

September 10, 2020

Report to:  
Kent Applegate  
Rio Algom Mining Company  
P.O. Box 218  
Grants, NM 87020

Bill to:  
Accounts Payable  
Rio Algom Mining Company  
P.O. Box 218  
Grants, NM 87020

cc: Clark Short, Angela Persico, Michaella Gorospe

Project ID: 4508122295  
ACZ Project ID: L60870

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 14, 2020. This project has been assigned to ACZ's project number, L60870. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L60870. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 10, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically \$11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.



Scott Habermehl has reviewed  
and approved this report.



### Rio Algom Mining Company

Project ID: 4508122295

Sample ID: 5-02 KD

ACZ Sample ID: **L60870-02**

Date Sampled: 08/11/20 11:11

Date Received: 08/14/20

Sample Matrix: Groundwater

#### Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	08/25/20 11:52	bsu
Arsenic, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0002	0.001	08/24/20 15:34	bsu
Barium, dissolved	M200.7 ICP	1	0.019	B		mg/L	0.007	0.04	08/18/20 18:55	kja
Beryllium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00008	0.0003	08/24/20 15:34	bsu
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	08/24/20 15:34	bsu
Calcium, dissolved	M200.7 ICP	1	86.0		*	mg/L	0.1	0.5	08/18/20 18:55	kja
Iron, dissolved	M200.7 ICP	1	2.76			mg/L	0.06	0.2	08/19/20 12:56	kja
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	08/24/20 15:34	bsu
Magnesium, dissolved	M200.7 ICP	1	88.0		*	mg/L	0.2	1	08/18/20 18:55	kja
Molybdenum, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0002	0.0005	08/24/20 15:34	bsu
Nickel, dissolved	M200.8 ICP-MS	1	0.0006	B		mg/L	0.0004	0.001	08/24/20 15:34	bsu
Potassium, dissolved	M200.7 ICP	1	18.9			mg/L	0.2	1	08/19/20 12:56	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1		U	*	mg/L	0.002	0.005	08/20/20 15:07	kja
Sodium, dissolved	M200.7 ICP	1	94.1		*	mg/L	0.2	1	08/18/20 18:55	kja
Uranium, dissolved	M200.8 ICP-MS	1	0.0008			mg/L	0.0001	0.0005	08/24/20 15:34	bsu

#### Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	471		*	mg/L	2	20	08/21/20 0:00	eep
Carbonate as CaCO3		1		U	*	mg/L	2	20	08/21/20 0:00	eep
Hydroxide as CaCO3		1		U	*	mg/L	2	20	08/21/20 0:00	eep
Total Alkalinity		1	471		*	mg/L	2	20	08/21/20 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			09/10/20 0:00	calc
Sum of Anions			16			meq/L			09/10/20 0:00	calc
Sum of Cations			16			meq/L			09/10/20 0:00	calc
Chloride	SM4500Cl-E	1	11.1		*	mg/L	0.5	2	08/19/20 10:33	rbt
Conductivity @25C	SM2510B	1	1300		*	umhos/cm	1	10	08/21/20 4:14	eep
Cyanide, Total	D7511-09	1		U	*	mg/L	0.003	0.01	08/18/20 14:36	rbt
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.41		*	mg/L	0.02	0.1	08/26/20 2:22	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	916		*	mg/L	20	40	08/17/20 11:44	che
Sulfate	D516-02/-07/-11 - Turbidimetric	25	289		*	mg/L	25	125	08/18/20 15:44	rbt
TDS (calculated)	Calculation		877			mg/L			09/10/20 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						09/10/20 0:00	calc

### Rio Algom Mining Company

Project ID: 4508122295  
 Sample ID: 31-02 TRB-R

ACZ Sample ID: **L60870-03**  
 Date Sampled: 08/11/20 16:22  
 Date Received: 08/14/20  
 Sample Matrix: Groundwater

#### Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1	684		*	mg/L	0.1	0.5	08/18/20 18:58	kja
Iron, dissolved	M200.7 ICP	1	6.01			mg/L	0.06	0.2	08/19/20 17:17	kja
Magnesium, dissolved	M200.7 ICP	1	854			mg/L	0.2	1	08/18/20 18:58	kja
Molybdenum, dissolved	M200.8 ICP-MS	5		U		mg/L	0.001	0.003	08/24/20 15:43	bsu
Nickel, dissolved	M200.8 ICP-MS	5		U		mg/L	0.002	0.005	08/24/20 15:43	bsu
Potassium, dissolved	M200.7 ICP	1	19.1			mg/L	0.2	1	08/19/20 17:17	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1		U	*	mg/L	0.002	0.005	08/20/20 15:09	kja
Sodium, dissolved	M200.7 ICP	1	679			mg/L	0.2	1	08/18/20 18:58	kja
Uranium, dissolved	M200.8 ICP-MS	5	0.0037			mg/L	0.0005	0.003	08/24/20 15:43	bsu

#### Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	1140		*	mg/L	2	20	08/21/20 0:00	eep
Carbonate as CaCO3		1		U	*	mg/L	2	20	08/21/20 0:00	eep
Hydroxide as CaCO3		1		U	*	mg/L	2	20	08/21/20 0:00	eep
Total Alkalinity		1	1140		*	mg/L	2	20	08/21/20 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			4.2			%			09/10/20 0:00	calc
Sum of Anions			124			meq/L			09/10/20 0:00	calc
Sum of Cations			135			meq/L			09/10/20 0:00	calc
Chloride	SM4500Cl-E	75	1100		*	mg/L	40	200	08/19/20 13:02	rbt
Conductivity @25C	SM2510B	1	8580		*	umhos/cm	1	10	08/21/20 4:32	eep
Cyanide, Total	D7511-09	1		U	*	mg/L	0.003	0.01	08/18/20 14:38	rbt
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.04	B	*	mg/L	0.02	0.1	08/26/20 2:23	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	7640	H	*	mg/L	100	200	08/20/20 14:57	jck
Sulfate	D516-02/-07/-11 - Turbidimetric	120	3350		*	mg/L	120	600	08/18/20 15:51	rbt
TDS (calculated)	Calculation		7390			mg/L			09/10/20 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.03						09/10/20 0:00	calc

### Rio Algom Mining Company

Project ID: 4508122295  
 Sample ID: 32-45 KD-R

ACZ Sample ID: **L60870-04**  
 Date Sampled: 08/11/20 18:12  
 Date Received: 08/14/20  
 Sample Matrix: Groundwater

#### Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, dissolved	M200.8 ICP-MS	1	0.0006	B		mg/L	0.0004	0.002	08/25/20 11:53	bsu
Arsenic, dissolved	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0002	0.001	08/24/20 15:44	bsu
Barium, dissolved	M200.7 ICP	1	0.035	B		mg/L	0.007	0.04	08/18/20 19:01	kja
Beryllium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00008	0.0003	08/24/20 15:44	bsu
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	08/24/20 15:44	bsu
Calcium, dissolved	M200.7 ICP	1	236		*	mg/L	0.1	0.5	08/18/20 19:01	kja
Iron, dissolved	M200.7 ICP	1		U	*	mg/L	0.06	0.2	08/18/20 19:01	kja
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	08/24/20 15:44	bsu
Magnesium, dissolved	M200.7 ICP	1	57.7			mg/L	0.2	1	08/18/20 19:01	kja
Molybdenum, dissolved	M200.8 ICP-MS	1	0.141			mg/L	0.0002	0.0005	08/24/20 15:44	bsu
Nickel, dissolved	M200.8 ICP-MS	1	0.0014			mg/L	0.0004	0.001	08/24/20 15:44	bsu
Potassium, dissolved	M200.7 ICP	1	6.6			mg/L	0.2	1	08/19/20 17:21	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1		U	*	mg/L	0.002	0.005	08/20/20 15:11	kja
Sodium, dissolved	M200.7 ICP	1	177			mg/L	0.2	1	08/18/20 19:01	kja
Uranium, dissolved	M200.8 ICP-MS	1	0.0425			mg/L	0.0001	0.0005	08/24/20 15:44	bsu

#### Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	378		*	mg/L	2	20	08/21/20 0:00	eep
Carbonate as CaCO3		1		U	*	mg/L	2	20	08/21/20 0:00	eep
Hydroxide as CaCO3		1		U	*	mg/L	2	20	08/21/20 0:00	eep
Total Alkalinity		1	378		*	mg/L	2	20	08/21/20 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			2.0			%			09/10/20 0:00	calc
Sum of Anions			24			meq/L			09/10/20 0:00	calc
Sum of Cations			25			meq/L			09/10/20 0:00	calc
Chloride	SM4500Cl-E	1	80.8		*	mg/L	0.5	2	08/19/20 12:40	rbt
Conductivity @25C	SM2510B	1	1920		*	umhos/cm	1	10	08/21/20 4:44	eep
Cyanide, Total	D7511-09	1		U	*	mg/L	0.003	0.01	08/18/20 14:40	rbt
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.28		*	mg/L	0.02	0.1	08/26/20 2:24	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1480		*	mg/L	20	40	08/17/20 11:48	che
Sulfate	D516-02/-07/-11 - Turbidimetric	25	672		*	mg/L	25	125	08/18/20 15:40	rbt
TDS (calculated)	Calculation		1460			mg/L			09/10/20 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.01						09/10/20 0:00	calc

**Rio Algom Mining Company**

Project ID: 4508122295  
Sample ID: 5-03 ALL-R

ACZ Sample ID: **L60870-05**  
Date Sampled: 08/12/20 11:44  
Date Received: 08/14/20  
Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1	595		*	mg/L	0.1	0.5	08/18/20 19:05	kja
Iron, dissolved	M200.7 ICP	1		U	*	mg/L	0.06	0.2	08/18/20 19:05	kja
Magnesium, dissolved	M200.7 ICP	1	326			mg/L	0.2	1	08/18/20 19:05	kja
Molybdenum, dissolved	M200.8 ICP-MS	2	0.001			mg/L	0.0004	0.001	08/24/20 15:46	bsu
Nickel, dissolved	M200.8 ICP-MS	2	0.0022			mg/L	0.0008	0.002	08/24/20 15:46	bsu
Potassium, dissolved	M200.7 ICP	1	3.8			mg/L	0.2	1	08/19/20 17:24	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	0.0104		*	mg/L	0.002	0.005	08/20/20 15:13	kja
Sodium, dissolved	M200.7 ICP	1	490			mg/L	0.2	1	08/18/20 19:05	kja
Uranium, dissolved	M200.8 ICP-MS	2	0.0936			mg/L	0.0002	0.001	08/24/20 15:46	bsu

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	317		*	mg/L	2	20	08/21/20 0:00	eep
Carbonate as CaCO3		1		U	*	mg/L	2	20	08/21/20 0:00	eep
Hydroxide as CaCO3		1		U	*	mg/L	2	20	08/21/20 0:00	eep
Total Alkalinity		1	317		*	mg/L	2	20	08/21/20 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			4.0			%			09/10/20 0:00	calc
Sum of Anions			72			meq/L			09/10/20 0:00	calc
Sum of Cations			78			meq/L			09/10/20 0:00	calc
Chloride	SM4500Cl-E	10	637		*	mg/L	5	20	08/19/20 12:49	rbt
Conductivity @25C	SM2510B	1	5390		*	umhos/cm	1	10	08/21/20 4:55	eep
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.62		*	mg/L	0.02	0.1	08/26/20 2:30	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	4690	H	*	mg/L	100	200	08/27/20 14:20	jck
Sulfate	D516-02/-07/-11 - Turbidimetric	120	2290		*	mg/L	120	600	08/18/20 15:51	rbt
TDS (calculated)	Calculation		4540			mg/L			09/10/20 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.03						09/10/20 0:00	calc

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (4) EPA SW-846. Test Methods for Evaluating Solid Waste.
- (5) Standard Methods for the Examination of Water and Wastewater.

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
- (4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
- (5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:

<https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf>

**Rio Algom Mining Company**

ACZ Project ID: **L60870**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Alkalinity as CaCO3** SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503747</b>													
WG503747PBW1	PBW	08/20/20 18:57				7.5	mg/L		-20	20			
WG503747LCSW3	LCSW	08/20/20 19:17	WC200810-7	820.0001		836	mg/L	102	90	110			
WG503747LCSW6	LCSW	08/20/20 22:36	WC200810-7	820.0001		855	mg/L	104	90	110			
WG503747PBW2	PBW	08/20/20 22:46				2.1	mg/L		-20	20			
WG503747LCSW9	LCSW	08/21/20 2:25	WC200810-7	820.0001		862	mg/L	105	90	110			
WG503747PBW3	PBW	08/21/20 2:34				2.2	mg/L		-20	20			
L60962-06DUP	DUP	08/21/20 6:07			117	104	mg/L				12	20	
WG503747LCSW12	LCSW	08/21/20 6:27	WC200810-7	820.0001		866	mg/L	106	90	110			
WG503747PBW4	PBW	08/21/20 6:37				2.3	mg/L		-20	20			
WG503747LCSW15	LCSW	08/21/20 10:08	WC200810-7	820.0001		868	mg/L	106	90	110			

**Antimony, dissolved** M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503937</b>													
WG503937ICV	ICV	08/25/20 11:32	MS200812-2	.02004		.01836	mg/L	92	90	110			
WG503937ICB	ICB	08/25/20 11:33				U	mg/L		-0.00088	0.00088			
WG503937LFB	LFB	08/25/20 11:35	MS200803-2	.01		.00914	mg/L	91	85	115			
L60856-01AS	AS	08/25/20 11:39	MS200803-2	2	U	2.01	mg/L	101	70	130			
L60856-01ASD	ASD	08/25/20 11:41	MS200803-2	2	U	2.026	mg/L	101	70	130	1	20	

