



# ALS Chemex

EXCELLENCE IN ANALYTICAL CHEMISTRY

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32 Shand Street

Stafford

Brisbane QLD 4053

Phone: +61 (7) 3243 7222 Fax: +61 (7) 3243 7218 www.alschemex.com

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Finalized Date: 13-APR-2010  
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## QC CERTIFICATE PH10035872

Project: 925000.2050

P.O. No.: REDB1000243

This report is for 140 Soil samples submitted to our lab in Perth, WA, Australia on 26-MAR-2010.

The following have access to data associated with this certificate:

RUSSELL BIRRELL

CRAIG HALL

## SAMPLE PREPARATION

ALS CODE	DESCRIPTION
LEV-01	Waste Disposal Levy
LOG-22	Sample login - Rcd w/o BarCode

## ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME-MS23	IONIC Leach - Complete PKG.	ICP-MS
pH-MS23	MS23 Leach pH	
ME-ICP23	IONIC Leach - ICP-AES	ICP-AES

To: REDBANK COPPER LTD  
ATTN: RUSSELL BIRRELL  
PO BOX 870  
WEST PERTH WA 6872

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.

Signature:

Wayne Abbott, Operations Manager, Western Australia



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## QC CERTIFICATE OF ANALYSIS PH10035872

Sample Description	Method	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23
	Analyte	Ag	As	Au	Ba	Be	Bi	Br	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy
	Units	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppm	ppb	ppb	ppb	ppb	ppb	ppb	ppb
	LOR	0.1	2	0.02	10	0.2	3	0.05	0.2	1	0.1	0.3	1	0.1	1	0.1
		STANDARDS														
ION-SRM18		17.2	9	7.68	190	0.3	<3	1.49	149.5	70	14.5	59.4	5	7.7	695	1.4
ION-SRM18		17.7	9	7.68	220	0.2	<3	1.43	160.5	72	16.2	63.7	7	7.9	846	1.4
ION-SRM18		18.0	10	7.70	180	0.5	<3	1.44	146.0	70	14.6	57.6	6	7.7	721	1.1
ION-SRM18		16.7	11	6.84	220	<0.2	<3	1.36	148.5	68	16.2	63.0	6	7.2	767	1.4
ION-SRM18		20.5	13	8.53	180	<0.2	<3	1.79	161.0	79	13.9	66.2	7	7.7	979	1.4
ION-SRM18		16.5	9	6.85	220	0.2	<3	1.43	149.0	66	16.6	56.4	7	7.0	742	1.4
ION-SRM18		15.7	10	5.77	180	<0.2	<3	1.31	146.5	58	17.1	57.0	7	6.8	706	2.1
ION-SRM18		20.8	10	8.09	190	<0.2	<3	1.56	164.0	67	13.7	65.4	8	7.5	849	1.4
Target Range - Lower Bound		15.7	5	6.83	180	<0.2	<3	1.23	139.5	58	13.6	54.6	4	6.6	693	1.1
Upper Bound		19.4	11	8.39	240	0.4	6	1.61	171.0	73	16.8	67.3	7	8.2	849	1.5
		BLANKS														
BLANK		<0.1	<2	<0.02	<10	<0.2	<3	<0.05	<0.2	<1	<0.1	<0.3	1	<0.1	<1	<0.1
BLANK		0.1	<2	<0.02	10	<0.2	<3	<0.05	<0.2	<1	<0.1	<0.3	<1	<0.1	<1	<0.1
BLANK		<0.1	<2	<0.02	10	0.2	<3	<0.05	<0.2	<1	<0.1	<0.3	1	<0.1	<1	<0.1
BLANK		0.1	2	0.02	10	<0.2	<3	<0.05	0.3	<1	0.4	<0.3	2	<0.1	<1	<0.1
Target Range - Lower Bound		<0.1	<2	<0.02	<10	<0.2	<3	<0.05	<0.2	<1	<0.1	<0.3	<1	<0.1	<1	<0.1
Upper Bound		0.2	4	0.04	20	0.4	6	0.10	0.4	2	0.2	0.6	2	0.2	2	0.2
		DUPLICATES														
REX - 010																
DUP																
Target Range - Lower Bound																
Upper Bound																
REX - 020		2.1	<2	0.23	750	0.6	<3	0.09	189.5	1	86.3	134.5	3	2.9	5720	27.1
DUP		1.9	<2	0.22	650	<0.2	<3	0.07	177.0	1	79.3	135.5	2	2.4	5900	23.9
Target Range - Lower Bound		1.8	<2	0.19	660	<0.2	<3	<0.05	174.0	<1	78.6	128.0	<1	2.4	5520	24.1
Upper Bound		2.2	4	0.26	750	0.6	6	0.10	192.5	2	87.0	142.0	4	2.9	6100	26.9



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## QC CERTIFICATE OF ANALYSIS PH10035872

