

January 20, 2022

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: Michaelaella Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Sharon Clouse, Drew Werth, Casandra Woodward, Shubhangi Agarwal, Anupama Subbakrishna, Revathi Ekambaram, Clark Short, Angela Pe

Project ID: 4512060294
ACZ Project ID: L70512

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on December 15, 2021. This project has been assigned to ACZ's project number, L70512. 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 L70512. 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 February 19, 2022. 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

January 20, 2022

Project ID: 4512060294

ACZ Project ID: L70512

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 1 groundwater sample from Rio Algom Mining Company on December 15, 2021. The sample was received in good condition. Upon receipt, the sample custodian removed the sample from the cooler, inspected the contents, and logged the sample into ACZ's computerized Laboratory Information Management System (LIMS). The sample was assigned ACZ LIMS project number L70512. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

This sample was analyzed for radiochemistry parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. (N1) Applies to: L70512-01/THORIUM 230

Prep Blank (Th-230) outside of acceptance limits, but within range of error.

Rio Algom Mining Company

Project ID: 4512060294

Sample ID: 32-04 TRA-12092021

Locator:

ACZ Sample ID: **L70512-01**

Date Sampled: 12/09/21 14:00

Date Received: 12/15/21

Sample Matrix: Groundwater

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	01/07/22 10:09		2.59	3.5	3.4	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	01/18/22 20:01		0.514	0.33	0.46	pCi/L	*	amk

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.
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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://aczk.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf>

Rio Algom Mining Company

ACZ Project ID: **L70512**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70512-01	WG534452	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.
	WG534723	Thorium 230, dissolved	ESM 4506	N1	

Rio Algom Mining Company

ACZ Project ID: **L70512**

Radiochemistry

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

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

Rio Algom Mining Company
4512060294

ACZ Project ID: L70512
Date Received: 12/15/2021 12:11
Received By:
Date Printed: 12/16/2021

Receipt Verification

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

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) Are all labels on containers and are they intact and legible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11) For preserved bottle types, was the pH checked and within limits? ¹	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12) Is there sufficient sample volume to perform all requested work?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13) Is the custody seal intact on all containers?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14) Are samples that require zero headspace acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15) Are all sample containers appropriate for analytical requirements?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16) Is there an Hg-1631 trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17) Is there a VOA trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18) Were all samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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?
NA36615	2.7	NA	15	Yes

Was ice present in the shipment container(s)?

Yes - Wet ice was present in the shipment container(s).

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

Rio Algom Mining Company
4512060294

ACZ Project ID: L70512

Date Received: 12/15/2021 12:11

Received By:

Date Printed: 12/16/2021

¹ 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), Na₂S₂O₃ preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).



Accredited
Environmental
Testing

2773 Downhill Drive
Steamboat Springs, CO 80487
(970) 879-6590

L70512

CHAIN of CUSTODY

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: 505-287-8851

Copy of Report to:

Name: See Remarks

Company:

E-mail: See Remarks

Telephone: 720-344-3500

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: 505-287-8851

Copy of Invoice to:

Name: See Remarks

Company:

E-mail:

Address:

Telephone:

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

NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring?

Yes

No

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Liam McNamara

Sampler's Site Information

State NM

Zip code 87020

Time Zone MST

*Sampler's 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

ANALYSES REQUESTED (attach list or use quot. number)

Quote #:

PO#: 4512060294

Reporting state for compliance testing:

Check box if samples include NRC licensed material?

SAMPLE IDENTIFICATION

DATE: TIME

Matrix

of Containers

Radionuclides

32-04 TRA-12092021

12/9/2021 14:00

GW

1

✓

Matrix

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

REMARKS

Please CC Report / Invoice to: Andrew.Werth@Arcadis.com,
Casandra.Woodward@Arcadis.com, Liam.McNamara@Arcadis.com,
Cshort@Intera.com, and Michaella.Gorospe@bhpbilliton.com

* Radionuclides = TH-230 & Po-210. Check w/ Scott H. if unclear.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:

DATE: TIME

RECEIVED BY:

DATE: TIME

[Signature]

12.14.21/1200

[Signature]

12.14.21/1200
12/14/21 (201)

Qualtrax ID: 1984

Revision #: 2

White - Return with sample.

Yellow - Retain for your records.



L70512 Chain of Custod

December 03, 2021

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: Michaela Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Sharon Clouse, Drew Werth, Casandra Woodward, Shubhangi Agarwal, Anupama Subbakrishna, Clark Short, Angela Persico

Project ID: 4510319940
ACZ Project ID: L69191

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 13, 2021. This project has been assigned to ACZ's project number, L69191. 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 L69191. 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 January 02, 2022. 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.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.



Rio Algom Mining Company

December 03, 2021

Project ID: 4510319940

ACZ Project ID: L69191

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 2 groundwater samples from Rio Algom Mining Company on October 13, 2021. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L69191. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic, radiochemistry parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. ACZ was unable to perform the Thorium and Polonium on L69191-02 due to insufficient volume. Sample was duplicated for other high volume tests, not leaving enough volume.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-02-10082021

ACZ Sample ID: **L69191-01**

Date Sampled: 10/08/21 13:50

Date Received: 10/13/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								11/01/21 10:34	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U		mg/L	0.05	0.25	10/18/21 15:01	kja
Arsenic, dissolved	M200.8 ICP-MS	1	0.0215			mg/L	0.0002	0.001	10/25/21 14:41	mfm
Barium, dissolved	M200.7 ICP	1	<0.007	U		mg/L	0.007	0.035	10/18/21 15:01	kja
Cadmium, dissolved	M200.8 ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	10/27/21 16:11	mfm
Calcium, dissolved	M200.7 ICP	1	0.62			mg/L	0.1	0.5	10/18/21 15:01	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	10/25/21 14:41	mfm
Cobalt, dissolved	M200.8 ICP-MS	1	0.000067	B		mg/L	0.00005	0.00025	10/27/21 16:11	mfm
Copper, dissolved	M200.7 ICP	1	0.011	B		mg/L	0.01	0.05	10/18/21 15:01	kja
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	10/18/21 15:01	kja
Lead, dissolved	M200.8 ICP-MS	1	0.00035	B		mg/L	0.0001	0.0005	10/27/21 16:11	mfm
Magnesium, dissolved	M200.7 ICP	1	<0.2	U		mg/L	0.2	1	10/18/21 15:01	kja
Manganese, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	10/18/21 15:01	kja
Molybdenum, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.1	10/18/21 15:01	kja
Nickel, dissolved	M200.7 ICP	1	<0.008	U		mg/L	0.008	0.04	10/18/21 15:01	kja
Potassium, dissolved	M200.7 ICP	1	1.51			mg/L	0.2	1	10/18/21 15:01	kja
Selenium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.00025	10/25/21 14:41	mfm
Silver, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	10/25/21 14:41	mfm
Sodium, dissolved	M200.7 ICP	1	165			mg/L	0.2	1	10/18/21 15:01	kja
Uranium, dissolved	M200.8 ICP-MS	1	0.00051			mg/L	0.0001	0.0005	10/25/21 14:41	mfm
Zinc, dissolved	M200.7 ICP	1	0.246			mg/L	0.02	0.05	10/18/21 15:01	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-02-10082021

ACZ Sample ID: **L69191-01**

Date Sampled: 10/08/21 13:50

Date Received: 10/13/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	73.6			mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	156			mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	229		*	mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.4			%			12/02/21 0:00	calc
Sum of Anions			7.5			meq/L			12/02/21 0:00	calc
Sum of Cations			7.3			meq/L			12/02/21 0:00	calc
Chloride	SM4500Cl-E	1	8.48			mg/L	0.5	2	10/21/21 15:11	md
Fluoride	SM4500F-C	1	0.72			mg/L	0.15	0.35	10/22/21 20:56	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	10/30/21 22:10	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	<0.2	U	*	mg/L	0.2	0.5	11/04/21 0:38	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	472		*	mg/L	20	40	10/14/21 7:34	mlh
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	5	124		*	mg/L	5	25	11/02/21 10:37	syw
TDS (calculated)	Calculation		439			mg/L			12/02/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.08						12/02/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-04 TRA-10072021

ACZ Sample ID: **L69191-02**

Date Sampled: 10/07/21 17:10

Date Received: 10/13/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U		mg/L	0.05	0.25	10/18/21 15:11	kja
Antimony, dissolved	M200.8 ICP-MS	1	0.00101	B		mg/L	0.0004	0.002	10/25/21 14:47	mfm
Arsenic, dissolved	M200.8 ICP-MS	1	0.00108			mg/L	0.0002	0.001	10/25/21 14:47	mfm
Barium, dissolved	M200.7 ICP	1	0.0145	B		mg/L	0.007	0.035	10/18/21 15:11	kja
Beryllium, dissolved	M200.8 ICP-MS	1	<0.00008	U		mg/L	0.00008	0.00025	10/25/21 14:47	mfm
Boron, dissolved	M200.7 ICP	1	0.380			mg/L	0.03	0.1	10/18/21 15:11	kja
Cadmium, dissolved	M200.8 ICP-MS	1	0.000071	B		mg/L	0.00005	0.00025	10/27/21 16:14	mfm
Calcium, dissolved	M200.7 ICP	1	165			mg/L	0.1	0.5	10/18/21 15:11	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	10/25/21 14:47	mfm
Cobalt, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	10/18/21 15:11	kja
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	10/18/21 15:11	kja
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	10/18/21 15:11	kja
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	10/27/21 16:14	mfm
Magnesium, dissolved	M200.7 ICP	1	53.8			mg/L	0.2	1	10/18/21 15:11	kja
Manganese, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	10/18/21 15:11	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	10/20/21 14:12	aeH
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0112			mg/L	0.0002	0.0005	10/25/21 14:47	mfm
Nickel, dissolved	M200.8 ICP-MS	1	0.00099	B		mg/L	0.0004	0.001	10/25/21 14:47	mfm
Potassium, dissolved	M200.7 ICP	1	7.40			mg/L	0.2	1	10/18/21 15:11	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	10/25/21 12:58	mlh
Selenium, dissolved	M200.8 ICP-MS	1	0.00010	B		mg/L	0.0001	0.00025	10/25/21 14:47	mfm
Silver, dissolved	M200.7 ICP	1	<0.01	U	*	mg/L	0.01	0.025	10/18/21 15:11	kja
Sodium, dissolved	M200.7 ICP	1	250			mg/L	0.2	1	10/18/21 15:11	kja
Thallium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	10/27/21 16:14	mfm
Uranium, dissolved	M200.8 ICP-MS	1	0.00650			mg/L	0.0001	0.0005	10/25/21 14:47	mfm
Zinc, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	10/18/21 15:11	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-04 TRA-10072021

ACZ Sample ID: **L69191-02**

Date Sampled: 10/07/21 17:10

Date Received: 10/13/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	145			mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	145			mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			12/02/21 0:00	calc
Sum of Anions			24			meq/L			12/02/21 0:00	calc
Sum of Cations			24			meq/L			12/02/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	20	26.0	B	*	mg/L	8	40	10/26/21 5:19	krh
Cyanide, Total	D7511-09	1	<0.003	U		mg/L	0.003	0.01	10/18/21 10:22	md
Fluoride	M300.0 - Ion Chromatography	20	<1	U	*	mg/L	1	5	10/26/21 5:19	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.113		*	mg/L	0.02	0.1	10/30/21 21:54	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1730		*	mg/L	20	40	10/14/21 7:36	mlh
Sulfate	M300.0 - Ion Chromatography	20	975			mg/L	8	40	10/26/21 5:19	krh
TDS (calculated)	Calculation		1570			mg/L			12/02/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.10						12/02/21 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>

QUIVIRA

ACZ Project ID: **L69191**

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
WG529842													
WG529842PBW1	PBW	10/19/21 22:18				5.8	mg/L		-20	20			
WG529842LCSW3	LCSW	10/19/21 22:37	WC211018-1	820.0001		801.1	mg/L	98	90	110			
WG529842LCSW6	LCSW	10/20/21 4:32	WC211018-1	820.0001		798	mg/L	97	90	110			
WG529842PBW2	PBW	10/20/21 4:39				5.9	mg/L		-20	20			
WG529842LCSW9	LCSW	10/20/21 8:41	WC211018-1	820.0001		792.5	mg/L	97	90	110			
WG529842PBW3	PBW	10/20/21 8:48				4.9	mg/L		-20	20			
WG529842LCSW12	LCSW	10/20/21 12:35	WC211018-1	820.0001		821.3	mg/L	100	90	110			
WG529842PBW4	PBW	10/20/21 12:41				4.4	mg/L		-20	20			
L69191-02DUP	DUP	10/20/21 15:21			145	144.1	mg/L				1	20	
WG529842LCSW15	LCSW	10/20/21 16:05	WC211018-1	820.0001		804	mg/L	98	90	110			

Aluminum, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	2		1.995	mg/L	100	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.15	0.15			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	1.0008		.978	mg/L	98	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	1.0008	U	.968	mg/L	97	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	1.0008	U	.993	mg/L	99	85	115	3	20	

Antimony, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530228													
WG530228ICV	ICV	10/25/21 13:55	MS211013-2	.0201		.02029	mg/L	101	90	110			
WG530228ICB	ICB	10/25/21 13:57				.00064	mg/L		-0.00088	0.00088			
WG530228LFB	LFB	10/25/21 13:58	MS210927-3	.01		.00975	mg/L	98	85	115			
L69191-01AS	AS	10/25/21 14:43	MS210927-3	.01	U	.00902	mg/L	90	70	130			
L69191-01ASD	ASD	10/25/21 14:45	MS210927-3	.01	U	.00923	mg/L	92	70	130	2	20	

Arsenic, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530228													
WG530228ICV	ICV	10/25/21 13:55	MS211013-2	.05		.05324	mg/L	106	90	110			
WG530228ICB	ICB	10/25/21 13:57				U	mg/L		-0.00044	0.00044			
WG530228LFB	LFB	10/25/21 13:58	MS210927-3	.05005		.0523	mg/L	104	85	115			
L69191-01AS	AS	10/25/21 14:43	MS210927-3	.05005	.0215	.07472	mg/L	106	70	130			
L69191-01ASD	ASD	10/25/21 14:45	MS210927-3	.05005	.0215	.07466	mg/L	106	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
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	2		2.0018	mg/L	100	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.021	0.021			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	.5		.4917	mg/L	98	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	.5	U	.4932	mg/L	99	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	.5	U	.4947	mg/L	99	85	115	0	20	

QUIVIRA

ACZ Project ID: **L69191**

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.

Beryllium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530228													
WG530228ICV	ICV	10/25/21 13:55	MS211013-2	.05		.054687	mg/L	109	90	110			
WG530228ICB	ICB	10/25/21 13:57				.000134	mg/L		-0.000176	0.000176			
WG530228LFB	LFB	10/25/21 13:58	MS210927-3	.05005		.052978	mg/L	106	85	115			
L69191-01AS	AS	10/25/21 14:43	MS210927-3	.05005	U	.052699	mg/L	105	70	130			
L69191-01ASD	ASD	10/25/21 14:45	MS210927-3	.05005	U	.055076	mg/L	110	70	130	4	20	

Boron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	2		1.989	mg/L	99	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.09	0.09			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	.5005		.504	mg/L	101	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	.5005	.19	.693	mg/L	100	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	.5005	.19	.693	mg/L	100	85	115	0	20	

Cadmium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.051188	mg/L	102	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00011	0.00011			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.050356	mg/L	101	85	115			
L69195-02AS	AS	10/27/21 16:20	MS210927-3	.05005	U	.055832	mg/L	112	70	130			
L69195-02ASD	ASD	10/27/21 16:23	MS210927-3	.05005	U	.055232	mg/L	110	70	130	1	20	

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	100		99.44	mg/L	99	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.3	0.3			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	67.98972		65.84	mg/L	97	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	67.98972	.62	65.19	mg/L	95	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	67.98972	.62	67.01	mg/L	98	85	115	3	20	

QUIVIRA

ACZ Project ID: **L69191**

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.