**Arsenic, dissolved** M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503894</b>													
WG503894ICV	ICV	08/24/20 15:21	MS200812-2	.05		.04853	mg/L	97	90	110			
WG503894ICB	ICB	08/24/20 15:23				U	mg/L		-0.00044	0.00044			
WG503894LFB	LFB	08/24/20 15:25	MS200803-2	.05005		.04756	mg/L	95	85	115			
L60870-02AS	AS	08/24/20 15:35	MS200803-2	.05005	U	.04851	mg/L	97	70	130			
L60870-02ASD	ASD	08/24/20 15:37	MS200803-2	.05005	U	.04874	mg/L	97	70	130	0	20	

**Barium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503549</b>													
WG503549ICV	ICV	08/18/20 17:52	II200810-1	2		1.9898	mg/L	99	95	105			
WG503549ICB	ICB	08/18/20 17:58				U	mg/L		-0.021	0.021			
WG503549LFB	LFB	08/18/20 18:10	II200805-3	.5005		.4837	mg/L	97	85	115			
L60868-04AS	AS	08/18/20 18:36	II200805-3	.5005	.014	.5544	mg/L	108	85	115			
L60868-04ASD	ASD	08/18/20 18:39	II200805-3	.5005	.014	.5443	mg/L	106	85	115	2	20	
L60879-05AS	AS	08/18/20 19:30	II200805-3	.5005	.04	.5785	mg/L	108	85	115			
L60879-05ASD	ASD	08/18/20 19:33	II200805-3	.5005	.04	.5906	mg/L	110	85	115	2	20	

**Beryllium, dissolved** M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503894</b>													
WG503894ICV	ICV	08/24/20 15:21	MS200812-2	.05		.048589	mg/L	97	90	110			
WG503894ICB	ICB	08/24/20 15:23				U	mg/L		-0.000176	0.000176			
WG503894LFB	LFB	08/24/20 15:25	MS200803-2	.05005		.051316	mg/L	103	85	115			
L60870-02AS	AS	08/24/20 15:35	MS200803-2	.05005	U	.053688	mg/L	107	70	130			
L60870-02ASD	ASD	08/24/20 15:37	MS200803-2	.05005	U	.055934	mg/L	112	70	130	4	20	



Rio Algom Mining Company

ACZ Project ID: **L60870**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Cadmium, dissolved**

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503894</b>													
WG503894ICV	ICV	08/24/20 15:21	MS200812-2	.05		.048402	mg/L	97	90	110			
WG503894ICB	ICB	08/24/20 15:23				U	mg/L		-0.00011	0.00011			
WG503894LFB	LFB	08/24/20 15:25	MS200803-2	.05005		.048949	mg/L	98	85	115			
L60870-02AS	AS	08/24/20 15:35	MS200803-2	.05005	U	.049693	mg/L	99	70	130			
L60870-02ASD	ASD	08/24/20 15:37	MS200803-2	.05005	U	.050743	mg/L	101	70	130	2	20	

**Calcium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503549</b>													
WG503549ICV	ICV	08/18/20 17:52	II200810-1	100		98.62	mg/L	99	95	105			
WG503549ICB	ICB	08/18/20 17:58				U	mg/L		-0.3	0.3			
WG503549LFB	LFB	08/18/20 18:10	II200805-3	67.9908		67.17	mg/L	99	85	115			
L60868-04AS	AS	08/18/20 18:36	II200805-3	67.9908	538	586.7	mg/L	72	85	115			M3
L60868-04ASD	ASD	08/18/20 18:39	II200805-3	67.9908	538	587.8	mg/L	73	85	115	0	20	M3
L60879-05AS	AS	08/18/20 19:30	II200805-3	67.9908	423	469.9	mg/L	69	85	115			M3
L60879-05ASD	ASD	08/18/20 19:33	II200805-3	67.9908	423	489.7	mg/L	98	85	115	4	20	

**Chloride**

SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503598</b>													
WG503598ICB	ICB	08/19/20 8:07				U	mg/L		-1.5	1.5			
WG503598ICV	ICV	08/19/20 8:07	WI200506-2	55.055		57.18	mg/L	104	90	110			
WG503598LFB1	LFB	08/19/20 9:57	WI200327-3	30.03		31.99	mg/L	107	90	110			
WG503598LFB2	LFB	08/19/20 10:18	WI200327-3	30.03		31.97	mg/L	106	90	110			
L60870-02DUP	DUP	08/19/20 10:33			11.1	10.4	mg/L				7	20	
L60868-04AS	AS	08/19/20 10:43	10XCL	30	483	500.4	mg/L	58	90	110			M3
<b>WG503614</b>													
WG503614ICB	ICB	08/19/20 8:07				U	mg/L		-1.5	1.5			
WG503614ICV	ICV	08/19/20 8:07	WI200506-2	55.055		57.18	mg/L	104	90	110			
WG503614LFB	LFB	08/19/20 12:39	WI200327-3	30.03		31.44	mg/L	105	90	110			
L60544-04AS	AS	08/19/20 12:39	WI200327-3	30.03	U	32.09	mg/L	107	90	110			
L60545-04DUP	DUP	08/19/20 12:39			3.2	3.15	mg/L				2	20	RA

**Conductivity @25C**

SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503747</b>													
WG503747LCSW2	LCSW	08/20/20 19:04	PCN61372	1410		1420	umhos/cm	101	90	110			
WG503747LCSW5	LCSW	08/20/20 22:22	PCN61372	1410		1410	umhos/cm	100	90	110			
WG503747LCSW8	LCSW	08/21/20 2:11	PCN61372	1410		1410	umhos/cm	100	90	110			
L60962-06DUP	DUP	08/21/20 6:07			217	217	umhos/cm				0	20	
WG503747LCSW11	LCSW	08/21/20 6:14	PCN61372	1410		1410	umhos/cm	100	90	110			
WG503747LCSW14	LCSW	08/21/20 9:55	PCN61372	1410		1400	umhos/cm	99	90	110			



Rio Algom Mining Company

ACZ Project ID: **L60870**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Cyanide, Total**

D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503522</b>													
WG503522ICV	ICV	08/18/20 14:16	WI200804-5	.3003		.2872	mg/L	96	90	110			
WG503522ICB	ICB	08/18/20 14:18				U	mg/L		-0.003	0.003			
WG503522LFB	LFB	08/18/20 14:24	WI200804-6	.1		.0944	mg/L	94	84	116			
L60869-02AS	AS	08/18/20 14:30	WI200804-6	.1	U	.0941	mg/L	94	84	116			
L60869-02ASD	ASD	08/18/20 14:32	WI200804-6	.1	U	.0948	mg/L	95	84	116	1	20	