Sample Description	Method	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23
	Analyte	Er	Eu	Fe	Ga	Gd	Ge	Hf	Hg	Ho	I	In	La	Li	Lu	Mg
	Units	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppm
	LOR	0.1	0.1	0.1	0.5	0.1	0.1	0.5	0.1	0.1	0.1	0.01	0.1	0.1	0.2	0.1
STANDARDS																
ION-SRM18		0.7	0.9	2.0	5.3	2.9	<0.1	<0.5	3.8	0.3	0.16	<0.1	4.6	<0.2	0.1	71.0
ION-SRM18		0.8	1.0	2.7	6.1	3.2	0.1	0.5	5.0	0.4	0.16	<0.1	5.4	0.4	0.1	74.5
ION-SRM18		0.6	0.8	2.6	5.0	2.7	0.2	<0.5	4.4	0.3	0.16	<0.1	4.0	0.4	0.1	73.1
ION-SRM18		0.9	1.0	2.5	6.0	3.3	0.2	<0.5	4.3	0.4	0.16	<0.1	5.5	0.3	0.1	73.3
ION-SRM18		0.7	0.7	2.9	5.7	2.8	0.1	<0.5	3.7	0.2	0.17	<0.1	4.6	0.6	0.1	81.1
ION-SRM18		0.6	0.7	2.4	6.2	3.0	<0.1	<0.5	4.7	0.2	0.15	<0.1	5.5	0.5	0.1	69.5
ION-SRM18		1.2	0.9	2.3	4.7	4.1	<0.1	<0.5	3.9	0.4	0.14	<0.1	5.6	0.4	0.1	67.1
ION-SRM18		0.7	0.7	2.5	5.2	3.0	<0.1	<0.5	4.6	0.2	0.16	<0.1	4.4	0.6	0.1	76.1
Target Range - Lower Bound		0.5	0.6	2.0	4.6	2.5	<0.1	<0.5	3.7	<0.1	0.13	<0.1	4.4	<0.2	<0.1	66.4
Upper Bound		0.9	1.0	2.7	6.7	3.3	0.2	1.0	4.8	0.3	0.18	0.2	5.6	0.4	0.2	81.2
BLANKS																
BLANK		<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	<0.5	<0.1	<0.1	<0.01	<0.1	<0.1	1.6	<0.1	<0.01
BLANK		<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	<0.5	<0.1	<0.1	<0.01	<0.1	<0.1	0.5	<0.1	0.01
BLANK		<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	<0.5	<0.1	<0.1	<0.01	<0.1	<0.1	2.3	<0.1	<0.01
BLANK		<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	<0.5	0.1	<0.1	<0.01	<0.1	0.4	2.6	<0.1	0.11
Target Range - Lower Bound		<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	<0.5	<0.1	<0.1	<0.01		<0.1	<0.2	<0.1	<0.01
Upper Bound		0.2	0.2	0.2	1.0	0.2	0.2	1.0	0.2	0.2	0.02		0.2	0.4	0.2	0.02
DUPLICATES																
REX - 010																
DUP																
Target Range - Lower Bound																
Upper Bound																
REX - 020		16.7	14.9	6.2	22.4	55.8	1.6	1.4	0.6	7.2	0.16	<0.1	45.5	1.8	1.7	43.4
DUP		14.8	13.7	4.2	18.1	50.9	1.4	1.1	1.0	6.4	0.15	<0.1	40.9	0.7	1.4	37.6
Target Range - Lower Bound		14.9	13.5	4.8	18.7	50.6	1.3	0.7	0.7	6.4	0.14	<0.1	40.9	1.0	1.4	38.5
Upper Bound		16.6	15.1	5.6	21.8	56.1	1.7	1.8	0.9	7.2	0.17	0.2	45.5	1.5	1.7	42.5



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## QC CERTIFICATE OF ANALYSIS PH10035872

Sample Description	Method	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23	ME-MS23
	Analyte	Mn	Mo	Nb	Nd	Ni	Pb	Pb 206	Pb 207	Pb 208	Pd	Pr	Rb	Re	Sb	Sc
	Units	ppm	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
	LOR	0.01	0.5	0.1	0.1	1	1	1	1	1	1	0.1	0.1	0.1	0.1	0.5
STANDARDS																
ION-SRM18		0.51	30.4	0.1	12.6	547	88	20	21	46	12.1	2.0	165.5	<0.1	<0.5	3
ION-SRM18		0.53	31.4	0.2	14.1	555	93	21	22	49	12.4	2.3	171.0	<0.1	<0.5	4
ION-SRM18		0.45	30.4	0.2	11.0	556	94	21	23	50	12.9	1.8	160.0	<0.1	<0.5	3
ION-SRM18		0.52	29.6	0.3	14.1	546	77	18	19	40	11.1	2.3	158.5	<0.1	<0.5	4
ION-SRM18		0.52	32.5	0.2	11.4	601	111	26	26	58	13.7	1.8	187.0	<0.1	<0.5	4
ION-SRM18		0.47	28.3	0.1	13.6	503	87	20	21	46	11.0	2.2	169.0	<0.1	<0.5	3
ION-SRM18		0.51	28.0	0.1	14.0	499	100	22	23	56	9.9	2.3	160.5	<0.1	<0.5	3
ION-SRM18		0.48	32.5	0.1	11.6	598	158	36	36	88	13.8	1.8	176.0	<0.1	<0.5	3
Target Range - Lower Bound		0.41	26.3	<0.1	11.4	495	77	17	17		10.6	1.7	156.5	<0.1	<0.5	2
Upper Bound		0.53	33.3	0.2	14.2	607	97	23	23		13.2	2.3	191.5	0.2	1.0	4
BLANKS																
BLANK		<0.01	<0.5	<0.1	<0.1	1	<1	<1	<1	<1	<0.1	<0.1	0.1	<0.1	<0.5	<1
BLANK		<0.01	<0.5	<0.1	<0.1	3	<1	<1	<1	<1	<0.1	<0.1	0.1	<0.1	<0.5	<1
BLANK		<0.01	<0.5	0.1	<0.1	1	<1	<1	1	<1	<0.1	<0.1	0.1	<0.1	<0.5	<1
BLANK		<0.01	<0.5	<0.1	0.3	9	4	<1	<1	3	<0.1	0.1	0.4	<0.1	<0.5	<1
Target Range - Lower Bound		<0.01	<0.5	<0.1	<0.1	<1	<1	<1	<1		<0.1	<0.1	<0.1	<0.1	<0.5	<1
Upper Bound		0.02	1.0	0.2	0.2	2	2	2	2		0.2	0.2	0.2	0.2	1.0	2
DUPLICATES																
REX - 010																
DUP																
Target Range - Lower Bound																
Upper Bound																
REX - 020		4.44	3.2	0.7	201	106	10	3	2	5	2.9	27.0	343	<0.1	<0.5	22
DUP		4.30	3.1	0.3	188.5	100	5	1	1	3	2.3	25.0	289	<0.1	<0.5	18
Target Range - Lower Bound		4.14	2.5	0.4	185.0	97	6	<1	<1	3	2.4	24.6	300	<0.1	<0.5	18
Upper Bound		4.60	3.8	0.6	205	109	9	3	2	5	2.8	27.4	332	0.2	1.0	22



