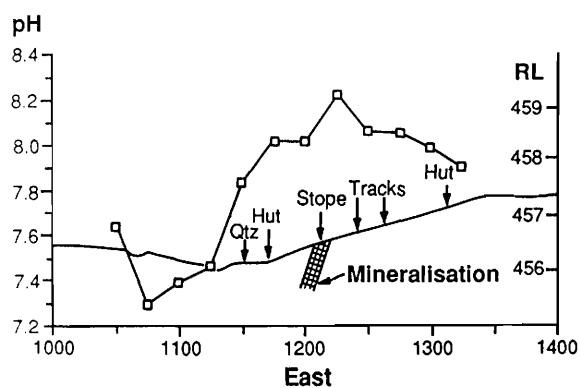
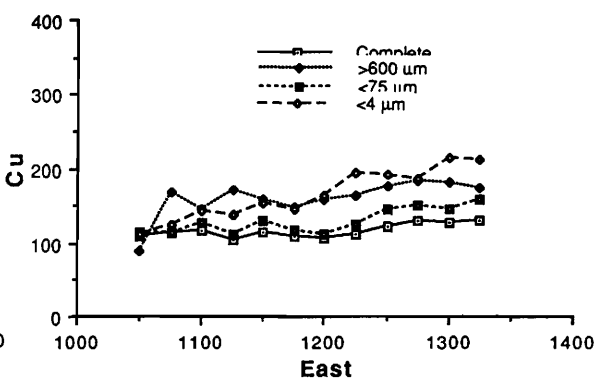
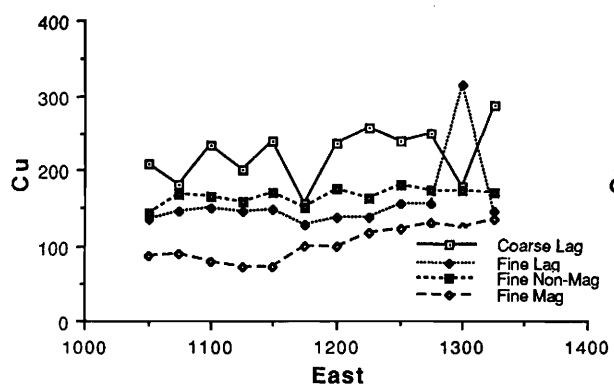
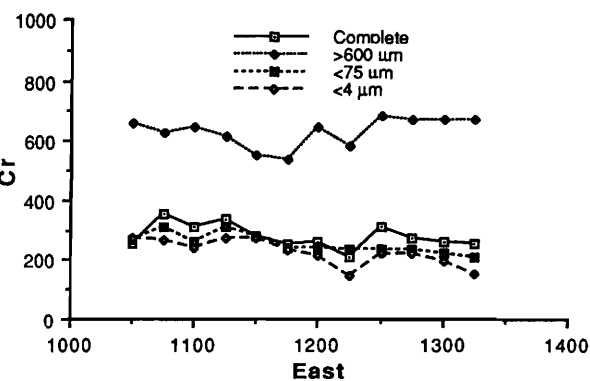
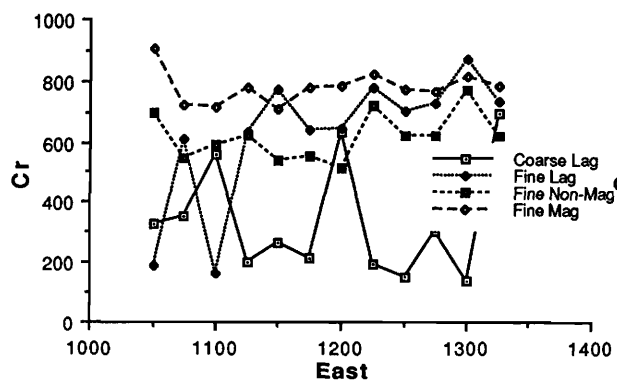
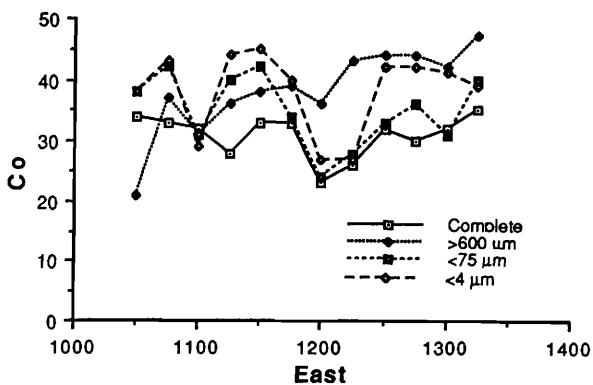
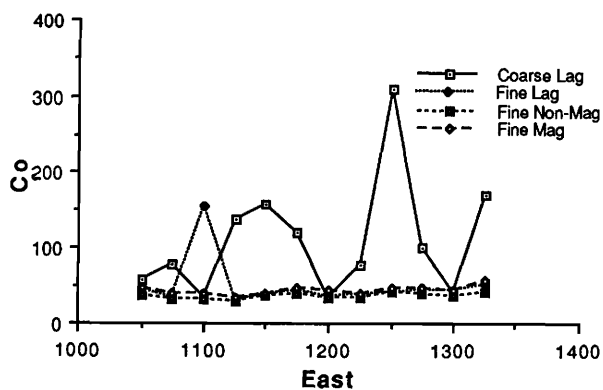
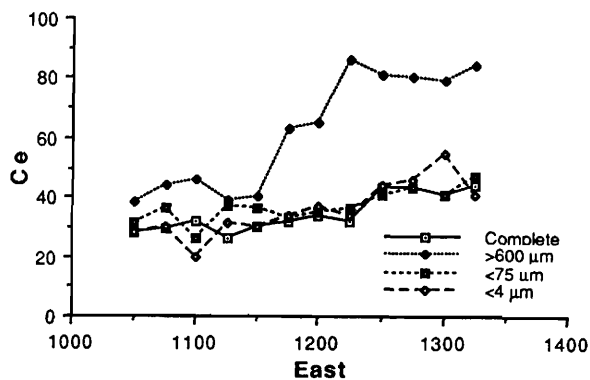
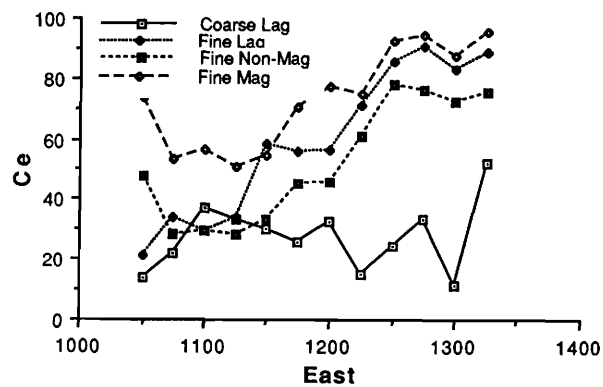
Graphed Soil and Lay Geochemistry

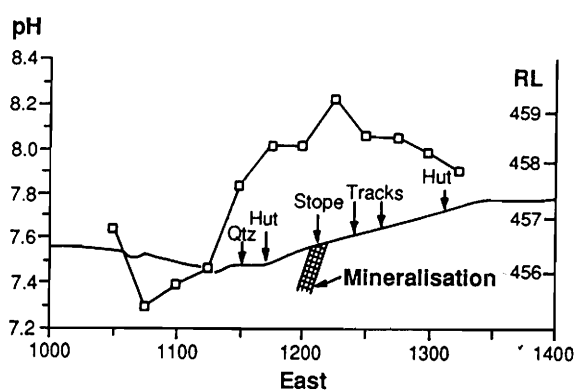
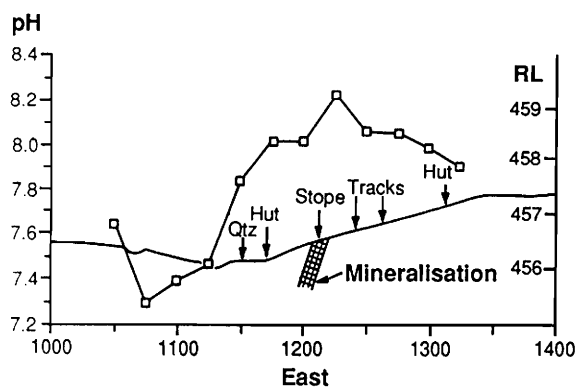
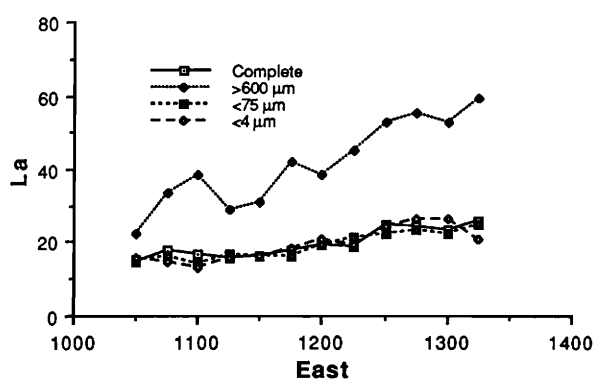
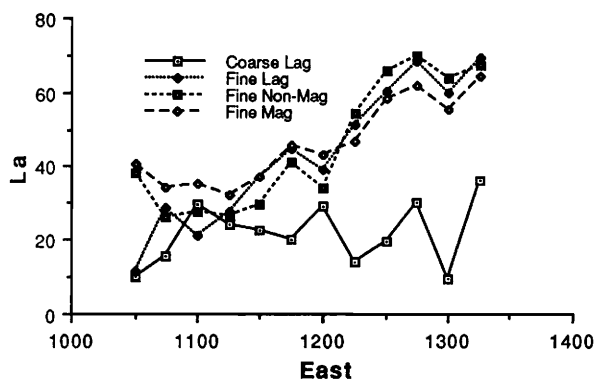
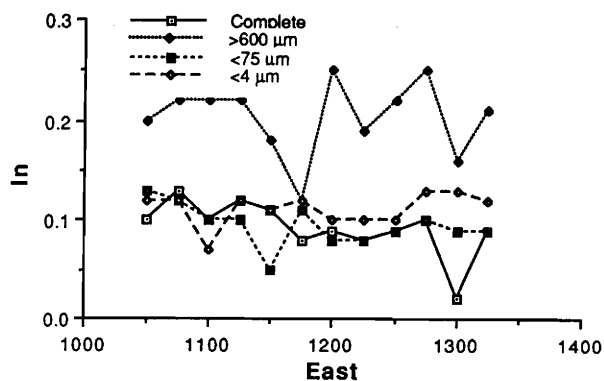
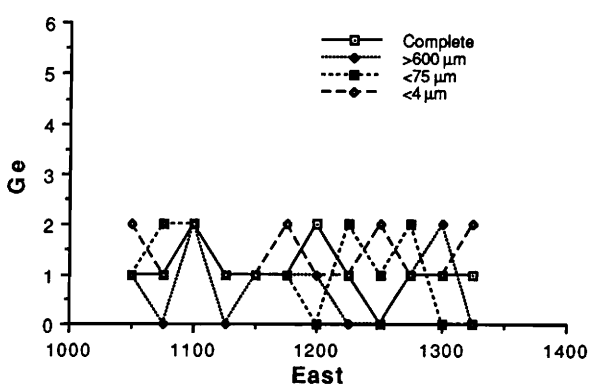
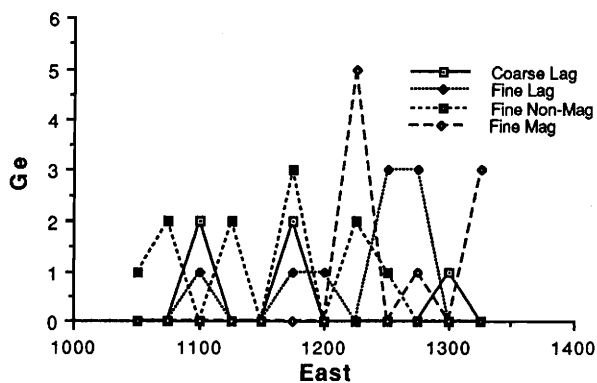
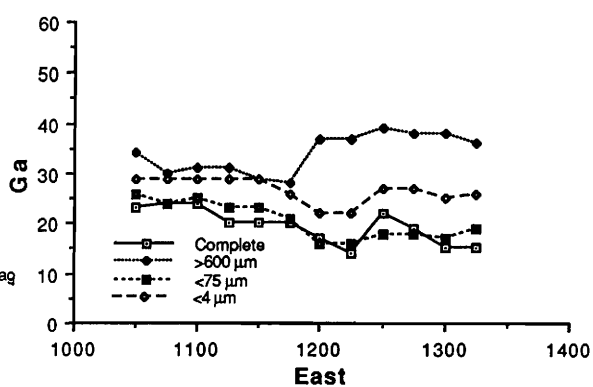
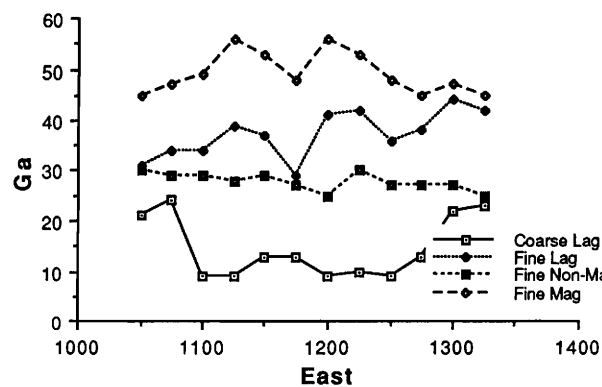


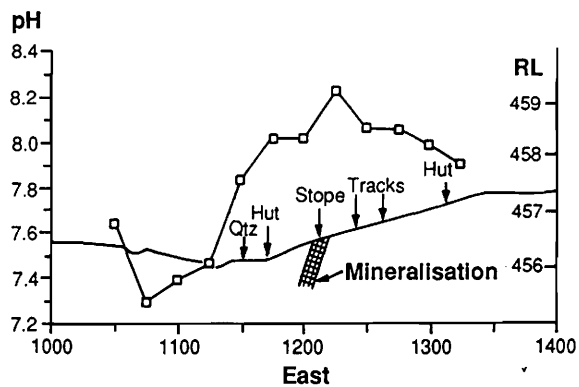
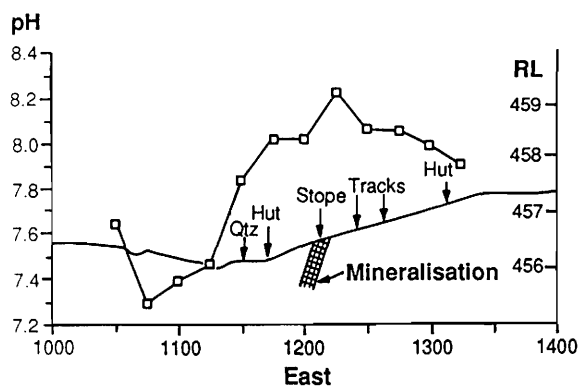
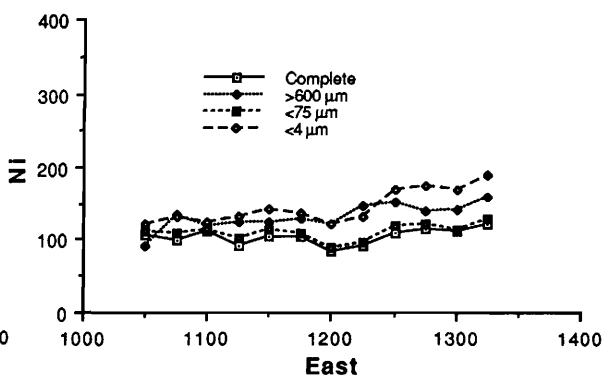
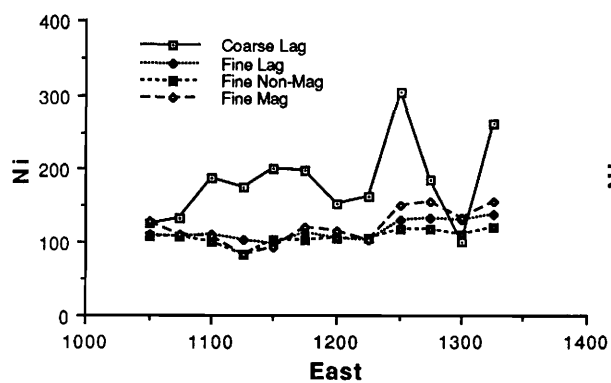
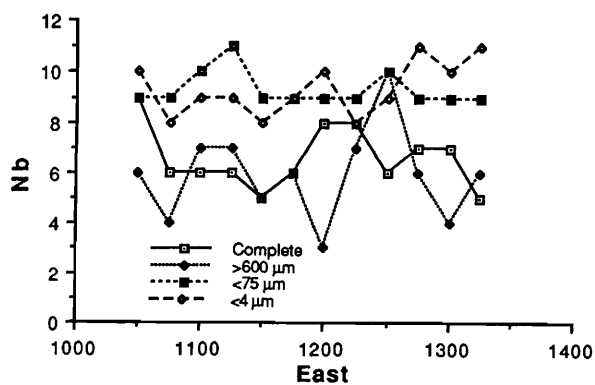
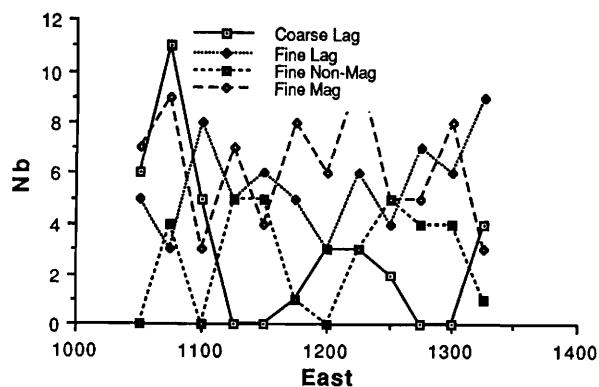
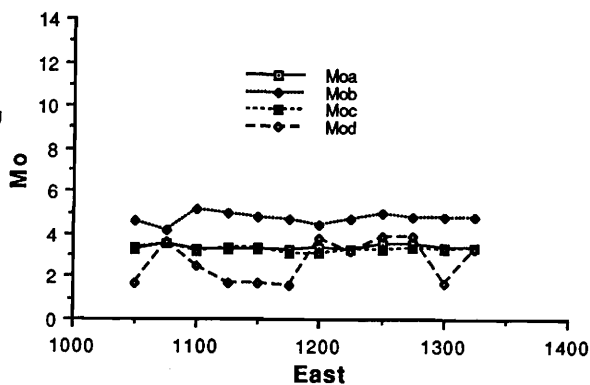
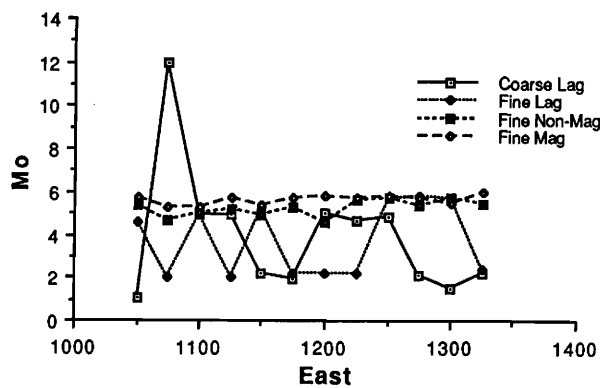
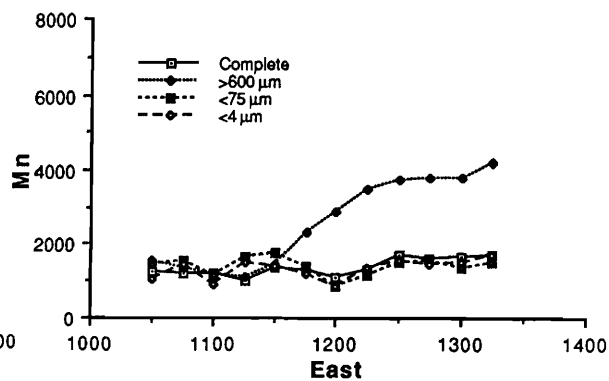
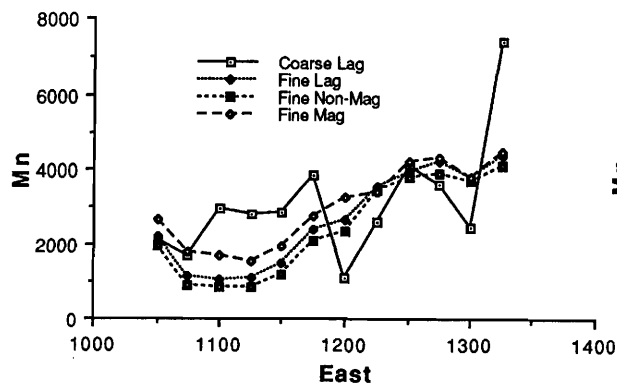


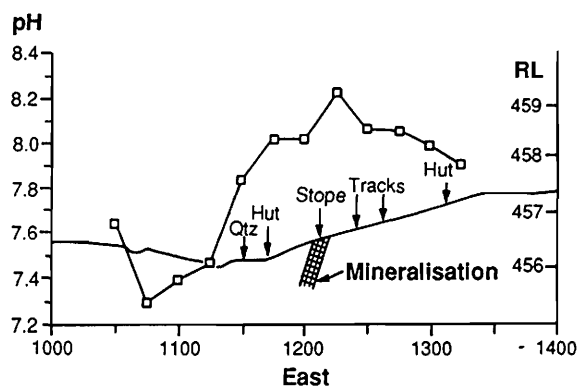
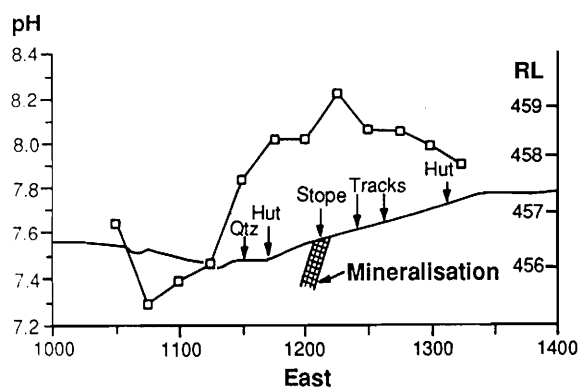
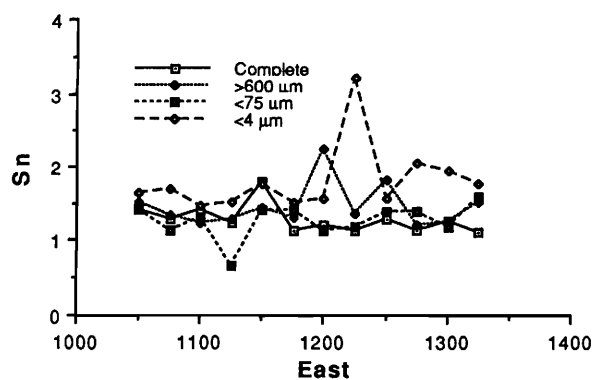
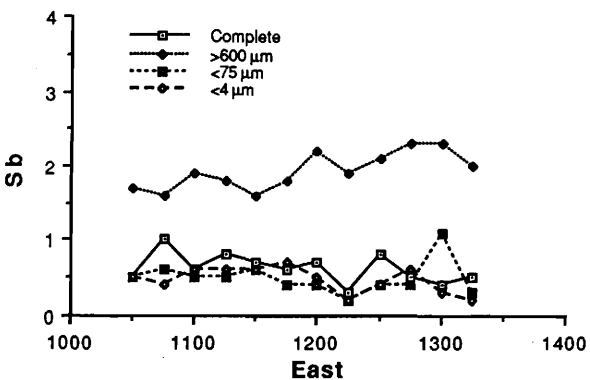
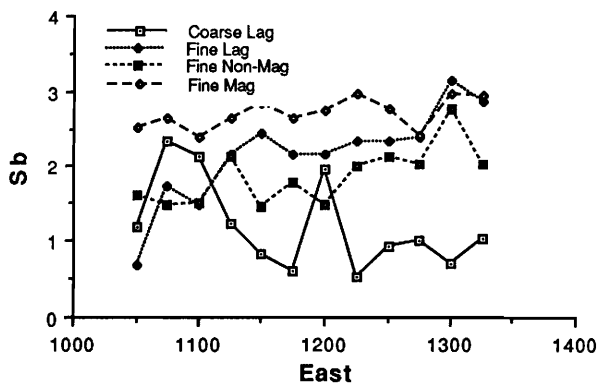
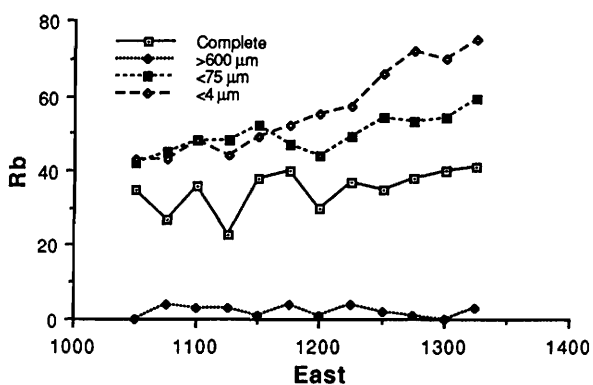
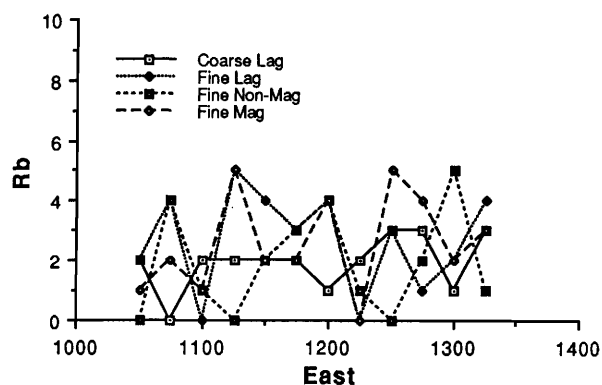
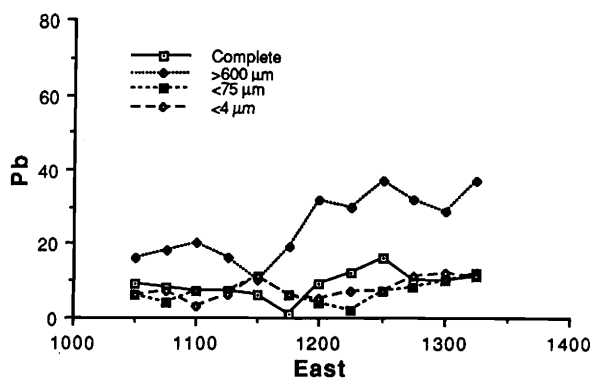
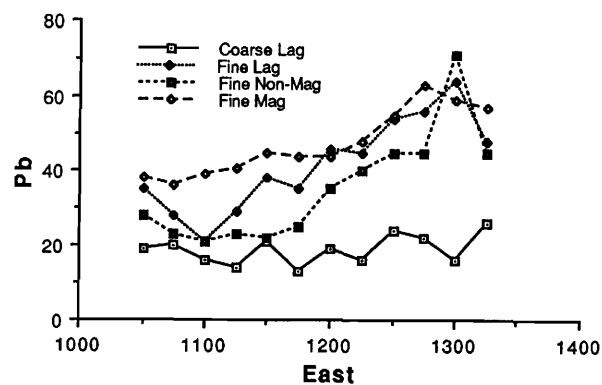


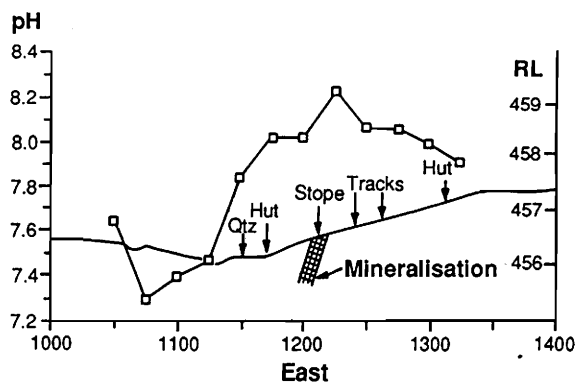
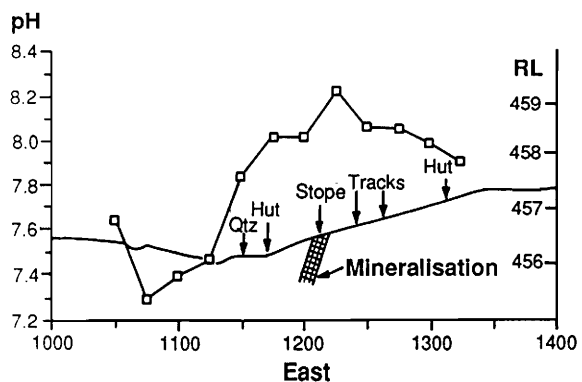
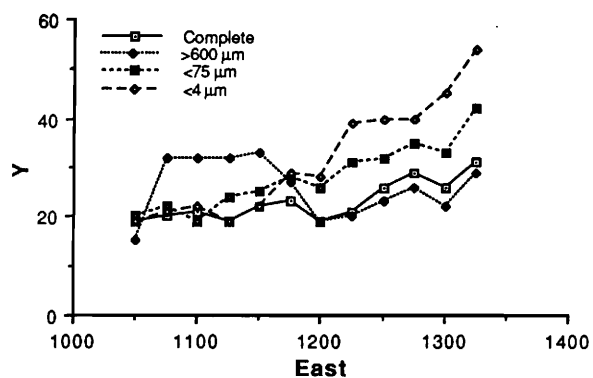
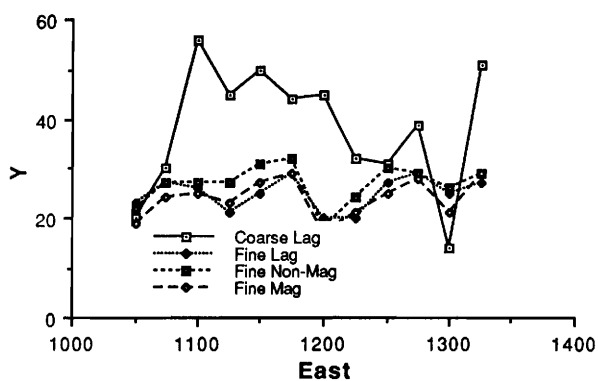
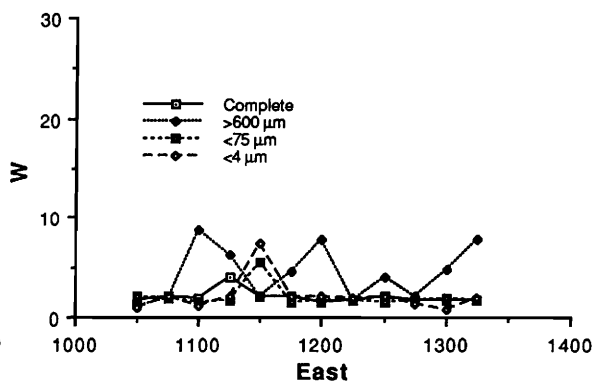
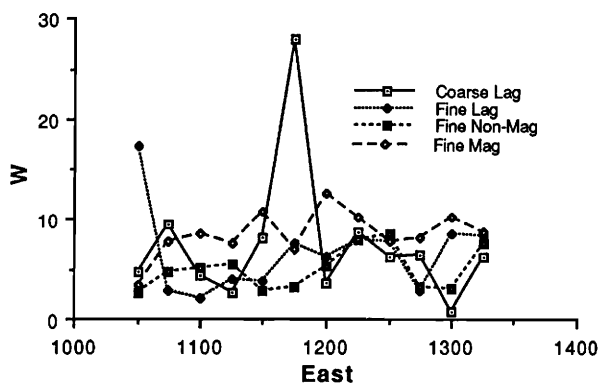
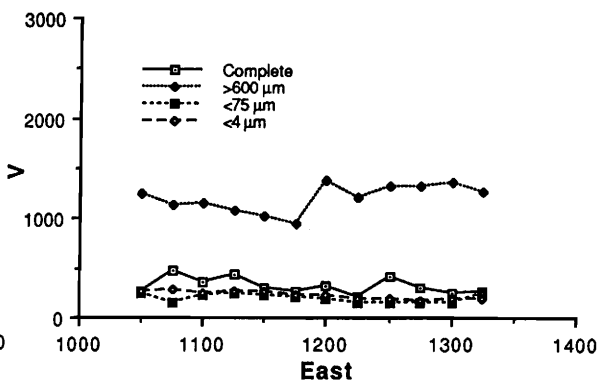
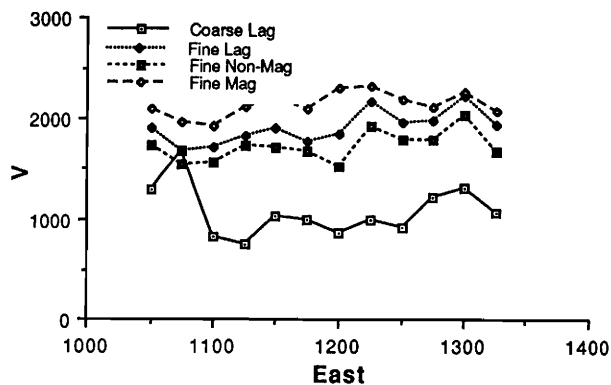
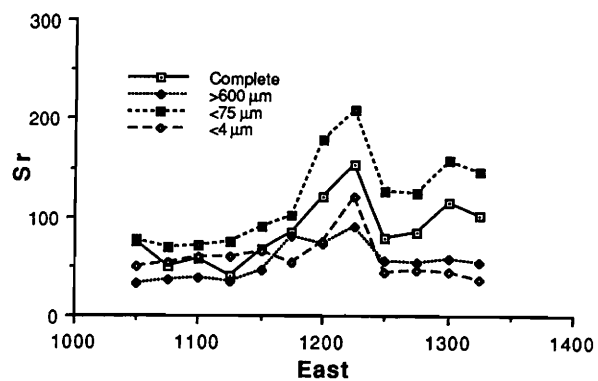
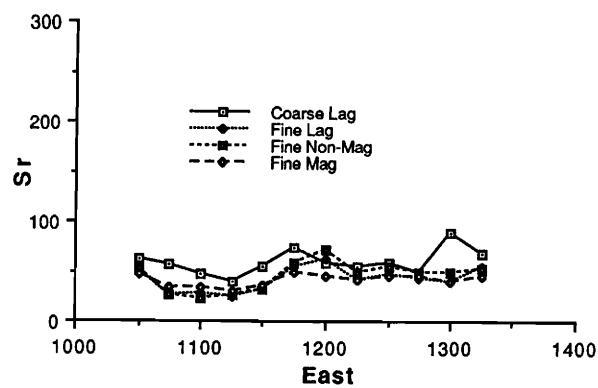


