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No: 825, Corporate Site No: 23001.

QC CERTIFICATE AD19011061

Project: Thomas Creek

This report is for 3 Soil samples submitted to our lab in Adelaide, SA, Australia on
16-JAN-2019.

The following have access to data associated with this certificate:

ROBERT REID

ANDY RUST

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Plus Appendix Pages
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SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
PUL-32	Pulverize 1000g to 85% < 75 um
LEV-01	Waste Disposal Levy
SCR-41	Screen to -180um and save both

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Au-ICP21	Au 30g FA ICP-AES Finish	ICP-AES
ME-MS61	48 element four acid ICP-MS	

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:

Cameron Brosnan, Laboratory Manager, Perth



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QC CERTIFICATE OF ANALYSIS AD19011061

Sample Description	Method Analyte Units LOD	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01	ME-MS61 Ca % 0.01	ME-MS61 Cd ppm 0.02	ME-MS61 Ce ppm 0.01	ME-MS61 Co ppm 0.1	ME-MS61 Cr ppm 1	ME-MS61 Cs ppm 0.05	ME-MS61 Cu ppm 0.2	ME-MS61 Fe % 0.01	ME-MS61 Ga ppm 0.05
STANDARDS																
AMIS0354																
Target Range - Lower Bound																
Upper Bound																
GBM908-10		2.76	7.39	61.0	1140	1.62	1.15	3.85	1.68	112.5	27.6	139	3.84	3640	5.65	22.2
Target Range - Lower Bound		2.60	6.40	50.2	930	1.27	1.12	3.33	1.53	99.0	24.0	125	3.44	3350	4.98	18.65
Upper Bound		3.20	7.84	61.8	1280	1.66	1.39	4.10	1.91	121.0	29.6	155	4.32	3850	6.10	22.9
GBM915-8		5.94	15.60	1860	30	0.99	8.65	0.04	0.08	6.16	1080	147	0.19	5710	16.80	55.2
Target Range - Lower Bound		5.84	13.80	1685	<10	0.83	7.44	0.02	0.03	8.85	975	137	0.09	5480	15.70	52.2
Upper Bound		7.16	16.90	2060	50	1.13	9.12	0.06	0.11	10.85	1190	169	0.31	6310	19.20	63.9
GPP-14																
GPP-14																
Target Range - Lower Bound																
Upper Bound																
JK-17																
Target Range - Lower Bound																
Upper Bound																
MRGeo08		4.12	7.85	31.7	1110	3.51	0.70	2.68	2.08	78.0	20.0	92	12.50	620	3.96	19.05
Target Range - Lower Bound		4.00	6.64	29.5	920	2.98	0.60	2.35	2.00	66.2	17.7	81	11.20	587	3.55	17.50
Upper Bound		4.92	8.14	36.5	1270	3.76	0.76	2.90	2.48	81.0	21.9	102	13.80	675	4.37	21.5
OREAS 24b		0.11	8.08	8.9	750	2.82	0.62	1.09	0.04	91.6	16.7	126	11.10	38.7	4.43	21.5
Target Range - Lower Bound		0.05	7.02	7.3	600	2.25	0.60	0.94	<0.02	76.8	14.3	105	9.58	35.1	3.94	18.05
Upper Bound		0.09	8.60	9.4	830	2.86	0.76	1.18	0.09	93.8	17.8	131	11.80	40.9	4.84	22.2
PK03																
Target Range - Lower Bound																
Upper Bound																
PMP-18																
Target Range - Lower Bound																
Upper Bound																



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QC CERTIFICATE OF ANALYSIS AD19011061