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## QC CERTIFICATE OF ANALYSIS PH10035872

Sample Description	Method Analyte Units LOR	ME-MS23 Se ppb 2	ME-MS23 Sm ppb 0.1	ME-MS23 Sn ppb 0.2	ME-MS23 Sr ppb 1	ME-MS23 Ta ppb 1	ME-MS23 Tb ppb 0.1	ME-MS23 Te ppb 1	ME-MS23 Th ppb 0.02	ME-MS23 Ti ppb 5	ME-MS23 Tl ppb 0.5	ME-MS23 Tm ppb 0.1	ME-MS23 U ppb 0.1	ME-MS23 W ppb 1	ME-MS23 Y ppb 0.1	ME-MS23 Yb ppb 0.1
STANDARDS																
ION-SRM18		14	3.0	0.2	1180	<1	0.5	<1	3.69	15	<0.5	0.1	10.2	<1	9.4	0.4
ION-SRM18		26	3.2	0.2	1020	<1	0.5	<1	3.68	41	<0.5	0.1	10.4	<1	9.7	0.4
ION-SRM18		15	2.6	<0.2	973	<1	0.4	<1	3.62	39	<0.5	0.1	10.4	<1	7.6	0.2
ION-SRM18		16	3.2	<0.2	1210	<1	0.5	<1	3.70	31	<0.5	0.1	10.1	<1	10.1	0.4
ION-SRM18		17	2.9	<0.2	1130	<1	0.4	<1	3.55	59	<0.5	0.1	9.8	<1	9.6	0.4
ION-SRM18		17	3.1	<0.2	1220	<1	0.4	<1	3.52	34	<0.5	0.1	9.2	<1	9.4	0.3
ION-SRM18		13	3.7	<0.2	1050	<1	0.6	1	4.15	21	<0.5	0.2	10.0	<1	13.0	0.7
ION-SRM18		21	3.0	<0.2	1230	<1	0.4	<1	3.43	33	<0.5	0.1	10.4	<1	9.6	0.4
Target Range - Lower Bound		13	2.5	<0.2	1010	<1	0.3	<1	3.11	24	<0.5	<0.1	8.7	<1	8.1	0.2
Upper Bound		21	3.3	0.4	1235	2	0.5	2	3.85	41	1.0	0.2	10.8	2	10.1	0.4
BLANKS																
BLANK		<2	<0.1	<0.2	<1	<1	<0.1	<1	<0.02	<5	<0.5	<0.1	<0.1	<1	<0.1	<0.1
BLANK		<2	<0.1	<0.2	<1	<1	<0.1	<1	<0.02	<5	<0.5	<0.1	<0.1	<1	<0.1	<0.1
BLANK		4	<0.1	<0.2	<1	<1	<0.1	<1	<0.02	<5	<0.5	<0.1	<0.1	<1	<0.1	<0.1
BLANK		4	<0.1	<0.2	1	<1	<0.1	<1	<0.02	<5	<0.5	<0.1	<0.1	<1	<0.1	<0.1
Target Range - Lower Bound		<2	<0.1	<0.2	<1	<1	<0.1	<1	<0.02	<5	<0.5	<0.1	<0.1	<1	<0.1	<0.1
Upper Bound		4	0.2	0.4	2	2	0.2	2	0.04	10	1.0	0.2	0.2	2	0.2	0.2
DUPLICATES																
REX - 010																
DUP																
Target Range - Lower Bound																
Upper Bound																
REX - 020		7	52.4	0.4	244	<1	9.2	<1	10.10	140	1.0	2.2	16.9	1	155.0	7.4
DUP		11	47.6	0.2	216	<1	8.3	<1	10.50	81	0.8	1.9	15.9	<1	134.0	6.4
Target Range - Lower Bound		7	47.4	<0.2	218	<1	8.2	<1	9.77	100	<0.5	1.8	15.5	<1	137.0	6.5
Upper Bound		11	52.6	0.4	243	2	9.3	2	10.85	121	1.0	2.3	17.3	2	152.0	7.3