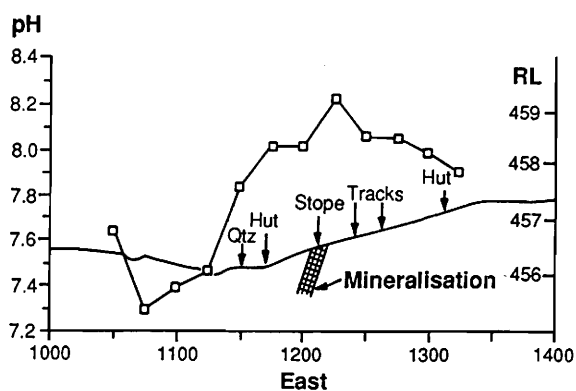
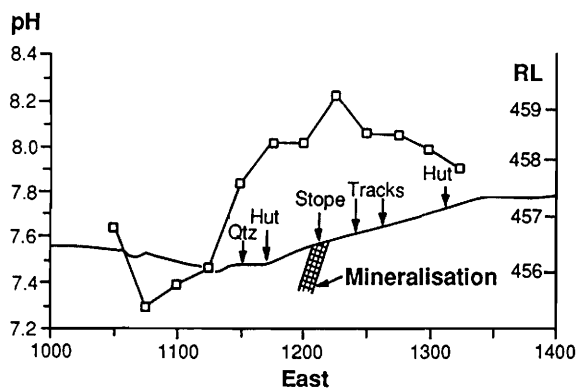
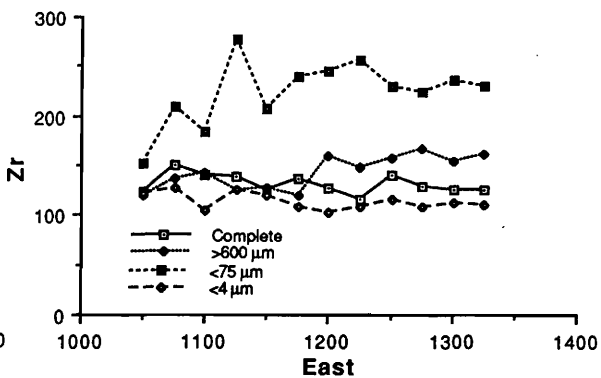
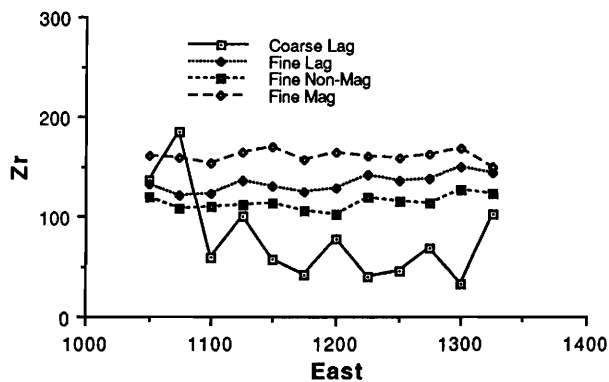
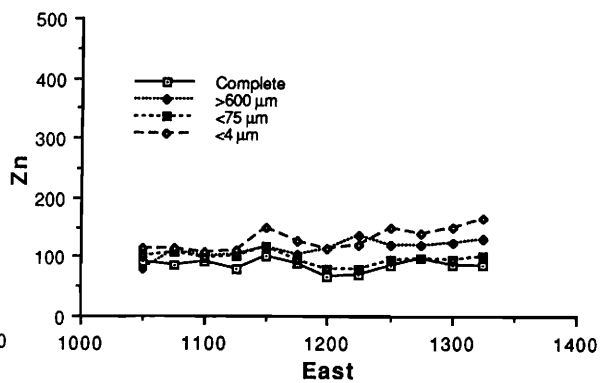
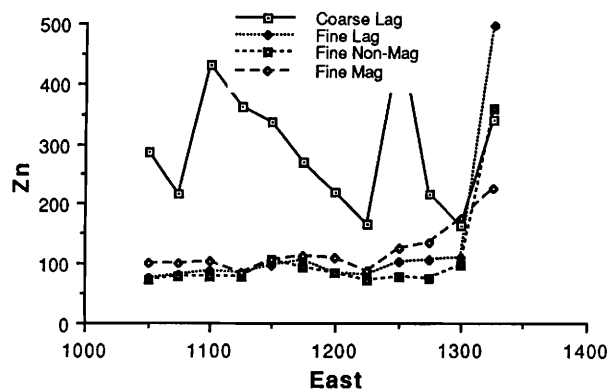






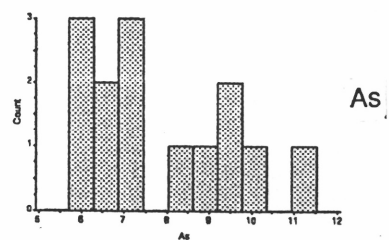
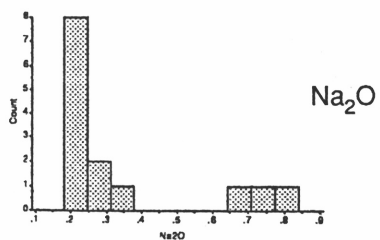
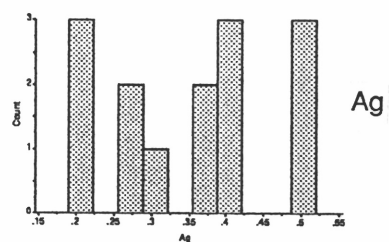
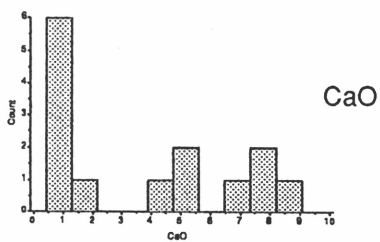
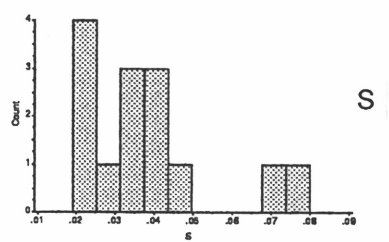
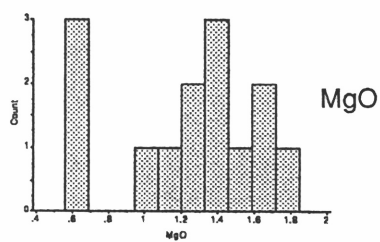
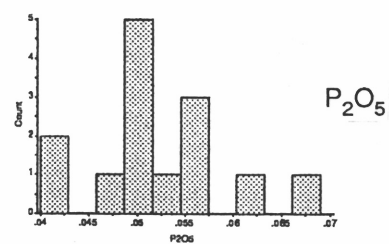
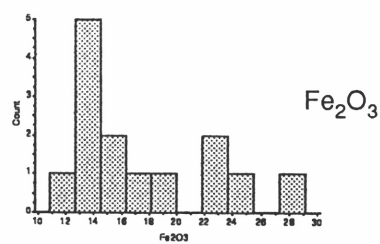
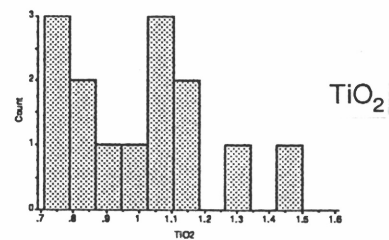
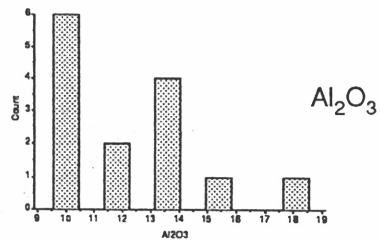
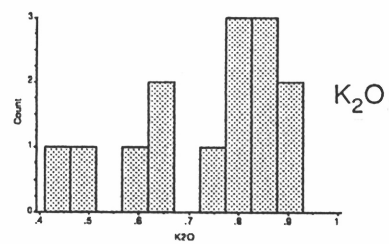
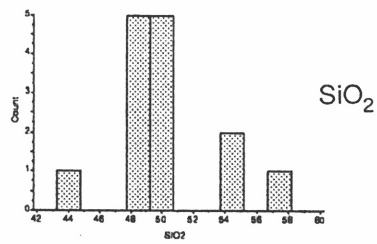


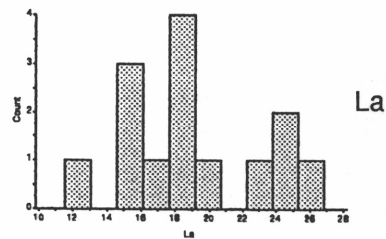
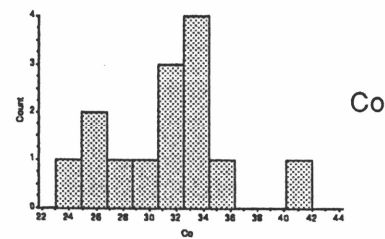
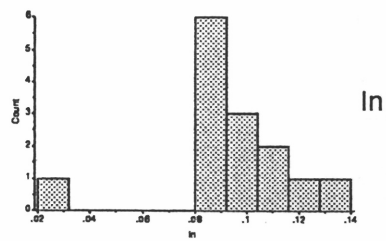
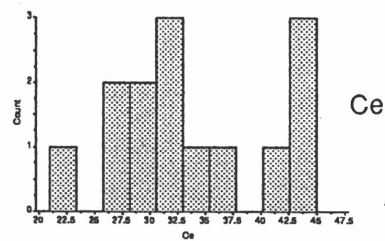
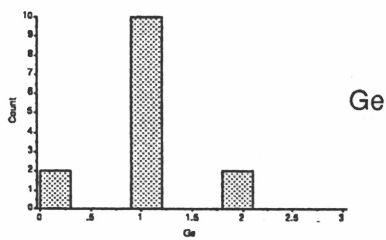
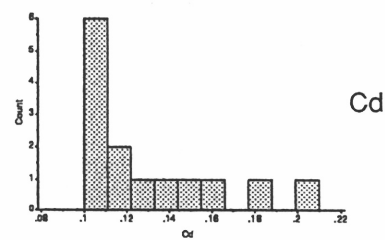
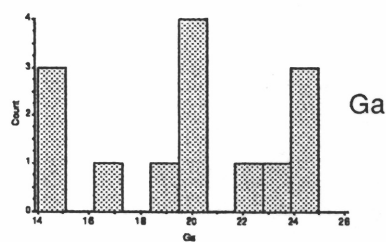
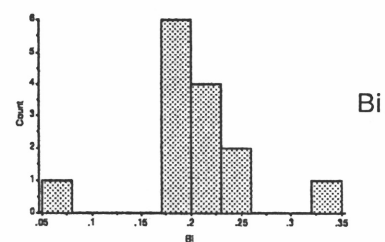
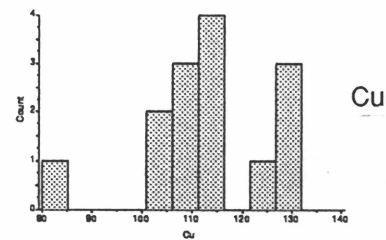
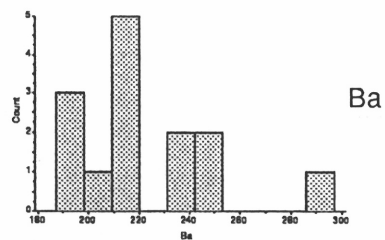
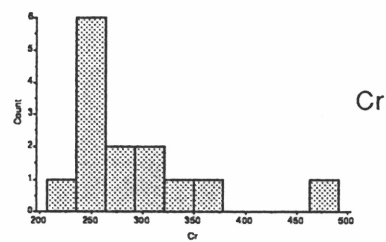
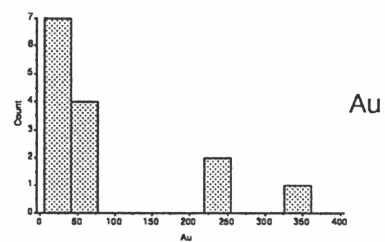


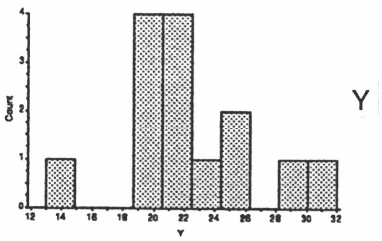
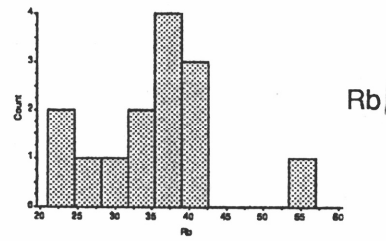
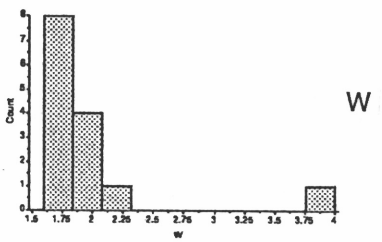
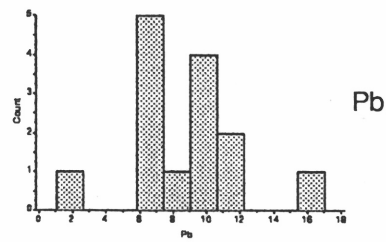
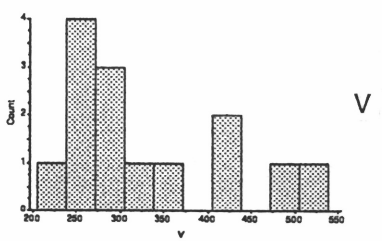
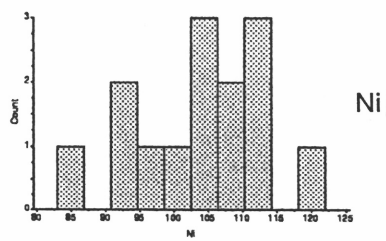
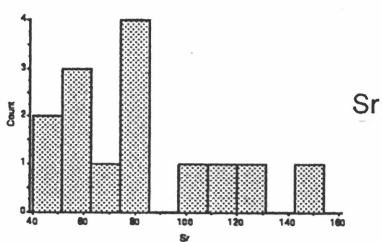
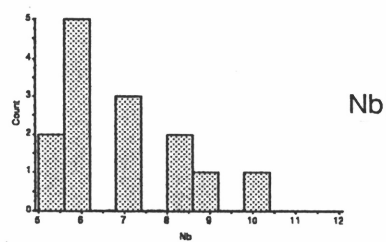
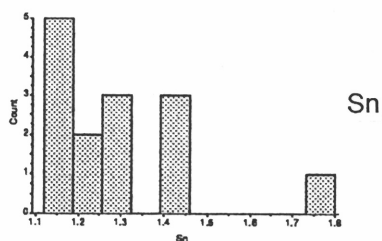
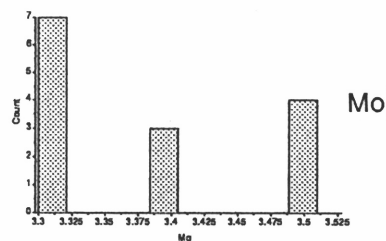
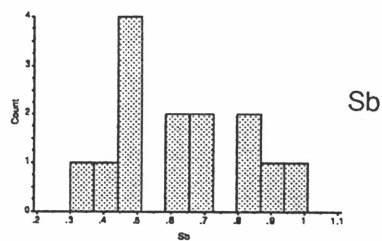
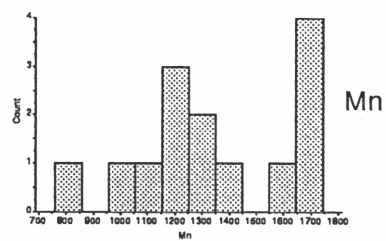


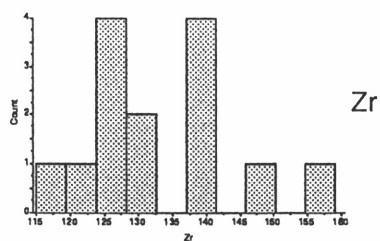
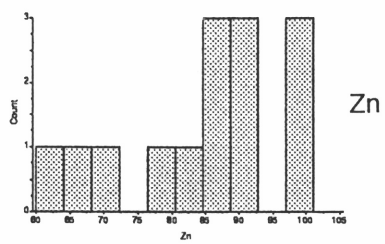
APPENDIX 4

Frequency Distributions - Complete Soil



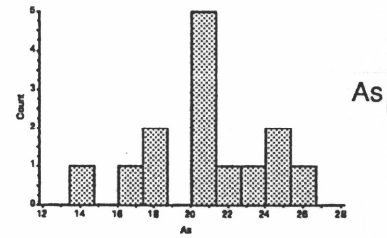
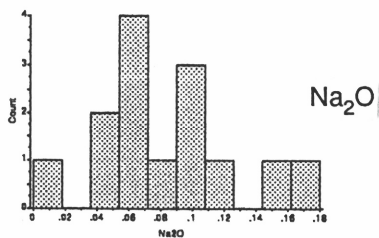
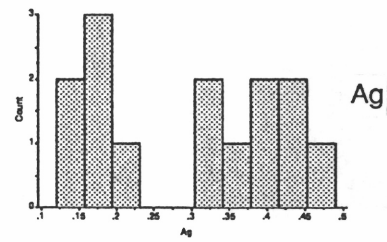
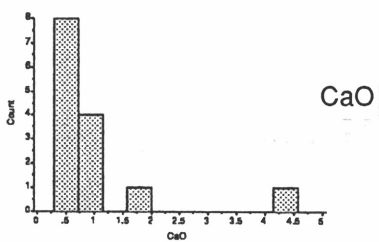
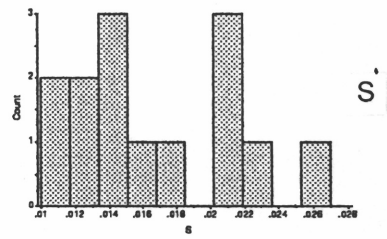
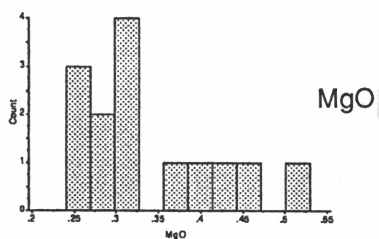
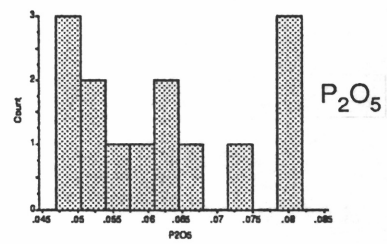
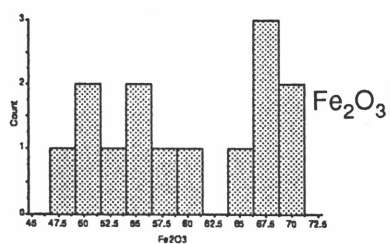
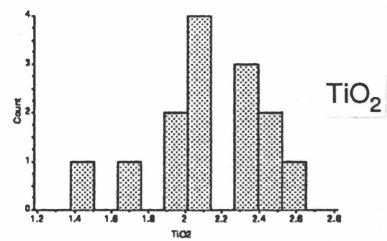
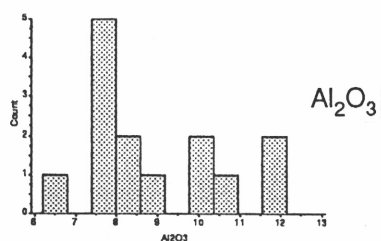
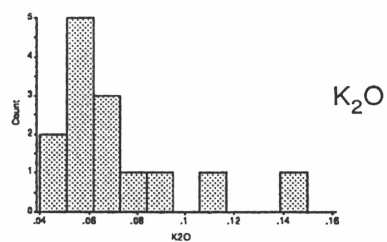
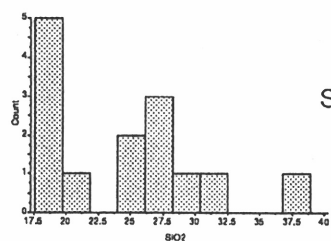


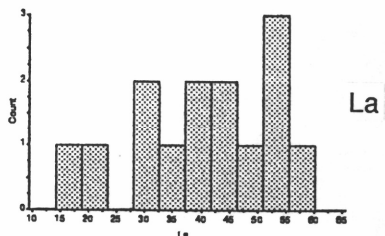
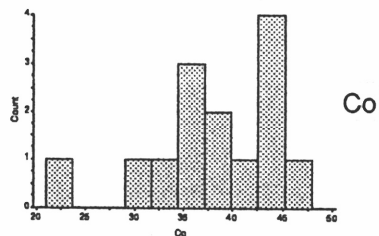
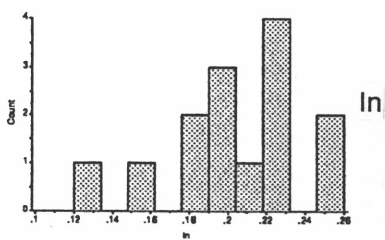
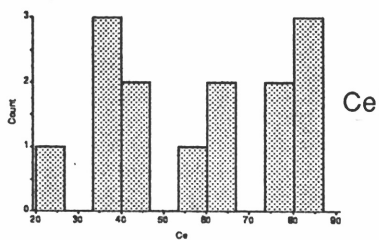
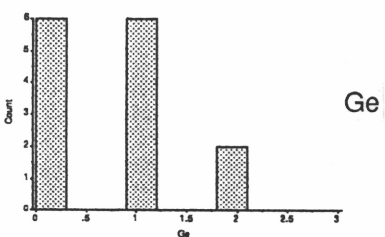
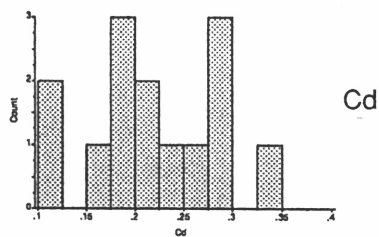
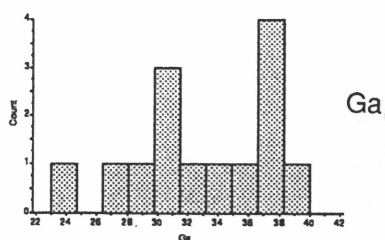
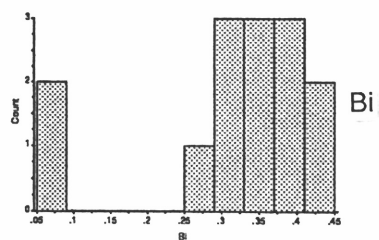
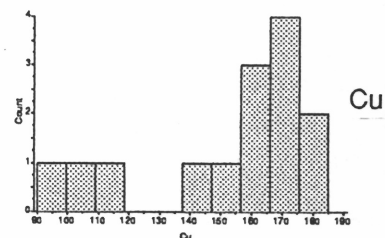
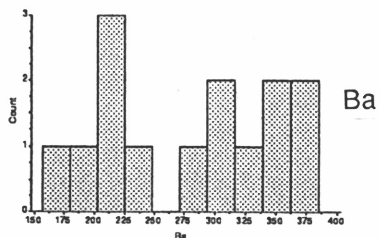
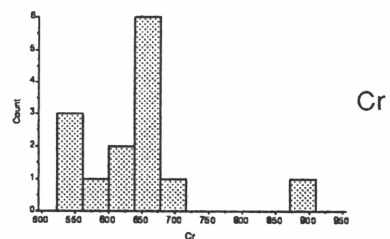
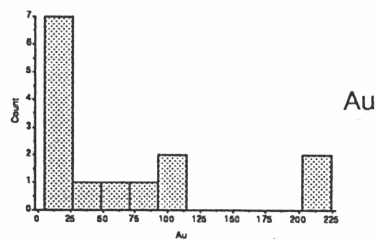


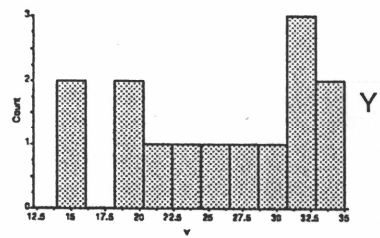
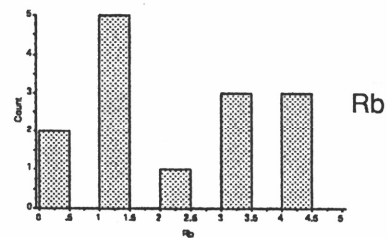
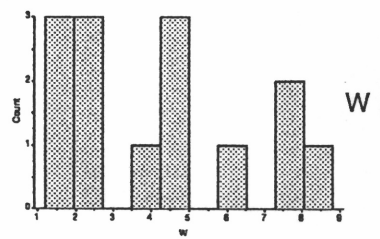
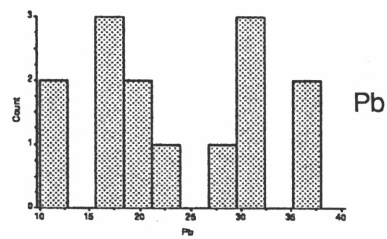
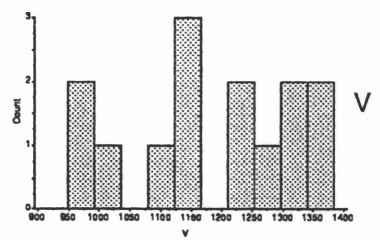
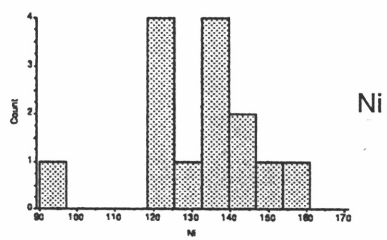
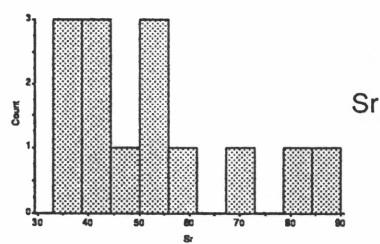
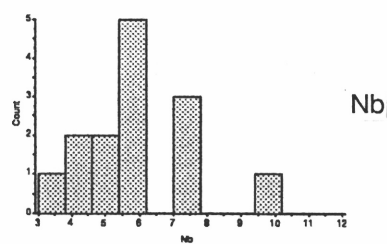
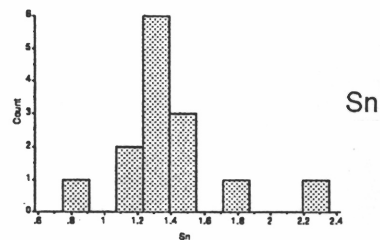
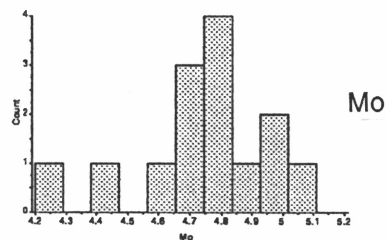
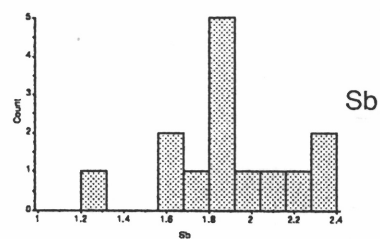
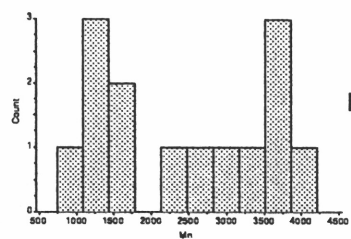


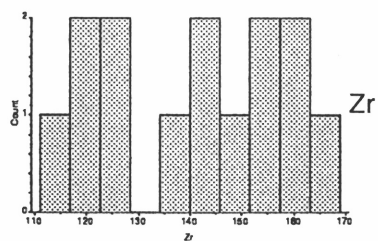
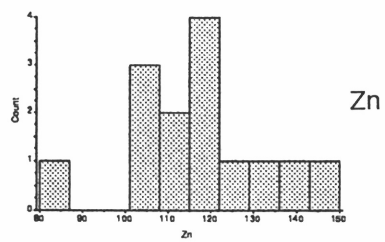
APPENDIX 5

Frequency Distributions - Soil > 600 μ m



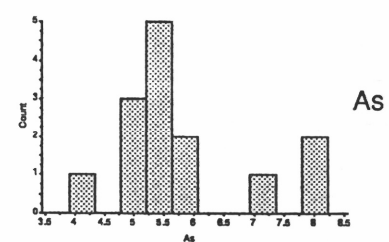
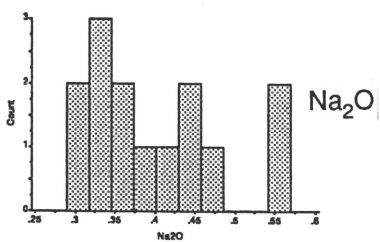
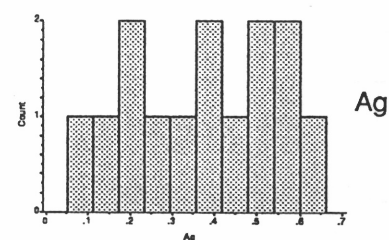
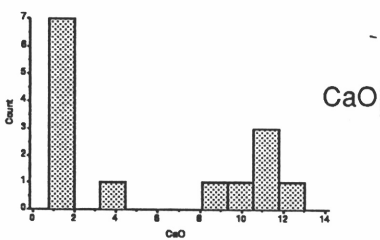
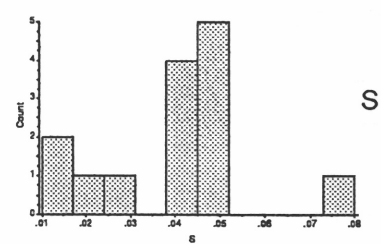
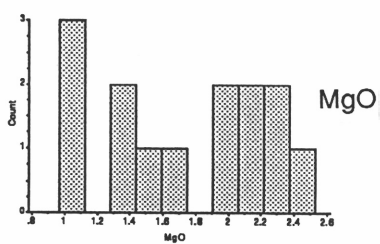
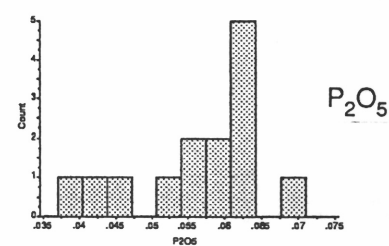
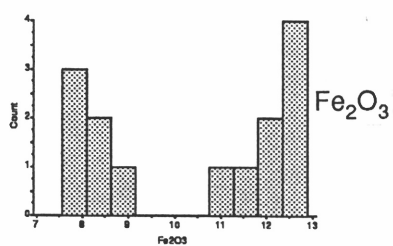
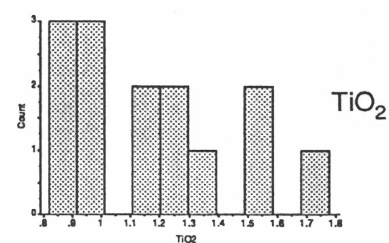
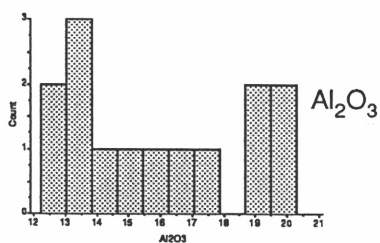
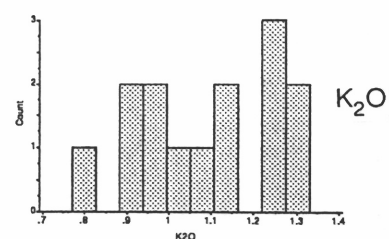
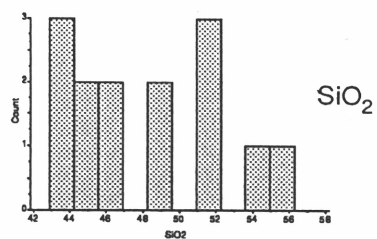


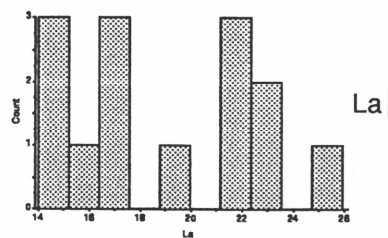
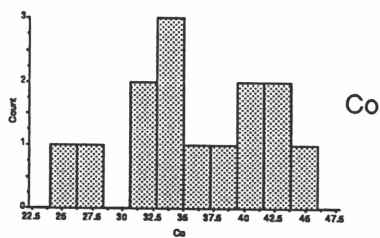
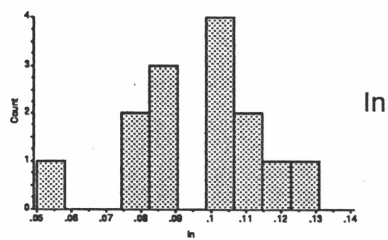
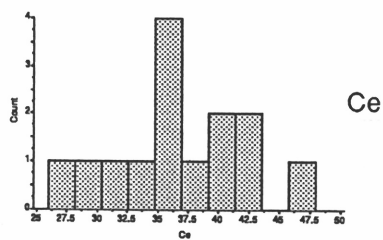
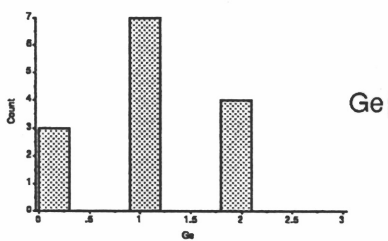
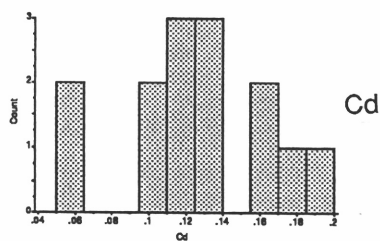
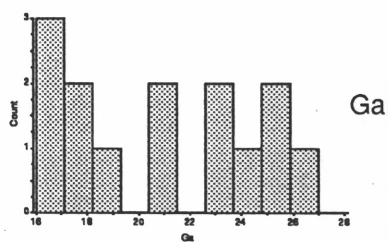
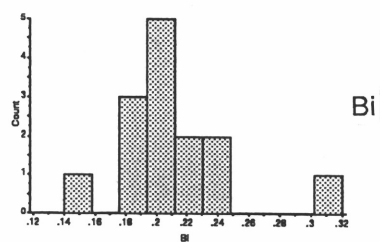
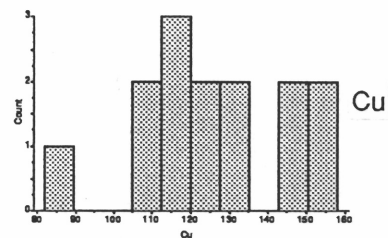
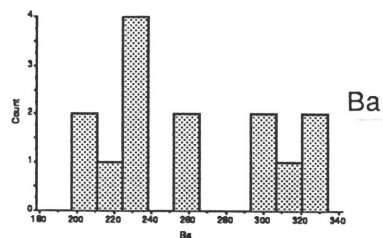
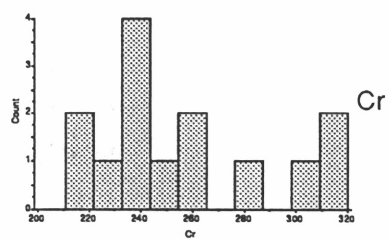
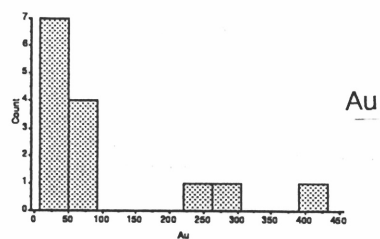