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528109													
WG528109ICV	ICV	09/24/21 18:47	WI210924-2	19.96		19.83	mg/L	99	90	110			
WG528109ICB	ICB	09/24/21 19:05				U	mg/L		-0.4	0.4			
WG530011													
WG530011LFB1	LFB	10/25/21 16:47	WI210907-6	30		29.84	mg/L	99	90	110			
L69098-04DUP	DUP	10/26/21 1:26			6.03	6.03	mg/L				0	20	
WG530011LFB2	LFB	10/26/21 1:44	WI210907-6	30		29.82	mg/L	99	90	110			
L69098-05AS	AS	10/26/21 2:20	WI210907-6	300	10.1	314.55	mg/L	101	90	110			

Chloride SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530038													
WG530038LFB1	LFB	10/21/21 14:50	WI210908-11	29.97		30.44	mg/L	102	90	110			
WG530038LFB2	LFB	10/21/21 15:05	WI210908-11	29.97		30.37	mg/L	101	90	110			
L69179-14AS	AS	10/21/21 15:06	WI210908-11	29.97	45.3	74.91	mg/L	99	90	110			
L69181-01DUP	DUP	10/21/21 15:49			974	986.72	mg/L				1	20	

Chromium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530228													
WG530228ICV	ICV	10/25/21 13:55	MS211013-2	.05		.05436	mg/L	109	90	110			
WG530228ICB	ICB	10/25/21 13:57				U	mg/L		-0.0011	0.0011			
WG530228LFB	LFB	10/25/21 13:58	MS210927-3	.05		.05179	mg/L	104	85	115			
L69191-01AS	AS	10/25/21 14:43	MS210927-3	.05	U	.05346	mg/L	107	70	130			
L69191-01ASD	ASD	10/25/21 14:45	MS210927-3	.05	U	.054	mg/L	108	70	130	1	20	

Cobalt, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	2.01		1.975	mg/L	98	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.06	0.06			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	.5005		.483	mg/L	97	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	.5005	U	.488	mg/L	98	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	.5005	U	.488	mg/L	98	85	115	0	20	

Cobalt, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.051646	mg/L	103	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00011	0.00011			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.050687	mg/L	101	85	115			
L69195-02AS	AS	10/27/21 16:20	MS210927-3	.05005	.00278	.053525	mg/L	101	70	130			
L69195-02ASD	ASD	10/27/21 16:23	MS210927-3	.05005	.00278	.052034	mg/L	98	70	130	3	20	

QUIVIRA

ACZ Project ID: **L69191**

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.

Copper, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	2		1.95	mg/L	98	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.03	0.03			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	.5		.49	mg/L	98	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	.5	.011	.503	mg/L	98	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	.5	.011	.503	mg/L	98	85	115	0	20	

Cyanide, Total D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529667													
WG529667ICV	ICV	10/18/21 9:52	WI211013-5	.3		.3024	mg/L	101	90	110			
WG529667ICB	ICB	10/18/21 9:54				U	mg/L		-0.003	0.003			
WG529667LFB	LFB	10/18/21 10:00	WI211013-4	.1		.1046	mg/L	105	84	116			
L69281-01AS	AS	10/18/21 10:26	WI211013-4	.1	U	.1078	mg/L	108	84	116			
L69281-01ASD	ASD	10/18/21 10:28	WI211013-4	.1	U	.1107	mg/L	111	84	116	3	20	

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528109													
WG528109ICV	ICV	09/24/21 18:47	WI210924-2	4.004		4.082	mg/L	102	90	110			
WG528109ICB	ICB	09/24/21 19:05				U	mg/L		-0.05	0.05			
WG530011													
WG530011LFB1	LFB	10/25/21 16:47	WI210907-6	1.5		1.457	mg/L	97	90	110			
L69098-04DUP	DUP	10/26/21 1:26			.783	.788	mg/L				1	20	
WG530011LFB2	LFB	10/26/21 1:44	WI210907-6	1.5		1.424	mg/L	95	90	110			
L69098-05AS	AS	10/26/21 2:20	WI210907-6	15	U	13.677	mg/L	91	90	110			

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530110													
WG530110ICV	ICV	10/22/21 18:02	WC211019-3	2.002		2.07	mg/L	103	90	110			
WG530110ICB	ICB	10/22/21 18:06				U	mg/L		-0.3	0.3			
WG530110LFB1	LFB	10/22/21 18:13	WC210803-9	5.02		5.07	mg/L	101	90	110			
L69189-01AS	AS	10/22/21 20:40	WC210803-9	5.02	.74	5.8	mg/L	101	90	110			
L69189-01ASD	ASD	10/22/21 20:48	WC210803-9	5.02	.74	5.88	mg/L	102	90	110	1	20	
WG530110LFB2	LFB	10/22/21 22:44	WC210803-9	5.02		4.75	mg/L	95	90	110			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	2		1.98	mg/L	99	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.18	0.18			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	1.0001		.993	mg/L	99	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	1.0001	U	1.029	mg/L	103	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	1.0001	U	1.004	mg/L	100	85	115	2	20	

QUIVIRA

ACZ Project ID: **L69191**

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.

Lead, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.0509	mg/L	102	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00022	0.00022			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.05048	mg/L	101	85	115			
L69195-02AS	AS	10/27/21 16:20	MS210927-3	.05005	U	.05552	mg/L	111	70	130			
L69195-02ASD	ASD	10/27/21 16:23	MS210927-3	.05005	U	.05418	mg/L	108	70	130	2	20	

Magnesium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	100		96.6	mg/L	97	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.6	0.6			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	49.99828		46.5	mg/L	93	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	49.99828	U	45.75	mg/L	92	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	49.99828	U	47.01	mg/L	94	85	115	3	20	

Manganese, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	2		1.959	mg/L	98	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.03	0.03			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	.5005		.497	mg/L	99	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	.5005	U	.498	mg/L	100	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	.5005	U	.498	mg/L	100	85	115	0	20	

Mercury, total

M245.1 CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529855													
WG529855ICV	ICV	10/20/21 13:52	HG211004-3	.00501		.0049	mg/L	98	90	110			
WG529855ICB	ICB	10/20/21 13:53				U	mg/L		-0.0006	0.0006			
WG529853													
WG529853LRB	LRB	10/20/21 14:10				U	mg/L		-0.00044	0.00044			
WG529853LFB	LFB	10/20/21 14:11	HG211015-3	.002002		.00186	mg/L	93	85	115			
L69192-03LFM	LFM	10/20/21 14:16	HG211015-3	.002002	U	.00184	mg/L	92	85	115			
L69192-03LFMD	LFMD	10/20/21 14:17	HG211015-3	.002002	U	.00184	mg/L	92	85	115	0	20	

QUIVIRA

ACZ Project ID: **L69191**

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.

Molybdenum, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	2		1.988	mg/L	99	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.06	0.06			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	.501		.474	mg/L	95	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	.501	U	.485	mg/L	97	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	.501	U	.495	mg/L	99	85	115	2	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530228													
WG530228ICV	ICV	10/25/21 13:55	MS211013-2	.01992		.02062	mg/L	104	90	110			
WG530228ICB	ICB	10/25/21 13:57				U	mg/L		-0.00044	0.00044			
WG530228LFB	LFB	10/25/21 13:58	MS210927-3	.05005		.05018	mg/L	100	85	115			
L69191-01AS	AS	10/25/21 14:43	MS210927-3	.05005	.0115	.06418	mg/L	105	70	130			
L69191-01ASD	ASD	10/25/21 14:45	MS210927-3	.05005	.0115	.06516	mg/L	107	70	130	2	20	

Nickel, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	2		1.981	mg/L	99	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.024	0.024			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	.5		.4927	mg/L	99	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	.5	U	.5027	mg/L	101	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	.5	U	.5006	mg/L	100	85	115	0	20	

Nickel, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530228													
WG530228ICV	ICV	10/25/21 13:55	MS211013-2	.05		.05398	mg/L	108	90	110			
WG530228ICB	ICB	10/25/21 13:57				U	mg/L		-0.00088	0.00088			
WG530228LFB	LFB	10/25/21 13:58	MS210927-3	.05		.05094	mg/L	102	85	115			
L69191-01AS	AS	10/25/21 14:43	MS210927-3	.05	.00137	.05189	mg/L	101	70	130			
L69191-01ASD	ASD	10/25/21 14:45	MS210927-3	.05	.00137	.0526	mg/L	102	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
WG530650													
WG530650ICV	ICV	10/30/21 20:11	WI210904-1	2.4161		2.349	mg/L	97	90	110			
WG530650ICB	ICB	10/30/21 20:12				U	mg/L		-0.02	0.02			
WG530652													
WG530652LFB	LFB	10/30/21 21:14	WI211001-5	2		2.011	mg/L	101	90	110			
L69162-02AS	AS	10/30/21 21:37	WI211001-5	2	.287	2.268	mg/L	99	90	110			
L69162-03DUP	DUP	10/30/21 21:39			.124	.133	mg/L				7	20	RA

QUIVIRA

ACZ Project ID: **L69191**

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.

Nitrogen, total Kjeldahl

M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530979													
WG530979ICV	ICV	11/04/21 0:30	WI211022-3	4		3.81	mg/L	95	90	110			
WG530979ICB	ICB	11/04/21 0:31				U	mg/L		-0.2	0.2			
WG530678LRB	LRB	11/04/21 0:33				U	mg/L		-0.2	0.2			
WG530678LFB	LFB	11/04/21 0:34	WI211014-3	2.5		2.37	mg/L	95	90	110			
L69257-01LFM	LFM	11/04/21 0:58	WI211014-3	2.5	.93	3.21	mg/L	91	90	110			
L69257-02DUP	DUP	11/04/21 1:00			.94	.95	mg/L				1	20	RA

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	20		19.82	mg/L	99	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.6	0.6			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	99.96008		94.81	mg/L	95	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	99.96008	1.51	94.06	mg/L	93	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	99.96008	1.51	96.85	mg/L	95	85	115	3	20	

Residue, Filterable (TDS) @180C

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529407													
WG529407PBW	PBW	10/14/21 7:11				U	mg/L		-20	20			
WG529407LCSW	LCSW	10/14/21 7:12	PCN64128	1000		978	mg/L	98	80	120			
L69195-06DUP	DUP	10/14/21 7:47			U	U	mg/L				0	10	RA

Selenium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530228													
WG530228ICV	ICV	10/25/21 13:55	MS211013-2	.05		.05455	mg/L	109	90	110			
WG530228ICB	ICB	10/25/21 13:57				.00016	mg/L		-0.00022	0.00022			
WG530228LFB	LFB	10/25/21 13:58	MS210927-3	.05		.05159	mg/L	103	85	115			
L69191-01AS	AS	10/25/21 14:43	MS210927-3	.05	U	.05378	mg/L	108	70	130			
L69191-01ASD	ASD	10/25/21 14:45	MS210927-3	.05	U	.05442	mg/L	109	70	130	1	20	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530171													
WG530171ICV	ICV	10/25/21 12:42	SE211005-1	.025		.0261	mg/L	104	90	110			
WG530171ICB	ICB	10/25/21 12:44				U	mg/L		-0.006	0.006			
WG530171LRB	LRB	10/25/21 12:46				U	mg/L		-0.006	0.006			
WG530171LFB	LFB	10/25/21 12:48	SE211013-16	.0225		.0217	mg/L	96	85	115			
L69133-03LFM	LFM	10/25/21 12:52	SE211013-16	.0225	U	.0207	mg/L	92	85	115			
L69133-03LFMD	LFMD	10/25/21 12:54	SE211013-16	.0225	U	.0208	mg/L	92	85	115	0	20	

QUIVIRA

ACZ Project ID: **L69191**

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.

Silver, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	1		.997	mg/L	100	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.03	0.03			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	.5		.492	mg/L	98	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	.5	U	.395	mg/L	79	85	115			M2 ZA
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	.5	U	.389	mg/L	78	85	115	2	20	M2 ZA

Silver, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530228													
WG530228ICV	ICV	10/25/21 13:55	MS211013-2	.02		.01956	mg/L	98	90	110			
WG530228ICB	ICB	10/25/21 13:57				U	mg/L		-0.00022	0.00022			
WG530228LFB	LFB	10/25/21 13:58	MS210927-3	.01		.00924	mg/L	92	85	115			
L69191-01AS	AS	10/25/21 14:43	MS210927-3	.01	U	.00799	mg/L	80	70	130			
L69191-01ASD	ASD	10/25/21 14:45	MS210927-3	.01	U	.00778	mg/L	78	70	130	3	20	

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	100		99.51	mg/L	100	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.6	0.6			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	100.007		95.46	mg/L	95	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	100.007	165	252.1	mg/L	87	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	100.007	165	251.3	mg/L	86	85	115	0	20	

Sulfate

D516-02/-07/-11 - TURBIDIMETRIC

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530736													
WG530736ICB	ICB	11/02/21 10:03				U	mg/L		-3	3			
WG530736ICV	ICV	11/02/21 10:03	WI211027-1	20.46		18.6	mg/L	91	90	110			
WG530736LFB	LFB	11/02/21 10:11	WI210105-3	10		9	mg/L	90	90	110			
L69190-05DUP	DUP	11/02/21 10:11			26.2	25.9	mg/L				1	20	
L69190-06AS	AS	11/02/21 10:37	SO4TURB5X	10	40.8	44.6	mg/L	38	90	110			M3

Sulfate

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528109													
WG528109ICV	ICV	09/24/21 18:47	WI210924-2	51.15		48.67	mg/L	95	90	110			
WG528109ICB	ICB	09/24/21 19:05				U	mg/L		-0.4	0.4			
WG530011													
WG530011LFB1	LFB	10/25/21 16:47	WI210907-6	30		29.61	mg/L	99	90	110			
L69098-04DUP	DUP	10/26/21 1:26			67.2	67.11	mg/L				0	20	
WG530011LFB2	LFB	10/26/21 1:44	WI210907-6	30		28.65	mg/L	96	90	110			
L69098-05AS	AS	10/26/21 2:20	WI210907-6	300	344	631.86	mg/L	96	90	110			

QUIVIRA

ACZ Project ID: **L69191**

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.

Thallium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.05235	mg/L	105	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00022	0.00022			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05		.05039	mg/L	101	85	115			
L69195-02AS	AS	10/27/21 16:20	MS210927-3	.05	U	.05277	mg/L	106	70	130			
L69195-02ASD	ASD	10/27/21 16:23	MS210927-3	.05	U	.05185	mg/L	104	70	130	2	20	

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530228													
WG530228ICV	ICV	10/25/21 13:55	MS211013-2	.05		.05417	mg/L	108	90	110			
WG530228ICB	ICB	10/25/21 13:57				.00013	mg/L		-0.00022	0.00022			
WG530228LFB	LFB	10/25/21 13:58	MS210927-3	.05		.05223	mg/L	104	85	115			
L69191-01AS	AS	10/25/21 14:43	MS210927-3	.05	.00051	.05682	mg/L	113	70	130			
L69191-01ASD	ASD	10/25/21 14:45	MS210927-3	.05	.00051	.0571	mg/L	113	70	130	0	20	

Zinc, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529682													
WG529682ICV	ICV	10/18/21 13:21	II211014-1	2		1.969	mg/L	98	95	105			
WG529682ICB	ICB	10/18/21 13:27				U	mg/L		-0.06	0.06			
WG529682LFB	LFB	10/18/21 13:40	II210930-2	.50045		.496	mg/L	99	85	115			
L69191-01AS	AS	10/18/21 15:05	II210930-2	.50045	.246	.731	mg/L	97	85	115			
L69191-01ASD	ASD	10/18/21 15:08	II210930-2	.50045	.246	.739	mg/L	99	85	115	1	20	

Rio Algom Mining CompanyACZ Project ID: **L69191**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69191-01	WG530652	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG530979	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG529407	Residue, Filterable (TDS) @180C	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).
	WG530736	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.
	WG529842	Total Alkalinity	SM2320B - Titration	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.
L69191-02	WG530011	Chloride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
		Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
	WG530652	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG529407	Residue, Filterable (TDS) @180C	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).
	WG529682	Silver, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-02-10082021

Locator:

ACZ Sample ID: **L69191-01**

Date Sampled: 10/08/21 13:50

Date Received: 10/13/21

Sample Matrix: Groundwater

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	11/23/21 0:27		0.02	0.28	1.7	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/25/21 19:13		6.3	4.4	9.9	pCi/L	*	slc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-04 TRA-10072021

Locator:

ACZ Sample ID: **L69191-02**

Date Sampled: 10/07/21 17:10

Date Received: 10/13/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	11/17/21 0:11		0.0	1.4	3.3	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved			see case narrative					n/a

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	11/23/21 0:28		0.29	0.09	0.34	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/25/21 19:13		0.49	0.8	2	pCi/L	*	slc

Thorium 230, dissolved

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved			see case narrative					n/a


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.
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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://aczk.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf>

QUIVIRA

ACZ Project ID: **L69191**

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.