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Sample Description	Method	ME-MS23	ME-MS23	pH-MS23	ME-ICP23	ME-ICP23	ME-ICP23	ME-ICP23	ME-ICP23	ME-ICP23	ME-ICP23	ME-ICP23	ME-ICP23
	Analyte	Zn	Zr	Final pH	Al	Ba	Cu	Ni	P	S	Si	Sr	Ti
	Units	ppb	ppb	Unity	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	LOR	10	0.1	0.1	1	0.05	0.05	0.05	0.1	0.1	0.5	0.05	0.5
STANDARDS													
ION-SRM18		540	5.0	8.5	33	0.18	0.78	0.58	0.2	41.9	3.2	1.24	<0.5
ION-SRM18		580	5.3	8.7	31	0.20	0.87	0.58	0.3	42.3	3.0	1.03	<0.5
ION-SRM18		560	5.3	9.0	27	0.16	0.71	0.54	0.3	39.8	2.6	1.01	<0.5
ION-SRM18		560	5.2	9.0	29	0.21	0.72	0.53	0.3	41.2	3.3	1.34	<0.5
ION-SRM18		550	5.4	8.5	34	0.17	1.09	0.62	0.4	54.0	3.1	1.15	<0.5
ION-SRM18		530	4.5	8.5	30	0.20	0.81	0.56	0.3	45.2	2.6	1.22	<0.5
ION-SRM18		440	5.2	8.7	29	0.17	0.74	0.48	0.4	38.0	2.7	1.03	<0.5
ION-SRM18		570	4.6	8.5	34	0.18	0.85	0.64	0.4	45.9	3.6	1.25	<0.5
Target Range - Lower Bound		530	4.3		<1	0.14	0.64	0.45	<0.1	<0.1	<0.5	0.96	<0.5
Upper Bound		670	5.5		2	0.28	0.90	0.66	0.2	0.2	1.0	1.28	1.0
BLANKS													
BLANK		<10	<0.1	9.0	<1	<0.05	<0.05	<0.05	<0.1	<0.1	<0.5	<0.05	<0.5
BLANK		<10	<0.1	9.0	<1	<0.05	<0.05	<0.05	<0.1	<0.1	<0.5	<0.05	<0.5
BLANK		10	<0.1	9.0	<1	<0.05	<0.05	<0.05	<0.1	<0.1	<0.5	<0.05	<0.5
BLANK		10	<0.1	9.0	<1	<0.05	<0.05	<0.05	<0.1	<0.1	<0.5	<0.05	<0.5
Target Range - Lower Bound		<10	<0.1	8.8	<1	<0.05	<0.05	<0.05	<0.1	<0.1	<0.5	<0.05	<0.5
Upper Bound		20	0.2	9.2	2	0.10	0.10	0.10	0.2	0.2	1.0	0.10	1.0
DUPLICATES													
REX - 010				8.3	38	1.19	2.64	0.13	0.4	3.1	4.0	0.28	<0.5
DUP				8.3	43	1.03	2.91	0.13	0.5	3.7	4.8	0.28	<0.5
Target Range - Lower Bound				7.8	37	1.00	2.59	0.07	0.3	3.1	3.7	0.22	<0.5
Upper Bound				8.8	44	1.22	2.96	0.19	0.6	3.7	5.1	0.34	1.0
REX - 020		10	17.5	8.3	47	0.65	6.68	0.11	0.4	3.3	3.5	0.23	<0.5
DUP		10	8.2	8.3	42	0.55	6.88	0.09	0.5	3.0	3.8	0.20	<0.5
Target Range - Lower Bound		<10	12.1	7.8	41	0.52	6.39	<0.05	0.3	2.9	3.0	0.15	<0.5
Upper Bound		20	13.6	8.8	48	0.68	7.17	0.16	0.6	3.4	4.3	0.28	1.0



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## QC CERTIFICATE OF ANALYSIS PH10035872

