



Australian Laboratory Services Pty. Ltd.

32 Shand Street

Stafford

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ALS Brisbane is a NATA Accredited Testing Laboratory. Corporate

Accreditation No: 825, Corporate Site No: 818.

CERTIFICATE

The following have access to data associated with this certificate:

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Plus Appendix Pages
Finalized Date: 29-MAR-2019
Account: MICK

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LEV-01	Waste Disposal Levy
PUL-QC	Pulverizing QC Test
CRU-21	Crush entire sample
PUL-23	Pulv Sample - Split/Retain
BAG-01	Bulk Master for Storage
SPL-21	Split sample - riffle splitter

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	
ME-MS61	48 element four acid ICP-MS	
Au-TL43	Trace Level Au - 25g AR	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:

Shaun Kenny, Brisbane Laboratory Manager



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CERTIFICATE OF ANALYSIS BU19061195

Sample Description	Method Analyte Units LOD	WEI-21 Recvd Wt. kg 0.02	Au-TL43 Au ppm 0.001	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
50071		3.80	0.002	0.05	1.11	1.7	80	0.65	0.14	31.7	0.10	16.55	2.5	12	3.11	8.9
50072		5.30	0.001	0.13	0.67	11.4	10	2.04	0.61	6.22	0.13	19.70	15.1	11	0.85	0.7
50073		4.74	0.002	0.11	0.91	56.3	10	6.82	2.97	8.20	0.10	69.3	15.8	19	0.66	0.5
50074		4.29	0.004	0.08	0.69	49.5	10	0.69	0.66	12.05	0.15	5.47	13.4	10	1.12	7.3
50075		3.27	0.001	0.03	0.67	41.3	30	2.08	0.67	28.1	0.02	19.20	4.6	12	3.50	4.3
50076		4.85	0.008	0.07	0.93	94.2	10	14.50	6.03	9.34	0.21	465	15.5	13	1.22	0.2
50077		4.23	0.001	0.08	0.85	14.3	<10	1.66	0.73	10.30	0.08	9.57	13.3	10	1.52	0.9
50078		4.12	0.004	0.03	1.50	48.0	10	10.40	1.53	15.90	0.28	154.0	9.3	13	2.33	2.0
50079		3.91	0.009	0.04	2.32	37.4	10	5.76	4.08	21.7	0.54	>500	3.6	16	2.74	1.9
50080		4.25	0.015	0.10	2.08	12.2	<10	8.48	6.89	21.6	0.17	455	9.9	18	2.20	2.7
50081		4.16	0.007	0.08	2.08	39.1	10	56.3	4.59	17.80	<0.02	>500	21.7	17	5.50	2.4
50082		4.46	0.004	0.05	1.36	44.9	10	27.7	3.61	20.0	0.19	>500	10.8	23	2.62	1.7
50083		4.19	0.004	0.10	4.35	15.2	160	10.25	2.96	15.05	1.00	199.5	4.0	14	6.79	29.6
50085		3.20	0.001	0.04	5.86	5.5	70	9.39	0.24	2.06	0.07	68.0	1.9	5	5.42	4.4
50086		3.67	0.001	0.01	6.19	4.5	180	5.03	0.17	1.20	0.05	341	2.2	6	7.89	1.4
50087		2.91	0.001	<0.01	6.21	2.9	310	3.82	0.14	1.02	0.05	130.5	0.8	4	6.62	3.0
50088		2.83	0.001	0.02	5.83	2.7	290	3.68	0.08	1.16	0.03	74.4	0.9	4	5.27	2.7
50089		3.92	0.001	0.07	6.28	4.2	300	4.67	0.17	1.25	0.05	58.8	0.8	5	5.48	2.3
50091		1.70	<0.001	<0.01	6.45	5.0	320	3.66	0.16	0.75	0.02	133.5	1.6	5	4.63	3.5
50093		10.88	<0.001	0.01	0.45	<0.2	40	0.23	0.02	31.5	0.09	7.79	1.3	4	0.85	1.2
50094		7.36	0.001	0.03	1.22	0.5	100	0.82	0.10	32.5	0.10	20.7	1.8	11	2.95	2.4
50098		5.09	0.001	0.08	6.30	4.4	310	2.97	0.23	1.16	0.06	165.0	0.8	4	6.24	3.7