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
WG530302																
WG530302LCSW	LCSW	11/16/1921	PCN64361	99.53				77	3.2	3.6	77	55	121			
WG530302PBW	PBW	11/16/1921						.83	1.6	3.9			7.8			
L69101-07DUP	DUP-RER	11/16/21			7.2	2	4.1	4.1	1.2	2.5				1.33	2	
L69101-07DUP	DUP-RPD	11/16/21			7.2	2	4.1	4.1	1.2	2.5				55	20	RG
L68594-01DUP	DUP-RPD	11/16/21			-0.23	2.8	6.9	.23	2.4	5.9				92	20	RG
L68594-01DUP	DUP-RER	11/16/21			-0.23	2.8	6.9	.23	2.4	5.9				0.12	2	
L69122-02MS	MS	11/17/21	PCN64361	99.52	3.2	2.1	4.8	80	3	2.7	77	55	121			

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
WG531215																
WG531215LCSW	LCSW	11/23/21	PCN64374	20				17	0.88	0.13	85	43	148			
WG531215PBW	PBW	11/23/21						-.06	0.1	0.11			0.22			
L68820-01DUP	DUP-RER	11/23/21			0.15	0.19	1.2	.07	0.16	0.78				0.32	2	
L68820-01DUP	DUP-RPD	11/23/21			0.15	0.19	1.2	.07	0.16	0.78				73	20	RG
L69191-02MS	MS	11/23/21	PCN64374	100	0.29	0.09	0.34	85	2.4	0.55	85	43	148			
L69703-01DUP	DUP-RER	11/23/21			0.04	0.07	0.39	.14	0.07	0.54				1.01	2	
L69703-01DUP	DUP-RPD	11/23/21			0.04	0.07	0.39	.14	0.07	0.54				111	20	RG

QUIVIRA

ACZ Project ID: **L69191**

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, 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
WG529607																
WG529607LCSW	LCSW	10/25/21	PCN63356	9.33				11	1.2	0.83	118	47	123			
WG529607PBW	PBW	10/25/21						.44	0.77	0.78			1.56			
L68902-02DUP	DUP-RPD	10/25/21			1.6	1.1	2.5	1.9	0.93	2.2				17	20	
L68979-01MS	MS	10/25/21	PCN63356	15.55	9.1	1.7	3	23	2.3	3.5	89	47	123			N1
L69159-02DUP	DUP-RPD	10/25/21			-0.15	0.95	2.3	1.3	0.9	2.1				252	20	RG
L69159-02DUP	DUP-RER	10/25/21			-0.15	0.95	2.3	1.3	0.9	2.1				1.11	2	

Rio Algom Mining Company

ACZ Project ID: **L69191**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69191-01	WG531215	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
			M903.1	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.
	WG529607	Radium 228, dissolved	M9320	DJ	Sample dilution required due to insufficient sample.
			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.
L69191-02	WG530302	Lead 210, dissolved	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.
	WG531215	Radium 226, dissolved	M903.1	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.
	WG529607	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.

Rio Algom Mining Company

ACZ Project ID: **L69191**

Radiochemistry

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

Lead 210, dissolved

EICHROM, OTW01

Rio Algom Mining Company
4510319940

ACZ Project ID: L69191
Date Received: 10/13/2021 11:28
Received By:
Date Printed: 12/2/2021

Receipt Verification

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

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) Are all labels on containers and are they intact and legible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11) For preserved bottle types, was the pH checked and within limits? ¹	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12) Is there sufficient sample volume to perform all requested work?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13) Is the custody seal intact on all containers?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14) Are samples that require zero headspace acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15) Are all sample containers appropriate for analytical requirements?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16) Is there an Hg-1631 trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17) Is there a VOA trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18) Were all samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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?
6713	0.9	<=6.0	15	Yes

Was ice present in the shipment container(s)?

Yes - Wet ice was present in the shipment container(s).

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

Rio Algom Mining Company
4510319940

ACZ Project ID: L69191
Date Received: 10/13/2021 11:28
Received By:
Date Printed: 12/2/2021

¹ 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), Na₂S₂O₃ preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

December 14, 2021

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: Michaela Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Sharon Clouse, Drew Werth, Casandra Woodward, Shubhangi Agarwal, Anupama Subbakrishna, Clark Short, Angela Persico

Project ID: 4512060294

ACZ Project ID: L69122

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 08, 2021. This project has been assigned to ACZ's project number, L69122. 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 L69122. 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 January 13, 2022. 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

December 14, 2021

Project ID: 4512060294

ACZ Project ID: L69122

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 12 groundwater samples from Rio Algom Mining Company on October 8, 2021. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L69122. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic, radiochemistry parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

This project has been revised to include a copy of the Chain of Custody.

1. (N1) L69122-07/TOTAL DISSOLVED SOLIDS

ACZ SOP prescribes samples with >5 dry cycles to be sent to REDO on a dilution. The method does not require a limit on dry cycles to obtain a constant weight. The sample was dried greater than 5 dry cycles to obtain a constant weight.

2. (N1) Applies to: L69122-07/LEAD 210

Carrier recovery outside of acceptance limits, which is attributable to matrix interference. Sample already ran on dilution.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 35-01-10062021

ACZ Sample ID: **L69122-01**

Date Sampled: 10/06/21 17:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 12:35	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	10	<0.5	U		mg/L	0.5	2.5	10/20/21 16:28	kja
Arsenic, dissolved	M200.8 ICP-MS	10	<0.002	U		mg/L	0.002	0.01	10/28/21 14:38	mfm
Barium, dissolved	M200.7 ICP	10	<0.07	U		mg/L	0.07	0.35	10/20/21 16:28	kja
Cadmium, dissolved	M200.8 ICP-MS	10	0.000646	B		mg/L	0.0005	0.0025	11/01/21 16:49	mfm
Calcium, dissolved	M200.7 ICP	10	448			mg/L	1	5	10/20/21 16:28	kja
Chromium, dissolved	M200.8 ICP-MS	10	<0.005	U		mg/L	0.005	0.02	10/28/21 14:38	mfm
Cobalt, dissolved	M200.8 ICP-MS	10	0.00685			mg/L	0.0005	0.0025	11/01/21 16:49	mfm
Copper, dissolved	M200.7 ICP	10	<0.1	U		mg/L	0.1	0.5	10/20/21 16:28	kja
Iron, dissolved	M200.7 ICP	10	<0.6	U		mg/L	0.6	1.5	10/20/21 16:28	kja
Lead, dissolved	M200.8 ICP-MS	10	<0.001	U		mg/L	0.001	0.005	11/01/21 16:49	mfm
Magnesium, dissolved	M200.7 ICP	10	677			mg/L	2	10	10/20/21 16:28	kja
Manganese, dissolved	M200.7 ICP	10	1.36			mg/L	0.1	0.5	10/20/21 16:28	kja
Molybdenum, dissolved	M200.7 ICP	10	<0.2	U		mg/L	0.2	1	10/20/21 16:28	kja
Nickel, dissolved	M200.7 ICP	10	<0.08	U		mg/L	0.08	0.4	10/20/21 16:28	kja
Potassium, dissolved	M200.7 ICP	10	27.0			mg/L	2	10	10/20/21 16:28	kja
Selenium, dissolved	M200.8 ICP-MS	10	0.00301			mg/L	0.001	0.0025	10/28/21 14:38	mfm
Silver, dissolved	M200.8 ICP-MS	10	<0.001	U	*	mg/L	0.001	0.005	11/01/21 16:49	mfm
Sodium, dissolved	M200.7 ICP	10	1560			mg/L	2	10	10/20/21 16:28	kja
Uranium, dissolved	M200.8 ICP-MS	10	0.0603		*	mg/L	0.001	0.005	10/28/21 14:38	mfm
Zinc, dissolved	M200.7 ICP	10	<0.2	U		mg/L	0.2	0.5	10/20/21 16:28	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 35-01-10062021

ACZ Sample ID: **L69122-01**

Date Sampled: 10/06/21 17:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	914			mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	914			mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.7			%			12/13/21 0:00	calc
Sum of Anions			152			meq/L			12/13/21 0:00	calc
Sum of Cations			147			meq/L			12/13/21 0:00	calc
Chloride	SM4500Cl-E	1	90.4			mg/L	0.5	2	10/29/21 13:12	md
Fluoride	SM4500F-C	1	0.26	B		mg/L	0.15	0.35	10/26/21 22:10	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	100	240			mg/L	2	10	11/03/21 3:12	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	<0.2	U	*	mg/L	0.2	0.5	10/23/21 2:24	pjb
Residue, Filterable (TDS) @180C	SM2540C	25	10400			mg/L	500	1000	10/12/21 15:56	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	250	6250		*	mg/L	250	1250	10/28/21 14:58	wtc
TDS (calculated)	Calculation		9610			mg/L			12/13/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.08						12/13/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-03 KD-10062021

ACZ Sample ID: **L69122-02**

Date Sampled: 10/06/21 13:20

Date Received: 10/08/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	<0.25	U		mg/L	0.25	1.25	10/20/21 16:31	kja
Antimony, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.01	10/28/21 14:40	mfm
Arsenic, dissolved	M200.8 ICP-MS	5	0.0118			mg/L	0.001	0.005	10/28/21 14:40	mfm
Barium, dissolved	M200.7 ICP	5	0.0370	B		mg/L	0.035	0.175	10/20/21 16:31	kja
Beryllium, dissolved	M200.8 ICP-MS	5	<0.0004	U		mg/L	0.0004	0.00125	11/01/21 16:50	mfm
Boron, dissolved	M200.7 ICP	5	0.153	B		mg/L	0.15	0.5	10/20/21 16:31	kja
Cadmium, dissolved	M200.8 ICP-MS	5	0.000489	B		mg/L	0.00025	0.00125	11/01/21 16:50	mfm
Calcium, dissolved	M200.7 ICP	5	701			mg/L	0.5	2.5	10/20/21 16:31	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/28/21 14:40	mfm
Cobalt, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/20/21 16:31	kja
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/20/21 16:31	kja
Iron, dissolved	M200.7 ICP	5	2.19			mg/L	0.3	0.75	10/20/21 16:31	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	11/01/21 16:50	mfm
Magnesium, dissolved	M200.7 ICP	5	363			mg/L	1	5	10/20/21 16:31	kja
Manganese, dissolved	M200.7 ICP	5	6.75			mg/L	0.05	0.25	10/20/21 16:31	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	10/14/21 10:51	mlh
Molybdenum, dissolved	M200.8 ICP-MS	5	1.77			mg/L	0.001	0.0025	10/28/21 14:40	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.00782			mg/L	0.002	0.005	10/28/21 14:40	mfm
Potassium, dissolved	M200.7 ICP	5	15.8			mg/L	1	5	10/20/21 16:31	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U	*	mg/L	0.002	0.005	10/13/21 15:26	mlh
Selenium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.00125	10/28/21 14:40	mfm
Silver, dissolved	M200.7 ICP	5	<0.05	U	*	mg/L	0.05	0.125	10/20/21 16:31	kja
Sodium, dissolved	M200.7 ICP	5	622			mg/L	1	5	10/20/21 16:31	kja
Thallium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	11/02/21 17:01	mfm
Uranium, dissolved	M200.8 ICP-MS	5	0.0131			mg/L	0.0005	0.0025	11/01/21 16:50	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/20/21 16:31	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-03 KD-10062021

ACZ Sample ID: **L69122-02**

Date Sampled: 10/06/21 13:20

Date Received: 10/08/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	290			mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	290			mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.1			%			12/13/21 0:00	calc
Sum of Anions			95			meq/L			12/13/21 0:00	calc
Sum of Cations			93			meq/L			12/13/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	1480		*	mg/L	20	100	10/26/21 21:10	krh
Cyanide, Total	D7511-09	1	<0.003	U	*	mg/L	0.003	0.01	10/11/21 14:47	md
Fluoride	M300.0 - Ion Chromatography	50	<2.5	U	*	mg/L	2.5	12.5	10/26/21 21:10	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.059	B		mg/L	0.02	0.1	11/03/21 3:08	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	5900			mg/L	40	80	10/12/21 16:00	anc
Sulfate	M300.0 - Ion Chromatography	50	2290			mg/L	20	100	10/26/21 21:10	krh
TDS (calculated)	Calculation		5660			mg/L			12/13/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						12/13/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 35-03-10062021

ACZ Sample ID: **L69122-03**

Date Sampled: 10/06/21 11:42

Date Received: 10/08/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 12:54	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	<0.25	U		mg/L	0.25	1.25	10/20/21 16:34	kja
Arsenic, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.005	10/28/21 14:42	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	10/20/21 16:34	kja
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	11/01/21 16:52	mfm
Calcium, dissolved	M200.7 ICP	5	412			mg/L	0.5	2.5	10/20/21 16:34	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/28/21 14:42	mfm
Cobalt, dissolved	M200.8 ICP-MS	5	0.00293			mg/L	0.00025	0.00125	11/01/21 16:52	mfm
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/20/21 16:34	kja
Iron, dissolved	M200.7 ICP	5	<0.3	U		mg/L	0.3	0.75	10/20/21 16:34	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	11/01/21 16:52	mfm
Magnesium, dissolved	M200.7 ICP	5	207			mg/L	1	5	10/20/21 16:34	kja
Manganese, dissolved	M200.7 ICP	5	0.874			mg/L	0.05	0.25	10/20/21 16:34	kja
Molybdenum, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.5	10/20/21 16:34	kja
Nickel, dissolved	M200.7 ICP	5	<0.04	U		mg/L	0.04	0.2	10/20/21 16:34	kja
Potassium, dissolved	M200.7 ICP	5	15.1			mg/L	1	5	10/20/21 16:34	kja
Selenium, dissolved	M200.8 ICP-MS	5	0.0206			mg/L	0.0005	0.00125	10/28/21 14:42	mfm
Silver, dissolved	M200.8 ICP-MS	5	<0.0005	U	*	mg/L	0.0005	0.0025	11/01/21 16:52	mfm
Sodium, dissolved	M200.7 ICP	5	1230			mg/L	1	5	10/20/21 16:34	kja
Uranium, dissolved	M200.8 ICP-MS	5	0.0144			mg/L	0.0005	0.0025	11/01/21 16:52	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/20/21 16:34	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 35-03-10062021