Sample Description	Method Analyte Units LOR	ME-MS23 Ag ppb 0.1	ME-MS23 As ppb 2	ME-MS23 Au ppb 0.02	ME-MS23 Ba ppb 10	ME-MS23 Be ppb 0.2	ME-MS23 Bi ppb 3	ME-MS23 Br ppm 0.05	ME-MS23 Ca ppm 0.2	ME-MS23 Cd ppb 1	ME-MS23 Ce ppb 0.1	ME-MS23 Co ppb 0.3	ME-MS23 Cr ppb 1	ME-MS23 Cs ppb 0.1	ME-MS23 Cu ppb 1	ME-MS23 Dy ppb 0.1
DUPLICATES																
REX - 030		2.5	<2	0.18	960	0.5	<3	0.12	171.5	<1	216	306	3	1.6	7170	49.0
DUP		2.7	<2	0.09	870	0.5	<3	0.13	158.5	<1	212	325	4	1.6	7730	48.7
Target Range - Lower Bound		2.4	<2	0.11	860	0.3	<3	0.07	156.5	<1	203	299	2	1.4	7080	46.3
Upper Bound		2.8	4	0.16	970	0.7	6	0.18	173.5	2	225	332	5	1.8	7820	51.4
REX - 054		3.2	14	0.13	1520	1.5	<3	0.13	136.0	1	317	258	7	4.4	5630	84.3
DUP		3.3	19	0.13	1560	1.1	<3	0.15	143.5	1	333	291	8	4.3	5880	87.8
Target Range - Lower Bound		3.0	14	0.10	1450	1.0	<3	0.08	132.5	<1	309	260	6	4.0	5470	81.6
Upper Bound		3.5	19	0.16	1630	1.6	6	0.20	147.0	2	341	289	9	4.7	6040	90.5
REX - 064		2.9	40	0.23	1250	15.9	<3	0.28	62.8	3	1555	393	33	42.6	14350	736
DUP		3.2	42	0.31	1380	16.4	<3	0.29	66.3	3	1665	439	35	45.0	15900	812
Target Range - Lower Bound		2.8	37	0.24	1240	15.1	<3	0.22	61.1	2	1530	395	31	41.5	14350	735
Upper Bound		3.3	45	0.30	1390	17.2	6	0.35	68.0	4	1690	437	37	46.1	15900	813
REX - 074																
DUP																
Target Range - Lower Bound																
Upper Bound																
REX - 098		0.8	<2	0.19	1780	2.7	<3	0.18	124.5	2	471	393	6	4.0	2880	159.5
DUP		0.8	<2	0.19	1730	2.7	<3	0.17	125.5	2	506	479	7	4.1	3040	165.0
Target Range - Lower Bound		0.7	<2	0.16	1660	2.4	<3	0.12	118.5	<1	464	414	5	3.7	2810	154.0
Upper Bound		0.9	4	0.22	1850	3.0	6	0.23	131.5	3	513	458	8	4.4	3110	170.5
REX - 108		0.8	3	0.06	1000	3.1	<3	0.15	131.0	1	417	255	17	5.4	1230	40.7
DUP		0.7	3	0.05	1000	3.3	<3	0.14	136.5	1	403	280	16	5.5	1210	42.5
Target Range - Lower Bound		0.6	<2	0.03	940	2.8	<3	0.09	127.0	<1	389	254	15	5.1	1160	39.4
Upper Bound		0.9	4	0.08	1060	3.6	6	0.20	140.5	2	431	281	18	5.8	1280	43.8
REX - 118		0.9	3	0.03	1380	2.2	<3	0.12	119.0	1	283	134.5	17	2.8	2470	44.6
DUP		1.0	3	0.05	1490	3.2	<3	0.11	125.5	1	318	147.0	20	3.2	2570	53.0
Target Range - Lower Bound		0.8	<2	<0.02	1350	2.4	<3	0.06	116.0	<1	285	133.5	17	2.8	2390	46.3
Upper Bound		1.1	4	0.06	1520	3.0	6	0.17	128.5	2	316	148.0	20	3.3	2650	51.3
REX - 140		2.3	29	0.19	2000	18.1	<3	0.23	73.2	1	1240	364	193	32.2	12700	88.3
DUP		2.3	31	0.18	1950	19.9	<3	0.23	66.3	1	1125	377	199	32.6	12350	82.6
Target Range - Lower Bound		2.1	27	0.16	1870	17.9	<3	0.17	66.1	<1	1125	352	185	30.7	11900	81.1
Upper Bound		2.5	34	0.21	2080	20.2	6	0.29	73.4	2	1240	389	207	34.1	13150	89.8



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## QC CERTIFICATE OF ANALYSIS PH10035872

Sample Description	Method Analyte Units LOR	ME-MS23 Er ppb 0.1	ME-MS23 Eu ppb 0.1	ME-MS23 Fe ppm 0.1	ME-MS23 Ga ppb 0.5	ME-MS23 Gd ppb 0.1	ME-MS23 Ge ppb 0.1	ME-MS23 Hf ppb 0.5	ME-MS23 Hg ppb 0.1	ME-MS23 Ho ppb 0.1	ME-MS23 I ppm 0.01	ME-MS23 In ppb 0.1	ME-MS23 La ppb 0.1	ME-MS23 Li ppb 0.2	ME-MS23 Lu ppb 0.1	ME-MS23 Mg ppm 0.01
DUPLICATES																
REX - 030		33.0	26.1	8.7	27.6	88.4	2.3	1.7	0.4	13.9	0.17	<0.1	67.1	2.7	3.5	44.4
DUP		32.1	26.3	8.5	25.4	89.7	2.2	1.8	0.5	13.7	0.19	<0.1	67.5	2.8	3.4	39.3
Target Range - Lower Bound		30.8	24.8	8.1	24.7	84.5	2.0	1.2	0.3	13.0	0.16	<0.1	63.8	2.4	3.2	39.7
Upper Bound		34.3	27.6	9.1	28.3	93.6	2.5	2.3	0.6	14.6	0.20	0.2	70.8	3.1	3.7	44.0
REX - 054		55.0	30.8	10.4	44.9	129.5	2.6	3.9	0.5	24.1	0.16	<0.1	100.0	5.4	5.7	30.9
DUP		58.1	31.7	10.4	44.9	132.5	2.6	3.9	0.5	24.9	0.17	<0.1	105.5	5.0	6.0	31.4
Target Range - Lower Bound		53.6	29.6	9.8	42.2	124.5	2.4	3.2	0.4	23.2	0.15	<0.1	97.5	4.7	5.5	29.6
Upper Bound		59.5	32.9	11.0	47.6	137.5	2.8	4.6	0.6	25.8	0.18	0.2	108.0	5.7	6.2	32.7
REX - 064		589	279	77.8	69.4	1040	18.6	22.6	2.1	225	0.48	0.2	519	37.7	90.3	27.4
DUP		636	315	83.3	74.0	1145	19.7	23.8	2.4	245	0.56	0.2	561	38.9	95.5	28.2
Target Range - Lower Bound		582	282	76.4	67.6	1040	18.1	21.5	2.0	223	0.48	<0.1	513	36.2	88.2	26.4
Upper Bound		643	312	84.7	75.8	1145	20.2	24.9	2.5	247	0.56	0.3	567	40.4	97.6	29.2
REX - 074																
DUP																
Target Range - Lower Bound																
Upper Bound																
REX - 098		88.5	62.4	11.8	58.0	289	5.8	4.5	1.0	26.2	0.27	<0.1	247	4.4	9.0	37.8
DUP		93.4	63.0	12.9	52.3	296	5.4	4.4	0.9	27.9	0.28	<0.1	255	5.3	9.5	35.1
Target Range - Lower Bound		86.3	59.5	11.6	51.9	278	5.2	3.7	0.8	25.6	0.25	<0.1	238	4.4	8.7	34.6
Upper Bound		95.6	65.9	13.1	58.4	307	6.0	5.2	1.1	28.5	0.30	0.2	264	5.3	9.8	38.3
REX - 108		23.3	14.5	21.6	39.3	68.7	2.1	3.1	0.7	6.8	0.11	0.1	132.0	10.0	2.3	23.7
DUP		24.3	15.3	22.4	38.3	70.3	2.0	3.2	1.2	7.1	0.12	0.1	133.5	10.5	2.4	22.9
Target Range - Lower Bound		22.5	14.1	20.8	36.4	65.9	1.8	2.5	0.8	6.5	0.10	<0.1	126.0	9.5	2.1	22.1
Upper Bound		25.1	15.7	23.2	41.2	73.1	2.3	3.8	1.1	7.4	0.13	0.2	139.5	11.0	2.6	24.5
REX - 118		26.1	12.8	16.8	45.6	66.7	1.6	3.7	1.8	7.7	0.10	0.1	89.6	4.6	2.6	26.8
DUP		31.7	14.7	20.5	47.8	77.6	1.8	4.5	1.0	9.1	0.11	0.1	103.5	6.7	3.3	27.4
Target Range - Lower Bound		27.4	13.0	17.6	43.9	68.4	1.5	3.4	1.2	7.9	0.09	<0.1	91.6	5.2	2.7	25.7
Upper Bound		30.4	14.5	19.7	49.5	75.9	1.9	4.8	1.6	8.9	0.12	0.2	101.5	6.1	3.2	28.5
REX - 140		52.5	30.8	162.0	158.5	153.5	9.0	20.8	1.5	14.9	0.51	0.5	398	69.5	7.7	23.6
DUP		49.7	28.9	166.0	160.0	145.5	9.2	20.9	1.6	14.3	0.51	0.5	352	70.5	7.4	22.4
Target Range - Lower Bound		48.4	28.3	155.5	151.0	142.0	8.5	19.3	1.4	13.8	0.47	0.4	356	66.3	7.1	21.8
Upper Bound		53.8	31.4	172.5	167.5	157.0	9.7	22.4	1.7	15.4	0.55	0.6	394	73.7	8.0	24.2