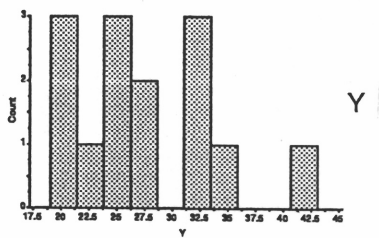
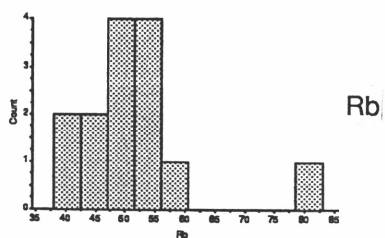
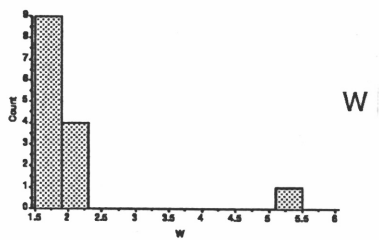
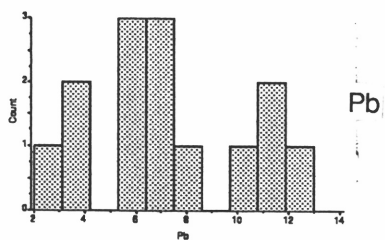
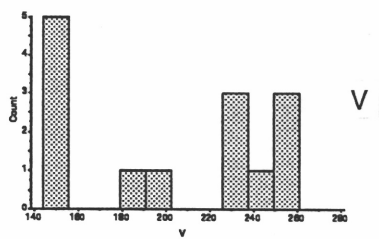
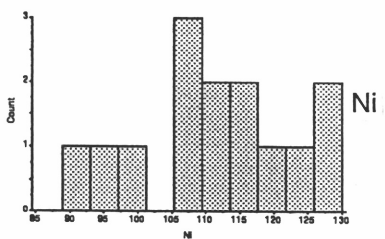
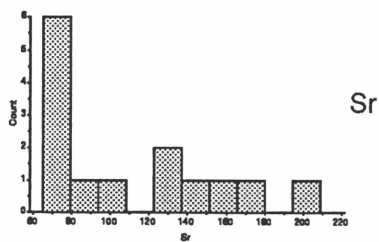
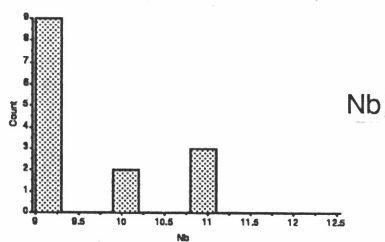
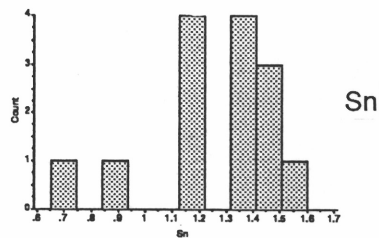
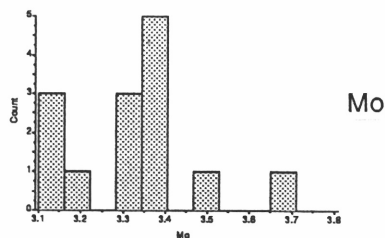
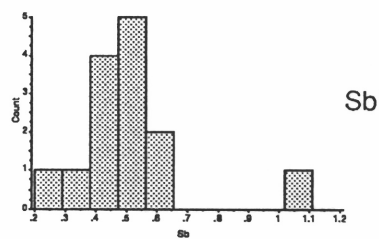
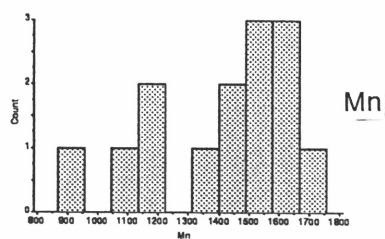


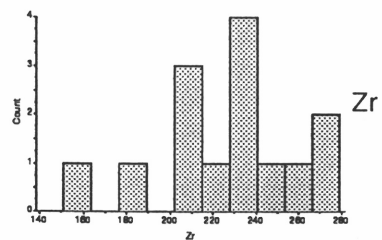
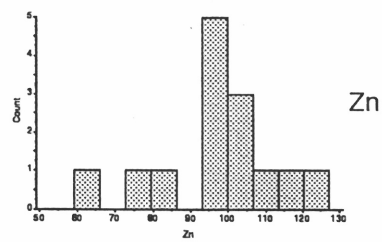
APPENDIX 6

Frequency Distributions - Soil <75 μ m



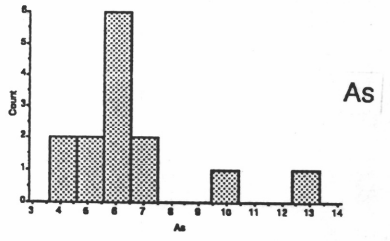
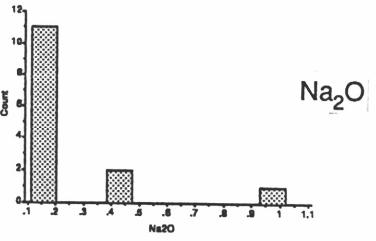
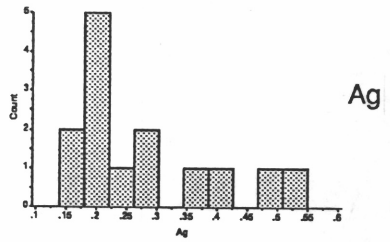
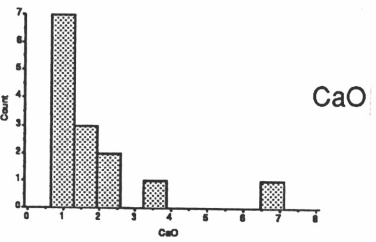
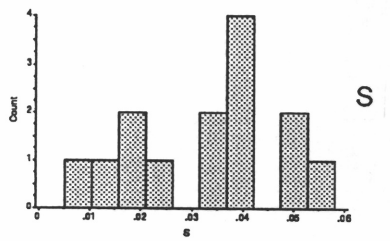
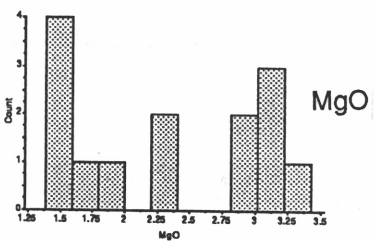
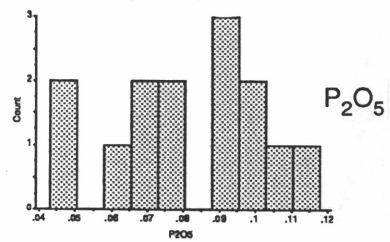
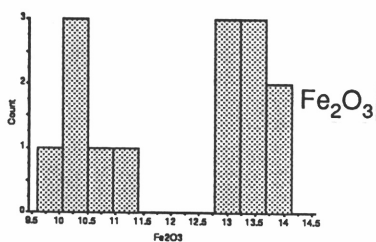
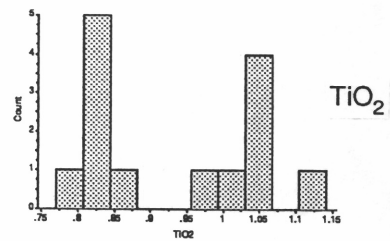
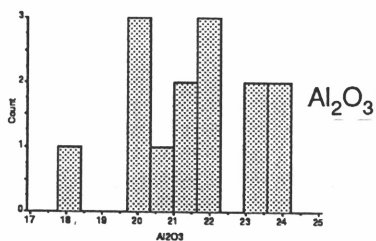
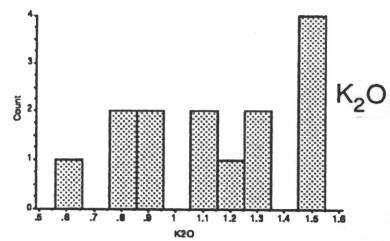
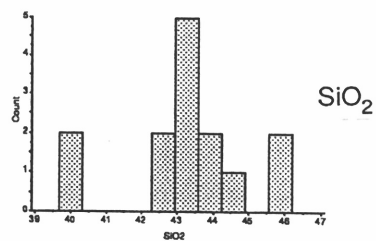


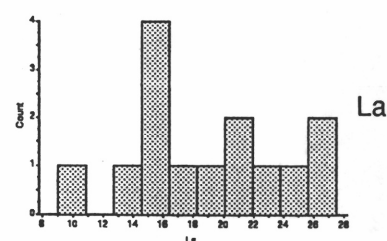
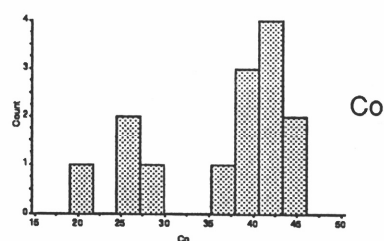
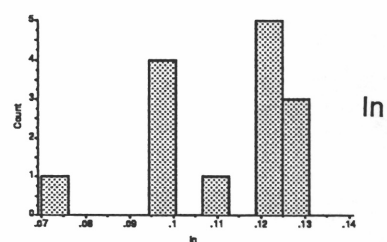
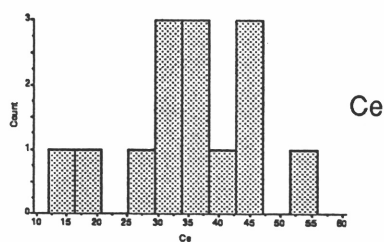
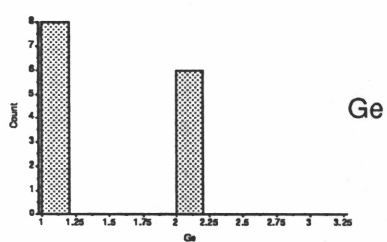
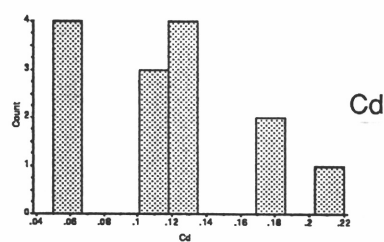
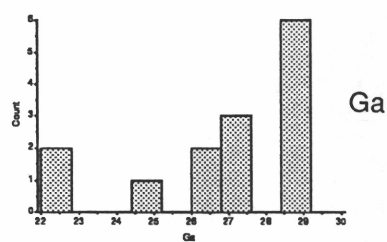
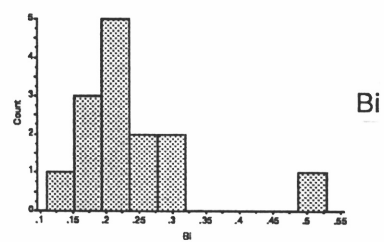
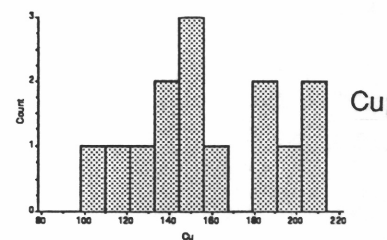
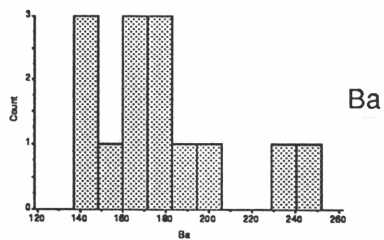
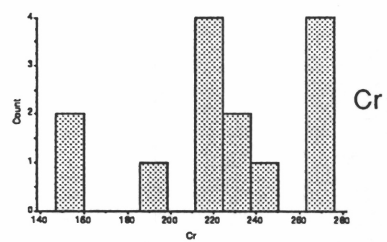
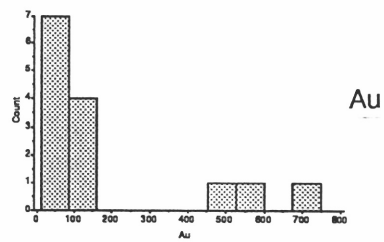


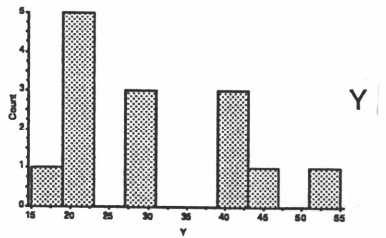
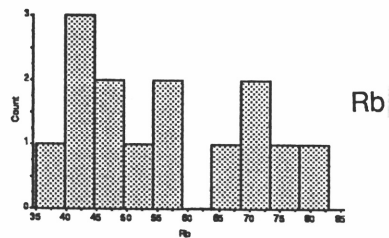
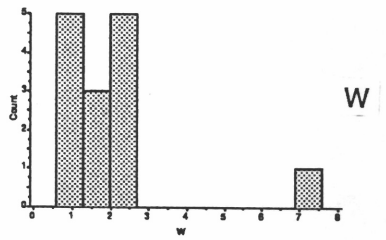
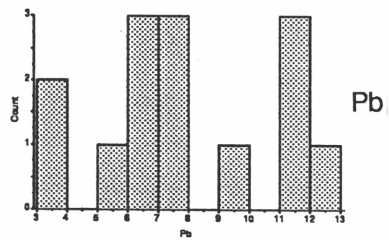
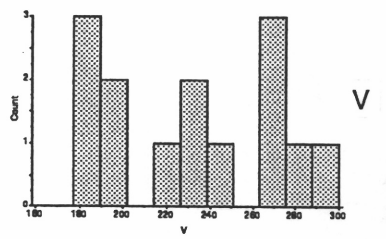
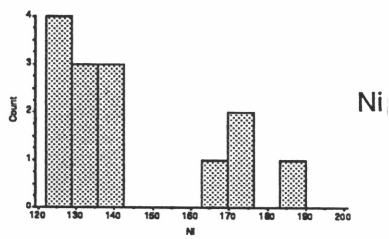
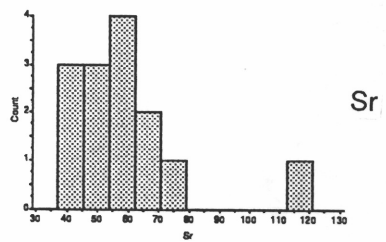
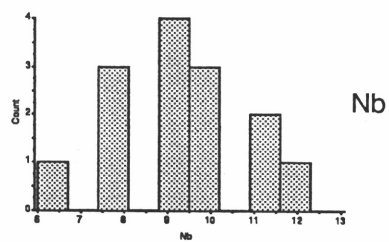
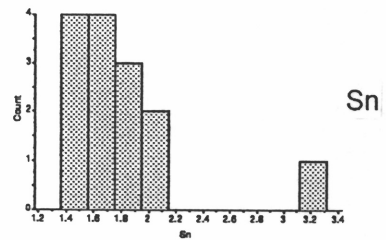
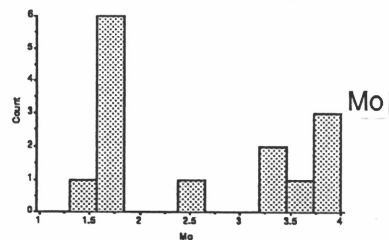
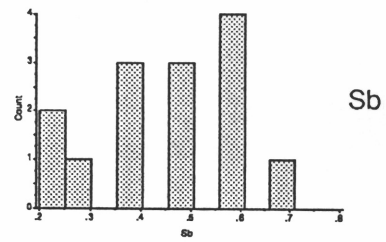
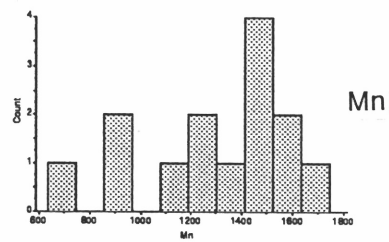


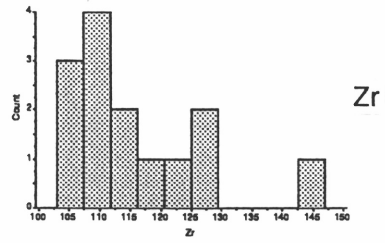
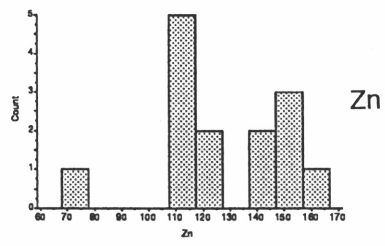
APPENDIX 7

Frequency Distribution - Soil <4 μ m



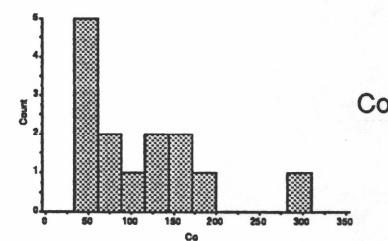
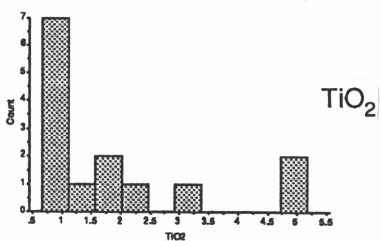
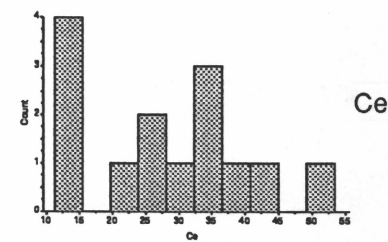
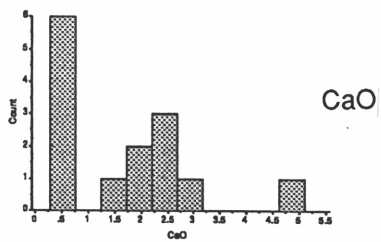
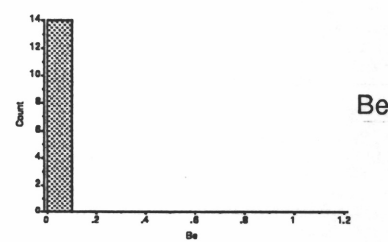
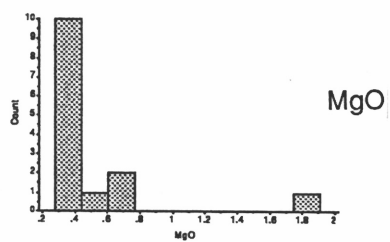
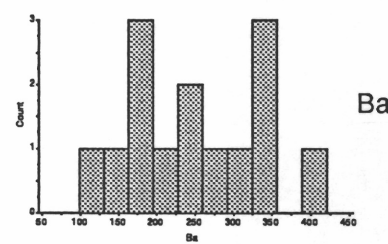
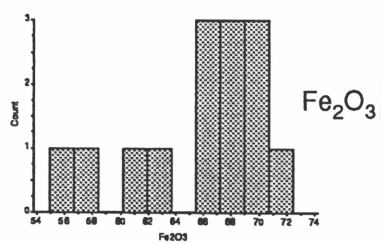
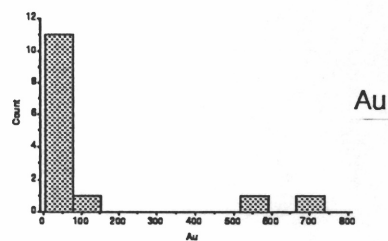
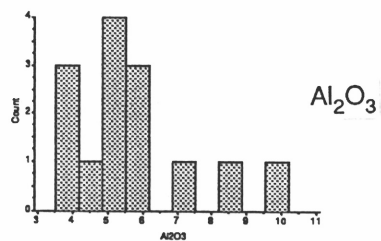
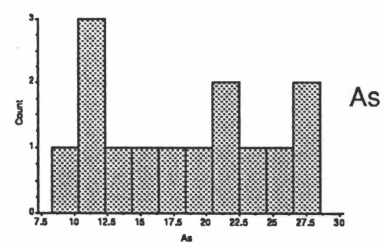
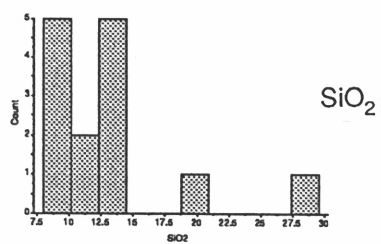


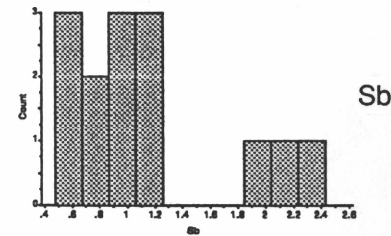
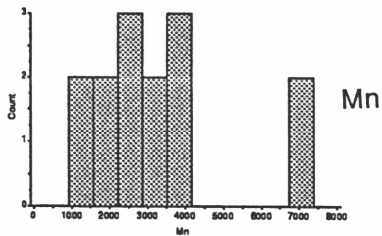
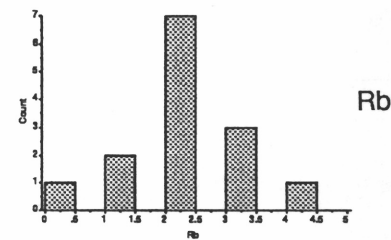
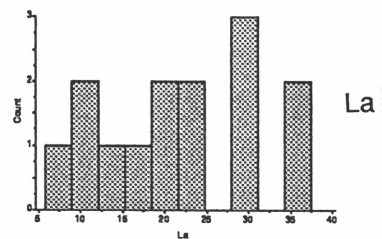
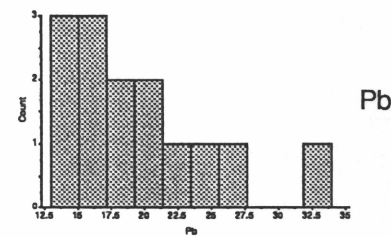
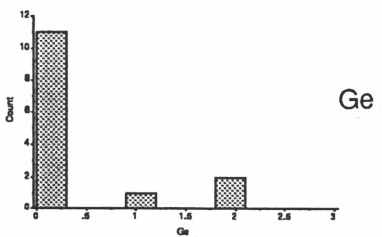
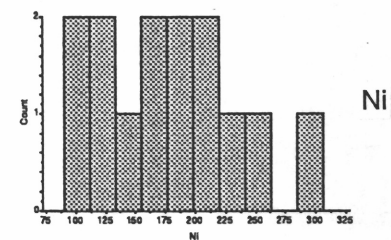
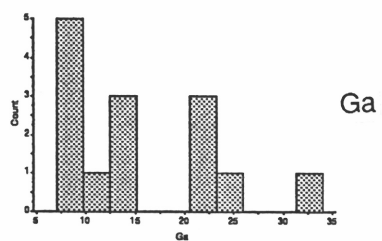
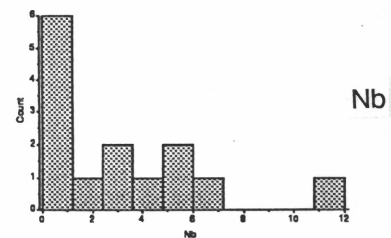
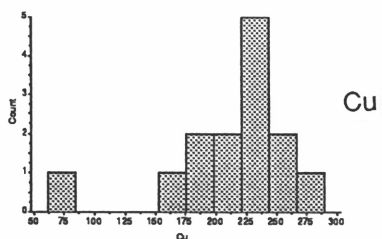
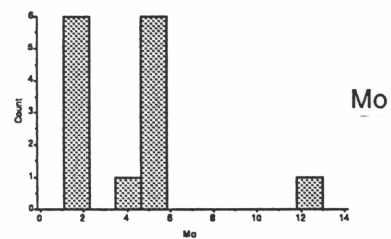
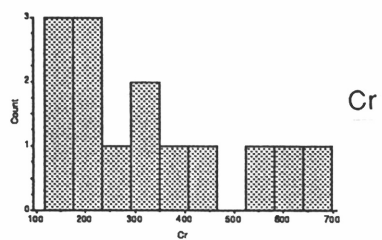


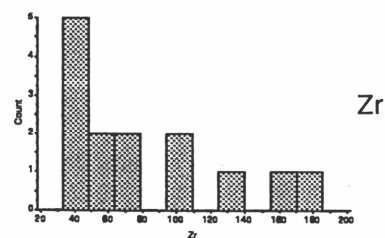
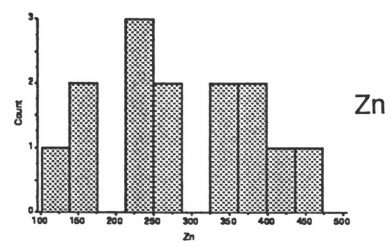
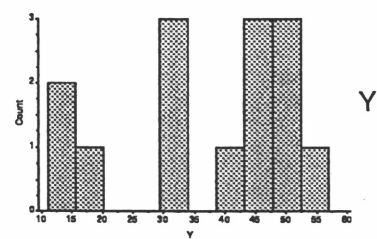
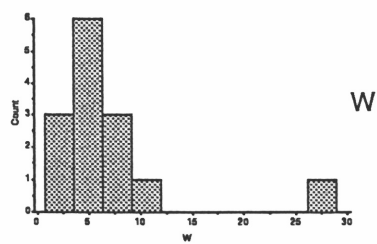
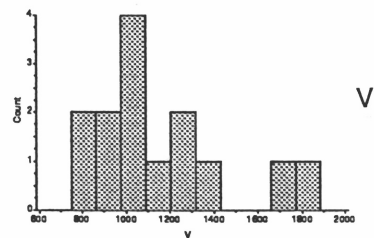
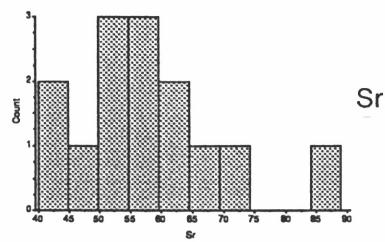


APPENDIX 8

Frequency Distributions - Coarse Lag

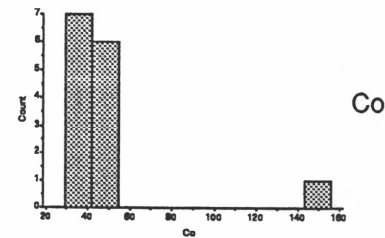
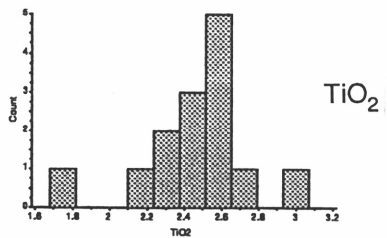
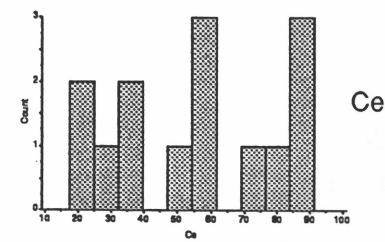
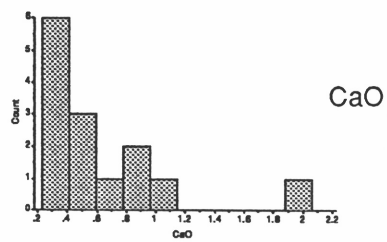
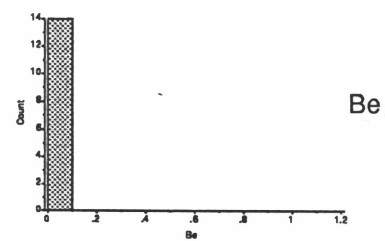
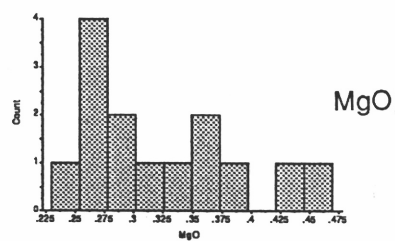
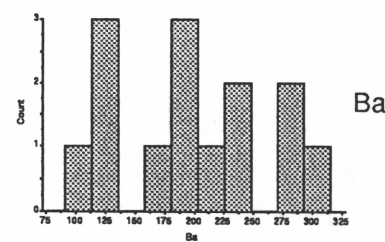
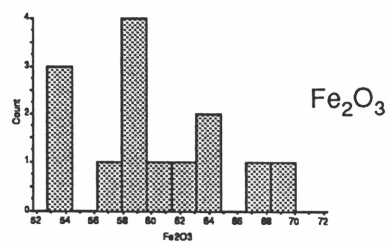
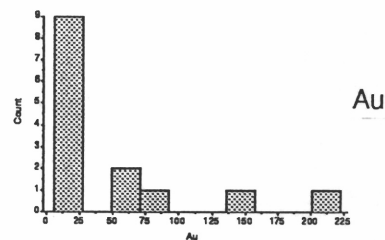
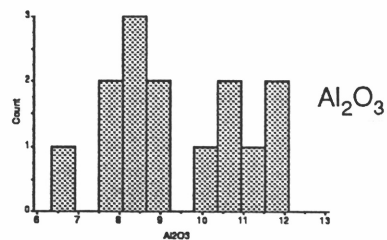
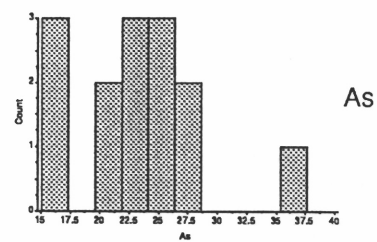
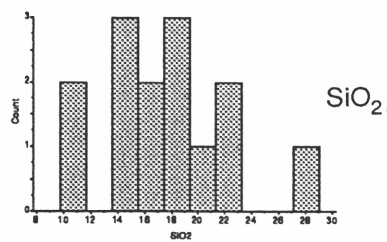


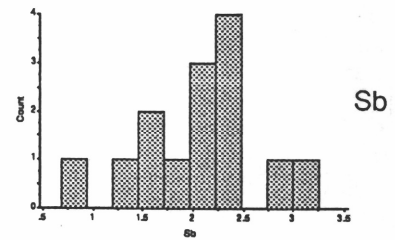
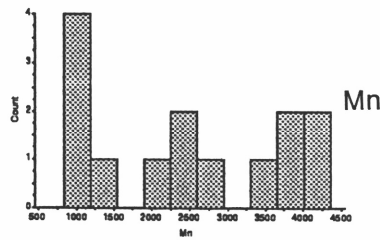
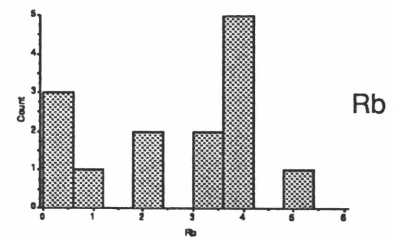
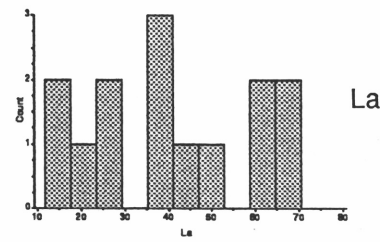
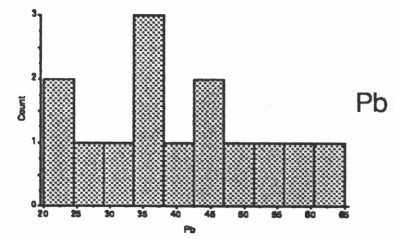
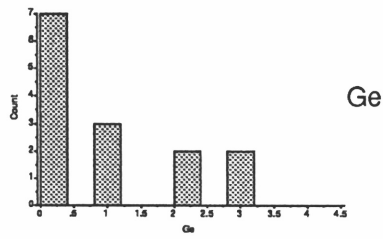
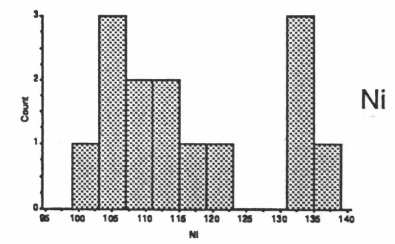
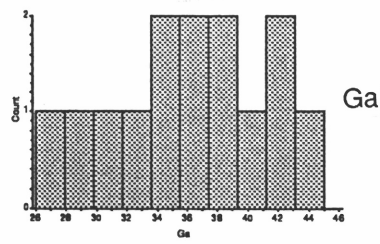
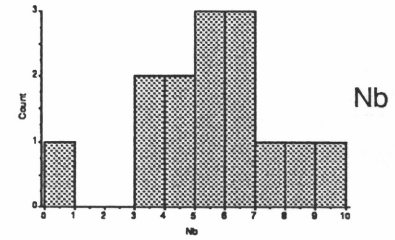
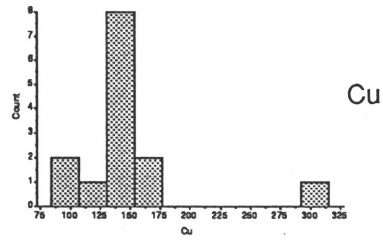
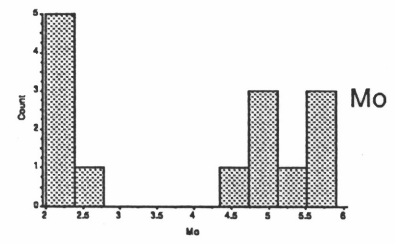
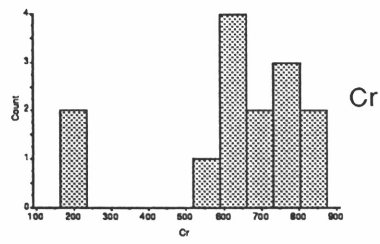