ACZ Sample ID: **L69122-03**

Date Sampled: 10/06/21 11:42

Date Received: 10/08/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	686			mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	686			mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-11.5			%			12/13/21 0:00	calc
Sum of Anions			116			meq/L			12/13/21 0:00	calc
Sum of Cations			92			meq/L			12/13/21 0:00	calc
Chloride	SM4500Cl-E	1	68.2			mg/L	0.5	2	10/29/21 13:12	md
Fluoride	SM4500F-C	1	0.35	B		mg/L	0.15	0.35	10/26/21 22:18	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	1.68			mg/L	0.02	0.1	11/03/21 2:35	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.83		*	mg/L	0.2	0.5	10/23/21 2:07	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	6730			mg/L	100	200	10/12/21 16:04	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	300	4760		*	mg/L	300	1500	10/28/21 15:21	wtc
TDS (calculated)	Calculation		7110			mg/L			12/13/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.95						12/13/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 35-02-10062021

ACZ Sample ID: **L69122-04**

Date Sampled: 10/06/21 13:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 13:13	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	<0.1	U		mg/L	0.1	0.5	10/20/21 16:37	kja
Arsenic, dissolved	M200.8 ICP-MS	2	<0.0004	U		mg/L	0.0004	0.002	10/28/21 14:44	mfm
Barium, dissolved	M200.7 ICP	2	<0.014	U		mg/L	0.014	0.07	10/20/21 16:37	kja
Cadmium, dissolved	M200.8 ICP-MS	2	<0.0001	U		mg/L	0.0001	0.0005	11/01/21 16:54	mfm
Calcium, dissolved	M200.7 ICP	2	477			mg/L	0.2	1	10/20/21 16:37	kja
Chromium, dissolved	M200.8 ICP-MS	2	<0.001	U		mg/L	0.001	0.004	10/28/21 14:44	mfm
Cobalt, dissolved	M200.8 ICP-MS	2	0.000856			mg/L	0.0001	0.0005	11/01/21 16:54	mfm
Copper, dissolved	M200.7 ICP	2	<0.02	U		mg/L	0.02	0.1	10/20/21 16:37	kja
Iron, dissolved	M200.7 ICP	2	<0.12	U		mg/L	0.12	0.3	10/20/21 16:37	kja
Lead, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.001	11/01/21 16:54	mfm
Magnesium, dissolved	M200.7 ICP	2	75.1			mg/L	0.4	2	10/20/21 16:37	kja
Manganese, dissolved	M200.7 ICP	2	0.084	B		mg/L	0.02	0.1	10/20/21 16:37	kja
Molybdenum, dissolved	M200.7 ICP	2	<0.04	U		mg/L	0.04	0.2	10/20/21 16:37	kja
Nickel, dissolved	M200.7 ICP	2	<0.016	U		mg/L	0.016	0.08	10/20/21 16:37	kja
Potassium, dissolved	M200.7 ICP	2	6.40			mg/L	0.4	2	10/20/21 16:37	kja
Selenium, dissolved	M200.8 ICP-MS	2	0.00287			mg/L	0.0002	0.0005	10/28/21 14:44	mfm
Silver, dissolved	M200.8 ICP-MS	2	<0.0002	U	*	mg/L	0.0002	0.001	11/01/21 16:54	mfm
Sodium, dissolved	M200.7 ICP	2	482			mg/L	0.4	2	10/20/21 16:37	kja
Uranium, dissolved	M200.8 ICP-MS	2	0.0163		*	mg/L	0.0002	0.001	10/28/21 14:44	mfm
Zinc, dissolved	M200.7 ICP	2	<0.04	U		mg/L	0.04	0.1	10/20/21 16:37	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 35-02-10062021

ACZ Sample ID: **L69122-04**

Date Sampled: 10/06/21 13:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	270			mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	270			mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.9			%			12/13/21 0:00	calc
Sum of Anions			54			meq/L			12/13/21 0:00	calc
Sum of Cations			51			meq/L			12/13/21 0:00	calc
Chloride	SM4500Cl-E	1	74.5			mg/L	0.5	2	10/29/21 13:14	md
Fluoride	SM4500F-C	1	0.69			mg/L	0.15	0.35	10/26/21 22:26	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	1.23			mg/L	0.02	0.1	11/03/21 2:36	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	<0.2	U	*	mg/L	0.2	0.5	10/23/21 2:08	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	3670			mg/L	40	80	10/12/21 16:08	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	60	2190		*	mg/L	60	300	10/28/21 15:19	wtc
TDS (calculated)	Calculation		3470			mg/L			12/13/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.06						12/13/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30W SHAFT-10062021

ACZ Sample ID: **L69122-05**

Date Sampled: 10/06/21 14:30

Date Received: 10/08/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 13:32	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	<0.25	U		mg/L	0.25	1.25	10/20/21 16:40	kja
Arsenic, dissolved	M200.8 ICP-MS	5	0.00135	B		mg/L	0.001	0.005	10/28/21 14:45	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	10/20/21 16:40	kja
Cadmium, dissolved	M200.8 ICP-MS	100	<0.005	U	*	mg/L	0.005	0.025	11/01/21 16:56	mfm
Calcium, dissolved	M200.7 ICP	5	526			mg/L	0.5	2.5	10/20/21 16:40	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/28/21 14:45	mfm
Cobalt, dissolved	M200.8 ICP-MS	100	<0.005	U	*	mg/L	0.005	0.025	11/01/21 16:56	mfm
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/20/21 16:40	kja
Iron, dissolved	M200.7 ICP	5	8.02			mg/L	0.3	0.75	10/20/21 16:40	kja
Lead, dissolved	M200.8 ICP-MS	100	<0.01	U	*	mg/L	0.01	0.05	11/01/21 16:56	mfm
Magnesium, dissolved	M200.7 ICP	5	174			mg/L	1	5	10/20/21 16:40	kja
Manganese, dissolved	M200.7 ICP	5	2.21			mg/L	0.05	0.25	10/20/21 16:40	kja
Molybdenum, dissolved	M200.7 ICP	5	0.373	B		mg/L	0.1	0.5	10/20/21 16:40	kja
Nickel, dissolved	M200.7 ICP	5	<0.04	U		mg/L	0.04	0.2	10/20/21 16:40	kja
Potassium, dissolved	M200.7 ICP	5	17.7			mg/L	1	5	10/20/21 16:40	kja
Selenium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.00125	10/28/21 14:45	mfm
Silver, dissolved	M200.8 ICP-MS	100	<0.01	U	*	mg/L	0.01	0.05	11/01/21 16:56	mfm
Sodium, dissolved	M200.7 ICP	5	416			mg/L	1	5	10/20/21 16:40	kja
Uranium, dissolved	M200.8 ICP-MS	100	14.1			mg/L	0.01	0.05	11/01/21 16:56	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/20/21 16:40	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30W SHAFT-10062021

ACZ Sample ID: **L69122-05**

Date Sampled: 10/06/21 14:30

Date Received: 10/08/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	436			mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	436			mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-7.7			%			12/13/21 0:00	calc
Sum of Anions			70			meq/L			12/13/21 0:00	calc
Sum of Cations			60			meq/L			12/13/21 0:00	calc
Chloride	SM4500Cl-E	5	268			mg/L	2.5	10	10/29/21 13:47	md
Fluoride	SM4500F-C	1	0.24	B		mg/L	0.15	0.35	10/26/21 22:34	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	11/03/21 2:38	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.42	B	*	mg/L	0.2	0.5	10/23/21 2:09	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4090			mg/L	40	80	10/12/21 16:12	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	125	2550		*	mg/L	125	625	10/28/21 14:59	wtc
TDS (calculated)	Calculation		4230			mg/L			12/13/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.97						12/13/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: SEC 23 WELL-10062021

ACZ Sample ID: **L69122-06**

Date Sampled: 10/06/21 18:15

Date Received: 10/08/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 14:10	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U		mg/L	0.05	0.25	10/20/21 16:44	kja
Arsenic, dissolved	M200.8 ICP-MS	1	0.00429			mg/L	0.0002	0.001	10/28/21 14:47	mfm
Barium, dissolved	M200.7 ICP	1	<0.007	U		mg/L	0.007	0.035	10/20/21 16:44	kja
Cadmium, dissolved	M200.8 ICP-MS	1	0.000094	B		mg/L	0.00005	0.00025	11/01/21 16:58	mfm
Calcium, dissolved	M200.7 ICP	1	2.58			mg/L	0.1	0.5	10/20/21 16:44	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	10/28/21 14:47	mfm
Cobalt, dissolved	M200.8 ICP-MS	1	0.000051	B		mg/L	0.00005	0.00025	11/01/21 16:58	mfm
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	10/20/21 16:44	kja
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	10/20/21 16:44	kja
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	11/01/21 16:58	mfm
Magnesium, dissolved	M200.7 ICP	1	0.37	B		mg/L	0.2	1	10/20/21 16:44	kja
Manganese, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	10/20/21 16:44	kja
Molybdenum, dissolved	M200.7 ICP	1	0.433			mg/L	0.02	0.1	10/20/21 16:44	kja
Nickel, dissolved	M200.7 ICP	1	<0.008	U		mg/L	0.008	0.04	10/20/21 16:44	kja
Potassium, dissolved	M200.7 ICP	1	6.66			mg/L	0.2	1	10/20/21 16:44	kja
Selenium, dissolved	M200.8 ICP-MS	1	0.0133			mg/L	0.0001	0.00025	10/28/21 14:47	mfm
Silver, dissolved	M200.8 ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	11/01/21 16:58	mfm
Sodium, dissolved	M200.7 ICP	1	139			mg/L	0.2	1	10/20/21 16:44	kja
Uranium, dissolved	M200.8 ICP-MS	1	0.0125		*	mg/L	0.0001	0.0005	10/28/21 14:47	mfm
Zinc, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	10/20/21 16:44	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: SEC 23 WELL-10062021

ACZ Sample ID: **L69122-06**

Date Sampled: 10/06/21 18:15

Date Received: 10/08/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	33.5			mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	22.4			mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	56.0			mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.3			%			12/13/21 0:00	calc
Sum of Anions			6.8			meq/L			12/13/21 0:00	calc
Sum of Cations			6.5			meq/L			12/13/21 0:00	calc
Chloride	SM4500Cl-E	1	15.6			mg/L	0.5	2	10/29/21 13:15	md
Fluoride	SM4500F-C	1	1.48			mg/L	0.15	0.35	10/26/21 22:54	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	11/03/21 2:43	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	<0.2	U	*	mg/L	0.2	0.5	10/23/21 2:12	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	452			mg/L	20	40	10/12/21 16:16	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	15	248		*	mg/L	15	75	10/28/21 15:01	wtc
TDS (calculated)	Calculation		448			mg/L			12/13/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.01						12/13/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-08 TRA-10062021

ACZ Sample ID: **L69122-07**

Date Sampled: 10/06/21 15:50

Date Received: 10/08/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	<1	U		mg/L	1	5	10/20/21 16:53	kja
Antimony, dissolved	M200.8 ICP-MS	20	0.0107	B		mg/L	0.008	0.04	10/28/21 14:52	mfm
Arsenic, dissolved	M200.8 ICP-MS	20	0.00449	B		mg/L	0.004	0.02	10/28/21 14:52	mfm
Barium, dissolved	M200.7 ICP	20	<0.14	U		mg/L	0.14	0.7	10/20/21 16:53	kja
Beryllium, dissolved	M200.8 ICP-MS	20	<0.0016	U		mg/L	0.0016	0.005	11/01/21 17:03	mfm
Boron, dissolved	M200.7 ICP	20	0.664	B		mg/L	0.6	2	10/20/21 16:53	kja
Cadmium, dissolved	M200.8 ICP-MS	20	0.00259	B		mg/L	0.001	0.005	11/01/21 17:03	mfm
Calcium, dissolved	M200.7 ICP	20	467			mg/L	2	10	10/20/21 16:53	kja
Chromium, dissolved	M200.8 ICP-MS	20	<0.01	U		mg/L	0.01	0.04	10/28/21 14:52	mfm
Cobalt, dissolved	M200.7 ICP	20	<0.4	U		mg/L	0.4	1	10/20/21 16:53	kja
Copper, dissolved	M200.7 ICP	20	<0.2	U		mg/L	0.2	1	10/20/21 16:53	kja
Iron, dissolved	M200.7 ICP	20	<1.2	U		mg/L	1.2	3	10/20/21 16:53	kja
Lead, dissolved	M200.8 ICP-MS	20	<0.002	U		mg/L	0.002	0.01	11/01/21 17:03	mfm
Magnesium, dissolved	M200.7 ICP	20	5080			mg/L	4	20	10/20/21 16:53	kja
Manganese, dissolved	M200.7 ICP	20	9.19			mg/L	0.2	1	10/20/21 16:53	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	10/14/21 10:52	mlh
Molybdenum, dissolved	M200.8 ICP-MS	20	0.0300			mg/L	0.004	0.01	10/28/21 14:52	mfm
Nickel, dissolved	M200.8 ICP-MS	20	0.131			mg/L	0.008	0.02	10/28/21 14:52	mfm
Potassium, dissolved	M200.7 ICP	20	23.0			mg/L	4	20	10/20/21 16:53	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	10	0.116			mg/L	0.02	0.05	10/14/21 15:16	mlh
Selenium, dissolved	M200.8 ICP-MS	20	0.126			mg/L	0.002	0.005	10/28/21 14:52	mfm
Silver, dissolved	M200.7 ICP	20	0.732		*	mg/L	0.2	0.5	10/20/21 16:53	kja
Sodium, dissolved	M200.7 ICP	20	417			mg/L	4	20	10/20/21 16:53	kja
Thallium, dissolved	M200.8 ICP-MS	20	<0.002	U		mg/L	0.002	0.01	11/02/21 17:03	mfm
Uranium, dissolved	M200.8 ICP-MS	20	0.0211			mg/L	0.002	0.01	11/01/21 17:03	mfm
Zinc, dissolved	M200.7 ICP	20	<0.4	U		mg/L	0.4	1	10/20/21 16:53	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-08 TRA-10062021

ACZ Sample ID: **L69122-07**

Date Sampled: 10/06/21 15:50

Date Received: 10/08/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	574			mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	574			mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			1.4			%			12/13/21 0:00	calc
Sum of Anions			447			meq/L			12/13/21 0:00	calc
Sum of Cations			460			meq/L			12/13/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	200	696		*	mg/L	80	400	10/26/21 21:28	krh
Cyanide, Total	D7511-09	1	0.007	B	*	mg/L	0.003	0.01	10/11/21 14:49	md
Fluoride	M300.0 - Ion Chromatography	200	<10	U	*	mg/L	10	50	10/26/21 21:28	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	11/03/21 2:45	pjb
Residue, Filterable (TDS) @180C	SM2540C	10	30200		*	mg/L	200	400	10/12/21 16:20	anc
Sulfate	M300.0 - Ion Chromatography	500	19800			mg/L	200	1000	10/27/21 22:22	krh
TDS (calculated)	Calculation		26800			mg/L			12/13/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.13						12/13/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW 24-01-10062021