**Iron, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503549</b>													
WG503549ICV	ICV	08/18/20 17:52	II200810-1	2		1.97	mg/L	99	95	105			
WG503549ICB	ICB	08/18/20 17:58				U	mg/L		-0.18	0.18			
WG503549LFB	LFB	08/18/20 18:10	II200805-3	1.0018		1.01	mg/L	101	85	115			
L60868-04AS	AS	08/18/20 18:36	II200805-3	1.0018	19.8	19.55	mg/L	15	85	115			M3
L60868-04ASD	ASD	08/18/20 18:39	II200805-3	1.0018	19.8	19.31	mg/L	-9	85	115	1	20	M3
L60879-05AS	AS	08/18/20 19:30	II200805-3	1.0018	.07	1.198	mg/L	113	85	115			
L60879-05ASD	ASD	08/18/20 19:33	II200805-3	1.0018	.07	1.223	mg/L	115	85	115	2	20	
<b>WG503608</b>													
WG503608ICV	ICV	08/19/20 12:10	II200810-1	2		1.998	mg/L	100	95	105			
WG503608ICB	ICB	08/19/20 12:16				U	mg/L		-0.18	0.18			
WG503608LFB	LFB	08/19/20 12:28	II200805-3	1.0018		.99	mg/L	99	85	115			
L60810-02AS	AS	08/19/20 12:38	II200805-3	1.0018	U	.982	mg/L	98	85	115			
L60810-02ASD	ASD	08/19/20 12:41	II200805-3	1.0018	U	.99	mg/L	99	85	115	1	20	
<b>WG503632</b>													
WG503632ICV	ICV	08/19/20 16:42	II200810-1	2		1.952	mg/L	98	95	105			
WG503632ICB	ICB	08/19/20 16:48				U	mg/L		-0.18	0.18			
WG503632LFB	LFB	08/19/20 17:02	II200805-3	1.0018		.981	mg/L	98	85	115			
L60810-02AS	AS	08/19/20 17:11	II200805-3	1.0018	U	.983	mg/L	98	85	115			
L60810-02ASD	ASD	08/19/20 17:14	II200805-3	1.0018	U	1	mg/L	100	85	115	2	20	

**Lead, dissolved**

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503894</b>													
WG503894ICV	ICV	08/24/20 15:21	MS200812-2	.05		.05124	mg/L	102	90	110			
WG503894ICB	ICB	08/24/20 15:23				U	mg/L		-0.00022	0.00022			
WG503894LFB	LFB	08/24/20 15:25	MS200803-2	.05005		.05003	mg/L	100	85	115			
L60870-02AS	AS	08/24/20 15:35	MS200803-2	.05005	U	.04828	mg/L	96	70	130			
L60870-02ASD	ASD	08/24/20 15:37	MS200803-2	.05005	U	.04929	mg/L	98	70	130	2	20	

Rio Algom Mining Company

ACZ Project ID: **L60870**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503549</b>													
WG503549ICV	ICV	08/18/20 17:52	II200810-1	100		97.16	mg/L	97	95	105			
WG503549ICB	ICB	08/18/20 17:58				U	mg/L		-0.6	0.6			
WG503549LFB	LFB	08/18/20 18:10	II200805-3	49.9996		47.76	mg/L	96	85	115			
L60868-04AS	AS	08/18/20 18:36	II200805-3	49.9996	350	391.8	mg/L	84	85	115			M3
L60868-04ASD	ASD	08/18/20 18:39	II200805-3	49.9996	350	388.3	mg/L	77	85	115	1	20	M3
L60879-05AS	AS	08/18/20 19:30	II200805-3	49.9996	37.6	89.59	mg/L	104	85	115			
L60879-05ASD	ASD	08/18/20 19:33	II200805-3	49.9996	37.6	93.25	mg/L	111	85	115	4	20	

**Molybdenum, dissolved**

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503894</b>													
WG503894ICV	ICV	08/24/20 15:21	MS200812-2	.0199		.02089	mg/L	105	90	110			
WG503894ICB	ICB	08/24/20 15:23				U	mg/L		-0.00044	0.00044			
WG503894LFB	LFB	08/24/20 15:25	MS200803-2	.0501		.05132	mg/L	102	85	115			
L60870-02AS	AS	08/24/20 15:35	MS200803-2	.0501	U	.0541	mg/L	108	70	130			
L60870-02ASD	ASD	08/24/20 15:37	MS200803-2	.0501	U	.05461	mg/L	109	70	130	1	20	

**Nickel, dissolved**

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503894</b>													
WG503894ICV	ICV	08/24/20 15:21	MS200812-2	.05		.0504	mg/L	101	90	110			
WG503894ICB	ICB	08/24/20 15:23				U	mg/L		-0.00088	0.00088			
WG503894LFB	LFB	08/24/20 15:25	MS200803-2	.05		.04788	mg/L	96	85	115			
L60870-02AS	AS	08/24/20 15:35	MS200803-2	.05	.0006	.04442	mg/L	88	70	130			
L60870-02ASD	ASD	08/24/20 15:37	MS200803-2	.05	.0006	.04466	mg/L	88	70	130	1	20	

**Nitrate/Nitrite as N**

M353.2 - H2SO4 preserved

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG504008</b>													
WG504008ICV	ICV	08/26/20 0:15	WI200815-1	2.416		2.389	mg/L	99	90	110			
WG504008ICB	ICB	08/26/20 0:17				U	mg/L		-0.02	0.02			
<b>WG504012</b>													
WG504012LFB1	LFB	08/26/20 1:56	WI200331-15	2		1.957	mg/L	98	90	110			
WG504012LFB2	LFB	08/26/20 2:36	WI200331-15	2		1.918	mg/L	96	90	110			
L60869-02AS	AS	08/26/20 2:50	WI200331-15	200	91	278.8	mg/L	94	90	110			
L60869-03DUP	DUP	08/26/20 2:52			.38	.337	mg/L				12	20	

Rio Algom Mining Company

ACZ Project ID: **L60870**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Potassium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503608</b>													
WG503608ICV	ICV	08/19/20 12:10	II200810-1	20		19.97	mg/L	100	95	105			
WG503608ICB	ICB	08/19/20 12:16				U	mg/L		-0.6	0.6			
WG503608LFB	LFB	08/19/20 12:28	II200805-3	99.96847		95.46	mg/L	95	85	115			
L60810-02AS	AS	08/19/20 12:38	II200805-3	99.96847	2.9	100.3	mg/L	97	85	115			
L60810-02ASD	ASD	08/19/20 12:41	II200805-3	99.96847	2.9	100.9	mg/L	98	85	115	1	20	
<b>WG503632</b>													
WG503632ICV	ICV	08/19/20 16:42	II200810-1	20		19.86	mg/L	99	95	105			
WG503632ICB	ICB	08/19/20 16:48				U	mg/L		-0.6	0.6			
WG503632LFB	LFB	08/19/20 17:02	II200805-3	99.96847		94.97	mg/L	95	85	115			
L60810-02AS	AS	08/19/20 17:11	II200805-3	99.96847	2.8	100.4	mg/L	98	85	115			
L60810-02ASD	ASD	08/19/20 17:14	II200805-3	99.96847	2.8	102.1	mg/L	99	85	115	2	20	