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## QC CERTIFICATE OF ANALYSIS PH10035872

Sample Description	Method Analyte Units LOR	ME-MS23 Mn ppm 0.01	ME-MS23 Mo ppb 0.5	ME-MS23 Nb ppb 0.1	ME-MS23 Nd ppb 0.1	ME-MS23 Ni ppb 1	ME-MS23 Pb ppb 1	ME-MS23 Pb 206 ppb 1	ME-MS23 Pb 207 ppb 1	ME-MS23 Pb 208 ppb 1	ME-MS23 Pd ppb 0.1	ME-MS23 Pr ppb 0.1	ME-MS23 Rb ppb 0.1	ME-MS23 Re ppb 0.1	ME-MS23 Sb ppb 0.5	ME-MS23 Sc ppb 1
DUPLICATES																
REX - 030		6.30	3.1	0.3	300	142	10	3	2	5	4.3	41.2	361	<0.1	<0.5	25
DUP		6.78	3.3	0.4	299	140	5	2	1	3	3.9	40.9	336	<0.1	<0.5	26
Target Range - Lower Bound		6.20	2.5	0.2	284	133	6	<1	<1	3	3.8	38.9	331	<0.1	<0.5	23
Upper Bound		6.88	3.9	0.5	315	149	9	4	2	5	4.4	43.2	366	0.2	1.0	28
REX - 054		9.83	7.4	1.5	313	98	17	4	4	9	8.4	48.5	281	<0.1	0.8	36
DUP		10.70	8.2	1.4	327	103	17	4	4	9	8.6	49.7	290	<0.1	0.9	35
Target Range - Lower Bound		9.74	6.9	1.3	304	94	15	3	3	8	8.0	46.5	271	<0.1	<0.5	33
Upper Bound		10.80	8.7	1.6	336	107	19	5	5	10	9.0	51.7	300	0.2	1.0	38
REX - 064		10.70	6.6	8.0	2200	395	25	7	6	14	57.6	314	600	0.1	3.6	252
DUP		11.50	7.9	7.6	2400	425	28	8	6	15	57.5	341	627	0.1	3.8	273
Target Range - Lower Bound		10.55	6.4	7.3	2180	389	24	6	5	13	54.6	311	583	<0.1	3.0	248
Upper Bound		11.65	8.1	8.3	2420	432	29	9	7	16	60.5	344	644	0.2	4.4	277
REX - 074																
DUP																
Target Range - Lower Bound																
Upper Bound																
REX - 098		15.90	3.7	0.8	851	175	22	6	5	10	7.7	138.0	476	<0.1	0.6	67
DUP		19.05	4.1	0.9	871	184	17	5	4	8	6.7	145.0	473	<0.1	0.6	67
Target Range - Lower Bound		16.60	3.2	0.7	818	170	18	4	3	8	6.7	134.5	451	<0.1	<0.5	63
Upper Bound		18.35	4.6	1.0	904	189	21	7	6	10	7.7	148.5	498	0.2	1.0	71
REX - 108		9.86	2.2	3.4	263	137	119	28	26	63	4.2	53.0	350	<0.1	0.6	42
DUP		10.80	2.4	3.2	274	136	123	29	28	64	4.4	52.3	353	<0.1	0.5	42
Target Range - Lower Bound		9.80	1.7	3.0	255	129	114	26	25	59	4.0	49.9	334	<0.1	<0.5	39
Upper Bound		10.85	2.9	3.6	282	144	128	31	29	68	4.6	55.4	369	0.2	1.0	45
REX - 118		5.41	2.5	1.8	210	143	31	8	7	15	4.6	37.7	242	<0.1	0.5	32
DUP		6.12	2.6	2.4	238	160	41	10	9	21	5.9	44.5	254	<0.1	0.6	38
Target Range - Lower Bound		5.47	1.9	1.9	213	143	33	8	7	16	4.9	38.9	236	<0.1	<0.5	32
Upper Bound		6.06	3.2	2.3	235	160	39	10	9	20	5.6	43.3	261	0.2	1.0	38
REX - 140		9.93	7.1	19.6	633	164	177	42	38	99	28.0	127.5	891	<0.1	5.4	309
DUP		9.90	7.5	18.8	592	169	155	36	32	88	28.4	117.0	892	<0.1	5.7	294
Target Range - Lower Bound		9.41	6.4	18.1	582	157	157	36	32	88	26.7	116.0	847	<0.1	4.8	285
Upper Bound		10.40	8.2	20.3	643	176	175	42	38	99	29.7	128.5	936	0.2	6.3	318