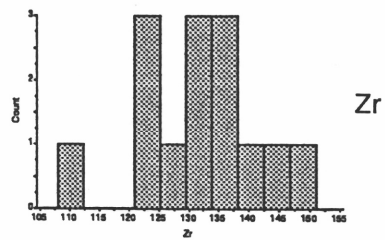
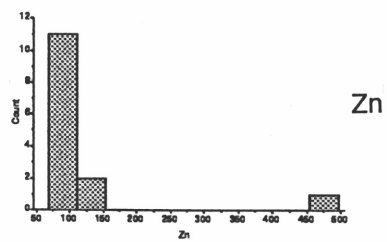
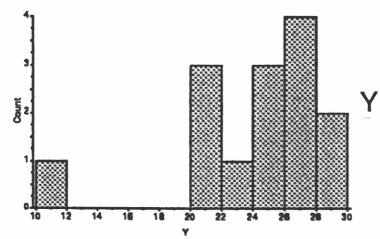
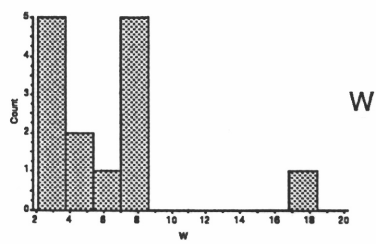
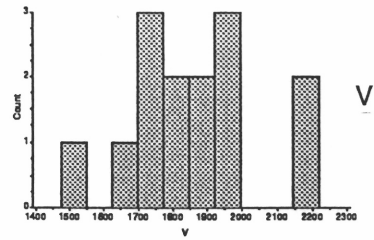
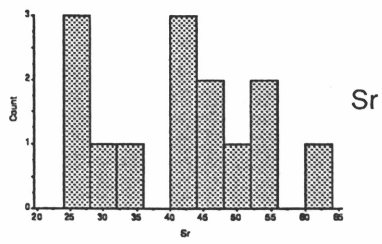


APPENDIX 9

Frequency Distributions - Fine Lag

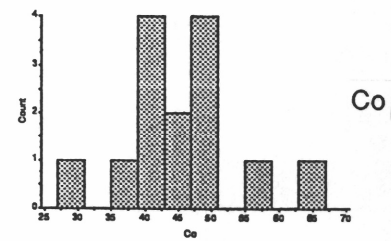
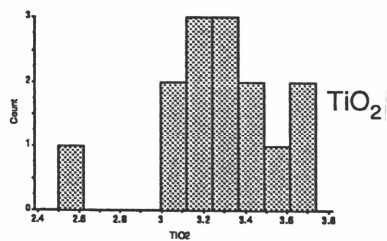
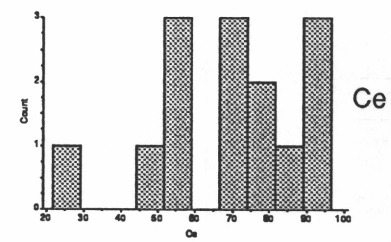
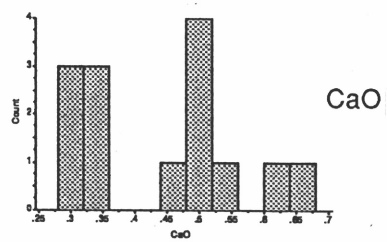
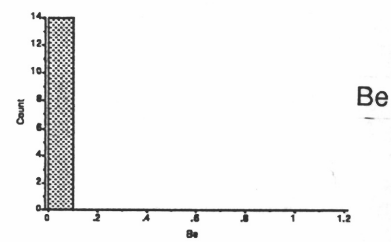
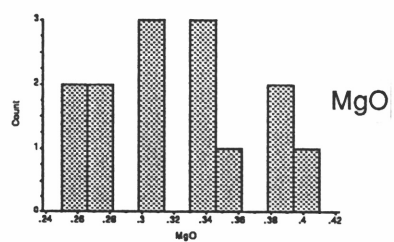
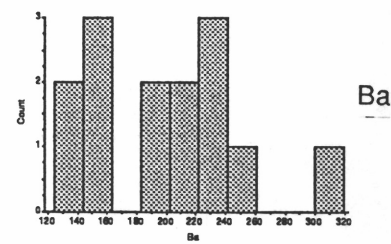
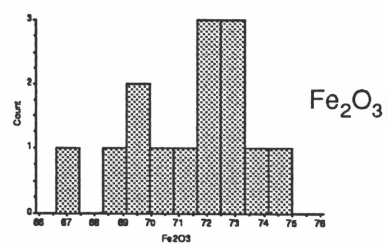
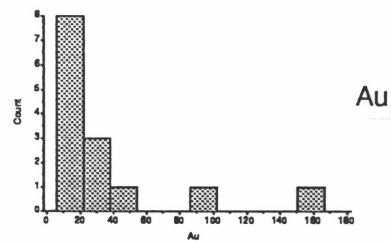
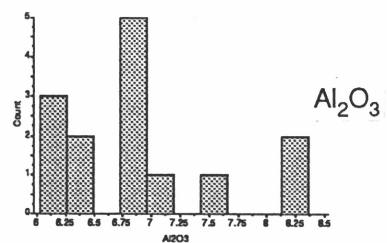
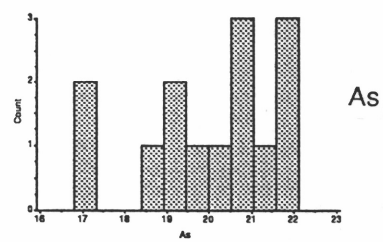
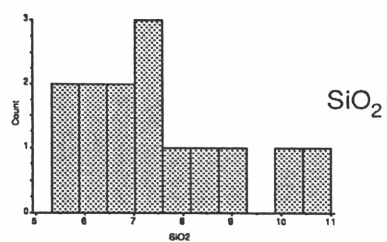


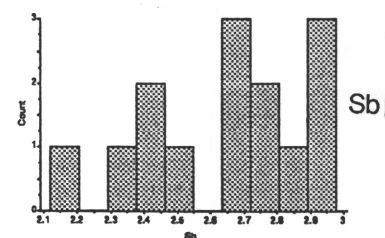
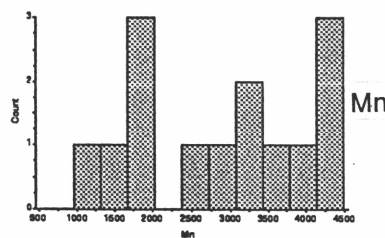
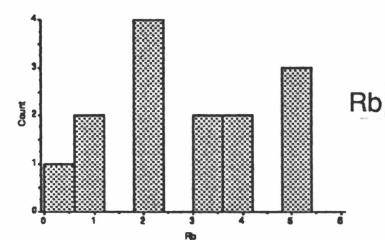
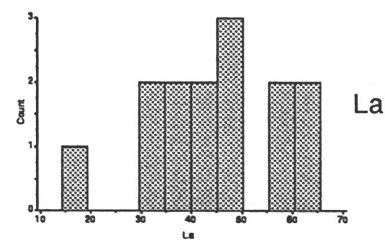
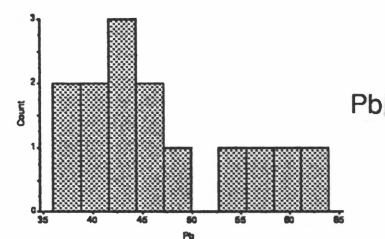
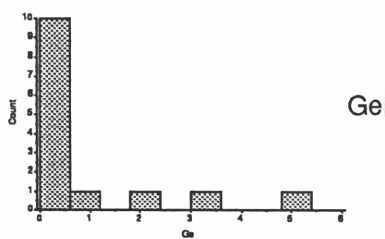
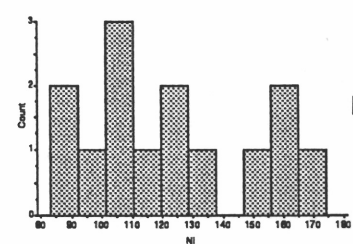
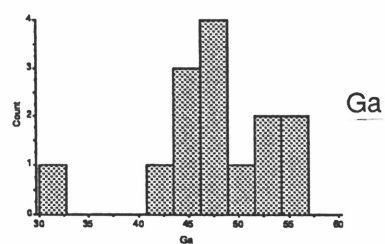
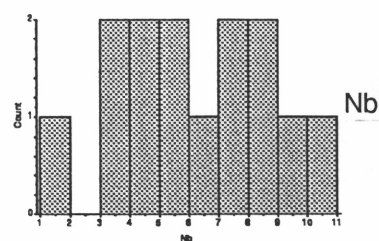
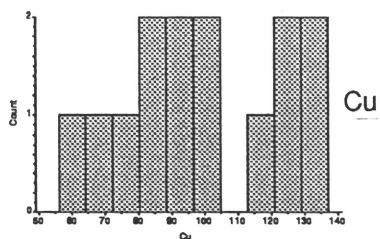
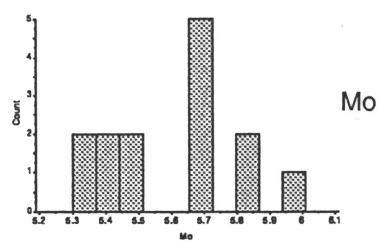
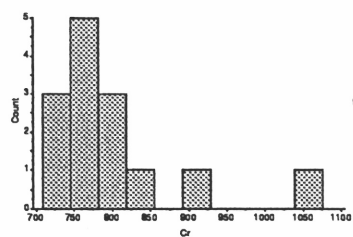


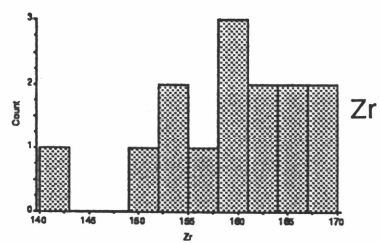
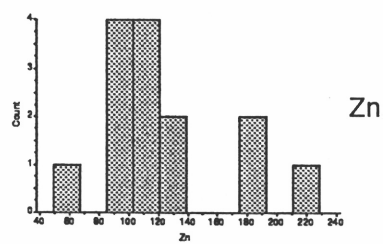
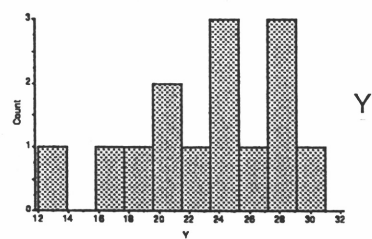
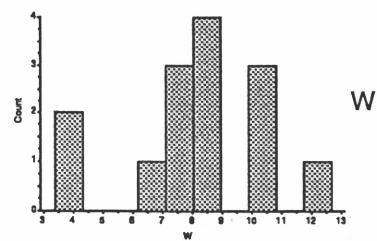
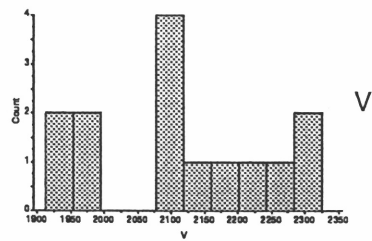
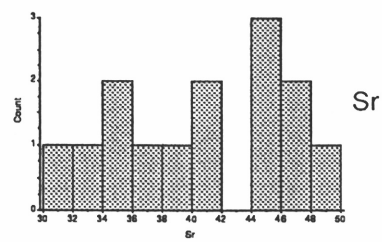


APPENDIX 10

Frequency Distributions - Fine Lag Magnetic

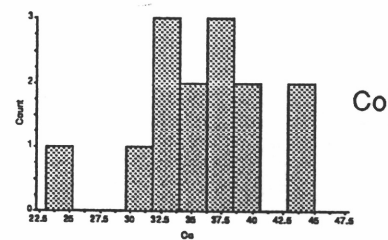
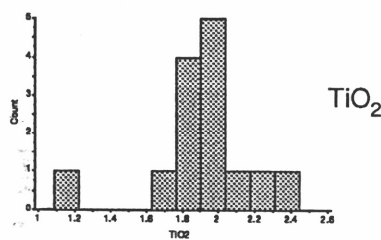
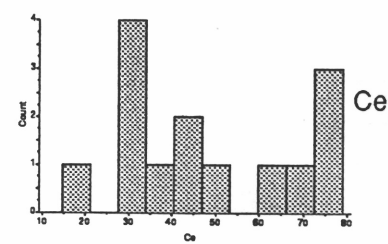
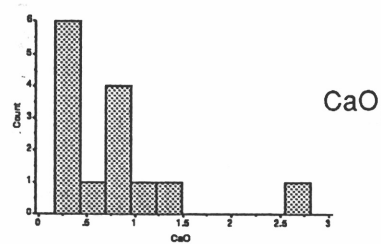
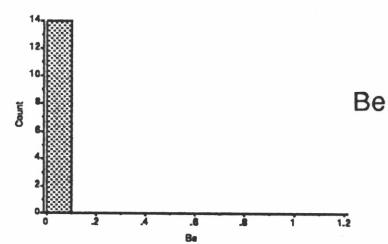
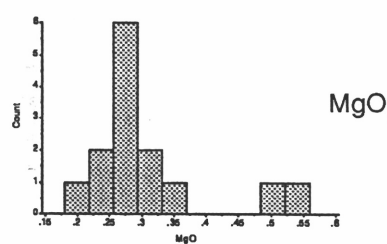
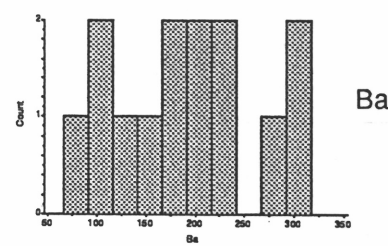
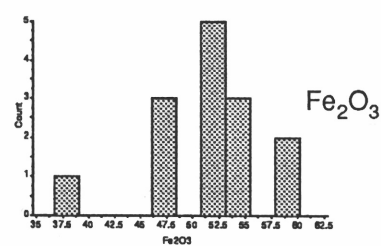
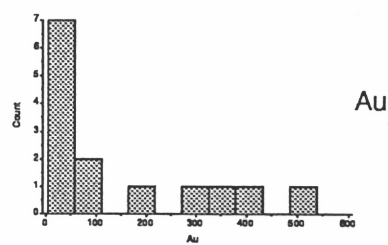
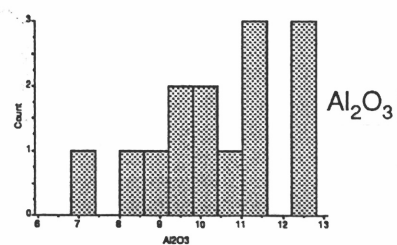
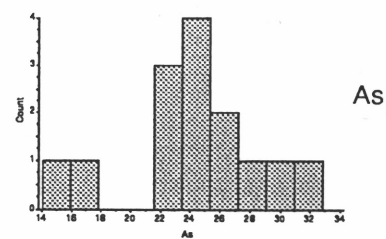
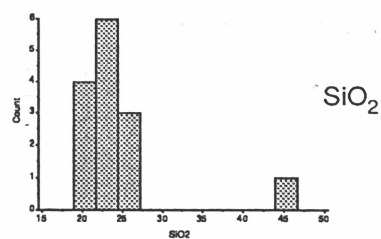


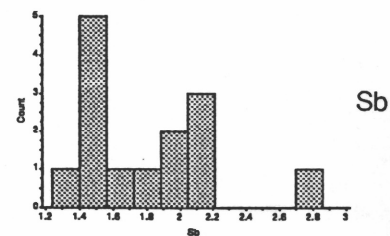
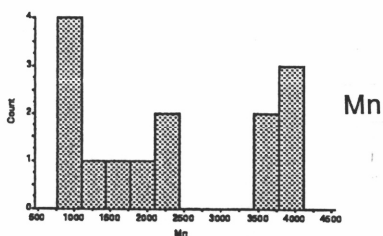
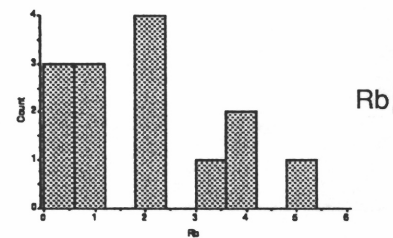
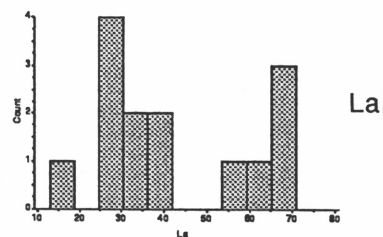
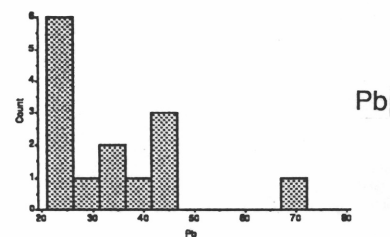
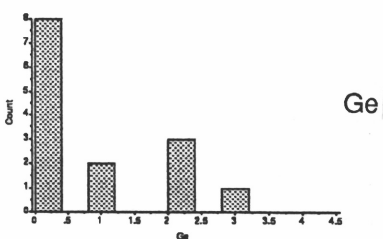
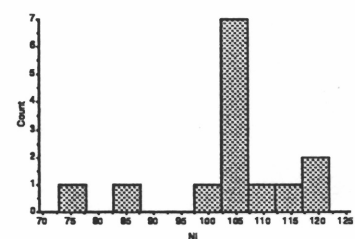
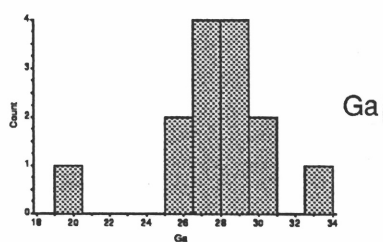
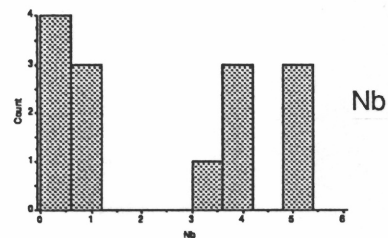
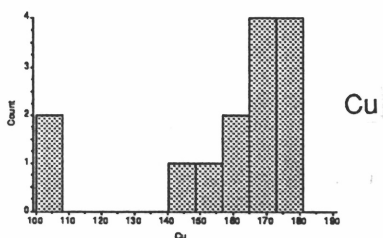
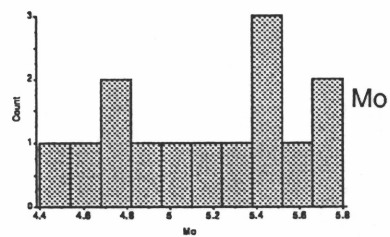
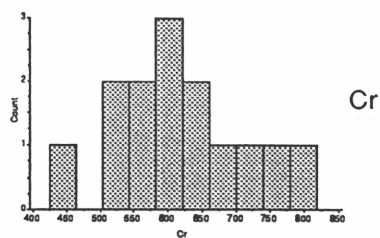


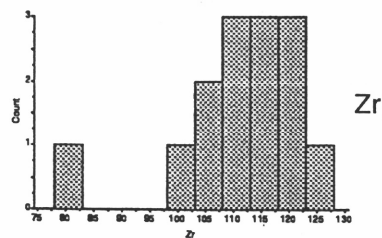
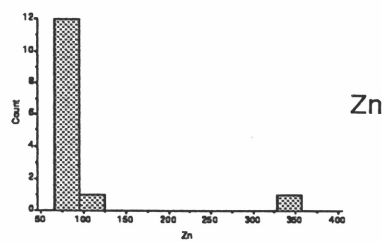
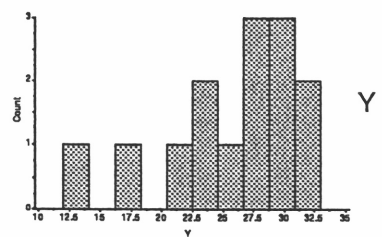
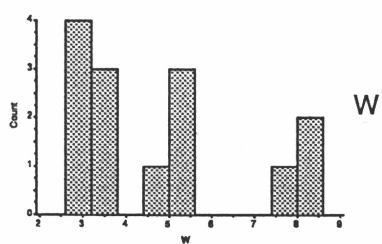
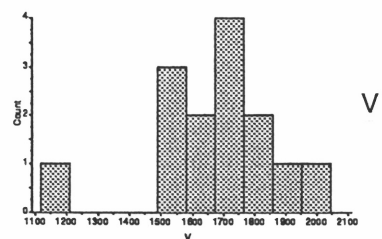
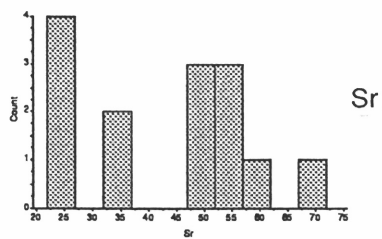


APPENDIX 11

Frequency Distributions - Fine Lag Non-Magnetic







APPENDIX 12

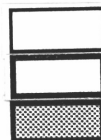
Correlation Matrices - Transformed Data

Significance:

95% > 0.458

99% > 0.612

99.9% > 0.780



See Appendix 17 for transforms used

TRANSFORMED DATA
CORRELATION MATRIX - COMPLETE SOIL

	Si	Al	Fe	Mg	Ca	Na	K	Ti	P	S	Ag	As	Au	Ba	Bi	Cd	Ce	Co	Cr	Cu	Ga	Ge	In	La	Mn	Mo	Nb	Ni	Pb	Rb	Sb	Sn	Sr	V	W	Y	Zn	Zr	pH
Si		-0.09	0.09	-0.23	-0.44	0.13	0.06	0.03	-0.25	-0.59	0.11	0.21	-0.25	0.04	0.49	-0.21	0.00	0.38	-0.02	-0.05	-0.05	0.10	0.20	0.08	0.12	0.12	-0.09	0.01	-0.24	0.28	0.09	0.32	-0.47	0.07	0.48	0.11	0.36	0.02	-0.39
Al	-0.09		0.00	-0.28	-0.59	-0.27	0.00	0.51	0.28	0.17	-0.07	-0.26	-0.32	0.40	0.23	-0.11	-0.50	0.42	0.13	-0.24	0.69	0.20	0.35	-0.56	-0.23	-0.33	0.22	0.13	-0.43	0.04	0.17	0.54	-0.47	0.08	0.11	-0.36	0.40	0.16	-0.54
Fe	0.09	0.00		-0.85	-0.59	-0.56	-0.80	0.22	-0.42	-0.67	-0.05	0.52	-0.51	0.59	0.28	-0.27	-0.36	-0.22	0.38	-0.38	0.68	-0.36	0.55	-0.32	-0.52	0.19	-0.39	-0.04	0.08	-0.70	0.23	-0.03	-0.71	0.22	0.38	-0.40	-0.23	0.23	-0.50
Mg	-0.23	-0.28	-0.85		0.49	0.33	-0.90	0.31	0.50	-0.13	-0.46	0.54	-0.62	-0.36	0.32	0.71	0.17	-0.87	0.56	-0.69	0.24	-0.64	0.64	0.72	0.15	0.29	0.22	0.15	0.75	-0.79	-0.12	0.23	-0.87	-0.59	0.63	0.21	-0.78	0.69	
Ca	-0.44	-0.59	-0.59	0.49		0.34	0.55	-0.83	0.27	0.50	0.00	-0.21	0.66	-0.61	-0.46	0.38	0.70	-0.24	-0.64	0.59	-0.74	0.10	-0.61	0.67	0.55	0.16	-0.03	0.06	0.27	0.35	-0.59	-0.44	0.64	-0.64	-0.47	0.61	-0.10	-0.59	0.49
Na	0.13	-0.27	-0.56	0.49	0.34		0.27	-0.54	-0.07	0.30	0.12	-0.01	0.40	-0.43	-0.15	-0.32	0.09	-0.17	-0.61	-0.11	-0.54	0.41	-0.29	0.14	0.12	0.08	0.62	-0.59	0.05	0.33	-0.45	-0.04	0.49	-0.47	-0.32	-0.07	-0.27	-0.53	0.22
K	0.06	0.00	-0.80	0.33	0.55	0.27		-0.74	0.52	0.38	-0.13	-0.57	0.26	-0.50	-0.17	0.41	0.68	0.59	-0.83	0.63	-0.47	0.15	-0.51	0.63	0.41	0.24	0.24	0.47	-0.07	0.23	-0.70	0.14	0.56	-0.84	-0.37	0.73	0.65	-0.70	0.44
Ti	0.03	0.51	0.22	-0.90	-0.83	-0.54	-0.74		-0.21	-0.45	-0.09	0.35	-0.54	0.40	-0.36	-0.72	-0.05	0.38	-0.62	0.31	-0.29	0.67	-0.71	-0.69	-0.15	-0.19	-0.11	-0.25	-0.65	0.23	-0.83	0.23	-0.83	0.38	-0.68	-0.13	0.23	-0.70	
P	-0.25	0.28	-0.42	0.31	0.27	-0.07	0.52	-0.21		0.52	0.10	-0.24	0.16	-0.24	-0.05	0.63	0.17	0.38	-0.42	0.36	-0.12	-0.07	-0.15	0.18	0.39	0.04	0.02	0.11	-0.24	0.28	-0.13	0.13	0.22	-0.41	0.02	0.34	0.41	-0.36	0.30
S	-0.59	0.17	-0.67	0.50	0.50	0.30	0.38	-0.45	0.52		0.00	-0.29	0.54	-0.40	-0.26	0.25	0.04	-0.19	-0.61	0.29	-0.34	0.27	-0.19	0.02	0.16	-0.23	0.30	-0.21	0.08	0.13	-0.57	-0.08	0.59	-0.64	-0.34	0.12	0.01	-0.66	0.52
Ag	0.11	-0.07	-0.05	-0.13	0.00	0.12	-0.13	-0.09	0.10	0.00		-0.01	-0.12	-0.36	-0.37	0.13	-0.01	-0.01	-0.06	0.14	-0.22	0.38	-0.25	0.12	-0.02	-0.04	-0.19	-0.26	-0.19	-0.12	0.01	-0.24	-0.08	-0.04	0.41	0.07	-0.13	0.09	-0.10
As	0.21	-0.26	0.52	-0.46	-0.21	-0.01	-0.57	0.35	-0.24	-0.29	-0.01		0.31	0.27	0.49	-0.03	-0.27	-0.49	0.40	-0.17	0.12	0.02	0.43	-0.21	-0.35	-0.04	-0.49	-0.51	0.15	-0.56	0.62	0.27	-0.22	0.53	0.29	-0.27	-0.30	0.26	0.02
Au	-0.25	-0.32	-0.51	0.54	0.66	0.40	0.26	-0.54	0.16	0.54	-0.12	0.31		-0.29	0.01	0.17	0.19	-0.49	-0.54	0.31	-0.54	0.28	-0.25	0.16	0.16	-0.34	-0.18	-0.36	0.08	0.08	-0.38	0.05	0.70	-0.52	-0.18	0.21	-0.15	-0.62	0.19
Ba	0.04	0.40	0.59	-0.62	-0.61	-0.43	-0.50	0.40	-0.24	-0.40	-0.36	0.27	-0.29		0.36	-0.36	-0.66	-0.10	0.72	-0.65	0.72	-0.33	0.51	-0.71	-0.65	-0.30	-0.25	0.00	-0.51	-0.44	0.64	0.15	-0.53	0.61	0.05	-0.62	-0.14	0.71	-0.45
Bi	0.49	0.23	0.28	-0.36	-0.46	-0.15	-0.17	0.40	-0.05	-0.26	-0.37	0.49	0.01	0.36		-0.20	-0.26	0.15	0.13	-0.16	0.37	-0.04	0.43	-0.23	-0.12	-0.07	-0.23	0.11	-0.12	-0.07	0.43	0.44	-0.47	0.31	0.36	-0.11	0.27	0.10	-0.24
Cd	-0.21	-0.11	-0.27	0.32	0.38	-0.32	0.41	-0.36	0.63	0.25	0.13	-0.03	0.17	-0.36	-0.20		0.43	0.29	-0.23	0.61	-0.36	-0.10	-0.35	0.41	0.51	0.10	-0.39	0.44	0.21	0.22	-0.18	0.12	0.33	-0.34	-0.15	0.56	0.33	-0.35	0.36
Ce	0.00	-0.50	-0.36	0.71	0.70	0.09	0.68	-0.72	0.17	0.04	-0.01	-0.27	0.19	-0.66	-0.26	0.43		0.31	-0.54	0.34	-0.51	0.08	-0.49	0.48	0.62	-0.08	0.50	0.39	0.65	-0.43	-0.16	0.55	-0.46	-0.27	0.33	0.43	-0.42	0.55	
Co	0.38	0.42	-0.22	0.17	-0.24	-0.17	0.59	-0.05	0.38	-0.19	-0.01	-0.49	-0.49	-0.10	0.15	0.29	0.31		-0.24	0.29	0.17	-0.08	-0.06	0.30	0.59	0.35	0.17	0.65	-0.15	0.72	-0.13	0.42	-0.24	-0.22	0.00	0.41	0.73	-0.09	-0.37
Cr	-0.02	0.13	0.33	-0.87	-0.64	-0.61	-0.83	0.37	-0.42	-0.61	-0.06	0.40	-0.54	0.72	0.13	-0.23	-0.54	-0.24		-0.54	0.69	-0.40	0.44	-0.54	-0.68	-0.05	-0.35	0.00	-0.05	-0.75	0.12	-0.03	-0.69	0.43	0.27	-0.58	-0.33	0.13	-0.57
Cu	-0.05	-0.24	-0.38	0.56	0.59	-0.11	0.63	-0.62	0.36	0.29	0.14	-0.17	0.31	-0.65	-0.16	0.61	0.34	0.29	-0.54		-0.42	0.24	-0.36	0.74	0.43	0.41	-0.30	0.47	0.31	0.52	-0.41	0.03	0.43	-0.49	-0.06	0.34	0.60	-0.48	0.56
Ga	-0.05	0.69	0.68	-0.69	-0.74	-0.54	-0.47	0.31	-0.12	-0.34	-0.22	0.12	-0.54	0.72	0.37	-0.36	-0.51	0.17	0.69	-0.42		-0.20	0.61	-0.55	-0.44	0.00	-0.05	0.11	-0.24	-0.37	0.71	0.35	-0.75	0.73	0.24	-0.49	0.15	0.75	-0.65
Ge	0.10	0.20	-0.36	0.24	0.10	0.41	0.15	-0.29	-0.07	0.27	0.38	0.02	0.28	-0.33	-0.04	-0.10	0.08	-0.08	-0.40	0.24	-0.20		-0.05	0.08	0.05	-0.16	0.10	-0.27	-0.17	0.20	-0.23	0.16	0.16	-0.33	0.00	0.11	0.14	-0.33	0.04
In	0.20	0.35	0.55	-0.64	-0.61	-0.29	-0.51	0.67	-0.15	-0.19	-0.25	0.43	-0.25	0.51	0.33	-0.35	-0.49	-0.06	0.44	-0.36	0.61	-0.05		-0.45	-0.45	-0.04	-0.16	-0.22	-0.09	-0.44	0.62	0.17	-0.63	0.60	0.34	-0.39	0.02	0.41	-0.45
La	0.08	-0.56	-0.32	0.64	0.67	0.14	0.63	-0.71	0.18	0.02	0.12	-0.21	0.16	-0.71	-0.23	0.41	0.33	0.30	-0.54	0.37	-0.55	0.08	-0.45		0.43	0.68	-0.09	0.40	0.40	0.60	-0.39	-0.22	0.49	-0.41	-0.17	0.33	0.39	-0.39	0.51
Mn	0.12	-0.23	-0.52	0.72	0.55	0.12	0.33	-0.69	0.39	0.16	-0.02	-0.35	0.16	-0.65	-0.12	0.51	0.40	0.59	-0.68	0.35	-0.44	0.05	-0.45	0.39		0.56	0.02	0.55	0.28	0.33	-0.51	0.12	0.45	-0.59	-0.23	0.32	0.67	-0.54	0.44
Mo	0.12	-0.33	0.19	0.15	0.16	0.08	0.24	-0.15	0.04	-0.23	-0.04	-0.04	-0.34	-0.30	-0.07	0.10	0.62	0.35	-0.05	0.41	0.00	-0.16	-0.04	0.68	0.56		0.16	0.26	0.41	0.31	0.12	-0.10	0.02	0.15	-0.20	0.47	0.30	0.11	-0.03
Nb	-0.09	0.22	-0.39	0.29	-0.03	0.62	0.24	-0.19	0.02	0.30	-0.19	-0.49	-0.18	-0.25	-0.23	-0.39	-0.08	0.17	-0.35	-0.30	-0.05	0.10	-0.16	-0.09	0.02	0.16		-0.22	0.13	0.32	-0.40	0.04	0.13	-0.29	-0.36	-0.26	-0.07	-0.32	-0.22
Ni	0.01	0.13	-0.04	0.22	0.06	-0.59	0.47	-0.11	0.11	-0.21	-0.26	-0.51	-0.36	0.00	-0.11	0.44	0.50	0.65	0.00	0.47	0.11	-0.27	-0.22	0.40	0.55	0.26	-0.22		0.09	0.49	-0.19	0.09	-0.02	-0.15	-0.21	0.56	0.62	0.03	-0.05
Pb	-0.24	-0.43	0.08	0.15	0.27	0.05	-0.07	-0.25	-0.24	0.08	-0.19	0.15	0.08	-0.51	-0.12	0.21	0.39	-0.15	-0.05	0.31	-0.24	-0.17	-0.09	0.40	0.28	0.41	0.13	0.09		-0.05	-0.17	-0.02	0.24	0.05	-0.26	0.21	-0.16	-0.23	0.18
Rb	0.28	0.04	-0.70	0.75	0.35	0.33	0.33	-0.65	0.28	0.13	-0.12	-0.56	0.08	-0.44	-0.07	0.22	0.65	0.72	-0.75	0.52	-0.37	0.20	-0.44	0.60	0.33	0.31	0.32	0.49	-0.05		-0.64	0.25	0.39	-0.72	-0.34	0.65	0.67	-0.59	0.19
Sb	0.09	0.17	0.18	-0.79	-0.59	-0.45	-0.70	0.33	-0.13	-0.57	0.01	0.62	-0.38	0.64	0.43	-0.18	-0.43	-0.13	0.12	-0.41	0.71	-0.23	0.62	-0.39	-0.51	0.12	-0.40	-0.19	-0.17	-0.64		0.14	-0.68	0.40	-0.44	-0.16	0.13	-0.47	
Sn	0.32	0.54	-0.03	-0.12	-0.44	-0.04	0.14	0.23	0.13	-0.08	-0.24	0.27	0.05	0.15	0.44	0.12	-0.16	0.42	-0.03	0.03	0.35	0.16	0.17	-0.22	0.12	-0.10	0.04	0.09	-0.02	0.25	0.14		-0.32	0.02	0.12	-0.08	0.53	-0.13	-0.30
Sr	-0.47	-0.47	-0.71	0.38	0.44	0.49	0.56	-0.83	0.22	0.59	-0.08	-0.22	0.70	-0.53	-0.47	0.33	0.55	-0.24	-0.69	0.43	-0.75	0.16	-0.63	0.49	0.45	0.02	0.13	-0.02	0.24	0.39	-0.68	-0.32		-0.73	-0.66	0.43	-0.17	-0.67	0.44
V	0.07	0.08	0.36	-0.87	-0.64	-0.47	-0.84	0.37	-0.41	-0.64	-0.04	0.53	-0.52	0.61	0.31	-0.34	-0.46	-0.22	0.34	-0.49	0.73	-0.33	0.60	-0.41	-0.59	0.15	-0.29	-0.15	0.05	-0.72	0.22	0.02	-0.73		0.36				