Sample Description	Method Analyte Units LOD	ME-MS61 Ge ppm 0.05	ME-MS61 Hf ppm 0.1	ME-MS61 In ppm 0.005	ME-MS61 K % 0.01	ME-MS61 La ppm 0.5	ME-MS61 Li ppm 0.2	ME-MS61 Mg % 0.01	ME-MS61 Mn ppm 5	ME-MS61 Mo ppm 0.05	ME-MS61 Na % 0.01	ME-MS61 Nb ppm 0.1	ME-MS61 Ni ppm 0.2	ME-MS61 P ppm 10	ME-MS61 Pb ppm 0.5	ME-MS61 Rb ppm 0.1
STANDARDS																
AMIS0354																
Target Range - Lower Bound																
Upper Bound																
GBM908-10		0.16	3.8	0.074	2.15	55.1	11.6	1.81	811	64.9	2.22	10.9	2240	950	2090	178.5
Target Range - Lower Bound		0.13	3.3	0.064	1.87	49.0	9.8	1.61	715	57.9	1.93	9.5	2020	880	1845	153.0
Upper Bound		0.35	4.3	0.092	2.31	61.0	12.4	1.99	885	70.9	2.38	11.9	2470	1100	2250	187.0
GBM915-8		0.51	7.8	0.314	0.09	1.0	6.0	0.03	413	5.22	0.02	26.8	4040	160	40.0	4.5
Target Range - Lower Bound		0.38	7.2	0.292	0.07	<0.5	4.9	<0.01	379	5.04	<0.01	24.2	3830	110	37.3	4.6
Upper Bound		0.63	9.0	0.368	0.11	2.7	6.5	0.05	475	6.27	0.04	29.8	4690	170	46.7	5.8
GPP-14																
GPP-14																
Target Range - Lower Bound																
Upper Bound																
JK-17																
Target Range - Lower Bound																
Upper Bound																
MRGeo08		0.13	3.0	0.169	3.16	37.2	36.2	1.33	568	14.35	2.00	20.3	690	1030	1075	207
Target Range - Lower Bound		<0.05	2.8	0.155	2.79	31.1	29.5	1.17	497	13.65	1.76	19.0	622	930	971	173.5
Upper Bound		0.27	3.6	0.201	3.43	39.1	36.5	1.45	619	16.75	2.18	23.4	760	1160	1185	212
OREAS 24b		0.17	3.9	0.074	2.85	44.4	58.9	1.58	453	3.73	0.84	14.8	62.8	690	22.7	176.0
Target Range - Lower Bound		<0.05	3.4	0.063	2.52	37.7	48.4	1.39	391	3.46	0.70	13.0	53.8	610	20.3	147.5
Upper Bound		0.26	4.4	0.091	3.10	47.1	59.6	1.72	489	4.34	0.88	16.2	66.2	770	25.9	180.5
PK03																
Target Range - Lower Bound																
Upper Bound																
PMP-18																
Target Range - Lower Bound																
Upper Bound																



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QC CERTIFICATE OF ANALYSIS AD19011061