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## QC CERTIFICATE OF ANALYSIS PH10035872

Sample Description	Method Analyte Units LOR	ME-MS23 Se ppb	ME-MS23 Sm ppb	ME-MS23 Sn ppb	ME-MS23 Sr ppb	ME-MS23 Ta ppb	ME-MS23 Tb ppb	ME-MS23 Te ppb	ME-MS23 Th ppb	ME-MS23 Ti ppb	ME-MS23 Tl ppb	ME-MS23 Tm ppb	ME-MS23 U ppb	ME-MS23 W ppb	ME-MS23 Y ppb	ME-MS23 Yb ppb
		2	0.1	0.2	1	1	0.1	1	0.02	5	0.5	0.1	0.1	1	0.1	0.1
DUPLICATES																
REX - 030		18	78.7	0.2	288	<1	15.5	<1	8.57	166	0.6	4.7	18.7	1	276	15.0
DUP		28	80.4	0.2	260	<1	15.8	<1	9.52	154	0.6	4.4	20.2	1	272	14.5
Target Range - Lower Bound		20	75.5	<0.2	259	<1	14.8	<1	8.57	147	<0.5	4.2	18.4	<1	260	13.9
Upper Bound		26	83.6	0.4	289	2	16.5	2	9.52	173	1.0	4.9	20.5	2	288	15.6
REX - 054		25	88.0	1.3	400	<1	25.1	1	68.2	341	2.0	7.5	59.8	1	481	25.1
DUP		43	90.2	1.2	412	<1	25.4	<1	71.3	295	1.9	8.0	61.7	1	491	26.0
Target Range - Lower Bound		30	84.5	1.0	385	<1	23.9	<1	66.2	297	1.4	7.3	57.6	<1	462	24.2
Upper Bound		38	93.7	1.5	427	2	26.6	2	73.3	339	2.5	8.2	63.9	2	510	26.9
REX - 064		302	759	4.8	345	4	212	1	160.0	2390	7.2	101.0	277	10	4440	367
DUP		318	839	5.1	370	4	235	1	179.5	2200	7.7	108.0	303	11	4740	385
Target Range - Lower Bound		293	759	4.5	339	3	212	<1	161.0	2180	6.6	99.2	275	9	4360	357
Upper Bound		328	839	5.4	376	5	235	2	178.5	2410	8.3	110.0	305	12	4820	395
REX - 074																
DUP																
Target Range - Lower Bound																
Upper Bound																
REX - 098		49	242	0.6	758	1	43.6	1	34.3	673	2.2	11.5	48.7	1	768	45.9
DUP		38	249	0.7	728	1	45.1	<1	39.1	595	2.5	12.4	55.4	1	768	49.5
Target Range - Lower Bound		39	233	0.4	705	<1	42.0	<1	34.8	597	1.7	11.3	49.3	<1	730	45.2
Upper Bound		48	258	0.9	781	2	46.7	2	38.6	671	3.0	12.6	54.8	2	807	50.2
REX - 108		12	60.8	1.8	492	<1	11.0	<1	45.7	1480	0.9	3.3	35.9	1	210	13.1
DUP		12	62.9	2.0	504	<1	11.3	<1	48.7	1410	1.1	3.4	37.1	1	222	13.7
Target Range - Lower Bound		9	58.7	1.6	472	<1	10.5	<1	44.8	1370	<0.5	3.1	34.6	<1	205	12.6
Upper Bound		15	65.0	2.2	524	2	11.8	2	49.6	1520	1.6	3.6	38.4	2	227	14.2
REX - 118		18	50.4	1.6	667	<1	11.1	<1	48.2	620	0.6	3.5	29.3	1	262	13.6
DUP		15	59.6	1.9	669	<1	13.3	<1	51.4	837	0.8	4.4	33.2	1	298	16.8
Target Range - Lower Bound		14	52.2	1.5	634	<1	11.5	<1	47.3	687	<0.5	3.7	29.6	<1	266	14.3
Upper Bound		19	57.9	2.0	702	2	12.9	2	52.3	770	1.0	4.2	32.9	2	294	16.1
REX - 140		38	148.5	20.0	344	2	25.0	1	401	6300	5.0	9.4	62.0	7	408	35.0
DUP		40	138.5	20.1	319	2	23.8	1	387	6420	5.0	8.9	62.1	7	396	34.6
Target Range - Lower Bound		35	136.0	18.8	314	<1	23.1	<1	374	6040	4.3	8.6	58.8	6	382	33.0
Upper Bound		43	151.0	21.3	349	3	25.7	2	414	6680	5.8	9.7	65.3	8	422	36.6



# ALS Chemex

EXCELLENCE IN ANALYTICAL CHEMISTRY

Australian Laboratory Services Pty. Ltd.