TRANSFORMED DATA
CORRELATION MATRIX - >600 μ m SOIL FRACTION

	Si	Al	Fe	Mg	Ca	Na	K	Ti	P	S	Ag	As	Au	Ba	Bi	Cd	Ce	Co	Cr	Cu	Ga	Ge	In	La	Mn	Mo	Nb	Ni	Pb	Rb	Sb	Sn	Sr	V	W	Y	Zn	Zr	pH
Si		0.16	-0.88	-0.12	-0.34	0.25	0.37	-0.89	0.68	-0.33	-0.19	-0.72	-0.04	-0.61	-0.01	-0.21	-0.41	-0.05	-0.53	-0.37	-0.94	0.02	-0.46	-0.24	-0.41	0.08	0.00	-0.01	-0.56	0.28	-0.88	-0.69	-0.22	-0.92	0.00	0.46	0.26	-0.79	-0.61
Al	0.16		-0.45	-0.05	-0.35	0.10	0.18	0.07	0.63	-0.05	0.23	0.14	-0.50	-0.24	0.05	-0.50	-0.65	-0.40	0.15	0.12	-0.20	-0.24	0.14	-0.54	-0.76	-0.02	-0.13	-0.18	-0.63	0.38	-0.09	0.15	-0.46	-0.29	-0.09	0.22	-0.42	-0.12	-0.38
Fe	-0.88	-0.45		-0.16	0.08	-0.22	-0.54	0.77	-0.70	0.08	-0.10	0.57	0.12	0.46	0.19	0.35	0.47	0.13	0.50	0.21	0.18	0.06	0.53	0.31	0.52	-0.03	0.05	0.06	0.66	-0.47	0.69	0.43	0.12	0.33	-0.03	-0.46	0.00	0.73	0.45
Mg	-0.12	-0.05	-0.16		0.25	0.59	0.02	-0.36	0.49	0.33	0.27	0.49	0.45	-0.32	-0.18	0.45	0.38	-0.33	0.46	0.22	-0.14	-0.31	0.32	0.41	-0.24	-0.02	0.31	0.25	0.39	0.29	0.45	0.25	-0.03	0.03	-0.02	0.18	0.22	0.73	
Ca	-0.34	-0.35	0.08	0.25		0.06	0.33	0.11	-0.58	0.62	0.33	0.25	0.50	0.55	-0.49	0.07	0.54	0.27	-0.22	0.29	0.34	0.12	-0.37	0.39	0.56	-0.16	0.02	0.13	0.40	0.07	0.46	0.46	0.14	0.12	-0.21	-0.03	0.23	0.11	
Na	0.25	0.10	-0.22	0.25	0.06		-0.03	-0.23	0.09	0.37	-0.26	0.29	0.41	-0.25	-0.10	-0.60	-0.09	-0.16	-0.17	-0.06	-0.13	0.22	-0.03	-0.16	-0.14	-0.19	-0.21	-0.10	-0.14	0.01	-0.08	-0.11	0.27	-0.08	-0.16	-0.16	0.13	-0.11	-0.04
K	0.37	0.18	-0.54	0.59	0.33	-0.03		-0.27	0.23	-0.01	0.28	-0.14	0.27	0.15	-0.18	0.10	0.08	0.33	-0.46	0.31	-0.23	-0.09	-0.49	0.14	0.05	0.13	0.15	0.27	-0.26	0.37	-0.18	-0.05	0.31	-0.50	-0.21	0.40	0.20	-0.16	0.32
Ti	-0.89	0.07	0.77	0.02	0.11	-0.23	-0.27		-0.56	0.09	0.31	0.66	-0.11	0.71	0.14	0.01	0.15	0.02	0.77	0.32	0.18	-0.13	0.52	-0.01	0.12	0.12	0.00	0.12	0.32	-0.16	0.65	0.12	0.31	-0.06	-0.49	-0.19	0.37	0.44	
P	0.68	0.63	-0.70	-0.36	-0.58	0.09	0.23	-0.56		-0.19	-0.14	-0.38	-0.30	-0.75	0.20	-0.25	-0.74	-0.45	-0.26	-0.36	-0.73	-0.16	-0.09	-0.55	-0.73	-0.04	0.03	-0.39	-0.79	0.15	-0.75	-0.37	-0.72	-0.71	-0.30	0.36	-0.28	-0.73	-0.70
S	-0.33	-0.05	0.08	0.49	0.62	0.37	-0.01	0.09	-0.19		0.13	0.48	0.26	0.10	-0.38	-0.15	0.11	-0.31	-0.11	-0.07	0.24	0.11	-0.15	-0.07	0.13	-0.47	-0.19	-0.41	0.04	-0.12	0.27	0.30	0.37	0.12	-0.40	-0.42	-0.46	-0.03	0.45
Ag	-0.19	0.23	-0.10	0.33	0.33	-0.26	0.28	0.31	-0.14	0.13		0.06	-0.22	0.50	-0.34	-0.27	-0.20	0.08	0.30	0.15	0.07	-0.05	-0.16	-0.21	-0.14	-0.21	-0.56	0.13	-0.24	0.01	0.31	0.32	0.20	-0.03	-0.02	-0.12	-0.10	0.24	0.16
As	-0.72	0.14	0.57	0.27	0.25	0.29	-0.14	0.66	-0.38	0.48	0.06		0.12	0.30	-0.09	-0.16	0.18	-0.19	0.24	0.36	0.75	0.17	0.35	0.02	0.16	-0.14	-0.20	-0.23	0.20	-0.31	0.70	0.63	0.21	0.70	-0.17	-0.39	-0.33	0.55	0.58
Au	-0.04	-0.50	0.12	0.49	0.50	0.41	0.27	-0.11	-0.30	0.26	-0.22	0.12		0.15	0.18	0.08	0.58	0.44	-0.38	0.29	0.18	0.10	0.08	0.51	0.61	0.03	0.32	0.23	0.46	0.05	0.13	0.08	0.58	0.13	-0.02	0.05	0.39	0.17	0.54
Ba	-0.61	-0.24	0.46	0.45	0.55	-0.25	0.15	0.71	-0.75	0.10	0.50	0.30	0.15		-0.21	0.11	0.39	0.44	0.53	0.38	0.71	-0.16	-0.04	0.20	0.37	0.26	0.11	0.49	0.39	0.01	0.73	0.48	0.62	0.51	0.06	-0.43	0.17	0.74	0.66
Bi	-0.01	0.05	0.19	-0.32	-0.49	-0.10	-0.18	0.14	0.20	-0.38	-0.34	-0.09	0.18	-0.21		-0.08	-0.05	0.06	0.11	-0.02	0.07	-0.47	0.22	-0.02	-0.05	0.08	0.35	0.05	0.13	0.29	-0.16	0.08	-0.32	0.16	-0.07	0.12	0.18	0.18	-0.19
Cd	-0.21	-0.50	0.35	-0.18	0.07	-0.60	0.10	0.01	-0.25	-0.15	-0.27	-0.16	0.08	0.11	-0.08		0.57	0.39	-0.21	0.23	0.19	0.15	-0.15	0.64	0.58	0.24	0.42	0.20	0.47	-0.20	0.07	-0.27	-0.04	0.16	0.02	0.29	0.14	0.07	0.27
Ce	-0.41	-0.65	0.47	0.45	0.54	-0.09	0.08	0.15	-0.74	0.11	-0.20	0.18	0.58	0.39	-0.05	0.57		0.74	-0.31	0.62	0.48	0.08	0.03	0.94	0.97	-0.03	0.25	0.54	0.92	0.09	0.40	0.11	0.67	0.44	0.28	0.18	0.51	0.49	0.72
Co	-0.05	-0.40	0.13	0.38	0.27	-0.16	0.33	0.02	-0.45	-0.31	0.08	-0.19	0.44	0.44	0.06	0.39	0.74		-0.20	0.68	0.18	-0.24	-0.05	0.75	0.69	0.10	0.20	0.32	0.63	0.35	0.18	-0.14	0.56	0.11	0.27	0.38	0.65	0.43	0.40
Cr	-0.53	0.15	0.50	-0.33	-0.22	-0.17	-0.46	0.77	-0.26	-0.11	0.30	0.24	-0.38	0.53	0.11	-0.21	-0.31	-0.20		-0.15	0.52	-0.21	0.36	-0.45	-0.32	0.21	-0.03	0.05	-0.05	-0.23	0.53	0.33	-0.18	0.54	-0.12	-0.64	-0.21	0.54	-0.11
Cu	-0.37	0.12	0.21	0.46	0.29	-0.06	0.31	0.32	-0.36	-0.07	0.15	0.36	0.29	0.38	-0.02	0.23	0.62	0.68	-0.15		0.43	-0.07	0.21	0.68	0.50	0.08	0.10	0.63	0.53	0.38	0.52	0.23	0.41	0.32	0.35	0.48	0.37	0.61	0.54
Ga	-0.94	-0.20	0.18	0.22	0.34	-0.13	-0.23	0.43	-0.73	0.24	0.07	0.75	0.18	0.71	0.07	0.19	0.48	0.18	0.52	0.43		-0.09	0.43	0.26	0.46	0.09	0.15	0.16	0.59	-0.22	0.49	0.67	0.36	0.22	-0.04	-0.49	-0.07	0.35	0.71
Ge	0.02	-0.24	0.06	-0.14	0.12	0.22	-0.09	-0.13	-0.16	0.11	-0.05	0.17	0.10	-0.16	-0.47	0.15	0.08	-0.24	-0.21	-0.07	-0.09		-0.21	0.20	0.11	0.13	-0.29	-0.34	0.00	-0.50	0.11	-0.20	0.00	0.05	0.26	0.11	-0.19	-0.09	0.03
In	-0.46	0.14	0.53	-0.31	-0.37	-0.03	-0.49	0.52	-0.09	-0.15	-0.16	0.35	0.08	-0.04	0.73	-0.15	0.03	-0.05	0.36	0.21	0.43	-0.21		0.05	0.01	-0.06	0.07	-0.03	0.31	0.10	0.30	0.35	-0.28	0.58	0.07	-0.02	-0.04	0.53	-0.04
La	-0.24	-0.54	0.31	0.32	0.39	-0.16	0.14	-0.01	-0.55	-0.07	-0.21	0.02	0.51	0.20	-0.02	0.64	0.44	0.75	-0.45	0.68	0.26	0.20	0.05		0.03	0.24	0.55	0.94	0.17	0.25	-0.06	0.49	0.27	0.43	0.48	0.52	0.38	0.53	
Mn	-0.41	-0.76	0.52	0.41	0.56	-0.14	0.05	0.12	-0.73	0.13	-0.14	0.16	0.61	0.37	-0.05	0.58	0.47	0.69	-0.32	0.50	0.46	0.11	0.01	0.49		-0.11	0.17	0.44	0.93	-0.08	0.35	0.14	0.64	0.45	0.21	0.09	0.48	0.42	0.72
Mo	0.08	-0.02	-0.03	-0.24	-0.16	-0.19	0.13	0.12	-0.04	-0.47	-0.21	-0.14	0.03	0.26	0.08	0.24	-0.03	0.10	0.21	0.08	0.09	0.13	-0.06	0.03	-0.11		0.63	0.16	-0.03	0.05	0.21	-0.18	-0.08	-0.05	0.33	0.10	0.03	0.10	0.01
Nb	0.00	-0.13	0.05	-0.02	0.02	-0.21	0.15	0.00	0.03	-0.19	-0.56	-0.20	0.32	0.11	0.35	0.42	0.25	0.20	-0.03	0.10	0.15	-0.29	0.07	0.24	0.17	0.63		0.19	0.27	0.30	0.03	-0.02	0.00	0.00	0.08	0.11	0.04	0.03	0.16
Ni	-0.01	-0.18	0.06	0.31	0.13	-0.10	0.27	0.12	-0.39	-0.41	0.13	-0.23	0.23	0.49	0.05	0.20	0.54	0.95	0.05	0.63	0.16	-0.34	-0.03	0.55	0.44	0.16	0.19		0.49	0.47	0.20	-0.13	0.49	0.09	0.28	0.30	0.33	0.49	0.22
Pb	-0.56	-0.63	0.66	0.25	0.40	-0.14	-0.26	0.32	-0.79	0.04	-0.24	0.20	0.46	0.39	0.13	0.47	0.92	0.63	-0.05	0.53	0.59	0.00	0.31	0.93	0.93	-0.03	0.27	0.49		0.07	0.50	0.23	0.54	0.64	0.39	0.04	0.43	0.62	0.58
Rb	0.28	0.38	-0.47	0.39	0.07	0.01	0.37	-0.16	0.15	-0.12	0.01	-0.31	0.05	0.01	0.29	-0.20	0.09	0.35	-0.23	0.38	-0.22	-0.50	0.10	0.17	-0.08	0.05	0.30	0.47	0.07		-0.14	-0.01	0.22	-0.37	0.26	0.49	0.27	0.06	-0.03
Sb	-0.88	-0.09	0.69	0.29	0.46	-0.08	-0.18	0.75	-0.75	0.27	0.31	0.70	0.13	0.93	-0.16	0.07	0.40	0.18	0.53	0.52	0.93	0.11	0.30	0.25	0.35	0.21	0.03	0.20	0.50	-0.14		0.62	0.43	0.93	0.19	-0.39	-0.13	0.67	
Sn	-0.69	0.15	0.43	0.45	0.46	-0.11	-0.05	0.65	-0.37	0.30	0.32	0.63	0.08	0.48	0.08	-0.27	0.11	-0.14	0.33	0.23	0.67	-0.20	0.35	-0.06	0.14	-0.18	-0.02	-0.13	0.23	-0.01	0.62		0.29	0.58	0.07	-0.43	-0.37	0.53	0.57
Sr	-0.22	-0.46	0.12	0.33	0.33	0.27	0.31	0.12	-0.72	0.37	0.20	0.21	0.58	0.62	-0.32	-0.04	0.67	0.56	-0.18	0.41	0.36	0.00	-0.28	0.49	0.64	-0.08	0.00	0.49	0.54	0.22	0.43	0.29		0.20	0.17	-0.18	0.44	0.40	0.76
V	-0.92	-0.29	0.33	-0.03	0.14	-0.08	-0.50	0.71	0.12	-0.03	0.70	0.13	0.51	0.16	0.16	0.44	0.11	0.54	0.32	0.32	0.05	0.58	0.27	0.45	-0.05	0.00	0.09	0.64	-0.37	0.58									

TRANSFORMED DATA
CORRELATION MATRIX - <75 μm SOIL FRACTION

	Si	Al	Fe	Mg	Ca	Na	K	Ti	P	S	Ag	As	Au	Ba	Bi	Cd	Ce	Co	Cr	Cu	Ga	Ge	In	La	Mn	Mo	Nb	Ni	Pb	Rb	Sb	Sn	Sr	V	W	Y	Zn	Zr	pH
Si		0.58	0.23	-0.84	-0.88	0.13	-0.50	0.50	-0.72	-0.56	-0.49	-0.25	-0.42	0.11	0.02	-0.28	-0.12	0.44	0.46	-0.36	0.43	-0.11	-0.10	-0.30	0.25	0.06	0.69	0.23	0.45	0.10	-0.01	-0.39	-0.51	0.29	-0.18	-0.01	0.24	-0.50	
Al	0.58		0.23	-0.68	-0.88	0.50	-0.44	0.27	-0.37	-0.21	-0.30	-0.15	-0.51	-0.13	-0.08	0.20	-0.18	0.54	0.15	0.00	0.75	-0.07	0.24	-0.31	0.33	0.32	0.33	0.50	0.56	0.26	0.04	0.19	-0.60	0.22	-0.31	0.43	-0.57	-0.52	
Fe	0.23	0.23		-0.89	-0.95	0.77	-0.68	0.45	-0.62	-0.33	-0.43	-0.16	-0.43	0.14	0.01	-0.01	-0.31	0.42	0.34	-0.32	0.63	-0.18	0.10	-0.46	0.18	0.02	0.46	0.25	0.44	0.01	-0.04	-0.10	-0.57	0.27	-0.36	0.12	-0.23	-0.49	
Mg	-0.84	-0.68	-0.89		0.45	-0.81	0.60	-0.46	0.73	0.21	0.39	0.30	0.33	-0.09	-0.12	0.18	0.29	-0.26	-0.38	0.32	-0.44	0.19	-0.03	0.44	-0.14	0.16	-0.45	-0.12	-0.35	0.22	0.04	0.32	0.43	-0.82	-0.17	0.27	0.11	-0.02	0.36
Ca	-0.88	-0.88	-0.95	0.45		-0.74	0.57	-0.45	0.66	0.46	0.49	0.24	0.55	0.02	0.12	0.07	0.22	-0.52	-0.39	0.26	-0.68	0.10	-0.09	0.38	-0.25	-0.21	-0.60	-0.36	-0.52	-0.18	-0.05	0.17	0.65	-0.94	-0.28	0.34	-0.20	0.19	0.64
Na	0.13	0.50	0.77	-0.81	-0.74		-0.54	0.51	-0.48	-0.15	-0.35	0.05	-0.07	0.37	0.31	-0.10	-0.19	0.37	0.43	-0.37	0.39	-0.25	-0.25	-0.39	0.28	-0.03	0.40	-0.04	0.31	-0.09	0.01	-0.36	-0.36	0.76	0.51	-0.23	0.05	0.14	-0.24
K	-0.50	-0.44	-0.68	0.60	0.57	-0.54		-0.38	0.77	0.08	0.39	0.26	0.17	-0.15	0.07	0.33	0.64	0.23	-0.37	0.58	-0.24	0.19	-0.08	0.61	0.40	0.54	-0.27	0.27	0.09	0.61	0.08	0.34	0.24	-0.61	-0.02	0.49	0.53	0.05	0.25
Ti	0.50	0.27	0.45	-0.46	-0.45	0.51	-0.38		-0.36	-0.19	-0.57	-0.26	-0.43	0.61	-0.01	0.02	-0.57	0.41	0.37	0.71	0.72	0.36	0.31	-0.82	0.21	0.06	0.49	-0.18	-0.13	-0.40	0.26	-0.60	-0.83	0.39	0.24	-0.79	0.02	-0.07	-0.69
P	-0.72	-0.37	-0.62	0.73	0.66	-0.48	0.77	-0.36		0.59	0.56	0.35	0.32	-0.01	0.23	0.52	0.50	0.15	-0.42	0.51	-0.19	0.02	0.10	0.45	0.37	0.40	-0.63	0.09	-0.10	0.28	0.05	0.47	0.33	-0.57	-0.01	0.38	0.49	-0.26	0.44
S	-0.56	-0.21	-0.33	0.21	0.46	-0.15	0.08	-0.19	0.59		0.50	0.39	0.56	0.13	0.51	0.44	0.15	-0.10	-0.21	0.33	-0.20	-0.08	-0.07	0.11	0.15	0.02	-0.75	-0.26	-0.23	-0.34	-0.01	0.21	0.41	-0.34	0.15	0.15	0.14	-0.32	0.56
Ag	-0.49	-0.30	-0.43	0.39	0.49	-0.35	0.39	-0.57	0.56	0.50		0.14	0.41	-0.30	0.60	0.26	0.39	-0.07	-0.57	0.60	-0.39	-0.16	-0.24	0.42	0.21	-0.06	-0.84	0.29	0.20	0.02	0.13	0.67	0.53	-0.52	0.16	0.56	0.15	-0.13	0.62
As	-0.25	-0.15	-0.16	0.30	0.24	0.05	0.26	-0.26	0.35	0.39	0.14		0.76	0.45	0.31	0.31	0.15	-0.08	-0.22	0.19	-0.25	-0.06	-0.59	0.17	-0.11	0.08	-0.48	-0.44	-0.20	0.12	-0.32	0.21	0.41	-0.04	0.42	0.15	0.27	-0.01	0.44
Au	-0.42	-0.51	-0.43	0.33	0.55	-0.07	0.17	-0.43	0.32	0.56	0.41	0.76		0.25	0.56	0.03	0.10	-0.49	-0.39	0.29	-0.62	-0.05	-0.73	0.25	-0.23	-0.33	-0.63	-0.52	-0.35	-0.20	-0.34	0.19	0.74	-0.42	0.26	0.33	-0.12	0.21	0.82
Ba	0.11	-0.13	0.14	-0.09	0.02	0.37	-0.15	0.61	-0.01	0.13	-0.30	0.45	0.25		0.23	0.29	-0.39	0.05	0.58	-0.55	0.23	0.07	-0.14	-0.57	-0.10	-0.20	-0.01	-0.63	-0.36	-0.44	0.00	-0.38	-0.25	0.13	0.34	-0.50	-0.01	0.12	-0.11
Bi	0.02	-0.08	0.01	-0.12	0.12	0.31	0.07	-0.01	0.23	0.51	0.60	0.31	0.56	0.23		0.25	0.11	0.11	-0.06	0.32	-0.08	0.03	-0.51	-0.02	0.44	-0.14	-0.53	0.07	0.22	-0.23	0.05	0.27	0.21	-0.14	0.57	0.22	0.20	-0.04	0.52
Cd	-0.28	0.20	-0.01	0.18	0.07	-0.10	0.33	0.02	0.52	0.44	0.26	0.31	0.03	0.29	0.25		0.28	0.44	-0.04	0.35	0.30	-0.26	0.02	0.04	0.41	0.42	-0.34	0.20	0.38	0.22	0.41	0.32	-0.17	0.02	0.35	-0.03	0.70	-0.50	-0.06
Ce	-0.12	-0.18	-0.31	0.29	0.22	-0.19	0.64	-0.57	0.50	0.15	0.39	0.15	0.10	-0.39	0.11	0.28		0.33	-0.54	0.70	-0.42	-0.34	-0.18	0.31	0.46	0.53	-0.16	0.42	0.43	0.66	-0.08	0.25	0.44	-0.25	-0.05	0.87	0.40	0.27	0.34
Co	0.44	0.54	0.42	-0.26	-0.52	0.37	0.23	0.41	0.15	-0.10	-0.07	-0.08	-0.49	0.05	0.11	0.44	0.33		0.34	0.11	0.68	0.10	0.20	-0.03	0.44	0.43	0.25	0.60	0.55	0.48	0.21	0.07	-0.63	0.42	0.39	-0.05	0.74	-0.28	-0.55
Cr	0.46	0.15	0.34	-0.38	-0.39	0.43	-0.37	0.38	-0.42	-0.21	-0.57	-0.22	-0.39	0.58	-0.06	-0.04	-0.54	0.34		0.77	0.61	0.36	0.20	-0.77	0.09	0.06	0.50	-0.24	-0.18	-0.43	0.27	-0.66	-0.76	0.29	0.31	-0.78	-0.10	0.00	-0.71
Cu	-0.36	0.00	-0.32	0.32	0.26	-0.37	0.58	-0.71	0.51	0.33	0.60	0.19	0.29	-0.55	0.32	0.35	0.70	0.11	-0.77		-0.30	-0.10	-0.22	0.73	0.43	0.35	-0.44	0.52	0.46	0.59	-0.04	0.62	0.46	-0.30	-0.06	0.73	0.55	-0.16	0.51
Ga	0.43	0.75	0.63	-0.44	-0.68	0.39	-0.24	0.72	-0.19	-0.20	-0.39	-0.25	-0.62	0.23	-0.08	0.30	-0.42	0.68	0.61	-0.30		0.30	0.45	-0.66	0.45	0.42	0.37	0.33	0.27	0.06	0.31	-0.05	-0.94	0.61	0.27	-0.69	0.50	-0.60	-0.79
Ge	-0.11	-0.07	-0.18	0.19	0.10	-0.25	0.19	0.36	0.02	-0.08	-0.16	-0.06	-0.05	0.07	0.03	-0.26	-0.34	0.10	0.36	-0.10	0.30		0.23	-0.31	0.15	0.17	0.05	0.01	-0.43	-0.13	-0.26	-0.01	-0.34	-0.26	-0.12	-0.35	0.08	-0.19	-0.19
In	-0.10	0.24	0.10	-0.03	-0.09	-0.25	-0.08	0.31	0.10	-0.07	-0.24	-0.59	-0.73	-0.14	-0.51	0.02	-0.18	0.20	0.20	-0.22	0.45	0.23		-0.23	0.10	0.18	0.19	0.20	-0.15	-0.08	0.08	-0.07	-0.47	0.08	-0.61	-0.31	0.04	-0.36	-0.45
La	-0.30	-0.31	-0.46	0.44	0.38	-0.39	0.61	-0.82	0.45	0.11	0.42	0.17	0.25	-0.57	-0.02	0.04	0.31	-0.03	-0.77	0.73	-0.66	-0.31	-0.23		0.16	0.32	-0.24	0.31	0.25	0.62	-0.24	0.34	0.68	-0.39	-0.23	0.39	0.16	0.30	0.53
Mn	0.25	0.33	0.18	-0.14	-0.25	0.28	0.40	0.21	0.37	0.15	0.21	-0.11	-0.23	-0.10	0.44	0.41	0.46	0.09	0.43	0.45	0.15	0.10	0.16	0.70		0.04	0.65	0.57	0.45	0.22	0.17	-0.36	0.12	0.32	0.21	0.76	-0.24	-0.14	
Mo	0.06	0.32	0.02	0.16	-0.21	-0.03	0.54	0.06	0.40	0.02	-0.06	0.08	-0.33	-0.20	-0.14	0.42	0.53	0.06	0.35	0.42	0.17	0.18	0.32	0.70	0.15		0.52	0.38	0.70	0.12	0.14	-0.35	0.13	0.20	0.13	0.83	-0.32	-0.38	
Nb	0.69	0.33	0.46	-0.45	-0.60	0.40	-0.27	0.49	-0.63	-0.75	-0.84	-0.48	-0.63	-0.01	-0.53	-0.34	-0.16	0.25	0.50	-0.44	0.37	0.05	0.19	-0.24	0.04	0.15		0.12	0.19	0.20	0.09	-0.61	-0.58	0.50	-0.11	-0.34	-0.10	0.26	-0.69
Ni	0.23	0.50	0.25	-0.12	-0.36	-0.04	0.27	-0.18	0.09	-0.26	0.29	-0.44	-0.52	-0.63	0.07	0.20	0.42	0.60	-0.24	0.52	0.33	0.01	0.20	0.31	0.65	0.52	0.12		0.77	0.61	0.19	0.53	-0.29	0.18	0.06	0.31	0.53	-0.35	-0.23
Pb	0.45	0.56	0.44	-0.35	-0.52	0.31	0.09	-0.13	-0.10	-0.23	0.20	-0.20	-0.35	-0.36	0.22	0.38	0.43	0.55	-0.18	0.46	0.27	-0.43	-0.15	0.25	0.57	0.38	0.19	0.77		0.57	0.45	0.27	-0.23	0.42	0.37	0.29	0.54	-0.17	-0.19
Rb	0.10	0.26	0.01	0.22	-0.18	-0.09	0.61	-0.40	0.28	-0.34	0.02	0.12	-0.20	-0.44	-0.23	0.22	0.66	0.48	-0.43	0.59	0.06	-0.13	-0.08	0.62	0.45	0.70	0.20	0.61	0.57		0.01	0.35	-0.01	0.13	0.01	0.48	0.67	-0.04	-0.11
Sb	-0.01	0.04	-0.04	0.04	-0.05	0.01	0.08	0.26	0.05	-0.01	0.13	-0.32	-0.34	0.00	0.05	0.41	-0.08	0.21	0.27	-0.04	0.31	-0.26	0.08	-0.24	0.22	0.12	0.09	0.19	0.45	0.01		-0.18	-0.37	-0.04	0.34	-0.29	0.23	-0.20	-0.35
Sn	-0.39	0.19	-0.10	0.32	0.17	-0.36	0.34	-0.60	0.47	0.21	0.67	0.21	0.19	-0.38	0.27	0.32	0.25	0.07	-0.66	0.62	-0.05	-0.01	-0.07	0.34	0.17	0.14	-0.61	0.53	0.27	0.35	-0.18		0.26	-0.13	0.09	0.37	0.39	-0.55	0.38
Sr	-0.51	-0.60	-0.57	0.43	0.65	-0.36	0.24	-0.83	0.33	0.41	0.53	0.41	0.74	-0.25	0.21	-0.17	0.44	-0.63	-0.76	0.46	-0.94	-0.34	-0.47	0.68	-0.36	-0.35	-0.58	-0.29	-0.23	-0.01	-0.37	0.26		-0.54	-0.19	0.73	-0.33	0.38	0.86
V	0.29	0.22	0.27	-0.17	-0.28	0.51	-0.02	0.24	-0.01	0.15	0.16	0.42	0.26	0.34	0.57	0.35	-0.05	0.39	0.31	-0.06	0.27	-0.12	-0.61	-0.23	0.32	0.20	-0.11	0.06	0.37	0.01									