Sample Description	Method Analyte Units LOD	ME-MS61 Re ppm 0.002	ME-MS61 S % 0.01	ME-MS61 Sb ppm 0.05	ME-MS61 Sc ppm 0.1	ME-MS61 Se ppm 1	ME-MS61 Sn ppm 0.2	ME-MS61 Sr ppm 0.2	ME-MS61 Ta ppm 0.05	ME-MS61 Te ppm 0.05	ME-MS61 Th ppm 0.01	ME-MS61 Ti % 0.005	ME-MS61 Tl ppm 0.02	ME-MS61 U ppm 0.1	ME-MS61 V ppm 1	ME-MS61 W ppm 0.1
STANDARDS																
AMIS0354																
Target Range - Lower Bound																
Upper Bound																
GBM908-10		<0.002	0.38	1.70	19.4	2	3.0	302	0.79	0.06	19.35	0.660	1.24	2.2	142	3.0
Target Range - Lower Bound		<0.002	0.33	1.40	17.0	<1	2.7	258	0.68	<0.05	16.55	0.591	1.00	2.0	123	2.9
Upper Bound		0.006	0.43	2.01	21.0	3	3.9	316	0.97	0.16	20.3	0.733	1.40	2.6	153	4.1
GBM915-8		<0.002	0.74	11.25	16.7	25	7.2	5.5	2.70	19.25	56.6	1.075	0.08	8.2	501	1.2
Target Range - Lower Bound		<0.002	0.67	9.98	15.9	23	6.8	5.7	2.57	17.35	58.3	0.972	0.03	7.6	472	0.9
Upper Bound		0.004	0.84	13.60	19.7	31	8.8	7.4	3.25	21.3	71.3	1.200	0.13	9.5	580	1.5
GPP-14																
GPP-14																
Target Range - Lower Bound																
Upper Bound																
JK-17																
Target Range - Lower Bound																
Upper Bound																
MRGeo08		0.008	0.30	4.31	12.7	2	3.6	311	1.48	<0.05	21.4	0.495	1.04	5.4	111	4.4
Target Range - Lower Bound		0.005	0.27	3.89	11.1	<1	3.5	277	1.39	<0.05	17.90	0.443	0.89	4.9	97	4.1
Upper Bound		0.013	0.35	5.39	13.7	4	4.7	339	1.81	0.14	21.9	0.553	1.25	6.2	121	5.8
OREAS 24b		<0.002	0.20	0.93	16.2	1	3.9	129.5	1.12	0.05	17.45	0.454	0.85	2.9	109	3.3
Target Range - Lower Bound		<0.002	0.17	0.76	13.7	<1	3.6	111.5	0.99	<0.05	14.75	0.387	0.71	2.7	96	3.0
Upper Bound		0.006	0.23	1.15	16.9	3	4.9	136.5	1.33	0.10	18.05	0.484	1.01	3.5	120	4.3
PK03																
Target Range - Lower Bound																
Upper Bound																
PMP-18																
Target Range - Lower Bound																
Upper Bound																



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QC CERTIFICATE OF ANALYSIS AD19011061

Sample Description	Method Analyte Units LOD	ME-MS61 Y ppm 0.1	ME-MS61 Zn ppm 2	ME-MS61 Zr ppm 0.5	Au-ICP21 Au ppm 0.001
STANDARDS					
AMIS0354					0.736
Target Range - Lower Bound					0.666
Upper Bound					0.754
GBM908-10		37.7	1080	152.0	
Target Range - Lower Bound		35.2	939	117.5	
Upper Bound		43.2	1150	160.5	
GBM915-8		1.0	21	258	
Target Range - Lower Bound		1.0	20	212	
Upper Bound		1.6	30	288	
GPP-14					0.929
GPP-14					0.904
Target Range - Lower Bound					0.853
Upper Bound					0.965
JK-17					2.00
Target Range - Lower Bound					1.875
Upper Bound					2.12
MRGeo08		26.3	803	104.0	
Target Range - Lower Bound		23.8	722	92.2	
Upper Bound		29.3	886	126.0	
OREAS 24b		22.4	110	140.5	
Target Range - Lower Bound		18.3	93	113.5	
Upper Bound		22.5	118	154.5	
PK03					5.10
Target Range - Lower Bound					4.73
Upper Bound					5.34
PMP-18					0.309
Target Range - Lower Bound					0.289
Upper Bound					0.327