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Account: MICK

Project: Steve Poke

CERTIFICATE OF ANALYSIS BU19061195

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
		Fe	Ga	Ge	Hf	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P
		%	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm
		0.01	0.05	0.05	0.1	0.005	0.01	0.5	0.2	0.01	5	0.05	0.01	0.1	0.2	10
50071		0.69	3.00	0.07	0.9	0.019	0.71	8.4	18.8	2.39	270	0.69	0.07	2.6	16.4	90
50072		44.6	11.75	1.21	1.0	2.24	0.01	10.8	7.6	2.12	7750	6.76	0.01	6.5	7.5	20
50073		41.1	11.20	0.55	1.4	2.38	0.01	40.8	6.1	2.90	8590	5.54	0.01	6.0	9.2	20
50074		33.8	9.13	0.36	1.0	1.955	0.08	3.4	12.1	2.85	7420	4.35	0.01	4.9	8.4	30
50075		5.02	3.12	0.09	0.7	0.495	0.33	10.3	10.3	2.92	1600	0.90	0.03	1.9	13.1	90
50076		33.6	12.50	0.74	1.4	2.64	0.01	159.0	6.4	3.58	7330	4.31	0.01	6.8	8.1	110
50077		28.2	11.55	0.31	1.5	3.73	0.01	2.5	7.4	3.32	6160	4.89	0.01	10.5	8.2	150
50078		23.2	11.70	0.38	1.7	4.92	0.02	70.8	10.6	2.98	6100	3.71	0.02	12.8	8.7	250
50079		13.35	13.65	0.74	2.3	6.89	0.02	259	7.0	1.71	5700	1.70	0.02	19.2	9.0	280
50080		14.50	15.15	0.65	3.4	7.12	0.02	201	5.8	1.71	7930	0.53	0.03	22.1	12.4	360
50081		12.80	22.9	1.30	3.8	3.22	0.02	1180	26.0	2.47	12100	2.38	0.04	25.2	13.9	350
50082		13.50	19.00	1.46	3.9	5.08	0.03	1330	12.6	2.10	8650	0.54	0.03	18.2	11.4	240
50083		9.52	13.40	0.40	4.2	4.39	1.83	80.5	10.7	0.96	4950	109.5	0.76	19.5	7.0	50
50085		1.48	16.00	0.24	3.6	0.246	3.78	31.2	17.4	0.17	1080	133.5	1.82	18.7	3.0	30
50086		1.71	19.20	0.46	5.7	0.142	4.64	171.0	23.3	0.20	444	1.00	1.92	23.9	2.7	160
50087		0.73	18.15	0.30	4.3	0.059	4.41	62.8	27.6	0.07	273	1.14	2.14	18.6	1.9	80
50088		0.72	17.10	0.26	4.0	0.036	4.04	30.7	22.5	0.10	292	0.85	2.17	18.1	2.1	110
50089		0.82	17.70	0.28	4.2	0.041	4.01	21.6	24.3	0.11	314	0.82	2.31	17.9	1.9	110
50091		1.41	18.35	0.32	4.6	0.051	3.89	66.2	24.9	0.13	253	0.75	2.35	21.6	2.3	120
50093		0.36	1.17	0.11	0.3	0.007	0.23	4.0	5.3	3.50	142	0.08	0.03	1.3	11.9	50
50094		0.54	2.62	0.08	1.2	0.011	0.83	10.8	6.8	0.96	231	0.07	0.24	3.5	13.1	120
50098		0.88	17.30	0.39	4.4	0.051	3.71	83.0	15.4	0.14	260	0.72	2.18	17.4	1.8	130



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CERTIFICATE OF ANALYSIS BU19061195