TRANSFORMED DATA
CORRELATION MATRIX - <4 μ m SOIL FRACTION

	Si	Al	Fe	Mg	Ca	Na	K	Ti	P	S	Ag	As	Au	Ba	Bi	Cd	Ce	Co	Cr	Cu	Ga	Ge	In	La	Mn	Mo	Nb	Ni	Pb	Rb	Sb	Sn	Sr	V	W	Y	Zn	Zr	pH
Si		0.34	0.46	-0.31	-0.77	-0.50	-0.16	0.25	-0.30	-0.70	-0.17	-0.34	-0.71	0.00	0.18	0.01	-0.10	0.19	0.24	-0.27	0.65	0.29	0.30	-0.18	-0.03	-0.53	0.12	0.29	0.14	0.11	0.15	-0.46	-0.56	0.26	-0.29	-0.16	0.04	0.40	-0.58
Al	0.34		0.77	-0.78	-0.80	-0.45	-0.55	0.81	-0.40	-0.14	-0.24	0.02	-0.57	0.56	-0.15	-0.27	-0.26	0.49	0.14	-0.59	0.88	0.25	0.10	-0.34	0.06	-0.28	0.01	-0.30	-0.17	-0.39	0.61	-0.58	-0.32	0.71	0.09	-0.59	-0.13	0.56	-0.63
Fe	0.46	0.77		-0.91	-0.81	-0.19	-0.82	0.80	-0.71	-0.43	-0.56	0.01	-0.58	0.70	-0.13	-0.35	-0.61	0.06	0.11	-0.88	0.71	0.10	-0.05	-0.68	-0.40	-0.58	-0.30	-0.60	-0.46	-0.63	0.64	-0.68	0.06	0.89	0.04	-0.88	-0.52	0.44	-0.79
Mg	-0.31	-0.78	-0.91		0.77	0.35	0.93	-0.71	0.82	0.35	0.37	0.17	0.62	-0.68	0.32	0.18	0.75	0.03	-0.75	0.80	-0.71	0.03	0.19	0.82	0.41	0.50	0.48	0.65	0.57	0.72	-0.50	0.55	-0.16	-0.81	0.05	0.83	0.66	-0.33	0.79
Ca	-0.77	-0.80	-0.81	0.77		0.48	0.59	-0.66	0.59	0.56	0.26	0.26	0.81	-0.39	0.07	0.17	0.39	-0.24	-0.64	0.63	-0.89	-0.20	-0.12	0.49	0.13	0.52	0.04	0.17	0.15	0.31	-0.39	0.63	0.37	-0.68	0.16	0.60	0.23	-0.55	0.87
Na	-0.50	-0.45	-0.19	0.35	0.48		0.20	-0.16	0.15	0.17	-0.21	0.39	0.49	-0.12	0.01	-0.44	0.19	-0.42	-0.23	0.15	-0.64	-0.17	-0.13	0.24	-0.25	0.24	0.23	-0.36	-0.11	0.20	-0.05	0.19	0.52	0.06	0.11	0.10	-0.04	-0.08	0.16
K	-0.16	-0.55	-0.82	0.54	0.59	0.20		-0.50	0.84	0.34	0.39	0.22	0.52	-0.61	0.44	0.17	0.89	0.32	-0.58	0.72	-0.45	0.10	0.36	0.83	0.64	0.51	0.63	0.77	0.76	0.91	-0.38	0.53	-0.34	-0.70	0.13	0.98	0.85	-0.06	0.69
Ti	0.25	0.66	0.80	-0.71	-0.66	-0.16	-0.50		-0.37	-0.06	-0.46	0.23	-0.33	0.71	-0.01	-0.39	-0.20	0.46	0.19	-0.52	0.73	0.22	0.10	-0.28	0.10	-0.42	0.03	-0.44	-0.13	-0.31	0.68	-0.42	-0.02	0.86	0.30	-0.58	-0.07	0.65	-0.58
P	-0.30	-0.40	-0.71	0.59	0.15	0.83	0.37	0.62		0.33	0.31	0.56	-0.41	0.47	0.16	0.45	0.47	-0.45	0.74	-0.45	0.08	0.51	0.85	0.70	0.44	0.51	0.65	0.77	0.68	-0.37	0.49	-0.34	-0.57	0.28	0.93	0.82	-0.03	0.77	
S	-0.70	-0.14	-0.43	0.35	0.56	0.17	0.34	-0.06	0.62		0.17	0.51	0.64	0.03	0.28	-0.04	0.44	0.35	-0.10	0.40	-0.39	-0.28	0.27	0.43	0.45	0.17	0.15	0.02	0.41	0.07	-0.10	0.54	0.18	-0.20	0.33	0.30	0.35	-0.10	0.64
Ag	-0.17	-0.24	-0.56	0.37	0.26	-0.21	0.39	-0.46	0.33	0.17		-0.45	-0.03	-0.55	-0.08	0.55	0.23	0.00	-0.51	0.39	-0.19	-0.10	0.16	0.26	0.29	0.60	0.25	0.46	0.31	0.34	-0.47	0.47	-0.24	-0.54	-0.18	0.50	0.22	-0.23	0.23
As	-0.34	0.02	0.01	0.17	0.26	0.39	0.22	0.23	0.31	0.51	-0.45		0.69	0.42	0.61	-0.37	0.28	0.34	0.35	0.17	-0.10	-0.22	0.03	0.31	0.16	0.01	0.09	-0.12	0.28	0.05	0.45	0.07	0.25	0.13	0.65	-0.02	0.32	0.05	0.39
Au	-0.71	-0.57	-0.58	0.62	0.83	0.49	0.52	-0.33	0.56	0.64	-0.03	0.69		0.04	0.42	0.11	0.38	0.05	-0.34	0.61	-0.66	-0.29	-0.17	0.45	0.27	0.38	-0.03	0.11	0.30	0.23	-0.15	0.54	0.43	-0.41	0.61	0.44	0.40	-0.36	0.81
Ba	0.00	0.56	0.70	-0.68	-0.39	-0.12	-0.61	0.71	-0.41	0.03	-0.55	0.42	0.04		0.17	-0.11	-0.48	0.29	0.68	-0.53	0.45	-0.23	-0.14	-0.53	-0.04	-0.32	-0.53	-0.48	-0.23	-0.66	0.53	-0.32	0.35	0.66	0.65	-0.69	-0.27	0.27	-0.29
Bi	0.18	-0.15	-0.13	0.32	0.07	0.01	0.44	-0.01	0.47	0.28	-0.08	0.61	0.42	0.17		0.04	0.40	0.47	-0.01	0.31	0.05	-0.23	0.47	0.37	0.43	-0.11	0.19	0.39	0.77	0.35	0.00	0.34	-0.06	-0.04	0.50	0.24	0.57	0.28	0.29
Cd	0.01	-0.27	-0.35	0.18	0.17	-0.44	0.17	-0.39	0.16	-0.04	0.55	-0.37	0.11	-0.11	0.04		-0.06	0.02	-0.44	0.30	-0.13	-0.14	-0.14	-0.08	0.24	0.32	-0.42	0.44	0.17	0.01	-0.53	0.30	-0.09	-0.45	0.17	0.34	0.15	-0.31	0.25
Ce	-0.10	-0.26	-0.61	0.75	0.39	0.19	0.83	-0.20	0.82	0.44	0.23	0.28	0.38	-0.48	0.40	-0.06		0.55	-0.30	0.70	-0.27	0.07	0.59	0.89	0.75	0.36	0.72	0.66	0.81	0.88	-0.21	0.42	-0.41	-0.44	0.08	0.91	0.84	0.24	0.50
Co	0.19	0.49	0.06	0.03	-0.24	-0.42	0.32	0.46	0.47	0.35	0.00	0.34	0.05	0.29	0.47	0.02	0.55		0.37	0.27	0.47	0.07	0.60	0.46	0.84	0.04	0.33	0.48	0.69	0.28	0.24	-0.01	-0.54	0.07	0.46	0.23	0.67	0.53	0.13
Cr	0.24	0.85	0.81	-0.75	-0.64	-0.23	-0.58	0.73	-0.45	-0.10	-0.51	0.35	-0.34	0.68	-0.01	-0.44	-0.30	0.37		-0.66	0.71	-0.01	0.04	-0.34	-0.17	-0.34	-0.16	-0.44	-0.25	-0.51	0.83	-0.63	-0.08	0.71	0.16	-0.73	-0.28	0.41	-0.50
Cu	-0.27	-0.59	-0.88	0.83	0.63	0.15	0.93	-0.52	0.82	0.40	0.39	0.17	0.61	-0.53	0.31	0.30	0.83	0.27	-0.66		-0.52	0.00	0.15	0.82	0.65	0.49	0.46	0.74	0.66	0.72	-0.49	0.55	-0.24	-0.77	0.20	0.95	0.89	-0.23	0.73
Ga	0.65	0.88	0.71	-0.71	-0.89	-0.64	-0.45	0.73	-0.45	-0.39	-0.19	-0.10	-0.66	0.45	0.05	-0.13	-0.27	0.47	0.71	-0.52		0.30	0.12	-0.33	0.10	-0.38	0.02	-0.07	-0.03	-0.23	0.50	-0.49	-0.40	0.60	0.02	-0.50	-0.04	0.60	-0.68
Ge	0.29	0.25	0.10	0.03	-0.20	-0.17	0.10	0.22	0.08	-0.28	-0.10	-0.22	-0.29	-0.23	-0.23	-0.14	0.07	0.07	-0.01	0.00	0.30		-0.13	0.11	0.07	-0.09	0.42	0.09	-0.11	0.28	0.08	-0.29	-0.45	0.08	-0.14	0.17	0.28	0.16	-0.11
In	0.30	0.10	-0.05	0.19	-0.12	-0.13	0.36	0.10	0.51	0.27	0.16	0.03	-0.17	-0.14	0.47	-0.14	0.59	0.60	0.04	0.15	0.12	-0.13		0.48	0.54	-0.13	0.47	0.43	0.72	0.39	-0.04	0.19	-0.43	0.02	-0.08	0.27	0.41	0.52	0.04
La	-0.18	-0.34	-0.68	0.82	0.49	0.24	0.93	-0.28	0.82	0.43	0.26	0.31	0.45	-0.53	0.37	-0.08	0.83	0.46	-0.34	0.72	-0.33	0.11	0.48		0.68	0.44	0.74	0.65	0.74	0.88	-0.18	0.44	-0.36	-0.52	0.08	0.94	0.83	0.13	0.58
Mn	-0.03	0.06	-0.40	0.41	0.13	-0.25	0.64	0.10	0.70	0.45	0.29	0.16	0.27	-0.04	0.43	0.24	0.75	0.83	-0.17	0.65	0.10	0.07	0.54	0.68		0.29	0.43	0.66	0.81	0.57	-0.24	0.43	-0.41	-0.26	0.41	0.63	0.84	0.41	0.37
Mo	-0.53	-0.28	-0.58	0.50	0.52	0.24	0.51	-0.42	0.44	0.17	0.60	0.01	0.38	-0.32	-0.11	0.32	0.36	0.04	-0.34	0.49	-0.38	-0.09	-0.13	0.44	0.29		0.20	0.34	0.15	0.35	-0.28	0.27	-0.06	-0.53	0.23	0.50	0.30	-0.25	0.43
Nb	0.12	0.01	-0.30	0.48	0.04	0.23	0.63	0.03	0.51	0.15	0.25	0.09	-0.03	-0.53	0.19	-0.42	0.72	0.33	-0.16	0.46	0.02	0.42	0.47	0.74	0.43	0.20		0.40	0.53	0.83	0.02	0.13	-0.50	-0.14	-0.17	0.55	0.64	0.32	0.09
Ni	0.29	-0.30	-0.60	0.65	0.17	-0.36	0.77	-0.44	0.65	0.02	0.46	-0.12	0.11	-0.48	0.39	0.44	0.66	0.48	-0.44	0.74	-0.07	0.09	0.43	0.65	0.66	0.34	0.40		0.74	0.71	-0.38	0.22	-0.69	-0.71	0.06	0.90	0.75	-0.05	0.45
Pb	0.14	-0.17	-0.46	0.57	0.15	-0.11	0.76	-0.13	0.77	0.41	0.31	0.28	0.30	-0.23	0.77	0.17	0.83	0.69	-0.25	0.66	-0.03	-0.11	0.72	0.74	0.83	0.15	0.53	0.74		0.70	-0.27	0.49	-0.42	-0.32	0.27	0.66	0.85	0.34	0.39
Rb	0.11	-0.39	-0.63	0.72	0.31	0.20	0.81	-0.31	0.68	0.07	0.34	0.05	0.23	-0.66	0.35	0.01	0.83	0.28	-0.51	0.73	-0.23	0.28	0.39	0.88	0.57	0.35	0.88	0.71	0.70		-0.30	0.41	-0.42	-0.49	-0.06	0.81	0.81	0.17	0.35
Sb	0.15	0.61	0.64	-0.50	-0.39	-0.05	-0.38	0.68	-0.37	-0.10	-0.47	0.45	-0.15	0.53	0.00	-0.53	-0.21	0.24	0.84	-0.49	0.50	0.08	-0.04	-0.18	-0.24	-0.28	0.02	-0.38	-0.27	-0.30		-0.56	0.00	0.51	0.18	-0.55	-0.22	0.17	-0.28
Sn	-0.46	-0.58	-0.68	0.55	0.63	0.19	0.53	-0.42	0.49	0.54	0.47	0.07	0.54	-0.32	0.34	0.30	0.42	-0.01	-0.63	0.55	-0.49	-0.29	0.19	0.44	0.43	0.27	0.13	0.22	0.49	0.41	-0.56		0.39	-0.39	0.08	0.53	0.34	0.01	0.48
Sr	-0.56	-0.32	0.06	-0.16	0.37	0.52	-0.34	-0.02	-0.34	0.18	-0.24	0.25	0.43	0.35	-0.06	-0.09	-0.41	-0.54	0.08	-0.24	-0.40	-0.45	-0.43	-0.36	-0.41	-0.06	-0.50	-0.69	-0.42	-0.42	0.00	0.39		0.25	0.20	-0.37	-0.51	-0.16	0.03
V	0.26	0.71	0.83	-0.81	-0.68	0.06	-0.70	0.83	-0.57	-0.20	-0.54	0.13	-0.41	0.66	-0.04	-0.45	-0.44	0.07	0.71	-0.77	0.60	0.08	0.02	-0.52	-0.26	-0.53	-0.14	-0.71	-0.32	-0.49									

Transformed Data
CORRELATION MATRIX - COARSE LAG

	Si	Al	Fe	Mg	Ca	Ti	As	Au	Ba	Ce	Co	Cr	Cu	Ga	Ge	La	Mn	Mo	Nb	Ni	Pb	Rb	Sb	Sr	V	W	Y	Zn	Zr
Si		0.51	-0.87	-0.03	-0.52	-0.03	0.40	0.29	0.40	0.08	0.12	-0.11	0.15	0.01	-0.07	0.04	0.07	0.33	0.13	-0.05	-0.19	-0.31	0.25	-0.20	-0.09	-0.14	0.16	0.24	0.33
Al	0.51		-0.73	0.61	-0.19	0.23	0.12	-0.22	-0.02	-0.47	-0.33	-0.17	-0.13	0.45	0.29	-0.45	-0.23	0.11	0.19	-0.56	-0.30	-0.67	0.24	0.33	0.36	-0.33	-0.45	-0.23	0.32
Fe	-0.87	-0.73		-0.26	0.37	-0.14	-0.31	-0.07	-0.12	0.20	0.09	0.08	-0.03	-0.19	0.06	0.20	0.19	-0.35	-0.24	0.29	0.29	0.58	-0.37	0.05	-0.07	0.29	0.16	-0.04	-0.44
Mg	-0.03	0.61	-0.26		0.28	-0.26	-0.31	-0.25	-0.58	-0.43	-0.38	-0.23	-0.04	0.15	0.43	-0.35	-0.10	-0.27	-0.27	-0.43	-0.24	-0.37	-0.21	0.65	0.03	-0.56	-0.44	-0.32	-0.32
Ca	-0.52	-0.19	0.37	0.28		-0.37	-0.32	-0.10	-0.35	0.02	0.11	0.00	0.54	-0.29	0.08	0.20	0.34	-0.47	-0.13	0.37	0.27	0.25	-0.35	0.61	-0.39	0.12	0.08	0.16	-0.54
Ti	-0.03	0.23	-0.14	-0.26	-0.37		-0.04	-0.47	0.28	-0.29	-0.38	0.47	-0.55	0.79	-0.23	-0.46	-0.59	0.41	0.80	-0.55	-0.10	-0.43	0.56	-0.25	0.81	0.16	-0.48	-0.46	0.9
As	0.40	0.12	-0.31	-0.31	-0.32	-0.04		0.24	0.35	0.17	-0.13	0.01	0.16	-0.37	0.06	0.31	-0.22	0.29	-0.03	0.04	-0.29	-0.34	0.51	-0.44	-0.22	0.21	0.42	0.17	0.11
Au	0.29	-0.22	-0.07	-0.25	-0.10	-0.47	0.24		0.03	0.02	0.34	-0.26	0.28	-0.49	-0.12	0.12	0.08	0.04	-0.21	0.38	-0.21	0.06	-0.15	-0.42	-0.50	0.25	0.36	0.30	-0.32
Ba	0.40	-0.02	-0.12	-0.58	-0.35	0.28	0.35	0.03		0.51	0.21	0.36	0.14	0.03	0.05	0.41	0.22	0.35	0.40	0.32	0.15	-0.08	0.42	-0.09	0.00	0.53	0.56	0.40	0.37
Ce	0.08	-0.47	0.20	-0.43	0.02	-0.29	0.17	0.02	0.51		0.39	0.40	0.58	-0.45	-0.08	0.9	0.65	0.01	-0.22	0.76	0.56	0.50	0.10	-0.04	-0.53	0.06	0.8	0.66	-0.26
Co	0.12	-0.33	0.09	-0.38	0.11	-0.38	-0.13	0.34	0.21	0.39		-0.42	0.32	-0.26	-0.36	0.37	0.71	-0.05	-0.36	0.71	0.48	0.59	-0.53	0.05	-0.25	0.34	0.36	0.50	-0.20
Cr	-0.11	-0.17	0.08	-0.23	0.00	0.47	0.01	-0.26	0.36	0.40	-0.42		0.09	0.25	-0.03	0.27	-0.20	0.05	0.50	0.00	0.03	-0.16	0.58	-0.15	0.01	0.07	0.25	-0.01	0.31
Cu	0.15	-0.13	-0.03	-0.04	0.54	-0.55	0.16	0.28	0.14	0.58	0.32	0.09		-0.65	-0.14	0.74	0.60	-0.11	-0.20	0.71	0.55	0.28	-0.02	0.26	-0.73	-0.06	0.68	0.67	-0.50
Ga	0.01	0.45	-0.19	0.15	-0.29	0.79	-0.37	-0.49	0.03	-0.45	-0.26	0.25	-0.65		-0.08	-0.68	-0.41	0.04	0.48	-0.68	-0.21	-0.35	0.10	0.04	0.87	-0.01	-0.71	-0.64	0.72
Ge	-0.07	0.29	0.06	0.43	0.08	-0.23	0.06	-0.12	0.05	-0.08	-0.36	-0.03	-0.14	-0.08		-0.03	0.10	-0.24	-0.09	-0.09	-0.48	-0.19	0.06	0.37	-0.18	0.04	0.06	0.08	-0.38
La	0.04	-0.45	0.20	-0.35	0.20	-0.46	0.31	0.12	0.41	0.94	0.37	0.27	0.74	-0.68	-0.03		0.64	0.01	-0.30	0.82	0.54	0.44	0.10	0.03	-0.70	0.07	0.93	0.72	-0.43
Mn	0.07	-0.23	0.19	-0.10	0.34	-0.59	-0.22	0.08	0.22	0.65	0.71	-0.20	0.60	-0.41	0.10	0.64		-0.29	-0.42	0.73	0.58	0.72	-0.48	0.37	-0.49	0.06	0.55	0.66	-0.52
Mo	0.33	0.11	-0.35	-0.27	-0.47	0.41	0.29	0.04	0.35	0.01	-0.05	0.05	-0.11	0.04	-0.24	0.01	-0.29		0.55	-0.06	0.08	-0.42	0.65	-0.31	0.29	0.10	0.05	-0.05	0.52
Nb	0.13	0.19	-0.24	-0.27	-0.13	0.80	-0.03	-0.21	0.40	-0.22	-0.36	0.50	-0.20	0.48	-0.09	-0.30	-0.42	0.55		-0.28	-0.11	-0.47	0.67	-0.14	0.46	0.30	-0.23	-0.19	0.73
Ni	-0.05	-0.56	0.29	-0.43	0.37	-0.55	0.04	0.38	0.32	0.76	0.71	0.00	0.71	-0.68	-0.09	0.82	0.79	-0.06	-0.28		0.55	0.61	-0.18	0.07	-0.71	0.32	0.81	0.82	-0.51
Pb	-0.19	-0.30	0.29	-0.24	0.27	-0.10	-0.29	-0.21	0.15	0.56	0.48	0.03	0.55	-0.21	-0.48	0.54	0.58	0.08	-0.11	0.55		0.56	-0.14	0.25	-0.11	-0.17	0.33	0.44	-0.13
Rb	-0.31	-0.67	0.58	-0.37	0.25	-0.43	-0.34	0.06	-0.08	0.50	0.59	-0.16	0.28	-0.35	-0.19	0.44	0.72	-0.42	-0.47	0.61	0.56		-0.61	-0.06	-0.32	-0.01	0.32	0.41	-0.45
Sb	0.25	0.24	-0.37	-0.21	-0.35	0.56	0.51	-0.15	0.42	0.10	-0.53	0.58	-0.02	0.10	0.06	0.10	-0.48	0.65	0.67	-0.18	-0.14	-0.61		-0.32	0.13	0.00	0.14	0.05	0.53
Sr	-0.20	0.33	0.05	0.65	0.61	-0.25	-0.44	-0.42	-0.09	-0.04	0.05	-0.15	0.26	0.04	0.37	0.03	0.37	-0.31	-0.14	0.07	0.25	-0.06	-0.32		-0.08	-0.09	-0.07	0.08	-0.35
V	-0.09	0.36	-0.07	0.03	-0.39	0.81	-0.22	-0.50	0.00	-0.53	-0.25	0.01	-0.73	0.87	-0.18	-0.70	-0.49	0.29	0.46	-0.71	-0.11	-0.32	0.13	-0.08		0.02	-0.74	-0.72	0.74
W	-0.14	-0.33	0.29	-0.56	0.12	0.16	0.21	0.25	0.53	0.06	0.34	0.07	-0.06	-0.01	0.04	0.07	0.06	0.10	0.30	0.32	-0.17	-0.01	0.00	-0.09	0.02		0.28	0.05	0.13
Y	0.16	-0.45	0.16	-0.44	0.08	-0.48	0.42	0.36	0.56	0.87	0.36	0.25	0.68	-0.71	0.06	0.93	0.55	0.05	-0.23	0.81	0.33	0.32	0.14	-0.07	-0.74	0.28		0.73	-0.41
Zn	0.24	-0.23	-0.04	-0.32	0.16	-0.46	0.17	0.30	0.40	0.66	0.50	-0.01	0.67	-0.64	0.08	0.72	0.66	-0.05	-0.19	0.83	0.44	0.41	0.05	0.08	-0.72	0.05	0.73		-0.37
Zr	0.33	0.32	-0.44	-0.32	-0.54	0.91	0.11	-0.32	0.37	-0.26	-0.20	0.31	-0.50	0.72	-0.38	-0.43	-0.52	0.52	0.73	-0.51	-0.13	-0.45	0.53	-0.35	0.74	0.13	-0.41	-0.37	

Transformed Data
CORRELATION MATRIX - FINE LAG

	Si	Al	Fe	Mg	Ca	Ti	As	Au	Ba	Ce	Co	Cr	Cu	Ga	Ge	La	Mn	Mo	Nb	Ni	Pb	Rb	Sb	Sr	V	W	Y	Zn	Zr
Si		0.33	-0.95	-0.22	-0.47	-0.89	-0.40	-0.46	-0.55	-0.54	0.11	-0.55	-0.57	-0.72	0.27	-0.39	-0.55	-0.14	-0.52	-0.30	-0.65	0.41	-0.60	-0.48	-0.97	-0.46	0.11	-0.08	-0.91
Al	0.33		-0.54	-0.12	-0.27	0.07	-0.01	-0.20	-0.30	-0.68	0.15	-0.47	-0.13	-0.08	-0.21	-0.66	-0.78	-0.20	0.30	-0.45	-0.67	-0.05	-0.47	-0.32	-0.26	-0.38	-0.17	-0.41	-0.17
Fe	-0.95	-0.54		0.26	0.50	0.77	0.41	0.47	0.58	0.72	-0.12	0.61	0.57	0.68	-0.20	0.58	0.72	0.18	0.45	0.39	0.80	-0.27	0.71	0.52	0.94	0.50	0.04	0.24	0.88
Mg	-0.22	-0.12	0.26		0.93	0.18	0.66	0.73	0.85	0.27	0.04	-0.07	0.07	0.16	0.10	0.22	0.49	-0.36	0.19	0.12	0.41	0.13	0.13	0.88	0.23	0.59	0.20	0.18	0.22
Ca	-0.47	-0.27	0.50	0.93		0.34	0.75	0.83	0.8	0.44	0.05	0.02	0.26	0.33	0.02	0.33	0.68	-0.17	0.24	0.24	0.63	0.01	0.25	0.9	0.49	0.73	0.23	0.20	0.42
Ti	-0.89	0.07	0.77	0.18	0.34		0.40	0.37	0.46	0.29	-0.21	0.50	0.51	0.76	-0.37	0.16	0.21	-0.01	0.65	0.11	0.40	-0.31	0.51	0.36	0.86	0.29	-0.25	-0.06	0.92
As	-0.40	-0.01	0.41	0.66	0.75	0.40		0.61	0.51	0.14	-0.05	-0.15	0.29	0.26	-0.44	-0.01	0.42	-0.11	0.34	-0.03	0.45	0.12	0.05	0.65	0.50	0.80	0.19	0.11	0.48
Au	-0.46	-0.20	0.47	0.73	0.83	0.37	0.61		0.64	0.43	0.08	-0.05	0.27	0.51	-0.17	0.37	0.64	-0.39	0.29	0.14	0.57	0.05	0.27	0.63	0.53	0.65	0.22	0.23	0.51
Ba	-0.55	-0.30	0.58	0.85	0.87	0.46	0.51	0.64		0.46	-0.10	0.31	0.08	0.32	0.23	0.36	0.57	-0.13	0.28	0.22	0.53	-0.15	0.32	0.94	0.50	0.51	-0.01	0.10	0.44
Ce	-0.54	-0.68	0.72	0.27	0.44	0.29	0.14	0.43	0.46		0.08	0.55	0.51	0.54	0.06	0.97	0.87	0.13	0.26	0.55	0.90	0.12	0.85	0.39	0.57	0.23	0.53	0.59	0.52
Co	0.11	0.15	-0.12	0.04	0.05	-0.21	-0.05	0.08	-0.10	0.08		-0.61	0.25	-0.05	0.13	0.06	0.10	0.26	0.44	0.18	-0.05	-0.32	-0.04	-0.03	-0.03	-0.09	0.49	0.25	-0.07
Cr	-0.55	-0.47	0.61	-0.07	0.02	0.50	-0.15	-0.05	0.31	0.55	-0.61		0.20	0.50	-0.04	0.54	0.29	-0.02	0.03	0.25	0.46	0.09	0.72	0.17	0.45	-0.04	-0.24	0.19	0.47
Cu	-0.57	-0.13	0.57	0.07	0.26	0.51	0.29	0.27	0.08	0.51	0.25	0.20		0.61	-0.39	0.47	0.42	0.23	0.39	0.30	0.64	0.04	0.66	0.06	0.66	0.24	0.45	0.17	0.62
Ga	-0.72	-0.08	0.68	0.16	0.33	0.76	0.26	0.51	0.32	0.54	-0.05	0.50	0.61		-0.43	0.48	0.37	-0.16	0.57	0.11	0.56	-0.03	0.74	0.24	0.79	0.13	-0.03	0.26	0.82
Ge	0.27	-0.21	-0.20	0.10	0.02	-0.37	-0.44	-0.17	0.23	0.06	0.13	-0.04	-0.39	-0.43		0.06	0.07	0.41	-0.33	0.36	-0.07	-0.26	-0.22	0.16	-0.38	-0.33	-0.08	-0.15	-0.41
La	-0.39	-0.66	0.58	0.22	0.33	0.16	-0.01	0.37	0.36	0.97	0.06	0.54	0.47	0.48	0.06		0.79	-0.01	0.16	0.48	0.8	0.23	0.85	0.25	0.43	0.11	0.58	0.59	0.39
Mn	-0.55	-0.78	0.72	0.49	0.68	0.21	0.42	0.64	0.57	0.87	0.10	0.29	0.42	0.37	0.07	0.79		0.13	0.14	0.58	0.92	0.02	0.59	0.60	0.57	0.58	0.48	0.53	0.49
Mo	-0.14	-0.20	0.18	-0.36	-0.17	-0.01	-0.11	-0.39	-0.13	0.13	0.26	-0.02	0.23	-0.16	0.41	-0.01	0.13		-0.02	0.42	0.19	-0.37	-0.03	-0.09	0.12	-0.11	0.05	-0.11	0.05
Nb	-0.52	0.30	0.45	0.19	0.24	0.65	0.34	0.29	0.28	0.26	0.44	0.03	0.39	0.57	-0.33	0.16	0.14	-0.02		0.15	0.17	-0.35	0.39	0.28	0.60	0.06	0.16	0.30	0.68
Ni	-0.30	-0.45	0.39	0.12	0.24	0.11	-0.03	0.14	0.22	0.55	0.18	0.25	0.30	0.11	0.36	0.48	0.58	0.42	0.15		0.49	-0.12	0.39	0.32	0.21	0.15	0.25	0.59	0.34
Pb	-0.65	-0.67	0.80	0.41	0.63	0.40	0.45	0.57	0.53	0.90	-0.05	0.46	0.64	0.56	-0.07	0.81	0.92	0.19	0.17	0.49		0.14	0.74	0.51	0.70	0.50	0.45	0.40	0.62
Rb	0.41	-0.05	-0.27	0.13	0.01	-0.31	0.12	0.05	-0.15	0.12	-0.32	0.09	0.04	-0.03	-0.26	0.23	0.02	-0.37	-0.35	-0.12	0.14		0.21	-0.13	-0.31	0.11	0.35	0.33	-0.20
Sb	-0.60	-0.47	0.71	0.13	0.25	0.51	0.05	0.27	0.32	0.85	-0.04	0.72	0.66	0.74	-0.22	0.85	0.59	-0.03	0.39	0.39	0.74	0.21		0.22	0.64	0.11	0.33	0.55	0.66
Sr	-0.48	-0.32	0.52	0.84	0.91	0.36	0.65	0.63	0.94	0.39	-0.03	0.17	0.06	0.24	0.16	0.25	0.60	-0.09	0.28	0.32	0.51	-0.13	0.22		0.43	0.64	-0.01	0.25	0.40
V	-0.97	-0.26	0.94	0.23	0.49	0.88	0.50	0.53	0.50	0.57	-0.03	0.45	0.66	0.79	-0.38	0.43	0.57	0.12	0.60	0.21	0.70	-0.31	0.64	0.43		0.46	0.03	0.10	0.94
W	-0.46	-0.38	0.50	0.59	0.73	0.29	0.80	0.65	0.51	0.23	-0.09	-0.04	0.24	0.13	-0.33	0.11	0.58	-0.11	0.06	0.15	0.50	0.11	0.11	0.64	0.46		0.12	0.21	0.43
Y	0.11	-0.17	0.04	0.20	0.23	-0.25	0.19	0.22	-0.01	0.53	0.49	-0.24	0.45	-0.03	-0.08	0.58	0.48	0.05	0.16	0.25	0.45	0.35	0.33	-0.01	0.03	0.12		0.43	-0.03
Zn	-0.08	-0.41	0.24	0.18	0.20	-0.06	0.11	0.23	0.10	0.59	0.25	0.19	0.17	0.26	-0.15	0.59	0.53	-0.11	0.30	0.59	0.40	0.33	0.55	0.25	0.10	0.21	0.43		0.26
Zr	-0.91	-0.17	0.88	0.22	0.42	0.92	0.48	0.51	0.44	0.52	-0.07	0.47	0.62	0.82	-0.41	0.39	0.49	0.05	0.68	0.34	0.62	-0.20	0.66	0.40	0.94	0.43	-0.03	0.26	

Transformed Data
CORRELATION MATRIX - FINE LAG MAGNETIC FRACTION

	Si	Al	Fe	Mg	Ca	Ti	As	Au	Ba	Ce	Co	Cr	Cu	Ga	Ge	La	Mn	Mo	Nb	Ni	Pb	Rb	Sb	Sr	V	W	Y	Zn	Zr
Si		0.79	-0.90	-0.56	-0.69	-0.26	-0.49	-0.68	-0.42	-0.70	-0.39	0.01	-0.72	-0.15	-0.35	-0.64	-0.75	-0.62	-0.27	-0.39	-0.78	-0.09	-0.62	-0.51	-0.83	-0.37	-0.06	-0.43	-0.38
Al	0.79		-0.87	-0.54	-0.49	0.26	-0.15	-0.43	-0.06	-0.82	-0.81	0.33	-0.74	0.23	-0.41	-0.84	-0.89	-0.60	0.04	-0.72	-0.64	-0.33	-0.31	-0.33	-0.47	-0.38	-0.48	-0.76	-0.01
Fe	-0.90	-0.87		0.38	0.46	0.03	0.32	0.51	0.29	0.59	0.49	-0.09	0.60	-0.10	0.27	0.58	0.71	0.42	0.12	0.47	0.66	0.27	0.40	0.34	0.67	0.40	0.14	0.47	0.22
Mg	-0.56	-0.54	0.38		0.88	-0.15	0.22	0.54	0.55	0.90	0.60	-0.03	0.80	-0.10	0.48	0.69	0.81	0.71	-0.02	0.71	0.57	0.03	0.23	0.70	0.34	0.18	0.11	0.56	-0.13
Ca	-0.69	-0.49	0.46	0.88		0.20	0.45	0.69	0.76	0.73	0.42	0.06	0.74	0.23	0.26	0.59	0.71	0.74	0.32	0.46	0.50	-0.15	0.53	0.84	0.63	0.18	-0.06	0.36	0.19
Ti	-0.26	0.26	0.03	-0.15	0.20		0.51	0.37	0.36	-0.13	-0.58	0.14	-0.11	0.88	-0.35	-0.22	-0.23	-0.01	0.63	-0.65	-0.03	-0.31	0.60	0.07	0.69	0.20	-0.50	-0.47	0.88
As	-0.49	-0.15	0.32	0.22	0.45	0.51		0.53	0.50	0.24	-0.10	0.08	0.19	0.50	-0.32	0.16	0.16	0.32	0.10	-0.08	0.48	0.01	0.50	0.50	0.59	0.22	-0.13	0.07	0.59
Au	-0.68	-0.43	0.51	0.54	0.69	0.37	0.53		0.49	0.54	0.28	-0.17	0.58	0.40	0.33	0.49	0.56	0.57	0.08	0.17	0.51	-0.06	0.79	0.38	0.73	0.61	0.03	0.40	0.26
Ba	-0.42	-0.06	0.29	0.55	0.76	0.36	0.50	0.49		0.19	-0.09	0.43	0.27	0.28	-0.02	0.03	0.23	0.48	0.29	0.07	0.25	-0.05	0.27	0.81	0.50	-0.03	-0.49	-0.20	0.20
Ce	-0.70	-0.82	0.59	0.80	0.73	-0.13	0.24	0.54	0.19		0.90	-0.47	0.94	-0.01	0.39	0.98	0.97	0.66	0.07	0.77	0.68	0.10	0.43	0.48	0.47	0.45	0.53	0.82	0.06
Co	-0.39	-0.81	0.49	0.60	0.42	-0.58	-0.10	0.28	-0.09	0.90		-0.55	0.69	-0.40	0.43	0.86	0.85	0.45	-0.24	0.87	0.36	0.18	0.09	0.27	0.09	0.35	0.70	0.89	-0.33
Cr	0.01	0.33	-0.09	-0.03	0.06	0.14	0.08	-0.17	0.43	-0.47	-0.55		-0.36	-0.15	-0.10	-0.61	-0.40	0.01	0.07	-0.28	-0.07	-0.11	-0.20	0.31	-0.07	-0.74	-0.81	-0.60	-0.05
Cu	-0.72	-0.74	0.60	0.80	0.74	-0.11	0.19	0.58	0.27	0.94	0.69	-0.36		-0.05	0.52	0.92	0.94	0.60	0.16	0.74	0.76	0.02	0.50	0.48	0.46	0.46	0.45	0.76	0.00
Ga	-0.15	0.23	-0.10	-0.10	0.23	0.88	0.50	0.40	0.28	-0.01	-0.40	-0.15	-0.05		-0.34	-0.06	-0.16	0.17	0.59	-0.61	-0.11	-0.22	0.62	0.03	0.63	0.35	-0.22	-0.31	0.79
Ge	-0.35	-0.41	0.27	0.48	0.26	-0.35	-0.32	0.33	-0.02	0.39	0.43	-0.10	0.52	-0.34		0.44	0.52	0.39	-0.20	0.42	0.44	-0.03	0.08	0.08	0.07	0.25	0.35	0.40	-0.42
La	-0.64	-0.84	0.58	0.69	0.59	-0.22	0.16	0.49	0.03	0.98	0.86	-0.61	0.92	-0.06	0.44		0.95	0.58	0.02	0.77	0.64	0.11	0.41	0.34	0.40	0.53	0.68	0.88	0.01
Mn	-0.75	-0.89	0.71	0.81	0.71	-0.23	0.16	0.56	0.23	0.97	0.85	-0.40	0.94	-0.16	0.52	0.95		0.64	-0.01	0.83	0.71	0.15	0.37	0.49	0.46	0.46	0.50	0.82	-0.06
Mo	-0.62	-0.60	0.42	0.71	0.74	-0.01	0.32	0.57	0.48	0.66	0.45	0.01	0.60	0.17	0.39	0.58	0.64		0.08	0.39	0.49	0.30	0.39	0.61	0.47	0.10	0.15	0.39	0.02
Nb	-0.27	0.04	0.12	-0.02	0.32	0.63	0.10	0.08	0.29	0.07	-0.24	0.07	0.16	0.59	-0.20	0.02	-0.01	0.08		-0.34	-0.12	-0.44	0.55	0.20	0.53	0.02	-0.26	-0.27	0.63
Ni	-0.39	-0.72	0.47	0.71	0.46	-0.65	-0.08	0.17	0.07	0.77	0.87	-0.28	0.74	-0.61	0.42	0.77	0.83	0.39	-0.34		0.56	0.27	-0.10	0.42	-0.06	0.13	0.52	0.80	-0.46
Pb	-0.78	-0.64	0.66	0.57	0.50	-0.03	0.48	0.51	0.25	0.68	0.36	-0.07	0.76	-0.11	0.44	0.64	0.71	0.49	-0.12	0.56		0.28	0.35	0.41	0.43	0.34	0.27	0.55	0.10
Rb	-0.09	-0.33	0.27	0.03	-0.15	-0.31	0.01	-0.06	-0.05	0.10	0.18	-0.11	0.02	-0.22	-0.03	0.11	0.15	0.30	-0.44	0.27	0.28		-0.31	-0.13	-0.11	0.10	0.15	0.19	-0.17
Sb	-0.62	-0.31	0.40	0.23	0.53	0.60	0.50	0.79	0.27	0.43	0.09	-0.20	0.50	0.62	0.08	0.41	0.37	0.39	0.55	-0.10	0.35	-0.31		0.24	0.77	0.49	0.05	0.27	0.57
Sr	-0.51	-0.33	0.34	0.70	0.84	0.07	0.50	0.38	0.81	0.48	0.27	0.31	0.48	0.03	0.08	0.34	0.49	0.61	0.20	0.42	0.41	-0.13	0.24		0.38	-0.21	-0.12	0.12	0.07
V	-0.83	-0.47	0.67	0.34	0.63	0.69	0.59	0.73	0.50	0.47	0.09	-0.07	0.46	0.63	0.07	0.40	0.46	0.47	0.53	-0.06	0.43	-0.11	0.77	0.38		0.50	-0.15	0.12	0.72
W	-0.37	-0.38	0.40	0.18	0.18	0.20	0.22	0.61	-0.03	0.45	0.35	-0.74	0.46	0.35	0.25	0.53	0.46	0.10	0.02	0.13	0.34	0.10	0.49	-0.21	0.50		0.43	0.50	0.26
Y	-0.06	-0.48	0.14	0.11	-0.06	-0.50	-0.13	0.03	-0.49	0.53	0.70	-0.81	0.45	-0.22	0.35	0.68	0.50	0.15	-0.26	0.52	0.27	0.15	0.05	-0.12	-0.15	0.43		0.71	-0.27
Zn	-0.43	-0.76	0.47	0.56	0.36	-0.47	0.07	0.40	-0.20	0.82	0.89	-0.60	0.76	-0.31	0.40	0.88	0.82	0.39	-0.27	0.90	0.55	0.19	0.27	0.12	0.12	0.50	0.71		-0.22
Zr	-0.38	-0.01	0.22	-0.13	0.19	0.88	0.59	0.26	0.20	0.06	-0.33	-0.05	0.00	0.79	-0.42	0.01	-0.06	0.02	0.63	-0.46	0.10	-0.17	0.57	0.07	0.72	0.26	-0.27	-0.22	