ACZ Sample ID: **L69122-08**

Date Sampled: 10/06/21 13:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 14:48	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U		mg/L	0.05	0.25	10/20/21 17:02	kja
Arsenic, dissolved	M200.8 ICP-MS	1	0.00053	B		mg/L	0.0002	0.001	10/28/21 14:58	mfm
Barium, dissolved	M200.7 ICP	1	0.0204	B		mg/L	0.007	0.035	10/20/21 17:02	kja
Cadmium, dissolved	M200.8 ICP-MS	1	0.000184	B		mg/L	0.00005	0.00025	11/01/21 17:08	mfm
Calcium, dissolved	M200.7 ICP	1	14.3			mg/L	0.1	0.5	10/20/21 17:02	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	10/28/21 14:58	mfm
Cobalt, dissolved	M200.8 ICP-MS	1	0.000234	B		mg/L	0.00005	0.00025	11/01/21 17:08	mfm
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	10/20/21 17:02	kja
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	10/20/21 17:02	kja
Lead, dissolved	M200.8 ICP-MS	1	0.00046	B		mg/L	0.0001	0.0005	11/01/21 17:08	mfm
Magnesium, dissolved	M200.7 ICP	1	0.36	B		mg/L	0.2	1	10/20/21 17:02	kja
Manganese, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	10/20/21 17:02	kja
Molybdenum, dissolved	M200.7 ICP	1	0.251			mg/L	0.02	0.1	10/20/21 17:02	kja
Nickel, dissolved	M200.7 ICP	1	<0.008	U		mg/L	0.008	0.04	10/20/21 17:02	kja
Potassium, dissolved	M200.7 ICP	1	4.05			mg/L	0.2	1	10/20/21 17:02	kja
Selenium, dissolved	M200.8 ICP-MS	1	0.00841			mg/L	0.0001	0.00025	10/28/21 14:58	mfm
Silver, dissolved	M200.8 ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	11/01/21 17:08	mfm
Sodium, dissolved	M200.7 ICP	1	153			mg/L	0.2	1	10/20/21 17:02	kja
Uranium, dissolved	M200.8 ICP-MS	1	0.00024	B		mg/L	0.0001	0.0005	11/01/21 17:08	mfm
Zinc, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	10/20/21 17:02	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW 24-01-10062021

ACZ Sample ID: **L69122-08**

Date Sampled: 10/06/21 13:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	5.6	B		mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	29.2			mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	34.9			mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-3.8			%			12/13/21 0:00	calc
Sum of Anions			8.2			meq/L			12/13/21 0:00	calc
Sum of Cations			7.6			meq/L			12/13/21 0:00	calc
Chloride	SM4500Cl-E	1	32.3			mg/L	0.5	2	10/29/21 13:15	md
Fluoride	SM4500F-C	1	0.81			mg/L	0.15	0.35	10/26/21 23:18	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	11/03/21 2:46	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	2.22		*	mg/L	0.2	0.5	10/23/21 2:14	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	592			mg/L	40	80	10/12/21 16:24	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	15	312		*	mg/L	15	75	10/28/21 14:59	wtc
TDS (calculated)	Calculation		538			mg/L			12/13/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.10						12/13/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-07 KD-10062021

ACZ Sample ID: **L69122-09**

Date Sampled: 10/07/21 12:40

Date Received: 10/08/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	<0.25	U		mg/L	0.25	1.25	10/20/21 17:05	kja
Antimony, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.01	10/28/21 15:00	mfm
Arsenic, dissolved	M200.8 ICP-MS	5	0.00172	B		mg/L	0.001	0.005	10/28/21 15:00	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	10/20/21 17:05	kja
Beryllium, dissolved	M200.8 ICP-MS	5	<0.0004	U		mg/L	0.0004	0.00125	11/01/21 17:10	mfm
Boron, dissolved	M200.7 ICP	5	0.232	B		mg/L	0.15	0.5	10/20/21 17:05	kja
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	11/01/21 17:10	mfm
Calcium, dissolved	M200.7 ICP	5	626			mg/L	0.5	2.5	10/20/21 17:05	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/28/21 15:00	mfm
Cobalt, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/20/21 17:05	kja
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/20/21 17:05	kja
Iron, dissolved	M200.7 ICP	5	0.971			mg/L	0.3	0.75	10/20/21 17:05	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	11/01/21 17:10	mfm
Magnesium, dissolved	M200.7 ICP	5	144			mg/L	1	5	10/20/21 17:05	kja
Manganese, dissolved	M200.7 ICP	5	2.34			mg/L	0.05	0.25	10/20/21 17:05	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	10/14/21 10:53	mlh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.0110			mg/L	0.001	0.0025	10/28/21 15:00	mfm
Nickel, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.005	10/28/21 15:00	mfm
Potassium, dissolved	M200.7 ICP	5	11.5			mg/L	1	5	10/20/21 17:05	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U	*	mg/L	0.002	0.005	10/13/21 15:39	mlh
Selenium, dissolved	M200.8 ICP-MS	5	0.00491			mg/L	0.0005	0.00125	10/28/21 15:00	mfm
Silver, dissolved	M200.7 ICP	5	<0.05	U	*	mg/L	0.05	0.125	10/20/21 17:05	kja
Sodium, dissolved	M200.7 ICP	5	349			mg/L	1	5	10/20/21 17:05	kja
Thallium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	11/02/21 17:06	mfm
Uranium, dissolved	M200.8 ICP-MS	5	0.00096	B		mg/L	0.0005	0.0025	11/01/21 17:10	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/20/21 17:05	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-07 KD-10062021

ACZ Sample ID: **L69122-09**

Date Sampled: 10/07/21 12:40

Date Received: 10/08/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	312			mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	312			mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.7			%			12/13/21 0:00	calc
Sum of Anions			61			meq/L			12/13/21 0:00	calc
Sum of Cations			59.0			meq/L			12/13/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	417		*	mg/L	20	100	10/26/21 21:46	krh
Cyanide, Total	D7511-09	1	0.009	B	*	mg/L	0.003	0.01	10/11/21 14:51	md
Fluoride	M300.0 - Ion Chromatography	50	<2.5	U	*	mg/L	2.5	12.5	10/26/21 21:46	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	11/03/21 2:47	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4010			mg/L	40	80	10/12/21 16:28	anc
Sulfate	M300.0 - Ion Chromatography	50	2030			mg/L	20	100	10/26/21 21:46	krh
TDS (calculated)	Calculation		3770			mg/L			12/13/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.06						12/13/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 35-VH-6-10072021

ACZ Sample ID: **L69122-10**

Date Sampled: 10/07/21 13:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 15:07	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U		mg/L	0.05	0.25	10/20/21 17:08	kja
Arsenic, dissolved	M200.8 ICP-MS	1	0.00073	B		mg/L	0.0002	0.001	10/28/21 15:01	mfm
Barium, dissolved	M200.7 ICP	1	0.0158	B		mg/L	0.007	0.035	10/20/21 17:08	kja
Cadmium, dissolved	M200.8 ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	11/01/21 17:12	mfm
Calcium, dissolved	M200.7 ICP	1	100.0			mg/L	0.1	0.5	10/20/21 17:08	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	10/28/21 15:01	mfm
Cobalt, dissolved	M200.8 ICP-MS	1	0.000281			mg/L	0.00005	0.00025	11/01/21 17:12	mfm
Copper, dissolved	M200.7 ICP	1	0.028	B		mg/L	0.01	0.05	10/20/21 17:08	kja
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	10/20/21 17:08	kja
Lead, dissolved	M200.8 ICP-MS	1	0.00055			mg/L	0.0001	0.0005	11/01/21 17:12	mfm
Magnesium, dissolved	M200.7 ICP	1	31.8			mg/L	0.2	1	10/20/21 17:08	kja
Manganese, dissolved	M200.7 ICP	1	0.163			mg/L	0.01	0.05	10/20/21 17:08	kja
Molybdenum, dissolved	M200.7 ICP	1	0.151			mg/L	0.02	0.1	10/20/21 17:08	kja
Nickel, dissolved	M200.7 ICP	1	<0.008	U		mg/L	0.008	0.04	10/20/21 17:08	kja
Potassium, dissolved	M200.7 ICP	1	5.99			mg/L	0.2	1	10/20/21 17:08	kja
Selenium, dissolved	M200.8 ICP-MS	1	0.00013	B		mg/L	0.0001	0.00025	10/28/21 15:01	mfm
Silver, dissolved	M200.8 ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	11/01/21 17:12	mfm
Sodium, dissolved	M200.7 ICP	1	491			mg/L	0.2	1	10/20/21 17:08	kja
Uranium, dissolved	M200.8 ICP-MS	1	0.538			mg/L	0.0001	0.0005	11/01/21 17:12	mfm
Zinc, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	10/20/21 17:08	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 35-VH-6-10072021

ACZ Sample ID: **L69122-10**

Date Sampled: 10/07/21 13:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	289			mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	20.2			mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	309			mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-3.3			%			12/13/21 0:00	calc
Sum of Anions			31			meq/L			12/13/21 0:00	calc
Sum of Cations			29			meq/L			12/13/21 0:00	calc
Chloride	SM4500Cl-E	1	28.6			mg/L	0.5	2	10/29/21 13:16	md
Fluoride	SM4500F-C	1	0.55			mg/L	0.15	0.35	10/26/21 23:26	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	11/03/21 2:50	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.21	B	*	mg/L	0.2	0.5	10/23/21 2:15	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	1970			mg/L	40	80	10/12/21 16:32	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	60	1160		*	mg/L	60	300	10/28/21 15:19	wtc
TDS (calculated)	Calculation		2010			mg/L			12/13/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.98						12/13/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: DUP-1

ACZ Sample ID: **L69122-11**

Date Sampled: 10/07/21 13:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	<0.25	U		mg/L	0.25	1.25	10/20/21 17:12	kja
Antimony, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.01	10/28/21 15:03	mfm
Arsenic, dissolved	M200.8 ICP-MS	5	0.00200	B		mg/L	0.001	0.005	10/28/21 15:03	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	10/20/21 17:12	kja
Beryllium, dissolved	M200.8 ICP-MS	5	<0.0004	U		mg/L	0.0004	0.00125	11/01/21 17:14	mfm
Boron, dissolved	M200.7 ICP	5	0.252	B		mg/L	0.15	0.5	10/20/21 17:12	kja
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	11/01/21 17:14	mfm
Calcium, dissolved	M200.7 ICP	5	636			mg/L	0.5	2.5	10/20/21 17:12	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/28/21 15:03	mfm
Cobalt, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/20/21 17:12	kja
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/20/21 17:12	kja
Iron, dissolved	M200.7 ICP	5	0.990			mg/L	0.3	0.75	10/20/21 17:12	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	11/01/21 17:14	mfm
Magnesium, dissolved	M200.7 ICP	5	145			mg/L	1	5	10/20/21 17:12	kja
Manganese, dissolved	M200.7 ICP	5	2.37			mg/L	0.05	0.25	10/20/21 17:12	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	10/14/21 10:54	mlh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.00675			mg/L	0.001	0.0025	10/28/21 15:03	mfm
Nickel, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.005	10/28/21 15:03	mfm
Potassium, dissolved	M200.7 ICP	5	11.8			mg/L	1	5	10/20/21 17:12	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U	*	mg/L	0.002	0.005	10/13/21 15:41	mlh
Selenium, dissolved	M200.8 ICP-MS	5	0.00242			mg/L	0.0005	0.00125	10/28/21 15:03	mfm
Silver, dissolved	M200.7 ICP	5	<0.05	U	*	mg/L	0.05	0.125	10/20/21 17:12	kja
Sodium, dissolved	M200.7 ICP	5	357			mg/L	1	5	10/20/21 17:12	kja
Thallium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	11/02/21 17:08	mfm
Uranium, dissolved	M200.8 ICP-MS	5	0.00184	B		mg/L	0.0005	0.0025	11/01/21 17:14	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/20/21 17:12	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: DUP-1

ACZ Sample ID: **L69122-11**

Date Sampled: 10/07/21 13:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	291			mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	291			mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			12/13/21 0:00	calc
Sum of Anions			60.0			meq/L			12/13/21 0:00	calc
Sum of Cations			60			meq/L			12/13/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	414		*	mg/L	20	100	10/26/21 22:39	krh
Cyanide, Total	D7511-09	1	0.011		*	mg/L	0.003	0.01	10/11/21 14:53	md
Fluoride	M300.0 - Ion Chromatography	50	<2.5	U	*	mg/L	2.5	12.5	10/26/21 22:39	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	11/03/21 2:52	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	4130	H	*	mg/L	100	200	10/22/21 12:52	emk
Sulfate	M300.0 - Ion Chromatography	50	2030			mg/L	20	100	10/26/21 22:39	krh
TDS (calculated)	Calculation		3770			mg/L			12/13/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.10						12/13/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: DUP-2

ACZ Sample ID: **L69122-12**

Date Sampled: 10/07/21 13:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 15:26	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	<0.1	U		mg/L	0.1	0.5	10/20/21 17:15	kja
Arsenic, dissolved	M200.8 ICP-MS	2	0.00077	B		mg/L	0.0004	0.002	10/28/21 15:05	mfm
Barium, dissolved	M200.7 ICP	2	0.0174	B		mg/L	0.014	0.07	10/20/21 17:15	kja
Cadmium, dissolved	M200.8 ICP-MS	2	<0.0001	U		mg/L	0.0001	0.0005	11/01/21 17:16	mfm
Calcium, dissolved	M200.7 ICP	2	96.9			mg/L	0.2	1	10/20/21 17:15	kja
Chromium, dissolved	M200.8 ICP-MS	2	<0.001	U		mg/L	0.001	0.004	10/28/21 15:05	mfm
Cobalt, dissolved	M200.8 ICP-MS	2	0.000198	B		mg/L	0.0001	0.0005	11/01/21 17:16	mfm
Copper, dissolved	M200.7 ICP	2	<0.02	U		mg/L	0.02	0.1	10/20/21 17:15	kja
Iron, dissolved	M200.7 ICP	2	<0.12	U		mg/L	0.12	0.3	10/20/21 17:15	kja
Lead, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.001	11/01/21 17:16	mfm
Magnesium, dissolved	M200.7 ICP	2	31.1			mg/L	0.4	2	10/20/21 17:15	kja
Manganese, dissolved	M200.7 ICP	2	0.158			mg/L	0.02	0.1	10/20/21 17:15	kja
Molybdenum, dissolved	M200.7 ICP	2	0.148	B		mg/L	0.04	0.2	10/20/21 17:15	kja
Nickel, dissolved	M200.7 ICP	2	<0.016	U		mg/L	0.016	0.08	10/20/21 17:15	kja
Potassium, dissolved	M200.7 ICP	2	5.76			mg/L	0.4	2	10/20/21 17:15	kja
Selenium, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.0005	10/28/21 15:05	mfm
Silver, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.001	11/01/21 17:16	mfm
Sodium, dissolved	M200.7 ICP	2	475			mg/L	0.4	2	10/20/21 17:15	kja
Uranium, dissolved	M200.8 ICP-MS	2	0.501		*	mg/L	0.0002	0.001	10/28/21 15:05	mfm
Zinc, dissolved	M200.7 ICP	2	<0.04	U		mg/L	0.04	0.1	10/20/21 17:15	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: DUP-2

ACZ Sample ID: **L69122-12**

Date Sampled: 10/07/21 13:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	292			mg/L	2	20	10/20/21 0:00	eep
Carbonate as CaCO ₃		1	17.2	B		mg/L	2	20	10/20/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/20/21 0:00	eep
Total Alkalinity		1	309			mg/L	2	20	10/20/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-3.3			%			12/13/21 0:00	calc
Sum of Anions			31			meq/L			12/13/21 0:00	calc
Sum of Cations			29			meq/L			12/13/21 0:00	calc
Chloride	SM4500Cl-E	1	28.6			mg/L	0.5	2	10/29/21 13:17	md
Fluoride	SM4500F-C	1	0.56			mg/L	0.15	0.35	10/26/21 23:34	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	1.93		*	mg/L	0.02	0.1	11/03/21 2:53	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	<0.2	U	*	mg/L	0.2	0.5	10/23/21 2:19	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	2010			mg/L	20	40	10/12/21 16:40	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	60	1150		*	mg/L	60	300	10/28/21 15:19	wtc
TDS (calculated)	Calculation		1980			mg/L			12/13/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.02						12/13/21 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>