**Residue, Filterable (TDS) @180C**

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503446</b>													
WG503446PBW	PBW	08/17/20 11:30				U	mg/L		-20	20			
WG503446LCSW	LCSW	08/17/20 11:31	PCN61596	1000		1000	mg/L	100	80	120			
L60870-02DUP	DUP	08/17/20 11:45			916	882	mg/L				4	10	
L60879-07DUP	DUP	08/17/20 11:59			2780	2780	mg/L				0	10	
<b>WG503730</b>													
WG503730PBW	PBW	08/20/20 14:50				U	mg/L		-20	20			
WG503730LCSW	LCSW	08/20/20 14:52	PCN61587	1000		998	mg/L	100	80	120			
L60917-02DUP	DUP	08/20/20 15:24			38	36	mg/L				5	10	RA RO
<b>WG504152</b>													
WG504152PBW	PBW	08/27/20 14:10				U	mg/L		-20	20			
WG504152LCSW	LCSW	08/27/20 14:12	PCN61590	1000		1000	mg/L	100	80	120			
L60999-04DUP	DUP	08/27/20 14:44			856	858	mg/L				0	10	

**Selenium, dissolved**

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503696</b>													
WG503696ICV	ICV	08/20/20 14:04	SE200702-2	.025		.0259	mg/L	104	90	110			
WG503696ICB	ICB	08/20/20 14:06				U	mg/L		-0.006	0.006			
<b>WG503695</b>													
WG503695LRB	LRB	08/20/20 14:34				U	mg/L		-0.006	0.006			
WG503695LFB	LFB	08/20/20 14:36	SE200820-2	.0225		.0211	mg/L	94	85	115			
L60870-05LFM	LFM	08/20/20 15:15	SE200820-2	.0225	.0104	.0223	mg/L	53	85	115			M2
L60870-05LFMD	LFMD	08/20/20 15:17	SE200820-2	.0225	.0104	.0223	mg/L	53	85	115	0	20	M2

Rio Algom Mining Company

ACZ Project ID: **L60870**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503549</b>													
WG503549ICV	ICV	08/18/20 17:52	II200810-1	100		99.64	mg/L	100	95	105			
WG503549ICB	ICB	08/18/20 17:58				U	mg/L		-0.6	0.6			
WG503549LFB	LFB	08/18/20 18:10	II200805-3	100.0157		97.33	mg/L	97	85	115			
L60868-04AS	AS	08/18/20 18:36	II200805-3	100.0157	437	516.9	mg/L	80	85	115			M3
L60868-04ASD	ASD	08/18/20 18:39	II200805-3	100.0157	437	519	mg/L	82	85	115	0	20	M3
L60879-05AS	AS	08/18/20 19:30	II200805-3	100.0157	28.6	138.9	mg/L	110	85	115			
L60879-05ASD	ASD	08/18/20 19:33	II200805-3	100.0157	28.6	143.5	mg/L	115	85	115	3	20	

**Sulfate** D516-02/-07/-11 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503551</b>													
WG503551ICB	ICB	08/18/20 11:13				U	mg/L		-3	3			
WG503551ICV	ICV	08/18/20 11:13	WI200812-2	20		19.6	mg/L	98	90	110			
WG503551LFB	LFB	08/18/20 14:58	WI200803-1	10.01		9.9	mg/L	99	90	110			
L60868-03AS	AS	08/18/20 15:51	SO4TURB	10.0000008	1960	1990	mg/L	300	90	110			M3
L60868-04DUP	DUP	08/18/20 15:51			2540	2510	mg/L				1	20	

**Uranium, dissolved** M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG503894</b>													
WG503894ICV	ICV	08/24/20 15:21	MS200812-2	.05		.04945	mg/L	99	90	110			
WG503894ICB	ICB	08/24/20 15:23				U	mg/L		-0.00022	0.00022			
WG503894LFB	LFB	08/24/20 15:25	MS200803-2	.05		.04816	mg/L	96	85	115			
L60870-02AS	AS	08/24/20 15:35	MS200803-2	.05	.0008	.04862	mg/L	96	70	130			
L60870-02ASD	ASD	08/24/20 15:37	MS200803-2	.05	.0008	.04894	mg/L	96	70	130	1	20	

Rio Algom Mining Company

ACZ Project ID: **L60870**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L60870-02	WG503747	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG503549	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG503747	Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG503598	Chloride	SM4500Cl-E	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG503747	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
			SM2510B	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.
	WG503522	Cyanide, Total	D7511-09	Q6	Sample was received above recommended temperature.
	WG503747	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG503549	Magnesium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG504012	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG503446	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG503695	Selenium, dissolved	SM 3114 B, AA-Hydride	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG503549	Sodium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG503551	Sulfate	D516-02/-07/-11 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02/-07/-11 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG503747	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.
			SM2320B - Titration	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.

Rio Algom Mining Company

ACZ Project ID: **L60870**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L60870-03</b>	WG503747	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG503549	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG503747	Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG503614	Chloride	SM4500CI-E	Q6	Sample was received above recommended temperature.
			SM4500CI-E	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG503747	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG503522	Cyanide, Total	D7511-09	Q3	Sample received with improper or inadequate chemical preservation.
			D7511-09	Q6	Sample was received above recommended temperature.
	WG503747	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG504012	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG503730	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
			SM2540C	Q6	Sample was received above recommended temperature.
			SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG503695	Selenium, dissolved	SM 3114 B, AA-Hydride	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG503551	Sulfate	D516-02/-07/-11 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
Q6				Sample was received above recommended temperature.	
Q6				Sample was received above recommended temperature.	
Q6				Sample was received above recommended temperature.	
Q6				Sample was received above recommended temperature.	
WG503747	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.	
<b>L60870-04</b>	WG503747	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG503549	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG503747	Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG503614	Chloride	SM4500CI-E	Q6	Sample was received above recommended temperature.
			SM4500CI-E	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG503747	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG503522	Cyanide, Total	D7511-09	Q6	Sample was received above recommended temperature.
	WG503747	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG503549	Iron, dissolved	M200.7 ICP	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG504012	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG503446	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG503695	Selenium, dissolved	SM 3114 B, AA-Hydride	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG503551	Sulfate	D516-02/-07/-11 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
				Q6	Sample was received above recommended temperature.
	WG503747	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

Rio Algom Mining Company

ACZ Project ID: **L60870**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L60870-05	WG503747	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG503549	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG503747	Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG503614	Chloride	SM4500CI-E	Q6	Sample was received above recommended temperature.
			SM4500CI-E	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG503747	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG503549	Iron, dissolved	M200.7 ICP	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG504012	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG504152	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
			SM2540C	Q6	Sample was received above recommended temperature.
	WG503695	Selenium, dissolved	SM 3114 B, AA-Hydrde	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG503551	Sulfate	D516-02/-07/-11 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02/-07/-11 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG503747	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.