Transformed Data
CORRELATION MATRIX - FINE LAG NON-MAGNETIC FRACTION

	Si	Al	Fe	Mg	Ca	Ti	As	Au	Ba	Ce	Co	Cr	Cu	Ga	Ge	La	Mn	Mo	Nb	Ni	Pb	Rb	Sb	Sr	V	W	Y	Zn	Zr
Si		-0.40	-0.93	-0.23	-0.49	-0.91	-0.52	-0.41	-0.57	-0.26	-0.68	-0.79	-0.44	-0.77	-0.25	-0.17	-0.25	-0.69	-0.22	-0.67	-0.47	0.05	-0.58	-0.49	-0.92	-0.20	0.02	-0.07	-0.89
Al	-0.40		0.13	0.13	-0.15	0.58	0.10	-0.08	-0.14	-0.59	0.15	0.26	0.10	0.79	0.25	-0.63	-0.65	-0.15	-0.14	0.24	-0.43	-0.05	-0.28	-0.24	0.11	-0.02	-0.19	-0.27	0.23
Fe	-0.93	0.13		0.11	0.48	0.78	0.57	0.54	0.62	0.45	0.68	0.74	0.47	0.60	0.20	0.38	0.43	0.80	0.41	0.62	0.61	-0.04	0.72	0.50	0.98	0.24	0.14	0.11	0.88
Mg	-0.23	0.13	0.11		0.75	0.05	0.43	0.34	0.64	0.12	0.41	-0.08	0.25	0.05	0.22	0.06	0.25	0.03	-0.35	0.32	0.09	0.35	-0.04	0.73	0.09	0.04	-0.11	0.03	0.02
Ca	-0.49	-0.15	0.48	0.75		0.22	0.68	0.46	0.87	0.66	0.72	0.22	0.50	0.07	0.14	0.58	0.75	0.53	-0.12	0.65	0.57	0.15	0.37	0.97	0.50	0.22	0.05	0.21	0.44
Ti	-0.91	0.58	0.78	0.05	0.22		0.29	0.26	0.31	0.02	0.58	0.85	0.27	0.86	0.14	-0.08	-0.03	0.55	0.10	0.63	0.35	-0.04	0.47	0.21	0.78	0.17	-0.13	0.13	0.87
As	-0.52	0.10	0.57	0.43	0.68	0.29		0.76	0.68	0.52	0.66	0.08	0.84	0.19	0.23	0.48	0.48	0.53	0.31	0.52	0.35	-0.09	0.42	0.58	0.59	0.54	0.34	0.09	0.50
Au	-0.41	-0.08	0.54	0.34	0.46	0.26	0.76		0.58	0.46	0.51	0.07	0.71	0.04	-0.05	0.45	0.43	0.48	0.22	0.36	0.39	0.07	0.53	0.41	0.54	0.52	0.37	0.28	0.42
Ba	-0.57	-0.14	0.62	0.64	0.87	0.31	0.68	0.58		0.60	0.72	0.33	0.44	0.20	0.12	0.49	0.70	0.53	0.04	0.67	0.62	0.07	0.39	0.91	0.56	0.42	-0.04	0.15	0.45
Ce	-0.26	-0.59	0.45	0.12	0.66	0.02	0.52	0.46	0.60		0.60	0.10	0.56	-0.30	-0.03	0.98	0.97	0.74	0.33	0.52	0.77	-0.03	0.68	0.66	0.52	0.34	0.47	0.38	0.44
Co	-0.68	0.15	0.68	0.41	0.72	0.58	0.66	0.51	0.72	0.60		0.37	0.64	0.40	0.10	0.52	0.57	0.72	0.15	0.91	0.51	-0.08	0.46	0.73	0.68	0.35	0.32	0.47	0.76
Cr	-0.79	0.26	0.74	-0.08	0.22	0.85	0.08	0.07	0.33	0.10	0.37		-0.09	0.71	0.03	-0.01	0.13	0.56	-0.04	0.47	0.54	-0.09	0.49	0.25	0.71	0.04	-0.40	-0.03	0.74
Cu	-0.44	0.10	0.47	0.25	0.50	0.27	0.84	0.71	0.44	0.56	0.64	-0.09		0.08	0.14	0.57	0.44	0.49	0.46	0.55	0.31	0.09	0.49	0.39	0.54	0.49	0.63	0.33	0.52
Ga	-0.77	0.79	0.60	0.05	0.07	0.86	0.19	0.04	0.20	-0.30	0.40	0.71	0.08		0.26	-0.38	-0.31	0.26	-0.01	0.49	-0.03	-0.16	0.04	0.05	0.54	0.07	-0.26	-0.18	0.61
Ge	-0.25	0.25	0.20	0.22	0.14	0.14	0.23	-0.05	0.12	-0.03	0.10	0.03	0.14	0.26		0.02	-0.05	0.30	0.28	-0.04	-0.24	-0.26	0.11	0.10	0.21	0.30	0.28	-0.25	0.09
La	-0.17	-0.63	0.38	0.06	0.58	-0.08	0.48	0.45	0.49	0.98	0.52	-0.01	0.57	-0.38	0.02		0.93	0.71	0.37	0.41	0.68	-0.03	0.66	0.57	0.46	0.31	0.59	0.37	0.36
Mn	-0.25	-0.65	0.43	0.25	0.75	-0.03	0.48	0.43	0.70	0.97	0.57	0.13	0.44	-0.31	-0.05	0.93		0.68	0.20	0.51	0.79	0.05	0.60	0.77	0.47	0.28	0.32	0.36	0.37
Mo	-0.69	-0.15	0.80	0.03	0.53	0.55	0.53	0.48	0.53	0.74	0.72	0.56	0.49	0.26	0.30	0.71	0.68		0.36	0.58	0.66	-0.29	0.82	0.53	0.86	0.36	0.42	0.28	0.80
Nb	-0.22	-0.14	0.41	-0.35	-0.12	0.10	0.31	0.22	0.04	0.33	0.15	-0.04	0.46	-0.01	0.28	0.37	0.20	0.36		0.05	0.22	0.01	0.53	-0.08	0.44	0.19	0.60	0.01	0.27
Ni	-0.67	0.24	0.62	0.32	0.65	0.63	0.52	0.36	0.67	0.52	0.91	0.47	0.55	0.49	-0.04	0.41	0.51	0.58	0.05		0.57	0.10	0.36	0.64	0.62	0.31	0.11	0.39	0.74
Pb	-0.47	-0.43	0.61	0.09	0.57	0.35	0.35	0.39	0.62	0.77	0.51	0.54	0.31	-0.03	-0.24	0.68	0.75	0.66	0.22	0.57		0.25	0.78	0.62	0.65	0.21	-0.02	0.28	0.59
Rb	0.05	-0.05	-0.04	0.35	0.15	-0.04	-0.09	0.07	0.07	-0.03	-0.08	-0.09	0.09	-0.16	-0.26	-0.03	0.05	-0.29	0.01	0.10	0.25		0.08	0.13	-0.01	-0.35	-0.11	-0.01	-0.10
Sb	-0.58	-0.28	0.72	-0.04	0.37	0.47	0.42	0.53	0.39	0.68	0.46	0.49	0.49	0.04	0.11	0.66	0.60	0.82	0.53	0.36	0.78	0.08		0.38	0.81	0.26	0.36	0.26	0.69
Sr	-0.49	-0.24	0.50	0.73	0.97	0.21	0.58	0.41	0.91	0.66	0.73	0.25	0.39	0.05	0.10	0.57	0.77	0.53	-0.08	0.64	0.62	0.13	0.38		0.49	0.19	0.01	0.26	0.43
V	-0.92	0.11	0.98	0.09	0.50	0.78	0.59	0.54	0.56	0.52	0.68	0.71	0.54	0.54	0.21	0.46	0.47	0.80	0.44	0.62	0.65	-0.01	0.81	0.49		0.22	0.23	0.13	0.91
W	-0.20	-0.02	0.24	0.04	0.22	0.17	0.54	0.52	0.42	0.34	0.35	0.04	0.49	0.07	0.30	0.31	0.28	0.36	0.19	0.31	0.21	-0.35	0.26	0.19	0.22		0.18	0.32	0.27
Y	0.02	-0.19	0.14	-0.11	0.05	-0.13	0.34	0.37	-0.04	0.47	0.32	-0.40	0.63	-0.26	0.28	0.59	0.32	0.42	0.60	0.11	-0.02	-0.11	0.36	0.01	0.23	0.18		0.32	0.18
Zn	-0.07	-0.27	0.11	0.03	0.21	0.13	0.09	0.28	0.15	0.38	0.47	-0.03	0.33	-0.18	-0.25	0.37	0.36	0.28	0.01	0.39	0.28	-0.01	0.26	0.26	0.13	0.32	0.32		0.39
Zr	-0.89	0.23	0.88	0.02	0.44	0.87	0.50	0.42	0.45	0.44	0.76	0.74	0.52	0.61	0.09	0.36	0.37	0.80	0.27	0.74	0.59	-0.10	0.69	0.43	0.91	0.27	0.18	0.39	

APPENDIX 13

Petrography of Soil Fractions

APPENDIX 13

Petrography of Soil Fractions

Sample LIC-53: 701- 2000 μm . It is dominated by angular fragments of deep brown to black goethite and minor chips of vein quartz, with a little tourmaline. The quartz varies widely from white, 'buck' quartz, through clear, well-crystalline, glassy quartz, which is the most abundant, and a very few rounded quartz grains. The glossy black fragments have partial nodular rims and are clearly fragments of larger nodules. The red brown fragments are less dense than the black glossy fragments and presumably consist of iron-stained clays. The yellow fragments are less abundant than the other two types and presumably consist of goethite-stained clays.

Sample LIC-53: 500-710 μm . Similar but the proportion of quartz is a little higher.

Sample LIC-53: 250-500 μm . Angular to subangular chips of vein quartz dominate the goethitic fragments. Some of the quartz is partly coated with goethite and there are minor schorlite grains. The proportion of glassy quartz is greater than in the previous sample. Some grains appear to show terminations and all the quartz is very angular, suggesting little transport.

Sample LIC-53: 150-250 μm . This is similar to the previous sample but it is contaminated with clay. Most of the quartz is very angular, though there are a very few worn and rounded grains.

Sample LIC-53: 75-150 μm . Goethite-rich fragments dominate the angular quartz slightly. There is a trace of microcline. Although most of the quartz is still angular, there is a higher proportion (10-20%) of rounded, worn grains and these are probably aeolian.

Sample LIC-53: <75 μm . This consists largely of goethite and clay with a trace of tourmaline. The material is too fine under the binocular microscope to determine if there are any aeolian grains.

Sample LIC-53: <4 μm . This is largely clay, with a trace of tourmaline.

Sample LIC-58: >2000 μm . This consists largely of angular goethitic granules.

Sample LIC-58: 710-2000 μm . Goethite-rich fragments dominate the fragments of vein quartz and minor tourmaline. The quartz is very variable, both white 'buck' quartz and clear types being represented, but it is all angular, except for 1-2% of frosted, rounded grains.

Sample LIC-58: 500-710 μm . There are approximately equal proportions of vein quartz and goethitic granules, with a significant amount of tourmaline. The quartz is all angular, and there are a few angular, cleavage fragments of fresh K feldspar.

Sample LIC-58: 250-500 μm . Subangular vein quartz grains dominate the goethitic granules and there is significant tourmaline and minor microcline. The quartz is almost all angular though there are a very few frosted, rounded grains.

Sample LIC-58: 150-250 μm . Subangular quartz grains dominate the granular goethite. There is also minor tourmaline and a trace of weathered microcline. The quartz shows slight coating with goethite. The proportion of frosted, rounded grains is slightly greater.

Specimen LIC-58: 75-150 μm . There is much clay and minor quartz with a significant proportion (>10%) of rounded, frosted grains.

Specimen LIC-58: <75 μm . This is dominantly clay pellets with a trace of quartz.

Specimen LIC-58: <4 μm . Clay, here, forms small flakes, a few clusters and pellets.

APPENDIX 14

Microprobe Standardisation

MICROPROBE STANDARDISATION (for fresh tourmalines)

Sample	Analysis	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	Cr2O3	MnO	FeO	Total
JJA5 Garnet	53167	0.10	7.19	22.76	40.34	0.00	18.14	0.37	0.00	0.21	11.52	100.64
JJA5 Garnet	53168	0.13	7.25	22.61	40.08	0.00	18.28	0.35	0.00	0.21	11.54	100.44
JJA5 Garnet	53169	0.13	7.36	22.93	40.47	0.00	18.29	0.35	0.00	0.12	11.34	100.99
JJA5 Garnet	53170	0.14	7.23	22.83	40.08	0.00	18.24	0.35	0.00	0.12	11.35	100.34
JJA5 Garnet	53171	0.12	7.20	22.51	39.72	0.00	18.15	0.37	0.00	0.19	11.63	99.89
JJA5 Garnet	53239	0.10	7.19	22.67	40.11	0.00	18.30	0.37	0.00	0.25	11.67	100.68
JJA5 Garnet	53240	0.13	7.14	22.70	40.17	0.00	18.07	0.37	0.00	0.20	11.45	100.23
JJA5 Garnet	53241	0.10	7.18	22.60	39.80	0.00	18.20	0.37	0.00	0.18	11.47	99.91
Mean		0.12	7.22	22.70	40.10	0.00	18.21	0.36	0.00	0.19	11.50	100.39
Acc Val		-	7.17	22.70	40.16	-	18.12	0.35	-	0.19	11.31	100.22

Sample	Analysis	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	Cr2O3	MnO	FeO	Total
JJA8 Garnet	53172	0.15	6.57	22.47	39.40	0.00	14.08	0.36	0.00	0.71	16.74	100.49
JJA8 Garnet	53173	0.14	6.74	22.38	39.43	0.00	14.19	0.36	0.00	0.74	16.62	100.60
JJA8 Garnet	53174	0.14	6.68	22.46	39.54	0.00	14.09	0.34	0.00	0.73	16.62	100.60
JJA8 Garnet	53242	0.14	6.65	22.32	39.63	0.00	14.04	0.36	0.00	0.64	16.53	100.32
JJA8 Garnet	53243	0.13	6.66	22.48	39.59	0.00	14.14	0.34	0.00	0.79	16.64	100.76
JJA8 Garnet	53244	0.11	6.58	22.23	38.94	0.00	14.11	0.36	0.00	0.73	16.30	99.35
Mean		0.14	6.65	22.39	39.42	0.00	14.11	0.35	0.00	0.72	16.58	100.35
Acc Val		-	6.55	22.27	39.47	-	14.39	0.39	0.00	0.59	16.25	100.19

Sample	Analysis	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	Cr2O3	MnO	FeO	Total
JJA18 Garnet	53175	0.03	18.30	23.63	42.01	0.00	5.04	0.39	0.06	0.30	10.57	100.33
JJA18 Garnet	53176	0.00	18.58	23.74	41.84	0.00	4.92	0.38	0.10	0.30	10.86	100.72
JJA18 Garnet	53177	0.02	18.77	23.57	41.74	0.00	5.13	0.41	0.12	0.36	10.38	100.49
JJA18 Garnet	53245	0.03	18.59	23.86	41.54	0.00	4.90	0.34	0.06	0.31	10.55	100.17
JJA18 Garnet	53246	0.02	18.75	23.94	42.07	0.00	4.86	0.37	0.11	0.34	10.63	101.10
Mean		0.02	18.60	23.75	41.84	0.00	4.97	0.38	0.09	0.32	10.60	100.56
Acc Val		-	18.51	23.73	41.46	-	5.17	0.47	-	0.28	10.68	100.30

MICROPROBE STANDARDISATION

(for soil tourmalines)

Sample	Analysis	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	Cr2O3	MnO	FeO	Total
JJA5 Garnet	51837	0.13	7.17	22.71	40.16	0.00	18.53	0.38	0.00	0.18	11.34	100.61
JJA5 Garnet	52221	0.10	7.22	22.74	40.07	0.00	18.62	0.36	0.00	0.22	11.51	100.84
JJA5 Garnet	52223	0.07	7.36	22.60	40.06	0.00	18.79	0.35	0.00	0.17	11.42	100.81
JJA5 Garnet	52224	0.13	7.14	22.65	39.56	0.00	18.59	0.33	0.00	0.22	11.59	100.21
Mean		0.11	7.22	22.68	39.96	0.00	18.63	0.36	0.00	0.20	11.47	100.62
Acc Val		-	7.17	22.70	40.16	-	18.12	0.35	-	0.19	11.31	100.22

Sample	Analysis	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	Cr2O3	MnO	FeO	Total
JJA8 Garnet	51838	0.17	6.55	22.29	39.79	0.00	14.33	0.40	0.00	0.80	16.41	100.73
Acc Val		-	6.55	22.27	39.47	-	14.39	0.39	-	0.59	16.25	100.19

Sample	Analysis	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	Cr2O3	MnO	FeO	Total
JJA18 Garnet	51839	0.00	18.96	23.66	42.15	0.00	5.13	0.42	0.08	0.31	10.32	101.03
Acc Val		-	18.51	23.73	41.46	-	5.17	0.47	-	0.28	10.68	100.30

APPENDIX 15

Microprobe Analyses of Tourmaline

- a Fresh Tourmaline
- b Soil Tourmaline

a

FRESH TOURMALINES OF LOI-113

Analys	SiO2	Al2O3	FeO	MgO	CaO	Na2O	K2O	TiO2	Cr2O3	MnO	Total	Fe#
53178	35.43	30.61	9.37	6.36	1.22	2.08	0.02	0.56	0.00	0.07	85.73	0.60
53179	35.40	30.81	9.00	6.35	1.13	1.94	0.04	0.74	0.00	0.05	85.46	0.59
53180	35.50	31.26	8.81	6.49	1.09	2.01	0.02	0.52	0.00	0.07	85.77	0.58
53181	35.43	30.75	8.81	6.77	0.94	2.11	0.00	0.43	0.00	0.00	85.24	0.57
53182	35.40	31.34	8.43	6.58	0.85	2.26	0.00	0.35	0.00	0.07	85.27	0.56
53183	35.63	31.60	8.41	6.46	0.77	2.24	0.02	0.27	0.05	0.04	85.49	0.57
53184	35.29	31.45	9.06	6.26	0.85	2.17	0.02	0.34	0.00	0.05	85.50	0.59
53185	35.75	30.89	8.64	6.42	1.03	2.15	0.02	0.76	0.00	0.06	85.72	0.57
53186	35.51	31.19	8.58	6.71	0.84	2.22	0.03	0.33	0.00	0.00	85.40	0.56
53187	35.58	31.38	8.68	6.51	0.84	2.23	0.02	0.36	0.00	0.04	85.64	0.57
53188	35.59	30.79	8.94	6.37	1.03	2.11	0.03	0.79	0.00	0.05	85.70	0.58
53189	35.44	31.10	8.46	6.49	0.90	2.19	0.02	0.35	0.00	0.05	85.02	0.57
53190	35.56	31.58	8.66	6.42	0.78	2.26	0.02	0.33	0.00	0.00	85.61	0.57
53191	35.24	31.18	9.06	6.21	1.07	2.15	0.04	0.43	0.00	0.06	85.44	0.59
53192	35.38	31.36	9.01	6.22	0.95	2.09	0.03	0.36	0.00	0.00	85.41	0.59
53193	35.23	30.81	9.22	6.35	0.99	2.16	0.02	0.57	0.00	0.00	85.37	0.59
53195	35.52	30.49	9.26	6.45	1.09	2.08	0.00	0.72	0.00	0.00	85.61	0.59
53196	35.83	31.04	10.04	6.13	0.59	2.21	0.00	0.09	0.00	0.05	85.97	0.62
53197	35.70	31.85	8.73	6.37	0.83	2.14	0.04	0.31	0.00	0.00	85.97	0.58
53198	35.33	30.54	9.17	6.37	1.07	2.08	0.02	0.78	0.00	0.06	85.44	0.59
53199	35.60	30.67	9.26	6.28	1.00	2.15	0.00	0.81	0.00	0.07	85.84	0.60
53200	35.42	30.40	9.04	6.58	1.07	2.11	0.03	0.84	0.00	0.00	85.50	0.58
53201	35.67	31.15	8.51	6.54	0.92	2.15	0.00	0.43	0.00	0.00	85.36	0.57
53202	35.98	32.21	8.88	5.79	0.55	2.00	0.04	0.15	0.00	0.07	85.67	0.61
53203	35.60	30.55	9.17	6.29	1.08	2.09	0.00	0.85	0.00	0.09	85.73	0.59
53204	35.76	30.66	8.96	6.43	0.93	2.13	0.02	0.73	0.00	0.09	85.70	0.58
53205	35.38	30.80	9.12	6.35	1.00	2.12	0.02	0.83	0.00	0.00	85.62	0.59
53206	35.50	31.15	8.53	6.51	0.87	2.24	0.04	0.36	0.00	0.06	85.25	0.57
53207	35.51	30.67	8.89	6.50	1.14	2.00	0.02	0.57	0.00	0.00	85.30	0.58
53208	35.55	31.12	8.80	6.60	0.83	2.22	0.00	0.33	0.00	0.00	85.47	0.57
53209	35.51	31.27	8.57	6.55	0.91	2.23	0.04	0.41	0.00	0.06	85.55	0.57
53210	35.26	31.21	9.10	6.30	1.00	2.02	0.04	0.47	0.00	0.06	85.45	0.59
53211	35.48	31.43	8.86	6.68	0.90	2.16	0.03	0.29	0.00	0.00	85.83	0.57
53212	35.56	31.07	9.22	6.35	1.14	2.06	0.04	0.51	0.00	0.04	86.00	0.59
53213	35.56	31.02	8.97	6.74	1.06	2.04	0.03	0.45	0.00	0.04	85.93	0.57
53214	35.55	31.15	8.63	6.50	1.11	2.08	0.00	0.69	0.00	0.08	85.81	0.57
53215	35.42	30.83	9.01	6.47	1.19	2.05	0.04	0.60	0.00	0.09	85.71	0.58
53216	35.35	30.95	9.32	6.32	1.14	2.00	0.03	0.51	0.00	0.05	85.67	0.60
53217	35.44	30.80	9.13	6.41	1.01	2.17	0.02	0.43	0.00	0.00	85.42	0.59
53218	35.36	30.32	9.11	6.67	1.00	2.10	0.02	0.72	0.00	0.00	85.31	0.58
53219	35.62	30.39	9.15	6.69	1.03	2.09	0.02	0.70	0.00	0.00	85.69	0.58
53220	35.66	31.35	8.63	6.63	0.91	2.13	0.00	0.46	0.00	0.00	85.76	0.57
53221	35.91	31.81	8.56	6.44	0.80	2.14	0.00	0.36	0.00	0.06	86.08	0.57
53222	35.42	30.30	9.21	6.45	1.03	2.09	0.05	0.81	0.00	0.00	85.36	0.59
53223	35.63	31.11	8.71	6.59	0.79	2.26	0.03	0.25	0.00	0.05	85.42	0.57
53224	35.49	31.10	9.15	6.43	1.01	2.18	0.03	0.41	0.00	0.00	85.81	0.59
53225	35.42	30.87	9.04	6.41	1.09	2.03	0.05	0.81	0.00	0.09	85.80	0.59
53226	35.61	31.10	9.15	6.33	1.17	2.02	0.03	0.69	0.00	0.07	86.16	0.59
53227	35.60	31.90	8.41	6.43	0.73	2.21	0.02	0.15	0.00	0.08	85.53	0.57
53228	35.37	31.04	9.35	6.38	1.20	2.00	0.02	0.67	0.00	0.00	86.03	0.59
53229	35.30	30.92	8.98	6.48	1.04	2.01	0.00	0.67	0.00	0.00	85.40	0.58
53230	35.36	31.24	9.20	6.34	0.99	2.08	0.05	0.38	0.00	0.05	85.69	0.59
53231	35.45	31.17	8.78	6.30	1.06	2.09	0.02	0.55	0.00	0.07	85.49	0.58

b

Analys	Samp	Grain	Posn	SiO2	Al2O3	FeO	MgO	CaO	Na2O	K2O	TiO2	Cr2O3	MnO	Total	Fe#
51864	LIC 53	50	RIM	35.54	30.83	7.24	8.19	1.36	2.19	0.02	0.05	0.00	0.00	85.40	0.47
51865	LIC 53	51	CORE	35.49	31.12	7.03	7.96	1.23	2.09	0.02	0.16	0.00	0.00	85.09	0.47
51866	LIC 53	52	RIM	35.42	29.84	9.43	6.96	1.23	2.18	0.03	0.39	0.00	0.00	85.49	0.58
51867	LIC 53	53	CORE	35.35	30.16	9.27	6.85	1.44	1.96	0.04	0.48	0.05	0.00	85.60	0.58
51869	LIC 53	55	CORE	35.62	31.79	8.74	6.23	0.27	2.37	0.00	0.19	0.00	0.00	85.21	0.58
51870	LIC 53	55	CORE	35.17	29.37	10.01	6.59	1.45	1.94	0.02	0.99	0.00	0.00	85.54	0.60
51871	LIC 53	55	RIM	35.11	30.00	9.18	6.77	1.07	2.15	0.03	0.72	0.00	0.00	85.03	0.58
51872	LIC 53	56	CORE	35.31	30.15	10.06	6.32	0.78	2.32	0.04	0.71	0.00	0.00	85.69	0.61
51873	LIC 53	57	RIM	34.76	28.98	10.21	6.68	1.78	1.59	0.06	1.04	0.00	0.00	85.09	0.60
51874	LIC 53	58	CORE	35.83	32.90	6.34	7.65	1.04	1.83	0.00	0.06	0.00	0.00	85.65	0.45
51875	LIC 53	59	RIM	35.37	31.52	7.44	7.64	1.43	1.95	0.02	0.08	0.00	0.06	85.51	0.49
51876	LIC 53	60	CORE	34.87	30.48	10.39	5.83	1.16	2.05	0.02	0.45	0.09	0.00	85.34	0.64
51877	LIC 53	61	RIM	35.09	30.47	10.53	5.63	1.09	2.09	0.02	0.53	0.00	0.09	85.53	0.65
51878	LIC 53	62	RIM	35.21	30.49	9.64	6.44	1.32	2.01	0.02	0.75	0.00	0.06	85.94	0.60
51879	LIC 53	63	CORE	35.68	31.48	8.53	6.55	0.91	2.18	0.03	0.22	0.00	0.00	85.58	0.57
51880	LIC 53	64	RIM	35.44	30.85	9.53	6.41	1.00	2.24	0.03	0.50	0.00	0.00	86.00	0.60
51881	LIC 53	65	CORE	35.19	30.32	9.14	6.44	1.03	2.20	0.02	0.40	0.00	0.06	84.80	0.59
51882	LIC 53	66	CORE	35.64	30.30	8.90	6.91	1.07	2.25	0.03	0.39	0.43	0.00	85.91	0.56
51883	LIC 53	67	RIM	35.38	30.22	8.78	6.74	0.87	2.27	0.04	0.40	0.44	0.00	85.14	0.57
51884	LIC 53	68	CORE	35.03	29.24	10.97	6.07	1.24	2.20	0.04	0.63	0.00	0.00	85.42	0.64
51886	LIC 53	70	CORE	35.44	30.21	8.96	6.56	1.32	1.98	0.02	0.63	0.06	0.00	85.19	0.58
51887	LIC 53	70	RIM	35.47	29.38	9.35	6.75	1.10	2.18	0.03	0.84	0.06	0.00	85.14	0.58
51888	LIC 53	71	CORE	35.49	30.60	9.11	6.48	0.95	2.13	0.00	0.40	0.00	0.04	85.21	0.58
51889	LIC 53	71	RIM	35.56	30.94	9.24	6.12	0.66	2.13	0.00	0.28	0.00	0.00	84.94	0.60
51890	LIC 53	72	CORE	35.44	30.54	8.60	6.82	1.36	2.02	0.03	0.72	0.00	0.00	85.54	0.56
51893	LIC 53	73	RIM	35.28	30.20	10.12	6.08	0.89	2.11	0.00	0.57	0.00	0.00	85.26	0.62
51895	LIC 53	74	RIM	35.18	31.27	8.09	6.61	0.95	1.99	0.02	0.61	0.05	0.00	84.76	0.55
51896	LIC 53	75	CORE	34.90	30.72	8.63	6.48	0.78	2.24	0.02	0.14	0.00	0.00	83.91	0.57
51897	LIC 53	75	RIM	35.60	31.16	8.69	6.44	0.83	2.16	0.00	0.32	0.00	0.00	85.20	0.57
51898	LIC 53	76	CORE	35.01	30.37	9.37	6.43	1.07	2.11	0.03	0.45	0.06	0.00	84.90	0.59
51899	LIC 53	76	RIM	35.48	30.51	9.15	6.41	0.91	2.27	0.02	0.27	0.10	0.00	85.11	0.59
51900	LIC 53	77	CORE	35.02	28.84	12.64	5.54	0.40	2.58	0.04	0.43	0.00	0.00	85.49	0.70
51901	LIC 53	77	RIM	35.30	31.03	10.26	5.45	0.57	2.30	0.02	0.20	0.00	0.00	85.12	0.65
51902	LIC 53	78	CORE	35.30	30.17	9.81	6.26	1.15	2.16	0.00	0.59	0.00	0.00	85.44	0.61
51903	LIC 53	78	RIM	35.13	29.56	9.89	6.21	0.98	2.05	0.00	1.11	0.05	0.00	84.98	0.61
51904	LIC 53	79	CORE	35.66	31.38	8.51	6.48	0.66	2.26	0.00	0.49	0.00	0.00	85.44	0.57
51906	LIC 53	80	CORE	35.72	30.05	8.49	6.77	1.29	1.99	0.00	0.56	0.00	0.07	84.93	0.56
51908	LIC 53	81	CORE	35.37	30.31	9.52	6.64	1.06	2.17	0.02	0.48	0.00	0.07	85.64	0.59
51909	LIC 53	81	RIM	35.51	30.66	9.02	6.48	0.96	2.14	0.03	0.37	0.00	0.06	85.24	0.58
51910	LIC 53	82	CORE	35.41	30.26	8.97	6.65	1.06	2.11	0.02	0.54	0.09	0.00	85.11	0.57
51911	LIC 53	82	RIM	35.14	29.76	9.62	6.70	1.18	2.12	0.02	0.50	0.00	0.00	85.05	0.59
51912	LIC 53	82	CORE	35.22	28.55	11.26	5.95	1.74	2.10	0.02	1.43	0.05	0.07	86.40	0.65
51913	LIC 53	82	RIM	35.44	28.99	11.20	6.19	1.33	2.11	0.02	0.56	0.00	0.08	85.92	0.64
51914	LIC 53	84	CORE	35.64	30.42	7.81	7.99	1.91	1.58	0.02	0.45	0.05	0.00	85.87	0.49
51915	LIC 53	84	RIM	35.47	30.66	6.66	8.08	1.52	1.88	0.02	0.23	0.55	0.00	85.08	0.45
51918	LIC 53	85	CORE	35.62	28.71	12.61	6.06	1.28	2.09	0.03	0.44	0.00	0.00	86.83	0.68
52073	LIC 53	87	CORE	35.40	28.99	10.91	6.18	1.39	2.14	0.04	1.01	0.11	0.00	86.18	0.64
52074	LIC 53	87	RIM	36.14	27.96	11.45	5.71	1.01	1.97	0.05	1.88	0.13	0.00	86.31	0.67
52078	LIC 53	88	CORE	36.03	29.95	9.16	6.70	0.90	2.22	0.02	0.74	0.08	0.00	85.80	0.58
52080	LIC 53	90	CORE	35.46	30.47	8.32	6.94	1.34	1.97	0.03	0.68	0.00	0.06	85.26	0.55
52081	LIC 53	90	RIM	35.36	30.80	8.39	7.23	1.34	2.03	0.03	0.47	0.00	0.11	85.76	0.54
52083	LIC 53	91	CORE	35.41	30.47	9.50	6.64	0.96	2.21	0.02	0.27	0.00	0.07	85.54	0.59
52084	LIC 53	92	CORE	35.22	28.53	12.00	6.34	1.23	2.12	0.03	0.37	0.00	0.09	85.94	0.65
52085	LIC 53	92	RIM	35.22	28.95	11.15	6.37	0.99	2.32	0.04	0.27	0.00	0.05	85.36	0.64
52086	LIC 53	93	CORE	35.43	29.01	10.65	6.73	1.12	2.24	0.05	0.50	0.00	0.07	85.79	0.61
52087	LIC 53	93	RIM	35.22	28.09	11.22	6.78	1.14	2.26	0.03	0.75	0.00	0.00	85.50	0.62
52088	LIC 53	94	CORE	35.29	29.56	10.28	6.33	1.14	2.06	0.03	0.57	0.00	0.08	85.34	0.62
52089	LIC 53	94	RIM	35.11	28.48	10.90	6.74	1.10	2.22	0.02	0.86	0.00	0.00	85.43	0.62

b (contd)