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
		Pb	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	U
		ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
		0.5	0.1	0.002	0.01	0.05	0.1	1	0.2	0.2	0.05	0.05	0.01	0.005	0.1
50071		12.3	29.2	<0.002	0.20	0.65	2.1	1	1.3	402	0.19	<0.05	3.09	0.073	1.2
50072		3.8	1.3	<0.002	0.21	2.19	1.6	<1	101.5	9.5	0.36	<0.05	0.74	0.102	1.6
50073		5.9	0.7	<0.002	0.02	10.30	2.2	<1	107.5	5.0	0.39	<0.05	8.26	0.169	10.3
50074		6.0	6.4	<0.002	0.05	2.16	1.5	1	88.3	66.3	0.39	<0.05	0.68	0.083	0.9
50075		3.7	22.1	<0.002	0.12	1.81	1.7	1	24.3	423	0.11	<0.05	2.38	0.047	2.9
50076		10.3	1.3	0.004	0.01	10.75	1.7	<1	141.0	11.5	0.43	0.11	15.90	0.075	125.5
50077		3.3	2.2	<0.002	<0.01	0.75	1.3	<1	151.5	4.2	0.29	<0.05	4.06	0.058	4.9
50078		7.7	2.4	0.003	0.04	10.80	1.7	<1	237	11.7	0.37	0.08	14.90	0.076	39.4
50079		9.4	3.8	0.005	<0.01	5.77	2.8	3	333	20.5	0.58	0.22	19.40	0.103	35.2
50080		11.8	3.8	0.003	<0.01	1.71	3.5	1	254	8.2	1.01	0.30	18.70	0.132	41.4
50081		14.0	3.3	0.003	0.01	17.40	3.7	2	52.2	33.9	1.44	0.12	33.9	0.142	100.5
50082		14.4	3.9	0.003	<0.01	9.24	3.8	1	275	20.3	1.11	0.09	51.7	0.141	24.4
50083		96.3	139.5	0.002	0.01	3.71	3.2	1	236	142.5	2.03	0.06	35.6	0.098	17.2
50085		13.4	267	<0.002	0.02	0.92	5.2	<1	4.7	80.9	2.00	<0.05	44.4	0.068	6.7
50086		15.0	307	<0.002	0.01	0.68	5.0	1	9.8	74.8	1.99	<0.05	83.6	0.194	6.5
50087		15.4	320	<0.002	0.01	0.71	2.6	1	11.7	69.9	2.05	<0.05	43.3	0.100	7.1
50088		15.9	260	<0.002	0.01	0.60	3.3	1	11.2	63.9	1.78	<0.05	43.3	0.120	6.8
50089		18.2	256	<0.002	0.01	0.75	3.2	1	10.4	70.4	1.86	<0.05	41.5	0.121	6.7
50091		15.2	258	<0.002	0.01	0.98	3.4	1	5.1	60.5	2.31	<0.05	48.2	0.128	8.7
50093		4.4	11.7	<0.002	0.09	0.13	0.8	1	0.5	370	0.08	<0.05	1.70	0.025	0.5
50094		5.7	27.7	<0.002	0.02	0.25	1.8	1	0.7	281	0.27	<0.05	4.25	0.094	1.3
50098		20.5	241	<0.002	0.01	0.90	3.4	1	10.7	77.1	1.55	<0.05	44.7	0.127	7.7



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CERTIFICATE OF ANALYSIS BU19061195

Sample Description	Method Analyte Units LOD	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	PUL-QC
		V	W	Y	Zn	Zr	Pass75Sum
		ppm	ppm	ppm	ppm	ppm	%
		1	0.1	0.1	2	0.5	0.01
50071		15	0.7	6.3	46	32.9	97.4
50072		25	10.3	4.5	911	26.0	
50073		35	7.6	18.2	967	36.7	
50074		20	8.6	2.3	919	29.9	
50075		10	1.2	6.1	148	23.1	
50076		32	3.7	285	673	34.8	
50077		51	1.3	31.4	472	44.3	
50078		49	2.9	300	329	54.9	
50079		82	4.2	>500	71	73.9	
50080		87	2.6	327	126	101.5	
50081		99	2.4	266	238	137.0	
50082		65	13.5	197.0	182	122.0	
50083		19	1.2	118.5	196	104.0	
50085		6	1.2	32.2	33	71.8	
50086		9	1.5	55.9	30	144.5	
50087		6	1.3	46.4	21	102.5	
50088		8	1.6	37.7	20	103.0	
50089		8	2.0	38.4	26	103.5	
50091		9	1.2	56.7	23	117.0	
50093		6	0.1	3.3	22	12.4	98.3
50094		15	0.6	8.5	19	38.1	
50098		9	1.8	45.8	29	118.5	



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CERTIFICATE OF ANALYSIS BU19061195

	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 Brisbane Sample Preparation. Corporate Accreditation No: 825, Corporate Site No: 818. The Technical Signatory is David Jones, ICPMS Supervising Chemist Au-TL43 ME-MS61
	LABORATORY ADDRESSES
Applies to Method:	Processed at ALS Brisbane located at 32 Shand Street, Stafford, Brisbane, QLD, Australia. Processed at ALS Brisbane Sample Preparation at 116 Delta Street, Geebung, QLD 4034, Australia Au-TL43 ME-MS61
Applies to Method:	Processed at ALS Burnie located at 39 River Road, Burnie, TAS, Australia. BAG-01 CRU-21 LEV-01 PUL-23 PUL-QC SPL-21 WEI-21