32 Shand Street

Stafford

Brisbane QLD 4053

Phone: +61 (7) 3243 7222 Fax: +61 (7) 3243 7218 www.alschemex.com

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## QC CERTIFICATE OF ANALYSIS PH10035872

Sample Description	Method Analyte Units LOR	ME-MS23 Zn ppb 10	ME-MS23 Zr ppb 0.1	pH-MS23 Final pH Unity 0.1	ME-ICP23 Al ppm 1	ME-ICP23 Ba ppm 0.05	ME-ICP23 Cu ppm 0.05	ME-ICP23 Ni ppm 0.05	ME-ICP23 P ppm 0.1	ME-ICP23 S ppm 0.1	ME-ICP23 Si ppm 0.5	ME-ICP23 Sr ppm 0.05	ME-ICP23 Ti ppm 0.5
DUPLICATES													
REX - 030		30	12.9	8.3	66	0.86	8.19	0.14	0.8	5.4	6.7	0.28	<0.5
DUP		20	14.5	8.3	64	0.95	8.81	0.14	0.9	5.5	4.6	0.25	<0.5
Target Range - Lower Bound		<10	12.9	7.8	61	0.81	8.03	0.08	0.7	5.1	4.9	0.20	<0.5
Upper Bound		40	14.5	8.8	69	1.00	8.98	0.20	1.0	5.8	6.4	0.33	1.0
REX - 054		150	38.1	8.3	42	1.54	5.63	0.08	0.7	4.8	3.8	0.40	<0.5
DUP		140	34.1	8.3	44	1.33	5.95	0.08	0.7	5.0	4.0	0.40	<0.5
Target Range - Lower Bound		130	34.2	7.8	40	1.31	5.45	<0.05	0.6	4.6	3.2	0.33	<0.5
Upper Bound		160	38.0	8.8	46	1.56	6.13	0.10	0.8	5.2	4.6	0.47	1.0
REX - 064		270	151.0	8.0	63	0.83	14.05	0.34	1.1	15.7	12.5	0.19	<0.5
DUP		290	163.0	8.0	71	0.97	15.85	0.36	1.4	16.3	20.1	0.19	0.5
Target Range - Lower Bound		260	149.0	7.5	63	0.81	14.15	0.28	1.1	15.1	15.0	0.13	<0.5
Upper Bound		300	165.0	8.5	71	1.00	15.75	0.42	1.4	16.9	17.6	0.25	1.0
REX - 074				8.3	65	0.64	8.36	0.23	0.6	2.8	6.1	0.28	<0.5
DUP				8.3	70	0.68	8.13	0.26	0.6	3.2	5.4	0.27	<0.5
Target Range - Lower Bound				7.8	63	0.58	7.78	0.18	0.5	2.8	5.0	0.21	<0.5
Upper Bound				8.8	72	0.74	8.71	0.31	0.7	3.3	6.5	0.34	1.0
REX - 098		100	26.3	8.1	61	2.07	3.16	0.18	0.7	5.5	8.0	0.75	<0.5
DUP		100	34.0	8.1	65	2.18	3.46	0.19	0.8	6.0	8.3	0.75	<0.5
Target Range - Lower Bound		90	28.5	7.6	59	1.97	3.09	0.13	0.6	5.4	7.2	0.66	<0.5
Upper Bound		120	31.8	8.6	67	2.28	3.53	0.24	0.9	6.1	9.1	0.84	1.0
REX - 108		240	37.5	8.0	133	1.10	1.29	0.14	1.3	8.2	31.2	0.53	0.7
DUP		210	36.2	8.0	145	0.85	1.25	0.15	1.3	8.4	32.4	0.49	0.7
Target Range - Lower Bound		200	34.9	7.5	131	0.88	1.16	0.09	1.1	7.8	29.7	0.43	<0.5
Upper Bound		250	38.8	8.5	147	1.07	1.38	0.20	1.5	8.8	33.9	0.59	1.0
REX - 118		250	38.2	8.1	105	1.34	2.73	0.16	1.3	4.7	22.8	0.69	<0.5
DUP		240	47.1	8.1	114	1.58	2.90	0.16	1.1	5.0	25.2	0.70	<0.5
Target Range - Lower Bound		220	40.4	7.6	103	1.34	2.62	0.10	1.0	4.5	22.3	0.61	<0.5
Upper Bound		270	44.9	8.6	116	1.58	3.01	0.22	1.4	5.2	25.7	0.78	1.0
REX - 140		240	266	9.0	218	0.83	12.60	0.08	2.7	8.2	167.0	0.21	1.8
DUP		210	257	9.0	250	0.87	12.20	0.08	3.3	8.5	212	0.23	2.2
Target Range - Lower Bound		200	248	8.5	221	0.76	11.75	<0.05	2.8	7.8	179.5	0.16	1.4
Upper Bound		250	275	9.6	247	0.94	13.05	0.10	3.3	8.9	199.5	0.28	2.6