Analys	Samp	Grain	Posn	SiO2	Al2O3	FeO	MgO	CaO	Na2O	K2O	TiO2	Cr2O3	MnO	Total	Fe#
52090	LIC 53	95	CORE	34.76	27.57	13.22	5.73	1.24	2.06	0.03	0.91	0.00	0.11	85.63	0.70
52091	LIC 53	95	RIM	34.80	26.85	14.00	5.81	1.29	2.18	0.02	0.76	0.00	0.00	85.71	0.71
52093	LIC 53	96	RIM	35.46	30.36	7.65	7.08	1.66	2.11	0.02	1.20	0.00	0.00	85.54	0.52
52094	LIC 53	97	CORE	35.07	29.01	10.08	6.58	1.34	2.07	0.02	1.39	0.00	0.00	85.56	0.61
52095	LIC 53	97	RIM	35.22	29.52	10.14	6.40	1.26	2.02	0.03	0.91	0.00	0.04	85.54	0.61
52096	LIC 53	98	CORE	35.02	30.68	9.96	5.95	1.17	2.07	0.03	0.60	0.10	0.00	85.58	0.63
52097	LIC 53	98	RIM	35.38	29.91	10.41	6.00	1.15	2.06	0.00	0.78	0.00	0.06	85.75	0.63
52098	LIC 53	99	CORE	35.72	31.16	8.04	6.93	0.24	2.39	0.02	0.31	0.00	0.00	84.80	0.54
52099	LIC 53	99	RIM	35.61	30.70	7.98	7.54	0.49	2.54	0.03	0.33	0.00	0.05	85.25	0.51
52101	LIC 53	100	RIM	35.01	29.53	10.69	6.25	1.20	2.05	0.02	0.86	0.05	0.07	85.73	0.63
52102	LIC 53	101	CORE	35.14	30.41	9.33	6.64	0.96	2.16	0.00	0.23	0.00	0.07	84.94	0.58
52103	LIC 53	101	RIM	35.11	29.26	10.64	6.58	1.12	2.20	0.03	0.48	0.00	0.00	85.42	0.62
52105	LIC 53	102	RIM	34.89	28.63	11.30	6.61	1.05	2.18	0.04	0.49	0.00	0.00	85.21	0.63
52106	LIC 53	103	CORE	35.37	31.72	8.39	6.48	0.94	2.26	0.02	0.26	0.00	0.05	85.48	0.56
52107	LIC 53	103	RIM	35.37	31.93	8.02	6.53	0.70	2.36	0.02	0.08	0.00	0.05	85.06	0.55
52108	LIC 53	104	CORE	35.16	30.76	8.20	7.14	1.28	1.92	0.02	0.60	0.00	0.00	85.08	0.53
52109	LIC 53	104	RIM	35.45	30.09	8.52	7.37	1.23	2.14	0.00	0.65	0.00	0.04	85.50	0.54
52112	LIC 53	106	CORE	35.55	31.06	8.93	6.23	0.76	2.09	0.02	0.24	0.00	0.07	84.96	0.59
52113	LIC 53	106	RIM	35.34	31.34	8.78	6.55	0.85	2.23	0.04	0.29	0.00	0.00	85.42	0.57
52114	LIC 53	107	CORE	35.40	31.68	8.01	6.52	0.73	2.22	0.02	0.18	0.05	0.00	84.81	0.55
52116	LIC 53	108	CORE	36.33	29.48	10.35	6.00	1.07	2.11	0.02	0.28	0.05	0.08	85.77	0.63
52117	LIC 53	108	RIM	35.22	29.90	10.09	6.35	1.25	2.10	0.02	0.77	0.05	0.00	85.76	0.61
52118	LIC 53	109	CORE	34.95	29.40	9.79	6.60	1.47	1.89	0.02	1.38	0.00	0.06	85.55	0.60
52120	LIC 53	110	CORE	35.37	31.17	8.56	6.83	1.00	2.20	0.02	0.13	0.00	0.00	85.28	0.56
52121	LIC 53	110	RIM	35.25	29.78	9.90	6.73	1.25	2.16	0.03	0.45	0.00	0.05	85.59	0.60
52122	LIC 53	111	CORE	34.79	28.32	12.01	5.90	1.02	2.18	0.03	1.23	0.08	0.00	85.57	0.67
52123	LIC 53	111	RIM	35.34	29.78	10.53	6.36	0.82	2.33	0.03	0.23	0.00	0.05	85.46	0.62
52124	LIC 53	112	CORE	34.97	31.06	7.68	7.17	1.27	1.90	0.02	0.77	0.05	0.00	84.88	0.52
52125	LIC 53	112	RIM	35.09	31.13	7.66	7.34	1.27	1.88	0.00	0.73	0.05	0.00	85.16	0.51
52126	LIC 58	1	CORE	33.99	33.23	8.35	6.34	2.12	1.43	0.02	0.72	0.11	0.00	86.29	0.57
52127	LIC 58	1	RIM	34.78	32.12	8.29	6.66	1.75	1.60	0.02	0.80	0.10	0.00	86.14	0.55
52129	LIC 58	2	RIM	35.64	31.04	9.49	6.56	1.08	2.10	0.00	0.51	0.00	0.00	86.40	0.59
52130	LIC 58	3	CORE	35.46	29.95	9.52	6.75	1.40	2.03	0.00	1.28	0.10	0.10	86.58	0.59
52131	LIC 58	3	RIM	35.66	30.79	7.99	7.35	1.63	1.60	0.00	0.75	0.00	0.06	85.82	0.52
52132	LIC 58	4	CORE	35.98	30.55	8.94	6.22	0.97	2.17	0.03	0.63	0.00	0.00	85.49	0.59
52133	LIC 58	4	RIM	35.20	30.52	9.61	6.72	1.35	2.06	0.03	0.64	0.00	0.05	86.19	0.59
52134	LIC 58	5	CORE	36.63	30.95	9.70	6.19	0.99	2.21	0.00	0.32	0.00	0.00	86.99	0.61
52136	LIC 58	6	CORE	35.10	28.95	12.27	6.18	0.89	2.42	0.00	0.49	0.00	0.00	86.30	0.67
52138	LIC 58	7	CORE	35.05	26.80	13.14	6.53	0.96	2.30	0.03	0.88	0.00	0.00	85.69	0.67
52139	LIC 58	7	RIM	35.32	27.08	11.92	6.91	1.00	2.34	0.04	0.96	0.00	0.06	85.62	0.63
52140	LIC 58	8	CORE	35.69	29.44	10.41	6.63	1.13	2.19	0.05	0.63	0.00	0.05	86.22	0.61
52141	LIC 58	8	RIM	35.60	30.59	9.67	6.68	1.07	2.24	0.03	0.47	0.00	0.00	86.34	0.59
52142	LIC 58	9	CORE	36.04	31.40	8.44	6.94	0.91	2.26	0.02	0.36	0.07	0.06	86.50	0.55
52143	LIC 58	9	RIM	35.72	30.44	8.49	7.06	1.06	2.14	0.00	0.70	0.07	0.05	85.73	0.55
52144	LIC 58	10	CORE	35.63	30.30	9.57	6.69	1.42	1.93	0.00	0.72	0.00	0.00	86.27	0.59
52145	LIC 58	10	RIM	35.71	30.15	9.81	6.72	1.36	2.06	0.00	0.79	0.05	0.00	86.64	0.59
52147	LIC 58	11	RIM	35.58	30.73	8.60	6.99	1.06	2.13	0.00	0.76	0.06	0.00	85.90	0.55
52148	LIC 58	12	CORE	35.61	29.52	10.41	6.65	1.46	2.02	0.00	0.38	0.07	0.00	86.12	0.61
52150	LIC 58	13	CORE	34.83	25.95	15.71	6.14	0.64	2.39	0.07	0.24	0.00	0.00	85.97	0.72
52151	LIC 58	14	CORE	35.75	31.63	8.30	6.92	1.20	2.11	0.03	0.50	0.13	0.06	86.62	0.55
52152	LIC 58	15	RIM	35.89	31.12	8.43	6.89	1.13	2.20	0.02	0.52	0.06	0.00	86.25	0.55
52154	LIC 58	16	RIM	35.84	30.46	9.35	6.70	1.22	2.13	0.02	0.66	0.00	0.05	86.42	0.58
52155	LIC 58	17	CORE	35.37	29.16	10.10	6.79	1.50	1.99	0.03	1.35	0.00	0.00	86.31	0.60
52157	LIC 58	18	CORE	35.73	30.99	9.54	6.43	0.99	2.16	0.00	0.47	0.00	0.00	86.32	0.60
52159	LIC 58	19	CORE	36.07	31.13	6.31	8.29	1.16	2.21	0.00	0.68	0.08	0.06	85.98	0.43
52160	LIC 58	19	RIM	35.99	30.94	6.20	8.56	1.14	2.08	0.00	0.93	0.00	0.00	85.84	0.42
52161	LIC 58	20	CORE	35.71	30.75	10.63	5.68	1.04	2.10	0.00	0.47	0.05	0.00	86.42	0.65
52162	LIC 58	20	RIM	35.68	30.81	9.80	6.12	0.80	2.24	0.03	0.25	0.00	0.15	85.89	0.62

b(contd)

Analys	Samp	Grain	Posn	SiO2	Al2O3	FeO	MgO	CaO	Na2O	K2O	TiO2	Cr2O3	MnO	Total	Fe#
52164	LIC 58	21	RIM	35.82	31.15	8.84	6.61	0.93	2.18	0.00	0.37	0.05	0.00	85.95	0.57
52165	LIC 58	22	CORE	35.42	28.62	11.06	6.97	1.01	2.37	0.00	0.62	0.00	0.00	86.05	0.61
52166	LIC 58	22	RIM	35.70	30.09	9.57	7.08	0.98	2.41	0.04	0.40	0.00	0.00	86.26	0.57
52167	LIC 58	23	CORE	35.48	30.86	8.91	6.63	1.15	2.10	0.03	0.56	0.16	0.00	85.88	0.57
52168	LIC 58	23	RIM	35.80	31.79	8.78	6.41	0.82	2.19	0.00	0.24	0.08	0.00	86.12	0.58
52169	LIC 58	24	CORE	35.86	31.46	8.60	6.83	0.95	2.23	0.03	0.22	0.00	0.07	86.24	0.56
52170	LIC 58	24	RIM	35.52	30.80	9.28	6.67	1.28	2.05	0.02	0.67	0.00	0.00	86.28	0.58
52172	LIC 58	25	RIM	34.98	26.15	14.27	6.33	1.19	2.14	0.04	1.36	0.00	0.00	86.46	0.69
52173	LIC 58	26	CORE	36.00	30.85	8.81	6.95	0.89	2.31	0.02	0.50	0.12	0.00	86.45	0.56
52174	LIC 58	26	RIM	35.76	30.13	9.01	7.44	0.90	2.34	0.02	0.59	0.07	0.00	86.25	0.55
52176	LIC 58	27	RIM	35.53	30.13	9.13	7.03	1.25	2.04	0.03	0.74	0.22	0.09	86.21	0.56
52177	LIC 58	28	CORE	35.51	30.27	9.19	6.86	1.31	2.03	0.02	0.80	0.28	0.06	86.32	0.57
52178	LIC 58	28	RIM	35.93	30.18	8.71	7.00	1.27	2.10	0.04	0.71	0.35	0.06	86.36	0.55
52180	LIC 58	29	RIM	35.67	31.07	8.72	6.86	1.15	2.13	0.02	0.40	0.00	0.00	86.03	0.56
52181	LIC 58	30	CORE	36.19	31.21	8.53	6.93	1.08	2.16	0.03	0.34	0.00	0.00	86.47	0.55
52182	LIC 58	30	RIM	35.97	30.70	8.91	6.94	1.20	2.11	0.04	0.77	0.00	0.05	86.69	0.56
52183	LIC 58	31	CORE	35.71	31.10	10.27	5.96	0.83	2.14	0.02	0.18	0.00	0.05	86.25	0.63
52185	LIC 58	32	CORE	36.67	28.60	9.14	7.56	1.91	2.03	0.04	0.80	0.06	0.05	86.85	0.55
52186	LIC 58	33	CORE	35.77	30.49	9.10	6.97	1.00	2.31	0.00	0.50	0.00	0.00	86.13	0.57
52188	LIC 58	61	CORE	35.59	30.55	10.54	6.14	0.94	2.22	0.00	0.63	0.00	0.11	86.72	0.63
52191	LIC 58	62	RIM	35.48	30.12	9.90	6.56	1.04	2.27	0.03	0.54	0.07	0.00	86.01	0.60
52192	LIC 58	63	CORE	35.99	31.30	8.63	6.71	0.93	2.23	0.00	0.32	0.07	0.00	86.17	0.56
52195	LIC 58	64	RIM	35.73	30.61	8.89	6.91	1.15	2.08	0.04	0.62	0.00	0.06	86.09	0.56
52198	LIC 58	66	CORE	35.58	29.71	10.17	6.71	0.72	2.51	0.03	0.39	0.05	0.00	85.86	0.60
52199	LIC 58	66	RIM	35.63	28.29	10.73	7.06	0.69	2.56	0.02	1.15	0.00	0.00	86.13	0.60
52200	LIC 58	67	CORE	36.01	32.42	8.34	6.53	0.79	2.21	0.02	0.17	0.00	0.00	86.50	0.56
52202	LIC 58	67	CORE	36.09	30.35	8.84	7.22	1.41	2.20	0.03	0.63	0.00	0.04	86.81	0.55
52203	LIC 58	67	RIM	35.55	29.54	9.45	7.37	2.34	1.54	0.05	1.00	0.08	0.06	86.97	0.56
52204	LIC 58	68	CORE	35.56	30.07	11.53	5.53	1.29	1.90	0.02	0.66	0.00	0.08	86.64	0.68
52208	LIC 58	70	CORE	35.82	31.32	7.20	7.99	1.68	1.84	0.00	0.26	0.00	0.00	86.11	0.47
52211	LIC 58	71	RIM	35.40	31.80	7.29	7.45	1.63	1.86	0.00	0.64	0.00	0.07	86.13	0.49
52212	LIC 58	72	CORE	36.38	32.34	6.55	7.70	0.93	1.86	0.02	0.33	0.00	0.05	86.15	0.46
52213	LIC 58	72	RIM	36.33	32.46	6.65	7.66	0.75	1.88	0.00	0.22	0.00	0.00	85.96	0.46
52214	LIC 58	73	CORE	35.39	29.59	9.77	6.79	1.45	1.88	0.03	0.97	0.00	0.00	85.86	0.59
52215	LIC 58	73	RIM	35.48	30.37	9.38	6.86	1.31	1.99	0.02	0.63	0.00	0.00	86.02	0.58
52217	LIC 58	74	RIM	35.78	30.67	10.01	6.45	1.15	2.12	0.02	0.56	0.00	0.00	86.75	0.61
52218	LIC 58	75	CORE	35.65	31.54	8.04	7.21	1.31	2.11	0.02	0.39	0.00	0.00	86.27	0.53

APPENDIX 16

Petrography of Coarse Lag

APPENDIX 16

PETROGRAPHY OF COARSE LAG

LOI-03. This consists of two fragments, one is mauvish grey and is rich in goethite, the other is dark grey, has an internally pisolithic structure and is hematite-rich. The goethite-rich fragment is porous and contains numerous layer-silicate relics, probably after smectite. The hematitic fragment has a probable ferruginised saprolite (layer silicate) fabric, which has been extensively blurred by replacement of the goethite by hematite. Most of it consists of structures of secondary hematite and intimately mixed hematite and goethite. The pisolithic structures are joined by a porous, hematite-rich cement.

LOI-04. This consists of four fragments, two are hematite rich and two are rich in ferruginous clay. The hematite-rich fragments consist of several generations of porous, secondary hematite and goethite. Large voids have been filled with a younger goethite with a cusped fabric (Figure 11G). The fragments of ferruginous clay consist of composite fragments, some partly coated in goethite with an internally pisolithic structure, and are set in goethitic clay. Voids and channelways in the cementing clay are lined and cemented with goethite.

LOI-05. Of the three fragments in the section, one is a ferruginised fragment of saprolite. It consists of a spongy mass of goethite set with layer-silicate pseudomorphs. The fabric has been partly dissolved and it is cut by voids and channelways. Another is rich in hematite and consists of iron-cemented pisolitic material. The centres of these pisoliths consist either of massive hematitic goethite or, in turn, consist of micro pisolithic structures. The margins of the fragment shows extensive dehydration cracking, due to conversion of goethite to hematite. The third appears to have been a ferruginised saprolite but it has been extensively etched and dissolved and parts have been filled with spongy goethite and mixed goethite and hematite.

LOI-06. Although the three fragments in the section are dominated by reds and browns rather than by the more usual greys, they are all very different from one another. One consists of subangular fragments of mixed goethite and hematite, with secondary fabrics, set in a mass of quartz shards, cemented by goethitic clay. Some of the goethitic clay shows cusped void-filling structures. There are no visible original fabrics. Both the other fragments contain relics of original fabrics. One consists of several fragments of deeply etched and partly dissolved ferruginised saprolite, set in massive to spongy secondary goethite. Each fragment has a subtly different fabric from its neighbour, though all consist of layer-silicate (clay) pseudomorphs in varied states of preservation. The other is similar though it also shows numerous accordion structures (Figure 11H).

LOI-07. The three fragments that make up this section are very different in appearance. One is deep red, one is yellow-brown and the third is very dark brown to black. The red fragment has a partial cutan of layered goethite and it consists largely of goethitic clay with a rather confused fabric. Parts of this clay have been etched away and the resultant voids and channelways have been lined with goethite. The black fragment consists of massive to spongy, bright goethite and even brighter dehydration-cracked hematite, with no visible primary structures. The yellow fragment consists of spongy, secondary goethite, which has been considerably etched and the voids lined with goethite.

LOI-08. One fragment is of dark quartz, with a few small pockets of goethite and goethitic clay. The other two are ferruginous. One consists of nodules of secondary goethite and hematite, set in spongy goethite and shards of quartz (Figure 11A). The other is saprolitic and consists of poorly preserved clay structures replaced by goethite. This fabric has been severely etched and the resultant voids have been filled with goethitic clay.

LOI-09. Both fragments, one a deep honey-brown and the other mottled red and grey, contain poorly preserved relics of layer silicates, largely replaced by massive goethite and by spongy secondary goethite respectively.

LOI-10. One of the fragments consists entirely of spongy secondary goethite with some small pseudomorphs after fine-grained pyrite (Figure 11F). This specimen is close to the ore subcrop and probably represents the gossan. The other contains some remnants of layer silicate pseudomorphs (Figure 11B) but the remainder is spongy secondary goethite, goethitic clay and dehydration-cracked hematite-goethite, cut by a web of voids and solution channels, many of which are lined with goethite (Figure 11D). There is evidence of several stages of solution, clay-filling and recementing by iron oxides. The third is saprolitic and consists of well-preserved layer silicate pseudomorphs but this is pockmarked with vermiform voids which are lined with a thin layer of colloform goethite.

LOI-11. Of the three fragments, one is red-brown and the others metallic grey. The red-brown fragment consists largely of massive, cracked goethite and hematitic goethite, with a few, very imperfectly preserved

remnants of layer silicate pseudomorphs. Of the two grey fragments, one consists of fragments of massive, secondary, hematitic goethite, set in later phases of hematitic goethite. The other has a similar mineralogy but shows incipient pisolith structures and some accordion structures set in spongy goethite.

LOI-12. Two of the fragments are red-brown and the third is metallic-grey. Both the red-brown fragments consist of goethite and goethitic clay, one being more clay-rich than the other. The more goethite-rich of the two shows some very well-preserved layer silicate fabrics pseudomorphed in goethite. In other parts, the goethite has recrystallised to a secondary fabric containing lozenge-shaped crystals of hematite. In the red fragment there is more clay, less goethite and the hematite occurs in small, lenticular aggregates of granules. The grey fragment is rich in goethite and hematite and shows numerous moderately well- to poorly-preserved layer silicate pseudomorphs and some accordion structures, all set in spongy secondary goethite and hematite.

LOI-13. There are two fragments, one brown, the other grey. The brown fragment, though poorer in goethite and richer in goethitic clay, shows well-preserved original fabrics. The grey fragment shows largely stellate secondary goethite (Figure 11E), possibly after original carbonates, with a hint of preserved layer silicate fabrics.

LOI-14. One fragment shows hematitic goethite stellate structures, with a hint of layer silicate structure. This has been extensively dissolved and is cross cut by numerous channelways. The other is more hematite-rich, has a generally spongy, secondary fabric and contains numerous voids now filled with iron oxides with a cusped fabric. There are a few hints of layer-silicate fabrics. The third fragment is also hematitic but it shows both layer silicate fabrics and accordion structures set in and invaded by massive secondary goethitic hematite.

LOI-71. One fragment is very rich in layer-silicate structures, preserved in hematitic goethite. This fabric is cut and invaded by massive goethitic hematite. Another fragment has a stellate structure with numerous solution channels and incipient pisoliths. The third contains less iron oxides and more clay and shows only secondary structures.

LOI-72. The fragments from this section are more diverse than most, possibly reflecting a geologically more complex area. Although one fragment shows poorly preserved layer silicate structures, it has been intensively dissolved and secondary goethite, with cusped structures has been deposited in the voids. This has been re-dissolved and recemented by massive to spongy hematitic goethite. Another fragment is rich in goethitic clay but it also contains numerous voids which are lined with colloform goethite. The third fragment is very complex and consists of hematitic nodules, with a variety of fabrics, from massive secondary, through internally clastic to internally pisolithic. These are set in a matrix of similar material cemented by goethite.

53>8. It consists of black and dark red-brown nodular fragments, deep honey brown clasts, yellow brown and red-brown clasts and fragments of quartz. The black fragments consist of spongy goethite with a distinct possibly pseudomorphic gneissose fabric. Some show some poorly preserved layer silicate (?smectite) fabrics and a well preserved relic of tourmaline (Figure 11C). The red-brown fragments consist of spongy goethitic clay with small patches of goethite and lozenge-shaped crystals of hematite

58>8. It consists of black, nodular fragments, deep red-brown fragments and yellow brown clasts as well as a few pieces of quartz. Again the nodular black material consists of massive to spongy hematitic goethite, in which are set some layer silicate pseudomorphs, some incipient pisolitic structures. The red-brown fragments consist of goethitic clay with scattered voids, lined with goethite. Some layer silicate relics are preserved in the clay.

53>22 and 58>22. These are similar to the above, showing a similar variety of clast and similar internal fabrics but the material in being finer-grained, is more fragmentary.

53>30 and 58>30. Similar to the above but the proportion of quartz fragments and clay-rich fragments has increased at the expense of the nodular black goethite and hematite-rich material. Only one fragment found which could be gossanous.

53>60 and 58>60. The trend towards more abundant quartz is even more obvious here. Pisolitic structures in these materials are extremely rare.

APPENDIX 17

Power Transforms Applied to Data

(See Appendix 12)

APPENDIX 17

POWER TRANSFORMS APPLIED TO DATA VALUES FOR LAMBDA (λ)

Compnt	Soil	Lag
Si	1	0
Al	1	1
Fe	-0.4	1.5
Mg	0.2	1
Ca	0	-0.4
Ti	-0.3	0.5
Na	0.5	-
K	1	-
P	-0.5	-
S	0.4	-
Ag	0.8	-
As	0	1
Au	0	-0.4
Ba	0	0.5
Bi	0.5	-
Cd	0	-
Ce	0.5	0.7
Co	1.5	-0.5
Cr	-0.3	1.2
Cu	0.2	0.33

Compnt	Soil	Lag
Ga	0.3	1
Ge	1	0.33
In	0.67	-
La	0	1
Mn	-0.3	0
Mo	1.4	1
Nb	1.4	0.67
Ni	-0.5	-0.5
Pb	0.3	0.25
Rb	0.33	1
Sb	0.1	1.4
Sn	0	-
Sr	-0.5	0
V	0	1.5
W	0	0.1
Y	0	0.3
Zn	0.5	-0.2
Zr	-0.5	1.5
pH	1	-

The generalised power transformed value y is calculated from an untransformed x as:-

$$y = (x^{\lambda}-1)/\lambda$$

but where $\lambda = 0$ then:-

$$y = \ln(x)$$

For more detail, refer to Box and Cox (1964) and Grunsky (1991).

APPENDIX 18

Soil Pilot Study and Soil Fractionation Techniques

APPENDIX 18

Soil Pilot Study and Soil Fractionation

Pilot Study

Size fraction analysis of selected samples formed a pilot study to aid the design of the final soil fractionation scheme, described in Section 3. Small soil sub-samples were split from two representative samples for preliminary size fraction analysis. The subsamples were first disaggregated by hand in an agate mortar. They were dry sieved on a six sieve stack without brushing to yield >2000, 2000-710, 710-500, 500-250, 250-142, 142-75 and <75 μm fractions. The <75 μm fraction was shaken with water and allowed to settle for 20 minutes through 100 mm. The clay that remained in suspension (nominally <4 μm fraction) was siphoned off. This clay, and the sedimented residue (4-75 μm), which still contained some clay, were dried by evaporation. Each of these eight fractions was weighed and the percentage yields calculated. All size fractions, except the <4 μm fraction, were repeatedly cleaned ultrasonically in water until the yield of clay was minimal, prior to petrographic study. The resultant preparation scheme for the complete soil sample set is given below.

Soil Sample Preparation and Clay Fractionation

Lumps in each soil sample were broken by hand in an agate mortar until the sample passed a 4 mm screen. Vegetable matter and any large stones were rejected. The sieved soil was coned and split into three parts on a paper sheet. The first part was retained for reference, the second was milled in a case-hardened steel mill and submitted for analysis as a whole. The third was separated into three components, as shown below, and each analysed separately.

The third sub-sample was first wet sieved in nylon and polystyrene by hand. Three size fractions were collected (2000-600, 600-75 and <75 μm). All fractions were shaken with de-ionised water to which a few drops of analytically pure, concentrated NH_4OH had been added to disperse any adhering clay-sized particles. Both the 2000-600 and the 600-75 μm fractions were repeatedly subjected to ultrasonic agitation. The clay-bearing liquid was decanted through a 75 μm screen and added to the <75 μm fraction. After several changes of water and ultrasonic treatment, the clean 710-2000 μm fraction, rich in ferruginous granules, was dried at 95°C and the sandy 75-710 μm fraction was discarded. This rather involved method (Figure A) was necessary to maximise the yield of clay to obtain sufficient for analysis. The clay separation method could have been simplified if a larger soil sample (>3 kg) had been collected (Figure B).

The <75 μm suspension was made up to 3.5 litres with de-ionised water. Analytically pure, concentrated NH_4OH was added dropwise, until a pH of 8.0 (measured by pH meter) was achieved, to disperse the clays. The suspension was allowed to settle for 20 minutes through a depth of 100 mm. At this stage, only particles <9 μm would still be in suspension (Stokes Law). Most of the suspension (>95%) was decanted using a specially constructed PVC siphoning tube. The <75 μm sediment was sedimented again to ensure that most of the clay had been removed and was then dried at 95°C, disaggregated in agate and packaged for analysis.

The clay-rich suspension was acidified dropwise with analytically pure, concentrated HCl to a pH of 4.0, to flocculate and precipitate the clays. Some samples consumed a little more acid than others. In these, the pH tended to stabilise at pH 6-7, apparently due to the buffering effect of minor calcite and, on addition of further HCl, the pH finally decreased to 4.0. After settling for 30 minutes or more, the overlying liquid was withdrawn and the clay floc dried at 95°C and disaggregated by hand in agate prior to analysis. Despite adequate drying, the clays tended to 'ball' and stick to the agate surfaces.

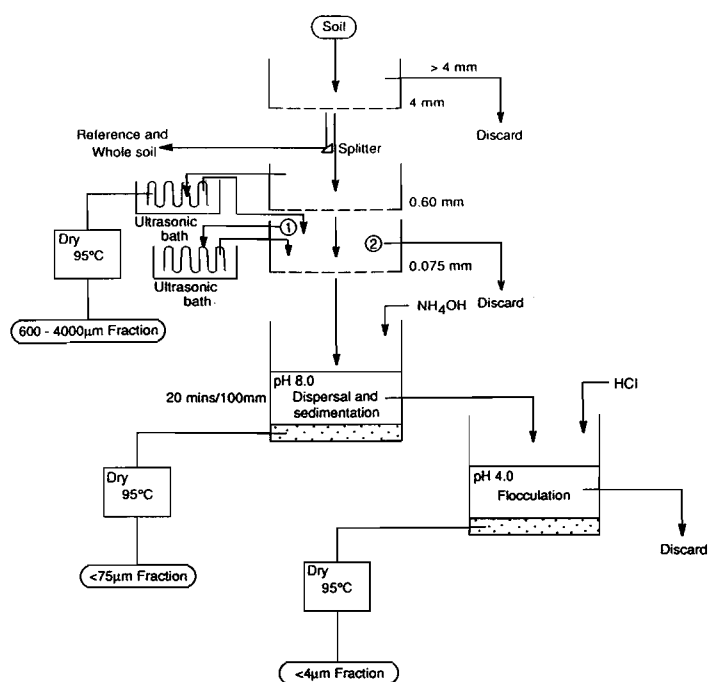


Figure A. Sample preparation flow chart.

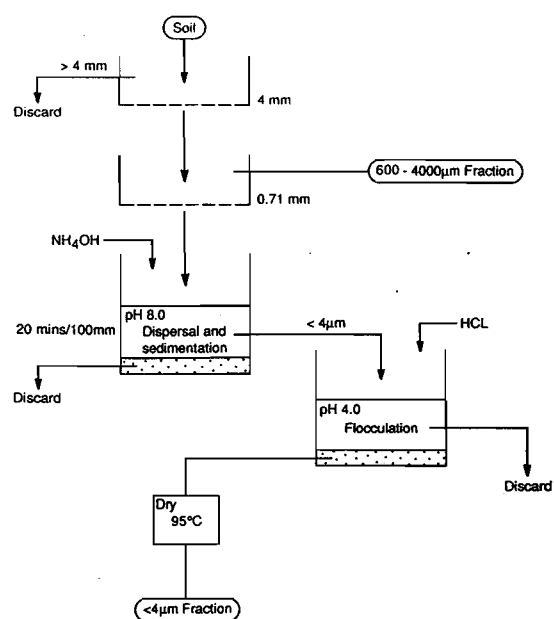


Figure B. Simplified soil fractionation flow chart.

Clay dispersion, using NH_4OH , significantly improved the yield of clay and was considered to be far less likely to contaminate the sample than technical grade polyphosphate (e.g. tetra sodium pyrophosphate), which would normally be used for this purpose. The short exposure (about one hour) of the clays to a pH range of 4.0-8.0, which is not extreme in the natural environment, and the use of pure water and reagents, was not regarded as likely to have significantly modified the clay chemistry. Clay flocculation at pH 4.0 was far quicker and more efficient than centrifugal separation of the dispersed clay.

Clay size separation, using this technique, is approximate. Stokes law assumes spherical particles, laminar flow and requires accurate values for the viscosity of the fluid and the densities of both fluid and particles. Clay particles are platelike and the clays contain an appreciable component of attached iron oxides, so varying their densities, fluid dynamics and hence settling velocities. Work by Robertson (1990) on similar soil clay separations from Beasley Creek showed that the clay fraction is nominally $<4\ \mu\text{m}$ (i.e. $>95\%$ are $<4\ \mu\text{m}$).

APPENDIX 19

Total Au and Iodide Extractable Au Data

**SOIL SAMPLES
TOTAL AND IODIDE EXTRACTABLE GOLD
(in ppb)**

Sample Number	Gold Total	Gold Extractable
08-1565	36	4
08-1566	9	4
08-1567	29	14
08-1568	22	6
08-1569	226	50
08-1570	68	26
08-1571	223	75
08-1572	360	131
08-1573	59	20
08-1574	41	12
08-1575	49	14
08-1576	32	10
08-1577	5	2
08-1578	9	1

APPENDIX 20

Step-scan Across Tourmaline Grain - Data

**STEP SCAN ACROSS SINGLE TOURMALINE GRAIN
TO INVESTIGATE ZONING**

Pos	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	Fe#	Total
1.00	2.60	7.32	30.32	35.42	0.04	0.49	0.25	0.00	8.03	0.52	84.47
2.00	2.56	7.44	30.79	35.28	0.02	0.61	0.26	0.00	7.78	0.51	84.73
3.00	2.42	7.11	30.80	35.37	0.02	0.34	0.69	0.00	7.92	0.53	84.67
4.00	2.43	7.11	29.88	35.26	0.02	0.37	1.43	0.00	8.41	0.54	84.92
5.00	2.39	7.00	31.24	35.52	0.00	0.25	0.28	0.00	7.93	0.53	84.60
6.00	2.40	7.01	31.07	35.39	0.02	0.24	0.32	0.05	8.04	0.53	84.55
7.00	2.39	7.09	31.27	35.88	0.00	0.22	0.18	0.00	7.80	0.52	84.84
8.00	2.48	7.09	31.39	35.83	0.02	0.19	0.13	0.00	8.17	0.54	85.29
9.00	2.36	7.20	31.43	35.62	0.00	0.23	0.12	0.00	7.55	0.51	84.52
10.00	2.36	7.14	31.37	35.65	0.00	0.21	0.14	0.00	7.38	0.51	84.25
11.00	2.48	7.09	31.57	35.83	0.00	0.18	0.14	0.00	7.38	0.51	84.68
12.00	2.52	7.35	30.07	35.44	0.00	0.61	0.47	0.00	8.23	0.53	84.70
13.00	2.47	7.31	30.43	35.43	0.02	0.61	0.49	0.00	8.25	0.53	85.01
14.00	2.49	7.39	28.75	35.19	0.03	0.76	1.36	0.00	9.04	0.55	85.00
15.00	2.59	7.42	31.51	35.83	0.00	0.51	0.09	0.05	7.20	0.49	85.19
16.00	2.50	7.17	31.07	35.45	0.03	0.48	0.17	0.00	7.73	0.52	84.60
Mean	2.47	7.20	30.81	35.52	0.01	0.39	0.41	0.01	7.93	0.52	84.75
Std Dev	0.08	0.15	0.76	0.22	0.01	0.19	0.42	0.02	0.45	0.01	0.27

APPENDIX 21

Geochemical Data Disc - DOS Format

Type README.DOC for contents and formats