### Rio Algom Mining Company

Project ID: 4508122295

Sample ID: 36-06 KD

Locator:

ACZ Sample ID: **L60870-01**

Date Sampled: 08/03/20 15:23

Date Received: 08/14/20

Sample Matrix: Groundwater

Gross Alpha - Corrected  
Calculation

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha - Corrected	09/10/20 14:16		470			pCi/L		calc

Gross Alpha, dissolved  
M9310

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha, dissolved	08/27/20 0:28		470	74	96	pCi/L	*	fdw

Lead 210, dissolved  
EICHROM, OTW01

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	09/10/20 8:41		13	9.4	18	pCi/L	*	isn

Radium 226 + Alpha Emitting Radium Isotopes, total  
M903.0

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226 + Alpha	08/20/20 0:00		87	3	0.86	pCi/L	*	fdw

Radium 228, total  
M9320

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, total	09/03/20 14:55		18	9.9	20	pCi/L	*	isn

Thorium 230, dissolved  
ESM 4506

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/03/20 13:27		12.9	2.1	0.34	pCi/L	*	djc

### Rio Algom Mining Company

Project ID: 4508122295

Sample ID: 5-02 KD

Locator:

ACZ Sample ID: **L60870-02**

Date Sampled: 08/11/20 11:11

Date Received: 08/14/20

Sample Matrix: Groundwater

Gross Alpha - Corrected  
Calculation

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha - Corrected	09/10/20 14:16		4.0			pCi/L		calc

Gross Alpha, dissolved  
M9310

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha, dissolved	08/27/20 0:30		4.5	3.5	11	pCi/L	*	fdw

Lead 210, dissolved  
EICHROM, OTW01

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	09/10/20 8:41		-0.08	2.2	4.5	pCi/L	*	isn

Polonium 210, dissolved  
HASL Po-01-RC

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	08/24/20 13:50		-0.186	1.8	3.7	pCi/L	*	isn

Radium 226, dissolved  
M903.1

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/01/20 0:30		0.67	0.16	0.26	pCi/L	*	amk

Radium 228, dissolved  
M9320

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	08/31/20 19:13		0.28	1.8	4.5	pCi/L	*	fdw

**Rio Algom Mining Company**

Project ID: 4508122295

Sample ID: 5-02 KD

Locator:

ACZ Sample ID: **L60870-02**

Date Sampled: 08/11/20 11:11

Date Received: 08/14/20

Sample Matrix: *Groundwater*

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/03/20 13:27		0.132	0.2	0.34	pCi/L	*	djc

### Rio Algom Mining Company

Project ID: 4508122295

Sample ID: 31-02 TRB-R

Locator:

ACZ Sample ID: **L60870-03**

Date Sampled: 08/11/20 16:22

Date Received: 08/14/20

Sample Matrix: Groundwater

Gross Alpha - Corrected  
Calculation

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha - Corrected	09/10/20 14:16		20			pCi/L		calc

Gross Alpha, dissolved  
M9310

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha, dissolved	08/27/20 0:31		22	26	76	pCi/L	*	fdw

Lead 210, dissolved  
EICHROM, OTW01

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	09/10/20 8:41		-4.6	3.6	7.6	pCi/L	*	isn

Polonium 210, dissolved  
HASL Po-01-RC

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	08/24/20 13:50		-0.75	1.4	3.2	pCi/L	*	isn

Radium 226, dissolved  
M903.1

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/01/20 0:31		4.3	0.28	0.17	pCi/L	*	amk

Radium 228, dissolved  
M9320

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	08/31/20 19:13		10	1.8	3.5	pCi/L	*	fdw

**Rio Algom Mining Company**

Project ID: 4508122295

Sample ID: 31-02 TRB-R

Locator:

ACZ Sample ID: **L60870-03**

Date Sampled: 08/11/20 16:22

Date Received: 08/14/20

Sample Matrix: *Groundwater*

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/03/20 13:27		0.15	0.33	0.59	pCi/L	*	djc

### Rio Algom Mining Company

Project ID: 4508122295

Sample ID: 32-45 KD-R

Locator:

ACZ Sample ID: **L60870-04**

Date Sampled: 08/11/20 18:12

Date Received: 08/14/20

Sample Matrix: Groundwater

Gross Alpha - Corrected  
Calculation

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha - Corrected	09/10/20 14:16		160			pCi/L		calc

Gross Alpha, dissolved  
M9310

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha, dissolved	08/27/20 0:33		190	22	26	pCi/L	*	fdw

Lead 210, dissolved  
EICHROM, OTW01

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	09/10/20 8:41		-2.6	2.3	4.8	pCi/L	*	isn

Polonium 210, dissolved  
HASL Po-01-RC

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	08/24/20 13:50		-1.94	2.9	5.9	pCi/L	*	isn

Radium 226, dissolved  
M903.1

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/01/20 0:33		1.4	0.17	0.1	pCi/L	*	amk

Radium 228, dissolved  
M9320

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	08/31/20 19:13		2.7	1.5	3.2	pCi/L	*	fdw

**Rio Algom Mining Company**

Project ID: 4508122295

Sample ID: 32-45 KD-R

Locator:

ACZ Sample ID: **L60870-04**

Date Sampled: 08/11/20 18:12

Date Received: 08/14/20

Sample Matrix: *Groundwater*

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/03/20 13:27		0.118	0.33	0.59	pCi/L	*	djc



### Rio Algom Mining Company

Project ID: 4508122295

Sample ID: 5-03 ALL-R

Locator:

ACZ Sample ID: **L60870-05**

Date Sampled: 08/12/20 11:44

Date Received: 08/14/20

Sample Matrix: Groundwater

Gross Alpha, dissolved  
M9310

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha, dissolved	08/27/20 0:34		26	17	38	pCi/L	*	fdw

Lead 210, dissolved  
EICHROM, OTW01

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	09/10/20 8:41		13	3	5	pCi/L	*	isn

Polonium 210, dissolved  
HASL Po-01-RC

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	08/24/20 13:50		-0.621	1.2	2.9	pCi/L	*	isn

Radium 226, dissolved  
M903.1

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/01/20 0:34		0.36	0.12	0.15	pCi/L	*	amk

Radium 228, dissolved  
M9320

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	08/31/20 19:13		1.5	1.3	3	pCi/L	*	fdw

Thorium 230, dissolved  
ESM 4506

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/03/20 13:27		-0.041	0.51	0.97	pCi/L	*	djc

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Error(+/-)</i>	Calculated sample specific uncertainty
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>LCL</i>	Lower Control Limit, in % (except for LCSS, mg/Kg)
<i>LLD</i>	Calculated sample specific Lower Limit of Detection
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>REr</i>	Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>UCL</i>	Upper Control Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>DUP</i>	Sample Duplicate	<i>MS/MSD</i>	Matrix Spike/Matrix Spike Duplicate
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBS</i>	Prep Blank - Soil
<i>LCSW</i>	Laboratory Control Sample - Water	<i>PBW</i>	Prep Blank - Water

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Matrix Spikes	Determines sample matrix interferences, if any.