QUIVIRA

ACZ Project ID: **L69122**

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
WG529842													
WG529842PBW1	PBW	10/19/21 22:18				5.8	mg/L		-20	20			
WG529842LCSW3	LCSW	10/19/21 22:37	WC211018-1	820.0001		801.1	mg/L	98	90	110			
WG529842LCSW6	LCSW	10/20/21 4:32	WC211018-1	820.0001		798	mg/L	97	90	110			
WG529842PBW2	PBW	10/20/21 4:39				5.9	mg/L		-20	20			
WG529842LCSW9	LCSW	10/20/21 8:41	WC211018-1	820.0001		792.5	mg/L	97	90	110			
WG529842PBW3	PBW	10/20/21 8:48				4.9	mg/L		-20	20			
L69122-01DUP	DUP	10/20/21 10:28			914	904.4	mg/L				1	20	
L69122-11DUP	DUP	10/20/21 12:16			291	292.6	mg/L				1	20	
WG529842LCSW12	LCSW	10/20/21 12:35	WC211018-1	820.0001		821.3	mg/L	100	90	110			
WG529842PBW4	PBW	10/20/21 12:41				4.4	mg/L		-20	20			
L69137-02DUP	DUP	10/20/21 14:16			77.8	82.2	mg/L				6	20	
WG529842LCSW15	LCSW	10/20/21 16:05	WC211018-1	820.0001		804	mg/L	98	90	110			

Aluminum, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	2		1.984	mg/L	99	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.15	0.15			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	1.0008		1.019	mg/L	102	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	1.0008	U	1.059	mg/L	106	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	1.0008	U	1.028	mg/L	103	85	115	3	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	1.0008	U	.967	mg/L	97	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	1.0008	U	1.04	mg/L	104	85	115	7	20	

Antimony, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530532													
WG530532ICV	ICV	10/28/21 14:33	MS211013-2	.0201		.0197	mg/L	98	90	110			
WG530532ICB	ICB	10/28/21 14:35				.00052	mg/L		-0.00088	0.00088			
WG530532LFB	LFB	10/28/21 14:36	MS210927-3	.01		.00971	mg/L	97	85	115			
L69122-06AS	AS	10/28/21 14:49	MS210927-3	.01	U	.0089	mg/L	89	70	130			
L69122-06ASD	ASD	10/28/21 14:51	MS210927-3	.01	U	.00966	mg/L	97	70	130	8	20	
L69192-03AS	AS	10/28/21 15:12	MS210927-3	.01	U	.00867	mg/L	87	70	130			
L69192-03ASD	ASD	10/28/21 15:14	MS210927-3	.01	U	.00841	mg/L	84	70	130	3	20	

Arsenic, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530532													
WG530532ICV	ICV	10/28/21 14:33	MS211013-2	.05		.04792	mg/L	96	90	110			
WG530532ICB	ICB	10/28/21 14:35				U	mg/L		-0.00044	0.00044			
WG530532LFB	LFB	10/28/21 14:36	MS210927-3	.05005		.04958	mg/L	99	85	115			
L69122-06AS	AS	10/28/21 14:49	MS210927-3	.05005	.00429	.06069	mg/L	113	70	130			
L69122-06ASD	ASD	10/28/21 14:51	MS210927-3	.05005	.00429	.06506	mg/L	121	70	130	7	20	
L69192-03AS	AS	10/28/21 15:12	MS210927-3	.05005	.00192	.06376	mg/L	124	70	130			
L69192-03ASD	ASD	10/28/21 15:14	MS210927-3	.05005	.00192	.0631	mg/L	122	70	130	1	20	

QUIVIRA

ACZ Project ID: **L69122**

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.

Barium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	2		2.0008	mg/L	100	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.021	0.021			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	.5		.4952	mg/L	99	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	.5	U	.5006	mg/L	100	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	.5	U	.5001	mg/L	100	85	115	0	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	.5	U	.5146	mg/L	103	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	.5	U	.5078	mg/L	102	85	115	1	20	

Beryllium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530754													
WG530754ICV	ICV	11/01/21 16:43	MS211013-2	.05		.053038	mg/L	106	90	110			
WG530754ICB	ICB	11/01/21 16:45				U	mg/L		-0.000176	0.000176			
WG530754LFB	LFB	11/01/21 16:47	MS210927-3	.05005		.051376	mg/L	103	85	115			
L69122-06AS	AS	11/01/21 16:59	MS210927-3	.05005	U	.053769	mg/L	107	70	130			
L69122-06ASD	ASD	11/01/21 17:01	MS210927-3	.05005	U	.055559	mg/L	111	70	130	3	20	
L69192-02AS	AS	11/01/21 17:21	MS210927-3	.05005	.00799	.05761	mg/L	99	70	130			
L69192-02ASD	ASD	11/01/21 17:23	MS210927-3	.05005	.00799	.058463	mg/L	101	70	130	1	20	

Boron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	2		1.993	mg/L	100	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.09	0.09			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	.5005		.511	mg/L	102	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	.5005	.144	.643	mg/L	100	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	.5005	.144	.637	mg/L	99	85	115	1	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	.5005	.046	.557	mg/L	102	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	.5005	.046	.552	mg/L	101	85	115	1	20	

Cadmium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530754													
WG530754ICV	ICV	11/01/21 16:43	MS211013-2	.05		.053875	mg/L	108	90	110			
WG530754ICB	ICB	11/01/21 16:45				.000051	mg/L		-0.00011	0.00011			
WG530754LFB	LFB	11/01/21 16:47	MS210927-3	.05005		.052221	mg/L	104	85	115			
L69122-06AS	AS	11/01/21 16:59	MS210927-3	.05005	.000094	.053816	mg/L	107	70	130			
L69122-06ASD	ASD	11/01/21 17:01	MS210927-3	.05005	.000094	.056079	mg/L	112	70	130	4	20	
L69192-02AS	AS	11/01/21 17:21	MS210927-3	.05005	.00443	.058766	mg/L	109	70	130			
L69192-02ASD	ASD	11/01/21 17:23	MS210927-3	.05005	.00443	.058936	mg/L	109	70	130	0	20	

QUIVIRA

ACZ Project ID: **L69122**

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.

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	100		97.7	mg/L	98	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.3	0.3			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	67.98972		66.53	mg/L	98	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	67.98972	2.58	71.27	mg/L	101	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	67.98972	2.58	69.71	mg/L	99	85	115	2	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	67.98972	58	117.8	mg/L	88	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	67.98972	58	122.5	mg/L	95	85	115	4	20	

Chloride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528109													
WG528109ICV	ICV	09/24/21 18:47	WI210924-2	19.96		19.83	mg/L	99	90	110			
WG528109ICB	ICB	09/24/21 19:05				U	mg/L		-0.4	0.4			
WG530287													
WG530287LFB1	LFB	10/26/21 19:22	WI210907-6	30		30.11	mg/L	100	90	110			
L69101-01DUP	DUP	10/26/21 19:58			42.2	42.12	mg/L				0	20	RA
L69101-07AS	AS	10/26/21 20:34	WI210907-6	1500	758	2254.21	mg/L	100	90	110			
WG530287LFB2	LFB	10/27/21 4:02	WI210907-6	30		30.18	mg/L	101	90	110			

Chloride

SM4500CI-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530473													
WG530473ICV	ICV	10/29/21 13:06	WI210503-1	54.89		56.37	mg/L	103	90	110			
WG530473ICB	ICB	10/29/21 13:07				U	mg/L		-1.5	1.5			
WG530473LFB1	LFB	10/29/21 13:08	WI210908-11	29.97		30.35	mg/L	101	90	110			
L69101-04AS	AS	10/29/21 13:09	WI210908-11	29.97	11.3	41.65	mg/L	101	90	110			
L69101-05DUP	DUP	10/29/21 13:10			59.4	60.18	mg/L				1	20	
L69122-08AS	AS	10/29/21 13:16	WI210908-11	29.97	32.3	62.65	mg/L	101	90	110			
L69122-10DUP	DUP	10/29/21 13:17			28.6	28.53	mg/L				0	20	
WG530473LFB2	LFB	10/29/21 13:23	WI210908-11	29.97		30.26	mg/L	101	90	110			

Chromium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530532													
WG530532ICV	ICV	10/28/21 14:33	MS211013-2	.05		.04889	mg/L	98	90	110			
WG530532ICB	ICB	10/28/21 14:35				U	mg/L		-0.0011	0.0011			
WG530532LFB	LFB	10/28/21 14:36	MS210927-3	.05		.04865	mg/L	97	85	115			
L69122-06AS	AS	10/28/21 14:49	MS210927-3	.05	U	.05251	mg/L	105	70	130			
L69122-06ASD	ASD	10/28/21 14:51	MS210927-3	.05	U	.05528	mg/L	111	70	130	5	20	
L69192-03AS	AS	10/28/21 15:12	MS210927-3	.05	.00128	.06093	mg/L	119	70	130			
L69192-03ASD	ASD	10/28/21 15:14	MS210927-3	.05	.00128	.06111	mg/L	120	70	130	0	20	

QUIVIRA

ACZ Project ID: **L69122**

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.

Cobalt, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	2.01		1.946	mg/L	97	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.06	0.06			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	.5005		.48	mg/L	96	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	.5005	U	.483	mg/L	97	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	.5005	U	.485	mg/L	97	85	115	0	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	.5005	.042	.529	mg/L	97	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	.5005	.042	.528	mg/L	97	85	115	0	20	

Cobalt, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530754													
WG530754ICV	ICV	11/01/21 16:43	MS211013-2	.05		.054744	mg/L	109	90	110			
WG530754ICB	ICB	11/01/21 16:45				U	mg/L		-0.00011	0.00011			
WG530754LFB	LFB	11/01/21 16:47	MS210927-3	.05005		.052037	mg/L	104	85	115			
L69122-06AS	AS	11/01/21 16:59	MS210927-3	.05005	.000051	.055779	mg/L	111	70	130			
L69122-06ASD	ASD	11/01/21 17:01	MS210927-3	.05005	.000051	.058067	mg/L	116	70	130	4	20	
L69192-02AS	AS	11/01/21 17:21	MS210927-3	.05005	.0226	.08116	mg/L	117	70	130			
L69192-02ASD	ASD	11/01/21 17:23	MS210927-3	.05005	.0226	.081505	mg/L	118	70	130	0	20	

Copper, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	2		1.959	mg/L	98	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.03	0.03			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	.5		.496	mg/L	99	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	.5	U	.507	mg/L	101	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	.5	U	.506	mg/L	101	85	115	0	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	.5	U	.515	mg/L	103	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	.5	U	.507	mg/L	101	85	115	2	20	

Cyanide, Total

D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529095													
WG529095ICV	ICV	10/11/21 14:15	WI210928-5	.3		.3098	mg/L	103	90	110			
WG529095ICB	ICB	10/11/21 14:17				U	mg/L		-0.003	0.003			
WG529095LFB	LFB	10/11/21 14:23	WI210928-2	.1		.11	mg/L	110	84	116			
L68879-01AS	AS	10/11/21 14:27	WI210928-2	.1	.014	.0573	mg/L	43	84	116			MC
L68879-01ASD	ASD	10/11/21 14:29	WI210928-2	.1	.014	.0592	mg/L	45	84	116	3	20	MC

QUIVIRA

ACZ Project ID: **L69122**

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.

Fluoride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528109													
WG528109ICV	ICV	09/24/21 18:47	WI210924-2	4.004		4.082	mg/L	102	90	110			
WG528109ICB	ICB	09/24/21 19:05				U	mg/L		-0.05	0.05			
WG530287													
WG530287LFB1	LFB	10/26/21 19:22	WI210907-6	1.5		1.456	mg/L	97	90	110			
L69101-01DUP	DUP	10/26/21 19:58			U	U	mg/L				0	20	RA
L69101-07AS	AS	10/26/21 20:34	WI210907-6	75	U	72.189	mg/L	96	90	110			
WG530287LFB2	LFB	10/27/21 4:02	WI210907-6	1.5		1.449	mg/L	97	90	110			

Fluoride

SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530309													
WG530309ICV	ICV	10/26/21 14:13	WC211019-3	2.002		2.17	mg/L	108	90	110			
WG530309ICB	ICB	10/26/21 14:18				U	mg/L		-0.3	0.3			
WG530342													
WG530342ICV	ICV	10/26/21 21:06	WC211019-3	2.002		2.21	mg/L	110	90	110			
WG530342ICB	ICB	10/26/21 21:14				U	mg/L		-0.3	0.3			
WG530342LFB1	LFB	10/26/21 21:22	WC210803-9	5.02		5.37	mg/L	107	90	110			
L69122-06AS	AS	10/26/21 23:02	WC210803-9	5.02	1.48	6.86	mg/L	107	90	110			
L69122-06ASD	ASD	10/26/21 23:10	WC210803-9	5.02	1.48	6.73	mg/L	105	90	110	2	20	
L69235-03AS	AS	10/27/21 0:33	WC210803-9	5.02	2.33	7.26	mg/L	98	90	110			
L69235-03ASD	ASD	10/27/21 0:41	WC210803-9	5.02	2.33	7.23	mg/L	98	90	110	0	20	
WG530342LFB2	LFB	10/27/21 1:01	WC210803-9	5.02		5.42	mg/L	108	90	110			

Iron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	2		1.956	mg/L	98	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.18	0.18			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	1.0001		.993	mg/L	99	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	1.0001	U	1.003	mg/L	100	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	1.0001	U	.995	mg/L	99	85	115	1	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	1.0001	.062	1.079	mg/L	102	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	1.0001	.062	1.064	mg/L	100	85	115	1	20	

Lead, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530754													
WG530754ICV	ICV	11/01/21 16:43	MS211013-2	.05		.054	mg/L	108	90	110			
WG530754ICB	ICB	11/01/21 16:45				.00011	mg/L		-0.00022	0.00022			
WG530754LFB	LFB	11/01/21 16:47	MS210927-3	.05005		.05185	mg/L	104	85	115			
L69122-06AS	AS	11/01/21 16:59	MS210927-3	.05005	U	.05476	mg/L	109	70	130			
L69122-06ASD	ASD	11/01/21 17:01	MS210927-3	.05005	U	.05576	mg/L	111	70	130	2	20	
L69192-02AS	AS	11/01/21 17:21	MS210927-3	.05005	.00046	.05656	mg/L	112	70	130			
L69192-02ASD	ASD	11/01/21 17:23	MS210927-3	.05005	.00046	.05668	mg/L	112	70	130	0	20	

QUIVIRA

ACZ Project ID: **L69122**

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
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	100		95.01	mg/L	95	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.6	0.6			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	49.99828		46.34	mg/L	93	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	49.99828	.37	48.58	mg/L	96	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	49.99828	.37	47.4	mg/L	94	85	115	2	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	49.99828	10.7	53.51	mg/L	86	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	49.99828	10.7	57.21	mg/L	93	85	115	7	20	

Manganese, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	2		1.967	mg/L	98	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.03	0.03			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	.5005		.495	mg/L	99	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	.5005	U	.507	mg/L	101	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	.5005	U	.503	mg/L	100	85	115	1	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	.5005	U	.507	mg/L	101	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	.5005	U	.503	mg/L	100	85	115	1	20	

Mercury, total

M245.1 CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529403													
WG529403ICV	ICV	10/14/21 10:37	HG211004-3	.00501		.00524	mg/L	105	95	105			
WG529403ICB	ICB	10/14/21 10:38				U	mg/L		-0.0002	0.0002			
WG529403LRB	LRB	10/14/21 10:39				U	mg/L		-0.00044	0.00044			
WG529403LFB	LFB	10/14/21 10:40	HG211004-6	.002002		.0021	mg/L	105	85	115			
L69037-01LFM	LFM	10/14/21 10:42	HG211004-6	.002002	U	.002	mg/L	100	85	115			
L69037-01LFMD	LFMD	10/14/21 10:43	HG211004-6	.002002	U	.00213	mg/L	106	85	115	6	20	

QUIVIRA

ACZ Project ID: **L69122**

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.