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Sample Description	Method Analyte Units LOD	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01	ME-MS61 Ca % 0.01	ME-MS61 Cd ppm 0.02	ME-MS61 Ce ppm 0.01	ME-MS61 Co ppm 0.1	ME-MS61 Cr ppm 1	ME-MS61 Cs ppm 0.05	ME-MS61 Cu ppm 0.2	ME-MS61 Fe % 0.01	ME-MS61 Ga ppm 0.05
BLANKS																
BLANK																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK		<0.01	<0.01	0.4	<10	<0.05	<0.01	<0.01	<0.02	<0.01	<0.1	<1	<0.05	0.2	<0.01	0.05
Target Range - Lower Bound		<0.01	<0.01	<0.2	<10	<0.05	<0.01	<0.01	<0.02	<0.01	<0.1	<1	<0.05	<0.2	<0.01	<0.05
Upper Bound		0.02	0.02	0.4	20	0.10	0.02	0.02	0.04	0.02	0.2	2	0.10	0.4	0.02	0.10
DUPLICATES																
TC412																
DUP																
Target Range - Lower Bound																
Upper Bound																
TCS015		0.05	4.90	2.3	160	0.37	0.06	0.56	<0.02	13.40	2.3	102	0.67	20.1	1.16	6.72
DUP		0.07	4.97	2.6	160	0.38	0.05	0.58	<0.02	14.45	2.4	101	0.67	20.9	1.18	7.00
Target Range - Lower Bound		0.05	4.68	2.1	140	0.31	0.04	0.53	<0.02	13.20	2.1	95	0.59	19.6	1.10	6.47
Upper Bound		0.07	5.19	2.8	180	0.44	0.07	0.61	0.04	14.65	2.6	108	0.75	21.4	1.24	7.25
ORIGINAL		0.12	7.91	12.8	100	2.99	2.70	3.53	0.14	28.6	142.0	27	1.45	55.0	11.65	22.1
DUP		0.12	7.57	12.2	100	2.97	2.70	3.36	0.14	28.2	136.0	26	1.35	53.9	11.20	21.5
Target Range - Lower Bound		0.10	7.34	11.7	80	2.78	2.56	3.26	0.11	27.0	132.0	24	1.28	52.3	10.85	20.7
Upper Bound		0.14	8.14	13.3	120	3.18	2.85	3.63	0.17	29.8	146.0	29	1.52	56.6	12.00	22.9
ORIGINAL																
DUP																
Target Range - Lower Bound																
Upper Bound																
ORIGINAL																
DUP																
Target Range - Lower Bound																
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Method Analyte Units LOD	ME-MS61 Ge ppm 0.05	ME-MS61 Hf ppm 0.1	ME-MS61 In ppm 0.005	ME-MS61 K % 0.01	ME-MS61 La ppm 0.5	ME-MS61 Li ppm 0.2	ME-MS61 Mg % 0.01	ME-MS61 Mn ppm 5	ME-MS61 Mo ppm 0.05	ME-MS61 Na % 0.01	ME-MS61 Nb ppm 0.1	ME-MS61 Ni ppm 0.2	ME-MS61 P ppm 10	ME-MS61 Pb ppm 0.5	ME-MS61 Rb ppm 0.1
Sample Description															
BLANK	BLANKS														
BLANK															
Target Range - Lower Bound															
Upper Bound															
BLANK	0.08	<0.1	<0.005	<0.01	<0.5	<0.2	<0.01	<5	<0.05	<0.01	<0.1	<0.2	<10	<0.5	<0.1
Target Range - Lower Bound	<0.05	<0.1	<0.005	<0.01	<0.5	<0.2	<0.01	<5	<0.05	<0.01	<0.1	<0.2	<10	<0.5	<0.1
Upper Bound	0.10	0.2	0.010	0.02	1.0	0.4	0.02	10	0.10	0.02	0.2	0.4	20	1.0	0.2
TC412	DUPLICATES														
DUP															
Target Range - Lower Bound															
Upper Bound															
TCS015	0.09	11.6	0.013	0.49	6.4	6.2	0.30	298	0.38	3.20	7.4	8.5	70	5.6	23.2
DUP	0.08	11.9	0.013	0.50	7.0	6.2	0.30	304	0.39	3.23	7.7	8.8	70	5.3	23.8
Target Range - Lower Bound	<0.05	11.1	0.007	0.46	5.9	5.7	0.28	281	0.32	3.04	7.1	8.0	60	4.7	22.2
Upper Bound	0.10	12.4	0.019	0.53	7.5	6.7	0.33	321	0.45	3.39	8.0	9.3	80	6.2	24.8
ORIGINAL	0.13	1.2	0.144	1.21	11.3	19.6	2.73	1620	0.62	0.80	8.5	69.5	550	11.9	96.4
DUP	0.15	1.2	0.143	1.15	11.1	18.8	2.58	1540	0.64	0.77	8.2	66.9	540	12.1	92.7
Target Range - Lower Bound	0.08	1.0	0.131	1.11	10.1	18.0	2.51	1495	0.55	0.74	7.8	64.6	510	10.9	89.7
Upper Bound	0.20	1.4	0.156	1.25	12.3	20.4	2.80	1665	0.71	0.83	8.9	71.8	580	13.1	99.4
ORIGINAL															
DUP															
Target Range - Lower Bound															
Upper Bound															
ORIGINAL															
DUP															
Target Range - Lower Bound															
Upper Bound															