**ACZ Qualifiers (Qual)**

H	Analysis exceeded method hold time.
---	-------------------------------------

**Method Prefix Reference**

M	EPA methodology, including those under SDWA, CWA, and RCRA
SM	Standard Methods for the Examination of Water and Wastewater.
D	ASTM
RP	DOE
ESM	DOE/ESM

**Comments**

- (1) Solid matrices are reported on a dry weight basis.
- (2) Preparation method: "Method" indicates preparation defined in analytical method.
- (3) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click:

<https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf>

Rio Algom Mining Company

ACZ Project ID: **L60870**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Gross Alpha, dissolved** M9310 **Units: pCi/L**

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
<b>WG503775</b>																
WG503775PBW	PBW	08/27/20						-82	0.92	11			22			
WG503775LCSWA	LCSW	08/27/20	PCN60283	100				110	9.1	12	110	67	144			
L60706-01MSA	MS	08/27/20	PCN60283	100	-0.79	0.48	4.5	100	8.5	3.9	101	67	144			
L60706-01DUP	DUP-RER	08/27/20			-0.79	0.48	4.5	-1.5	0.41	7.4				1.12	2	
L60706-01DUP	DUP-RPD	08/27/20			-0.79	0.48	4.5	-1.5	0.41	7.4				62	20	RG
L60870-05DUP	DUP-RER	08/27/20			26	17	38	52	22	47				0.94	2	
L60870-05DUP	DUP-RPD	08/27/20			26	17	38	52	22	47				67	20	RG

**Lead 210, dissolved** EICHROM, OTW01 **Units: pCi/L**

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
<b>WG504097</b>																
WG504097LCSW	LCSW	09/10/20	PCN59634	96.72				95	3.6	2.9	98	55	121			
WG504097PBW	PBW	09/10/20						1	1.4	2.8			5.6			
L60890-01DUP	DUP-RER	09/10/20			-0.42	1.5	3.1	-2.9	1.4	3.1				1.21	2	
L60890-02MS	MS	09/10/20	PCN59634	96.72	9.2	2	3.2	86	4.1	3.8	79	55	121			
L60890-01DUP	DUP-RPD	09/10/20			-0.42	1.5	3.1	-2.9	1.4	3.1				149	20	RG

**Polonium 210, dissolved** HASL Po-01-RC **Units: pCi/L**

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
<b>WG503776</b>																
L60695-01DUP	DUP-RPD	08/24/20			-0.496	2.1	4.4	-3.01	2.8	6.1				143	20	RG
L60695-01DUP	DUP-RER	08/24/20			-0.496	2.1	4.4	-3.01	2.8	6.1				0.72	2	
WG503776PBW	PBW	08/24/20						.485	2.2	4.1			8.2			
WG503776LCSW	LCSW	08/24/20	PCN59634	500				437	79	4.4	87	51	128			
L60870-05MS	MS	08/24/20	PCN59634	500	-0.621	1.2	2.9	404	68	4.5	81	51	128			
L60870-02DUP	DUP-RER	08/24/20			-0.186	1.8	3.7	.283	1.5	2.9				0.2	2	
L60870-02DUP	DUP-RPD	08/24/20			-0.186	1.8	3.7	.283	1.5	2.9				967	20	RG

Rio Algom Mining Company

ACZ Project ID: **L60870**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Radium 226 + Alpha Emitting Radium M903.0**

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
<b>WG503542</b>																
WG503542PBW	PBW	08/20/20						.24	0.21	0.73			1.46			
L60869-01MS	MS	08/20/20	PCN61539	20	6.4	0.68	0.57	23	1.3	0.57	83	66	132			
L60870-01DUP	DUP-RPD	08/20/20			87	3	0.86	106	4	1.2				19.7	20	
WG503542LCSW	LCSW	08/20/20	PCN61539	20				16	1.3	0.77	80	66	132			

**Radium 226, dissolved**

M903.1

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
<b>WG503900</b>																
WG503900PBW	PBW	09/01/20						.13	0.12	0.25			0.5			
WG503900LCSW	LCSW	09/01/20	PCN61539	20				19	0.54	0.11	95	43	148			
L60693-01DUP	DUP-RPD	09/01/20			1.8	0.21	0.17	1.8	0.27	0.29				0	20	
L60710-01MS	MS	09/01/20	PCN61539	20	0.69	0.15	0.1	20	0.63	0.11	97	43	148			
L60730-01DUP	DUP-RPD	09/01/20			2.6	0.23	0.13	4.2	0.34	0.15				47	20	RM

**Radium 228, dissolved**

M9320

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
<b>WG503967</b>																
WG503967LCSW	LCSW	08/31/20	PCN61541	9.74				10	1.7	1.3	103	47	123			
WG503967PBW	PBW	08/31/20						-.44	0.53	0.58			1.16			
L60707-01DUP	DUP-RPD	08/31/20			-0.14	1.1	2.7	1	1.1	2.6				265	20	RG
L60707-01DUP	DUP-RER	08/31/20			-0.14	1.1	2.7	1	1.1	2.6				0.73	2	
L60746-03MS	MS	08/31/20	PCN61541	6.49	1.2	0.81	0.79	9.2	1.5	1.2	123	47	123			
L60870-05DUP	DUP-RPD	08/31/20			1.5	1.3	3	.68	1.4	3.2				75	20	RG
L60870-05DUP	DUP-RER	08/31/20			1.5	1.3	3	.68	1.4	3.2				0.43	2	

Rio Algom Mining Company

ACZ Project ID: **L60870**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Radium 228, total**

M9320

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
<b>WG504280</b>																
WG504280LCSW	LCSW	09/03/20	PCN61541	9.73				10	1.1	0.75	103	47	123			
WG504280PBW	PBW	09/03/20						.36	0.38	0.38			0.76			
L60743-01MS	MS	09/03/20	PCN61541	9.73	0.63	0.87	1.9	12	1.2	1.9	117	47	123			
L60731-02DUP	DUP-RPD	09/03/20			3.5	0.94	2	3.3	0.88	1.8				6	20	
L60799-01DUP	DUP-RPD	09/03/20			1.2	0.72	1.7	1.2	0.74	2				0	20	