Molybdenum, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	2		1.992	mg/L	100	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.06	0.06			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	.501		.495	mg/L	99	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	.501	.433	.925	mg/L	98	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	.501	.433	.911	mg/L	95	85	115	2	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	.501	.066	.528	mg/L	92	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	.501	.066	.565	mg/L	100	85	115	7	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530532													
WG530532ICV	ICV	10/28/21 14:33	MS211013-2	.01992		.02003	mg/L	101	90	110			
WG530532ICB	ICB	10/28/21 14:35				.00023	mg/L		-0.00044	0.00044			
WG530532LFB	LFB	10/28/21 14:36	MS210927-3	.05005		.04988	mg/L	100	85	115			
L69122-06AS	AS	10/28/21 14:49	MS210927-3	.05005	.443	.48451	mg/L	83	70	130			
L69122-06ASD	ASD	10/28/21 14:51	MS210927-3	.05005	.443	.49608	mg/L	106	70	130	2	20	
L69192-03AS	AS	10/28/21 15:12	MS210927-3	.05005	U	.05515	mg/L	110	70	130			
L69192-03ASD	ASD	10/28/21 15:14	MS210927-3	.05005	U	.05415	mg/L	108	70	130	2	20	

Nickel, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	2		1.9395	mg/L	97	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.024	0.024			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	.5		.4875	mg/L	98	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	.5	U	.4885	mg/L	98	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	.5	U	.4901	mg/L	98	85	115	0	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	.5	U	.4978	mg/L	100	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	.5	U	.4952	mg/L	99	85	115	1	20	

Nickel, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530532													
WG530532ICV	ICV	10/28/21 14:33	MS211013-2	.05		.04939	mg/L	99	90	110			
WG530532ICB	ICB	10/28/21 14:35				U	mg/L		-0.00088	0.00088			
WG530532LFB	LFB	10/28/21 14:36	MS210927-3	.05		.04903	mg/L	98	85	115			
L69122-06AS	AS	10/28/21 14:49	MS210927-3	.05	U	.05088	mg/L	102	70	130			
L69122-06ASD	ASD	10/28/21 14:51	MS210927-3	.05	U	.05377	mg/L	108	70	130	6	20	
L69192-03AS	AS	10/28/21 15:12	MS210927-3	.05	.0772	.13109	mg/L	108	70	130			
L69192-03ASD	ASD	10/28/21 15:14	MS210927-3	.05	.0772	.13236	mg/L	110	70	130	1	20	

QUIVIRA

ACZ Project ID: **L69122**

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.

Nitrate/Nitrite as N

M353.2 - H2SO4 preserved

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530865													
WG530865ICV	ICV	11/03/21 0:20	WI210904-1	2.4161		2.404	mg/L	99	90	110			
WG530865ICB	ICB	11/03/21 0:21				U	mg/L		-0.02	0.02			
WG530868													
WG530868LFB	LFB	11/03/21 2:24	WI211001-5	2		1.991	mg/L	100	90	110			
L69122-09AS	AS	11/03/21 2:48	WI211001-5	2	U	1.936	mg/L	97	90	110			
L69122-10DUP	DUP	11/03/21 2:51			U	U	mg/L				0	20	RA
L69054-01AS	AS	11/03/21 3:03	WI211001-5	40	35.9	75.722	mg/L	100	90	110			
L69055-01DUP	DUP	11/03/21 3:05			36.7	36.822	mg/L				0	20	

Nitrogen, total Kjeldahl

M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530123													
WG530123ICV	ICV	10/23/21 1:49	WI211022-3	4		3.95	mg/L	99	90	110			
WG530123ICB	ICB	10/23/21 1:50				U	mg/L		-0.2	0.2			
WG529285LRB	LRB	10/23/21 1:51				U	mg/L		-0.2	0.2			
WG529285LFB	LFB	10/23/21 1:52	WI210714-5	2.5		2.53	mg/L	101	90	110			
L69011-01LFM	LFM	10/23/21 1:55	WI210714-5	2.5	U	2.5	mg/L	100	90	110			
L69011-02DUP	DUP	10/23/21 1:57			U	U	mg/L				0	20	RA
L69122-05LFM	LFM	10/23/21 2:11	WI210714-5	2.5	.42	3.05	mg/L	105	90	110			
L69122-06DUP	DUP	10/23/21 2:13			U	U	mg/L				0	20	RA

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	20		19.6	mg/L	98	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.6	0.6			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	99.96008		96.48	mg/L	97	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	99.96008	6.66	105.9	mg/L	99	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	99.96008	6.66	104.1	mg/L	97	85	115	2	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	99.96008	2.77	94.16	mg/L	91	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	99.96008	2.77	101.6	mg/L	99	85	115	8	20	

Residue, Filterable (TDS) @180C

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529265													
WG529265PBW	PBW	10/12/21 15:29				U	mg/L		-20	20			
WG529265LCSW	LCSW	10/12/21 15:32	PCN64137	1000		982	mg/L	98	80	120			
L69124-02DUP	DUP	10/12/21 16:51			3180	3154	mg/L				1	10	
L69124-03DUP	DUP	10/12/21 16:59			2980	3020	mg/L				1	10	
WG530101													
WG530101PBW	PBW	10/22/21 12:45				U	mg/L		-20	20			
WG530101LCSW	LCSW	10/22/21 12:46	PCN64127	1000		996	mg/L	100	80	120			
L69369-01DUP	DUP	10/22/21 13:08			202	208	mg/L				3	10	

QUIVIRA

ACZ Project ID: **L69122**

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.

Selenium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530532													
WG530532ICV	ICV	10/28/21 14:33	MS211013-2	.05		.04993	mg/L	100	90	110			
WG530532ICB	ICB	10/28/21 14:35				U	mg/L		-0.00022	0.00022			
WG530532LFB	LFB	10/28/21 14:36	MS210927-3	.05		.05046	mg/L	101	85	115			
L69122-06AS	AS	10/28/21 14:49	MS210927-3	.05	.0133	.06337	mg/L	100	70	130			
L69122-06ASD	ASD	10/28/21 14:51	MS210927-3	.05	.0133	.06798	mg/L	109	70	130	7	20	
L69192-03AS	AS	10/28/21 15:12	MS210927-3	.05	.00135	.05398	mg/L	105	70	130			
L69192-03ASD	ASD	10/28/21 15:14	MS210927-3	.05	.00135	.05366	mg/L	105	70	130	1	20	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529292													
WG529292ICV	ICV	10/13/21 13:03	SE211005-1	.025		.0265	mg/L	106	90	110			
WG529292ICB	ICB	10/13/21 13:05				U	mg/L		-0.006	0.006			
WG529294													
WG529294LRB	LRB	10/13/21 14:45				U	mg/L		-0.006	0.006			
WG529294LFB	LFB	10/13/21 14:47	SE210901-2	.0225		.0227	mg/L	101	85	115			
L69122-07LFM	LFM	10/13/21 16:57	SE210901-2	.0225	.036	.0415	mg/L	24	85	115			M2
L69122-07LFMD	LFMD	10/13/21 16:59	SE210901-2	.0225	.036	.0426	mg/L	29	85	115	3	20	M2
WG529459													
WG529459ICV	ICV	10/14/21 14:06	SE211005-1	.025		.026	mg/L	104	90	110			
WG529459ICB	ICB	10/14/21 14:08				U	mg/L		-0.006	0.006			
WG529463													
WG529463LRB	LRB	10/14/21 15:06				U	mg/L		-0.006	0.006			
WG529463LFB	LFB	10/14/21 15:08	SE211013-16	.0225		.0201	mg/L	89	85	115			
L69103-01LFM	LFM	10/14/21 15:12	SE211013-16	.0225	U	.0216	mg/L	96	85	115			
L69103-01LFMD	LFMD	10/14/21 15:14	SE211013-16	.0225	U	.0213	mg/L	95	85	115	1	20	

QUIVIRA

ACZ Project ID: **L69122**

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.

Silver, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	1		.994	mg/L	99	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.03	0.03			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	.5		.506	mg/L	101	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	.5	U	.377	mg/L	75	85	115			M2 ZA
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	.5	U	.392	mg/L	78	85	115	4	20	M2 ZA
L69259-02AS	AS	10/20/21 17:39	II211018-2	.5	U	.402	mg/L	80	85	115			M2 ZA
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	.5	U	.414	mg/L	83	85	115	3	20	M2 ZA

Silver, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530754													
WG530754ICV	ICV	11/01/21 16:43	MS211013-2	.02		.02176	mg/L	109	90	110			
WG530754ICB	ICB	11/01/21 16:45				U	mg/L		-0.00022	0.00022			
WG530754LFB	LFB	11/01/21 16:47	MS210927-3	.01		.01013	mg/L	101	85	115			
L69122-06AS	AS	11/01/21 16:59	MS210927-3	.01	U	.00932	mg/L	93	70	130			
L69122-06ASD	ASD	11/01/21 17:01	MS210927-3	.01	U	.00725	mg/L	73	70	130	25	20	RF ZA
L69192-02AS	AS	11/01/21 17:21	MS210927-3	.01	U	.00929	mg/L	93	70	130			
L69192-02ASD	ASD	11/01/21 17:23	MS210927-3	.01	U	.00954	mg/L	95	70	130	3	20	

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	100		98.57	mg/L	99	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.6	0.6			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	100.007		97.14	mg/L	97	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	100.007	139	231.3	mg/L	92	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	100.007	139	228.3	mg/L	89	85	115	1	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	100.007	38.6	129	mg/L	90	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	100.007	38.6	136.1	mg/L	97	85	115	5	20	

QUIVIRA

ACZ Project ID: **L69122**

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.

Sulfate

D516-02/-07/-11 - TURBIDIMETRIC

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530511													
WG530511ICB	ICB	10/28/21 9:40				U	mg/L		-3	3			
WG530511ICV	ICV	10/28/21 9:40	WI211027-1	20.46		19.4	mg/L	95	90	110			
WG530511LFB	LFB	10/28/21 14:05	WI210105-3	10		9.3	mg/L	93	90	110			
L69101-05AS	AS	10/28/21 14:56	SO4TURB25X	50	2860	2725.8	mg/L	-268	90	110			M3
L69220-06AS	AS	10/28/21 14:59	SO4TURB25X	10	591	591.7	mg/L	7	90	110			M3
L69229-01DUP	DUP	10/28/21 14:59			566	564.2	mg/L				0	20	
L69101-04DUP	DUP	10/28/21 15:18			794	791.3	mg/L				0	20	

Sulfate

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528109													
WG528109ICV	ICV	09/24/21 18:47	WI210924-2	51.15		48.67	mg/L	95	90	110			
WG528109ICB	ICB	09/24/21 19:05				U	mg/L		-0.4	0.4			
WG530287													
WG530287LFB1	LFB	10/26/21 19:22	WI210907-6	30		29.56	mg/L	99	90	110			
L69101-01DUP	DUP	10/26/21 19:58			1260	1253.36	mg/L				1	20	
L69101-07AS	AS	10/26/21 20:34	WI210907-6	1500	3000	4402.77	mg/L	94	90	110			
WG530287LFB2	LFB	10/27/21 4:02	WI210907-6	30		28.98	mg/L	97	90	110			

Thallium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530852													
WG530852ICV	ICV	11/02/21 16:55	MS211013-2	.05		.05109	mg/L	102	90	110			
WG530852ICB	ICB	11/02/21 16:57				U	mg/L		-0.00022	0.00022			
WG530852LFB	LFB	11/02/21 16:59	MS210927-3	.05		.04948	mg/L	99	85	115			
L69192-01AS	AS	11/02/21 17:12	MS210927-3	.05	.00012	.0416	mg/L	83	70	130			
L69192-01ASD	ASD	11/02/21 17:15	MS210927-3	.05	.00012	.04283	mg/L	85	70	130	3	20	

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530532													
WG530532ICV	ICV	10/28/21 14:33	MS211013-2	.05		.04975	mg/L	100	90	110			
WG530532ICB	ICB	10/28/21 14:35				.00027	mg/L		-0.00022	0.00022			BB
WG530532LFB	LFB	10/28/21 14:36	MS210927-3	.05		.04949	mg/L	99	85	115			
L69122-06AS	AS	10/28/21 14:49	MS210927-3	.05	.0125	.06414	mg/L	103	70	130			
L69122-06ASD	ASD	10/28/21 14:51	MS210927-3	.05	.0125	.06596	mg/L	107	70	130	3	20	
L69192-03AS	AS	10/28/21 15:12	MS210927-3	.05	.00554	.06	mg/L	109	70	130			
L69192-03ASD	ASD	10/28/21 15:14	MS210927-3	.05	.00554	.06015	mg/L	109	70	130	0	20	
WG530754													
WG530754ICV	ICV	11/01/21 16:43	MS211013-2	.05		.0541	mg/L	108	90	110			
WG530754ICB	ICB	11/01/21 16:45				U	mg/L		-0.00022	0.00022			
WG530754LFB	LFB	11/01/21 16:47	MS210927-3	.05		.0514	mg/L	103	85	115			
L69122-06AS	AS	11/01/21 16:59	MS210927-3	.05	.0101	.06702	mg/L	114	70	130			
L69122-06ASD	ASD	11/01/21 17:01	MS210927-3	.05	.0101	.06979	mg/L	119	70	130	4	20	
L69192-02AS	AS	11/01/21 17:21	MS210927-3	.05	.00418	.06339	mg/L	118	70	130			
L69192-02ASD	ASD	11/01/21 17:23	MS210927-3	.05	.00418	.06359	mg/L	119	70	130	0	20	

QUIVIRA

ACZ Project ID: **L69122**

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.

Zinc, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529909													
WG529909ICV	ICV	10/20/21 16:07	II211014-1	2		1.954	mg/L	98	95	105			
WG529909ICB	ICB	10/20/21 16:12				U	mg/L		-0.06	0.06			
WG529909LFB	LFB	10/20/21 16:25	II211018-2	.50045		.504	mg/L	101	85	115			
L69122-06AS	AS	10/20/21 16:47	II211018-2	.50045	U	.525	mg/L	105	85	115			
L69122-06ASD	ASD	10/20/21 16:50	II211018-2	.50045	U	.514	mg/L	103	85	115	2	20	
L69259-02AS	AS	10/20/21 17:39	II211018-2	.50045	U	.485	mg/L	97	85	115			
L69259-02ASD	ASD	10/20/21 17:42	II211018-2	.50045	U	.524	mg/L	105	85	115	8	20	

Rio Algom Mining Company

ACZ Project ID: **L69122**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69122-01	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530754	Silver, dissolved	M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG530511	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.
	WG530532	Uranium, dissolved	M200.8 ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
L69122-02	WG530287	Chloride	M300.0 - Ion Chromatography	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).
	WG529095	Cyanide, Total	D7511-09	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
	WG530287	Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	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).
	WG529294	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.
	WG529909	Silver, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
L69122-03	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530754	Silver, dissolved	M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG530511	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.
L69122-04	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530754	Silver, dissolved	M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG530511	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.
	WG530532	Uranium, dissolved	M200.8 ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.

REPAD.15.06.05.01

Rio Algom Mining Company

ACZ Project ID: **L69122**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69122-05	WG530754	Cadmium, dissolved	M200.8 ICP-MS	D2	Sample required dilution. Target analyte exceeded calibration range.
		Cobalt, dissolved	M200.8 ICP-MS	D2	Sample required dilution. Target analyte exceeded calibration range.
		Lead, dissolved	M200.8 ICP-MS	D2	Sample required dilution. Target analyte exceeded calibration range.
	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530754	Silver, dissolved	M200.8 ICP-MS	D2	Sample required dilution. Target analyte exceeded calibration range.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG530511	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.
	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
L69122-06	WG530754	Silver, dissolved	M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG530511	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.
	WG530532	Uranium, dissolved	M200.8 ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
L69122-07	WG530287	Chloride	M300.0 - Ion Chromatography	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).
	WG529095	Cyanide, Total	D7511-09	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
	WG530287	Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	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).
	WG529265	Residue, Filterable (TDS) @180C	SM2540C	N1	See Case Narrative.
	WG529909	Silver, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.