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Method Analyte Units LOD	ME-MS61 Re ppm 0.002	ME-MS61 S % 0.01	ME-MS61 Sb ppm 0.05	ME-MS61 Sc ppm 0.1	ME-MS61 Se ppm 1	ME-MS61 Sn ppm 0.2	ME-MS61 Sr ppm 0.2	ME-MS61 Ta ppm 0.05	ME-MS61 Te ppm 0.05	ME-MS61 Th ppm 0.01	ME-MS61 Ti % 0.005	ME-MS61 Tl ppm 0.02	ME-MS61 U ppm 0.1	ME-MS61 V ppm 1	ME-MS61 W ppm 0.1
Sample Description															
BLANK	BLANKS														
BLANK															
Target Range - Lower Bound															
Upper Bound															
BLANK	<0.002	<0.01	<0.05	<0.1	<1	<0.2	<0.2	<0.05	<0.05	<0.01	<0.005	<0.02	<0.1	<1	<0.1
Target Range - Lower Bound	<0.002	<0.01	<0.05	<0.1	<1	<0.2	<0.2	<0.05	<0.05	<0.01	<0.005	<0.02	<0.1	<1	<0.1
Upper Bound	0.004	0.02	0.10	0.2	2	0.4	0.4	0.10	0.10	0.02	0.010	0.04	0.2	2	0.2
TC412	DUPLICATES														
DUP															
Target Range - Lower Bound															
Upper Bound															
TCS015	<0.002	0.04	0.55	4.1	1	0.8	97.8	0.63	<0.05	5.80	0.475	0.06	2.9	60	0.7
DUP	<0.002	0.04	0.56	4.1	1	0.8	100.5	0.61	<0.05	5.66	0.478	0.06	3.0	60	0.7
Target Range - Lower Bound	<0.002	0.03	0.46	3.8	<1	0.6	94.0	0.54	<0.05	5.43	0.448	0.04	2.7	56	0.5
Upper Bound	0.004	0.05	0.65	4.4	2	1.0	104.5	0.70	0.10	6.03	0.505	0.08	3.2	64	0.9
ORIGINAL	0.002	0.82	0.40	47.2	2	7.9	83.7	1.13	0.32	1.81	0.677	0.48	1.5	386	12.6
DUP	<0.002	0.79	0.39	46.3	2	7.8	80.5	1.07	0.30	1.66	0.651	0.46	1.6	369	10.8
Target Range - Lower Bound	<0.002	0.75	0.32	44.3	<1	7.3	77.8	1.00	0.24	1.64	0.626	0.41	1.4	358	10.7
Upper Bound	0.004	0.86	0.47	49.2	3	8.4	86.4	1.21	0.38	1.83	0.702	0.53	1.7	397	12.7
ORIGINAL															
DUP															
Target Range - Lower Bound															
Upper Bound															
ORIGINAL															
DUP															
Target Range - Lower Bound															
Upper Bound															



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QC CERTIFICATE OF ANALYSIS AD19011061