**Thorium 230, dissolved**

ESM 4506

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
<b>WG504355</b>																
L60870-02DUP	DUP-RER	09/03/20			0.132	0.2	0.34	.0916	0.21	0.39				0.14	2	
L60870-02DUP	DUP-RPD	09/03/20			0.132	0.2	0.34	.0916	0.21	0.39				36	20	RG
L60870-03MS	MS	09/03/20	PCN58726	200	0.15	0.33	0.59	256	35	0.65	128	91	126			M1
WG504355PBW	PBW	09/03/20						.22	0.24	0.37			0.74			
WG504355LCSW	LCSW	09/03/20	PCN58726	200				195	26	0.26	98	91	126			

Rio Algom Mining Company

ACZ Project ID: **L60870**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L60870-01</b>	WG503775	Gross Alpha, dissolved	M9310	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG504097	Lead 210, dissolved	EICHROM, OTW01	DJ	Sample dilution required due to insufficient sample.
			EICHROM, OTW01	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG503542	Radium 226 + Alpha Emitting Radium Isotopes, total	M903.0	N1	See Case Narrative.
	WG504280	Radium 228, total	M9320	DJ	Sample dilution required due to insufficient sample.
WG504355	Thorium 230, dissolved	ESM 4506	ESM 4506	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			ESM 4506	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
<b>L60870-02</b>	WG503775	Gross Alpha, dissolved	M9310	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG504097	Lead 210, dissolved	EICHROM, OTW01	D1	Sample required dilution due to matrix.
			EICHROM, OTW01	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG503776	Polonium 210, dissolved	HASL Po-01-RC	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG503900	Radium 226, dissolved	M903.1	RM	For a water matrix, the duplicate precision assessment (RPD or RER) exceeded the control limit. High sediment, turbidity, or presence of an immiscible liquid attributed to non-homogeneity of the sample.
	WG503967	Radium 228, dissolved	M9320	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG504355	Thorium 230, dissolved	ESM 4506	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
ESM 4506			RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.	
<b>L60870-03</b>	WG503775	Gross Alpha, dissolved	M9310	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG504097	Lead 210, dissolved	EICHROM, OTW01	D1	Sample required dilution due to matrix.
			EICHROM, OTW01	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG503776	Polonium 210, dissolved	HASL Po-01-RC	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG503900	Radium 226, dissolved	M903.1	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
			M903.1	RM	For a water matrix, the duplicate precision assessment (RPD or RER) exceeded the control limit. High sediment, turbidity, or presence of an immiscible liquid attributed to non-homogeneity of the sample.
	WG503967	Radium 228, dissolved	M9320	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
			M9320	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG504355	Thorium 230, dissolved	ESM 4506	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
ESM 4506			RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.	

Rio Algom Mining Company

ACZ Project ID: **L60870**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L60870-04	WG503775	Gross Alpha, dissolved	M9310	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG504097	Lead 210, dissolved	EICHROM, OTW01	D1	Sample required dilution due to matrix.
			EICHROM, OTW01	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG503776	Polonium 210, dissolved	HASL Po-01-RC	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG503900	Radium 226, dissolved	M903.1	RM	For a water matrix, the duplicate precision assessment (RPD or RER) exceeded the control limit. High sediment, turbidity, or presence of an immiscible liquid attributed to non-homogeneity of the sample.
	WG503967	Radium 228, dissolved	M9320	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
WG504355	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.	
		ESM 4506	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.	
		ESM 4506	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.	
L60870-05	WG503775	Gross Alpha, dissolved	M9310	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG504097	Lead 210, dissolved	EICHROM, OTW01	D1	Sample required dilution due to matrix.
			EICHROM, OTW01	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG503776	Polonium 210, dissolved	HASL Po-01-RC	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG503900	Radium 226, dissolved	M903.1	RM	For a water matrix, the duplicate precision assessment (RPD or RER) exceeded the control limit. High sediment, turbidity, or presence of an immiscible liquid attributed to non-homogeneity of the sample.
	WG503967	Radium 228, dissolved	M9320	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
WG504355	Thorium 230, dissolved	ESM 4506	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.	
		ESM 4506	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.	



**Rio Algom Mining Company**

ACZ Project ID: **L60870**

Radiochemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Lead 210, dissolved	EICHROM, OTW01
Polonium 210, dissolved	HASL Po-01-RC
Thorium 230, dissolved	ESM 4506

Rio Algom Mining Company  
 4508122295

ACZ Project ID: L60870  
 Date Received: 08/14/2020 10:25  
 Received By:  
 Date Printed: 8/17/2020

**Receipt Verification**

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

**Samples/Containers**

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? <sup>1</sup> L60870-03 Container B2310405 (GREEN CUBE): Added 10 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.		X	
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

**Chain of Custody Related Remarks**

**Client Contact Remarks**

**Shipping Containers**

Cooler Id	Temp (°C)	Temp Criteria (°C)	Rad (µR/Hr)	Custody Seal Intact?
6028	20	NA	15	Yes
6030	11.8	<=6.0	15	Yes

Was ice present in the shipment container(s)?

Yes - Wet ice was present in the shipment container(s) but was thawed by receipt at ACZ.

Rio Algom Mining Company  
4508122295

ACZ Project ID: L60870  
Date Received: 08/14/2020 10:25  
Received By:  
Date Printed: 8/17/2020

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

<sup>1</sup> The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).



Laboratories, Inc. L60870

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Kent Applegate
Company: Rio Algom Mining LLC
E-mail: Kent.KC.Applegate@bhpbilliton.com

Address: PO Box 218
Grants, NM 87020
Telephone: 1-505-287-8851

Copy of Report to:

Name: See Remarks
Company: INTERA, INC.

E-mail: See Remarks
Telephone: 505-246-1600 x1207

Invoice to:

Name: Kent Applegate
Company: Rio Algom Mining LLC
E-mail: Kent.KC.Applegate@bhpbilliton.com

Address: PO Box 218
Grants, NM 87020
Telephone: 1-505-287-8851

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

Sampler's Name: B. Williams Sampler's Site Information State NM Zip code 87020 Time Zone MST

\*Sampler's Signature: [Signature] \*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #:
PO#: 4502646279
Reporting state for compliance testing: NM
Check box if samples include NRC licensed material? [ ]

Table with columns: SAMPLE IDENTIFICATION, DATE:TIME, Matrix, # of Containers, and various analysis columns (NRC-KD, NRC-TRP, NRC-ALL, etc.).

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

RAML COC#: 20-71. Note different COC's may have different PO's. Shipment of 4 Coolers.
Please CC report to: cshort@intera.com, apersico@intera.com, Michaella.Gorospe@bhpbilliton.com, jcarroll@intera.com
Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Table with columns: RELINQUISHED BY, DATE:TIME, RECEIVED BY, DATE:TIME. Includes signatures and dates.

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

\* 36-06 KD in this shipment is just the nitric cap, the bottles were shipped on 8/19/20 to avoid exceeding hold times

60870 Chain of Custody