Sample Description	Method Analyte Units LOD	ME-MS61 Y ppm 0.1	ME-MS61 Zn ppm 2	ME-MS61 Zr ppm 0.5	Au-ICP21 Au ppm 0.001
BLANKS					
BLANK					0.001
BLANK					<0.001
Target Range - Lower Bound					<0.001
Upper Bound					0.002
BLANK		<0.1	<2	<0.5	
Target Range - Lower Bound		<0.1	<2	<0.5	
Upper Bound		0.2	4	1.0	
DUPLICATES					
TC412					0.001
DUP					<0.001
Target Range - Lower Bound					<0.001
Upper Bound					0.002
TCS015		8.9	7	>500	
DUP		9.5	7	>500	
Target Range - Lower Bound		8.6	5	462	
Upper Bound		9.8	9	>500	
ORIGINAL		31.9	113	32.3	
DUP		30.9	107	32.5	
Target Range - Lower Bound		29.7	103	29.5	
Upper Bound		33.1	118	35.3	
ORIGINAL					0.015
DUP					0.014
Target Range - Lower Bound					0.013
Upper Bound					0.016
ORIGINAL					0.755
DUP					0.741
Target Range - Lower Bound					0.710
Upper Bound					0.786
ORIGINAL					0.071
DUP					0.072
Target Range - Lower Bound					0.067
Upper Bound					0.076



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QC CERTIFICATE OF ANALYSIS AD19011061

Sample Description	Method Analyte Units LOD	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61
		Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga
		ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
		0.01	0.01	0.2	10	0.05	0.01	0.01	0.02	0.01	0.1	1	0.05	0.2	0.01	0.05
ORIGINAL DUP Target Range - Lower Bound Upper Bound		DUPLICATES														



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QC CERTIFICATE OF ANALYSIS AD19011061

Sample Description	Method Analyte Units LOD	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61
		Ge	Hf	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm
		0.05	0.1	0.005	0.01	0.5	0.2	0.01	5	0.05	0.01	0.1	0.2	10	0.5
ORIGINAL DUP Target Range - Lower Bound Upper Bound		DUPLICATES													



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QC CERTIFICATE OF ANALYSIS AD19011061

Sample Description	Method Analyte Units LOD	ME-MS61 Re ppm 0.002	ME-MS61 S % 0.01	ME-MS61 Sb ppm 0.05	ME-MS61 Sc ppm 0.1	ME-MS61 Se ppm 1	ME-MS61 Sn ppm 0.2	ME-MS61 Sr ppm 0.2	ME-MS61 Ta ppm 0.05	ME-MS61 Te ppm 0.05	ME-MS61 Th ppm 0.01	ME-MS61 Ti % 0.005	ME-MS61 Tl ppm 0.02	ME-MS61 U ppm 0.1	ME-MS61 V ppm 1	ME-MS61 W ppm 0.1
ORIGINAL DUP Target Range - Lower Bound Upper Bound	DUPLICATES															

***** See Appendix Page for comments regarding this certificate *****



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QC CERTIFICATE OF ANALYSIS AD19011061

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method:

REE's may not be totally soluble in this method.
ME-MS61

ACCREDITATION COMMENTS

Applies to Method:

NATA Accreditation covers the performance of this service but does not cover the performance of ALS Perth Sample Preparation. Corporate Accreditation No: 825, Corporate Site No: 23001. The Technical Signatory is Wendy Wong, Senior QC Chemist
Au-ICP21 ME-MS61

LABORATORY ADDRESSES

Applies to Method:

Processed at ALS Perth located at 31 Denninup Way, Malaga, Australia. Processed at ALS Perth Sample Preparation at 79 Distinction Road, Wangara, WA, Australia
Au-ICP21 ME-MS61

Applies to Method:

Processed at ALS Adelaide located at Unit 1, 1 Burma Road, Pooraka, Adelaide, SA, Australia.
LEV-01 LOG-22 PUL-32 SCR-41
WEI-21