Rio Algom Mining Company

ACZ Project ID: **L69122**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69122-08	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530754	Silver, dissolved	M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG530511	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.
L69122-09	WG530287	Chloride	M300.0 - Ion Chromatography	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).
	WG529095	Cyanide, Total	D7511-09	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
	WG530287	Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	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).
	WG530868	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG529294	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.
	WG529909	Silver, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
L69122-10	WG530868	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530754	Silver, dissolved	M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG530511	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.

Rio Algom Mining Company

ACZ Project ID: **L69122**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69122-11	WG530287	Chloride	M300.0 - Ion Chromatography	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).
	WG529095	Cyanide, Total	D7511-09	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
	WG530287	Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	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).
	WG530868	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG530101	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
	WG529294	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.
	WG529909	Silver, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
L69122-12	WG530868	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530511	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.
	WG530532	Uranium, dissolved	M200.8 ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 35-01-10062021

Locator:

ACZ Sample ID: **L69122-01**

Date Sampled: 10/06/21 17:00

Date Received: 10/08/21

Sample Matrix: *Groundwater*

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:20		1.4	0.13	0.31	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 23:27		3.9	1.4	3.1	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-03 KD-10062021

Locator:

ACZ Sample ID: **L69122-02**

Date Sampled: 10/06/21 13:20

Date Received: 10/08/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	11/17/21 0:11		3.2	2.1	4.8	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	11/29/21 21:59		0.0	24	3.2	pCi/L	*	ess

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:21		9.3	0.49	0.51	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 23:27		26	2.7	4.2	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	11/30/21 10:54		0.483	0.29	0.35	pCi/L	*	amk

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 35-03-10062021

Locator:

ACZ Sample ID: **L69122-03**

Date Sampled: 10/06/21 11:42

Date Received: 10/08/21

Sample Matrix: *Groundwater*

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:34		0.38	0.09	0.41	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 23:27		3.2	0.81	1.7	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 35-02-10062021

Locator:

ACZ Sample ID: **L69122-04**

Date Sampled: 10/06/21 13:00

Date Received: 10/08/21

Sample Matrix: *Groundwater*

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/09/21 0:31		0.41	0.11	0.53	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 23:27		1.5	0.68	1.6	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30W SHAFT-10062021

Locator:

ACZ Sample ID: **L69122-05**

Date Sampled: 10/06/21 14:30

Date Received: 10/08/21

Sample Matrix: *Groundwater*

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/09/21 0:34		170	1.6	0.29	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 23:27		8	1.7	3.3	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: SEC 23 WELL-10062021

Locator:

ACZ Sample ID: **L69122-06**

Date Sampled: 10/06/21 18:15

Date Received: 10/08/21

Sample Matrix: Groundwater

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/10/21 0:02		1.4	0.18	0.45	pCi/L		ess

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 23:27		3.1	0.89	1.7	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-08 TRA-10062021

Locator:

ACZ Sample ID: **L69122-07**

Date Sampled: 10/06/21 15:50

Date Received: 10/08/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	11/17/21 0:11		-2.8	6	15	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	12/01/21 11:04		0.613	3.4	4.2	pCi/L	*	ess

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/10/21 0:04		2.2	0.24	0.56	pCi/L	*	ess

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 23:27		11	1.2	1.9	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	11/30/21 10:54		1.37	0.43	0.26	pCi/L	*	amk

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW 24-01-10062021

Locator:

ACZ Sample ID: **L69122-08**

Date Sampled: 10/06/21 13:00

Date Received: 10/08/21

Sample Matrix: *Groundwater*

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/10/21 0:05		0.25	0.11	0.5	pCi/L		ess

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 23:27		0.13	1.3	3.1	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-07 KD-10062021

Locator:

ACZ Sample ID: **L69122-09**

Date Sampled: 10/07/21 12:40

Date Received: 10/08/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	11/17/21 0:11		1.6	1.3	3.1	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	12/01/21 11:04		0.672	1.7	2	pCi/L	*	ess

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/10/21 0:07		2	0.19	0.39	pCi/L		ess

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 23:27		5.7	1.7	3.4	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	11/30/21 10:54		1.3	0.51	0.59	pCi/L	*	amk

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 35-VH-6-10072021

Locator:

ACZ Sample ID: **L69122-10**

Date Sampled: 10/07/21 13:00

Date Received: 10/08/21

Sample Matrix: *Groundwater*

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/10/21 0:08		27	0.68	0.54	pCi/L		ess

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 23:27		4.1	0.82	1.6	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: DUP-1

Locator:

ACZ Sample ID: **L69122-11**

Date Sampled: 10/07/21 13:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	11/17/21 0:11		1.5	1.2	2.7	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	12/01/21 11:04		0.0	51	7	pCi/L	*	ess

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/10/21 0:10		2.9	0.25	0.55	pCi/L		ess

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 23:27		6.3	1.4	2.6	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	11/30/21 10:54		0.202	0.29	0.49	pCi/L	*	amk

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: DUP-2

Locator:

ACZ Sample ID: **L69122-12**

Date Sampled: 10/07/21 13:00

Date Received: 10/08/21

Sample Matrix: Groundwater

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/10/21 0:11		33	0.73	0.55	pCi/L		ess

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 23:27		2.8	1.4	3.3	pCi/L	*	ess

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.
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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://aczk.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf>

QUIVIRA

ACZ Project ID: **L69122**

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.

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
WG530302																
WG530302LCSW	LCSW	11/10/21	PCN64361	99.53				77	3.2	3.6	77	55	121			
WG530302PBW	PBW	11/10/21						.83	1.6	3.9			7.8			
L69101-07DUP	DUP-RER	11/16/21			7.2	2	4.1	4.1	1.2	2.5				1.33	2	
L68594-01DUP	DUP-RER	11/16/21			-0.23	2.8	6.9	.23	2.4	5.9				0.12	2	
L68594-01DUP	DUP-RPD	11/16/21			-0.23	2.8	6.9	.23	2.4	5.9				92	20	RG
L69101-07DUP	DUP-RPD	11/16/21			7.2	2	4.1	4.1	1.2	2.5				55	20	RG
L69122-02MS	MS	11/17/21	PCN64361	99.52	3.2	2.1	4.8	80	3	2.7	77	55	121			

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
WG532364																
WG532364LCSW	LCSW	11/29/21	PCN64360	500				510	110	2.8	102	51	128			
WG532364PBW	PBW	11/29/21						.362	1.7	2.2			4.4			
L69101-01DUP	DUP-RER	11/29/21			0.434	2.5	3.1	0	39	5.3				0.01	2	
L69101-01DUP	DUP-RPD	11/29/21			0.434	2.5	3.1	0	39	5.3				200	20	RG
L69122-09MS	MS	12/01/21	PCN64360	500	0.672	1.7	2	509	110	2	102	51	128			

QUIVIRA

ACZ Project ID: **L69122**

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, 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
WG532082																
WG532082LCSW	LCSW	12/06/21	PCN64374	20				17	0.49	0.45	85	43	148			
WG532082PBW	PBW	12/06/21						.12	0.1	0.76			1.52			
L69101-04DUP	DUP-RPD	12/06/21			1.2	0.13	0.37	1.1	0.13	0.31				9	20	
L69101-06MS	MS	12/06/21	PCN64374	20	1.3	0.16	0.48	15	0.41	0.19	69	43	148			
L69349-02DUP	DUP-RER	12/06/21			0.18	0.07	0.27	.12	0.08	0.1				0.56	2	
L69349-02DUP	DUP-RPD	12/06/21			0.18	0.07	0.27	.12	0.08	0.1				40	20	RG
WG532513																
WG532513LCSW	LCSW	12/09/21	PCN64374	20				17	0.45	0.08	85	43	148			
WG532513PBW	PBW	12/09/21						-.04	0.1	0.11			0.22			
L69176-01MS	MS	12/09/21	PCN64374	20	1.2	0.14	0.42	18	0.42	0.17	84	43	148			
L69240-03DUP	DUP-RPD	12/09/21			0.12	0.06	0.41	.09	0.05	0.26				29	20	RG
L69240-03DUP	DUP-RER	12/09/21			0.12	0.06	0.41	.09	0.05	0.26				0.38	2	
L69122-04DUP	DUP-RPD	12/09/21			0.41	0.11	0.53	.29	0.09	0.41				34	20	RG
L69122-04DUP	DUP-RER	12/09/21			0.41	0.11	0.53	.29	0.09	0.41				0.84	2	
WG532562																
WG532562LCSW	LCSW	12/10/21	PCN64374	20				25	0.62	0.42	125	43	148			
WG532562PBW	PBW	12/10/21						.03	0.09	0.56			1.12			
L69240-01DUP	DUP-RPD	12/10/21			52	0.95	0.53	44	0.87	0.5				17	20	
L69361-01MS	MS	12/10/21	PCN64374	20	0.17	0.09	0.42	22	0.56	0.47	109	43	148			
L69362-02DUP	DUP-RPD	12/10/21			0.21	0.11	0.33	.04	0.11	0.35				136	20	RG
L69362-02DUP	DUP-RER	12/10/21			0.21	0.11	0.33	.04	0.11	0.35				1.09	2	

QUIVIRA

ACZ Project ID: **L69122**

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, 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
WG529971																
WG529971LCSW	LCSW	10/24/21	PCN63356	9.33				8	1.2	2.1	86	47	123			
WG529971PBW	PBW	10/24/21						0	1.1	2.4					4.8	
L69101-04DUP	DUP-RPD	10/24/21			1.6	0.86	1.9	1.8	1	2.2				12	20	
L69122-12DUP	DUP-RER	10/24/21			2.8	1.4	3.3	3.8	1	2.2				0.58	2	
L69122-01MS	MS	10/24/21	PCN63356	11.67	3.9	1.4	3.1	28	2.5	3.9	207	47	123			M1
L69122-12DUP	DUP-RPD	10/24/21			2.8	1.4	3.3	3.8	1	2.2				30	20	M1 RG

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
WG531618																
L68426-05DUP	DUP-RPD	11/29/21			0.496	0.18	0.13	1.69	0.61	0.66				109	20	RG
L68426-05DUP	DUP-RER	11/29/21			0.496	0.18	0.13	1.69	0.61	0.66				1.88	2	
L68426-07MS	MS	11/29/21	PCN58726	200	0.341	0.24	0.33	208	26	0.4	104	91	126			
L69490-02DUP	DUP-RPD	11/30/21			0.618	0.35	0.43	.529	0.42	0.63				16	20	
WG531618LCSW	LCSW	12/01/21	PCN58726	200				208	26	0.41	104	91	126			
WG531618PBW	PBW	12/01/21						1999999999	0.22	0.26				0.5296		

Rio Algom Mining Company

ACZ Project ID: **L69122**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69122-01	WG532082	Radium 226, dissolved	M903.1	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
			M903.1	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.
	WG529971	Radium 228, dissolved	M9320	D1	Sample required dilution due to matrix.
			M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69122-02	WG530302	Lead 210, dissolved	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.
	WG532364	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.
	WG532082	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
			M903.1	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.
	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG531618	Thorium 230, dissolved	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.
L69122-03	WG532082	Radium 226, dissolved	M903.1	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.
			M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG529971	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.
			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.
L69122-04	WG532513	Radium 226, dissolved	M903.1	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.
			M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG529971	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.
			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.
L69122-05	WG532513	Radium 226, dissolved	M903.1	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.
			M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG529971	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.
			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.
L69122-06	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.

Rio Algom Mining Company

ACZ Project ID: **L69122**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69122-07	WG530302	Lead 210, dissolved	EICHROM, OTW01	D1	Sample required dilution due to matrix.
			EICHROM, OTW01	N1	See Case Narrative.
			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.
	WG532364	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.
	WG532562	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG531618	Thorium 230, dissolved	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.
L69122-08	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
L69122-09	WG530302	Lead 210, dissolved	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.
	WG532364	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.
	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG531618	Thorium 230, dissolved	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.
L69122-10	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
L69122-11	WG530302	Lead 210, dissolved	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.
	WG532364	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.
	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG531618	Thorium 230, dissolved	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.
L69122-12	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.

Rio Algom Mining Company

ACZ Project ID: **L69122**

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
4510319940

ACZ Project ID: L69122
Date Received: 10/08/2021 11:26
Received By:
Date Printed: 10/11/2021

Receipt Verification

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

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) Are all labels on containers and are they intact and legible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11) For preserved bottle types, was the pH checked and within limits? ¹ L69122-01 Container B2463400 (GREEN CUBE): Added 10 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12) Is there sufficient sample volume to perform all requested work?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13) Is the custody seal intact on all containers?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14) Are samples that require zero headspace acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15) Are all sample containers appropriate for analytical requirements?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16) Is there an Hg-1631 trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17) Is there a VOA trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18) Were all samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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?
6750	2.9	<=6.0	15	Yes
NA36169	3.3	<=6.0	15	Yes
6514	3.3	<=6.0	15	Yes
6301	2.3	<=6.0	15	Yes

Was ice present in the shipment container(s)?

Rio Algom Mining Company
4510319940

ACZ Project ID: L69122

Date Received: 10/08/2021 11:26

Received By:

Date Printed: 10/11/2021

Yes - Wet ice was present in the shipment container(s).

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

¹ 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), Na₂S₂O₃ preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ**Laboratories, Inc.** *69122*

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-6493

CHAIN of CUSTODY*pg. 16*

Report to:

Name: *Kent Applegate*
Company: *Rio Algom Mining, LLC*
E-mail: *Kent.KC.Applegate@bhp.com*Address: *PO BOX 218*
 Grants, NM 87020
Telephone: *505-287-8851*

Copy of Report to:

Name: *See Remarks*
Company: *RAML / Arcadia / Intera*E-mail: *See Remarks*
Telephone: *775-530-6298*

Invoice to:

Name: *Kent Applegate*
Company: *Rio Algom Mining, LLC*
E-mail: *Kent.KC.Applegate@bhp.com*Address: *PO BOX 218*
 Grants, NM 87020
Telephone: *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 ☒
NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring?

Yes ☐No ☐

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: *Arcadia* 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

ANALYSES REQUESTED (attach list or use quote number)

Quote #:

PO#:

Reporting state for compliance testing:

Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION DATE:TIME Matrix

of Containers

NEW ACL VENTS

SAP-GW

<i>36-07 KD-10062021</i>	<i>10-5-21 : 1525</i>	<i>GW</i>	<i>7</i>	<i>X</i>															
<i>35-01-10062021</i>	<i>10-6-21 : 1040</i>	<i>GW</i>	<i>5</i>		<i>X</i>														
<i>31-03 KD-10062021</i>	<i>10-6-21 : 1700</i>	<i>GW</i>	<i>7</i>	<i>X</i>															
<i>35-03-10062021</i>	<i>10-6-21 : 1320</i>	<i>GW</i>	<i>5</i>		<i>X</i>														
<i>35-02-10062021</i>	<i>10-6-21 : 1142</i>	<i>GW</i>	<i>5</i>		<i>X</i>														
<i>30W Shaft-10062021</i>	<i>10-6-21 : 1300</i>	<i>GW</i>	<i>5</i>		<i>X</i>														
<i>Sec 23 Well-10062021</i>	<i>10-6-21 : 1430</i>	<i>GW</i>	<i>5</i>		<i>X</i>														
<i>36-08 TRA-10062021</i>	<i>10-6-21 : 1815</i>	<i>GW</i>	<i>7</i>	<i>X</i>															
<i>MW 24-01-10062021</i>	<i>10-6-21 : 1550</i>	<i>GW</i>	<i>5</i>		<i>X</i>														
<i>30-07 KD-10062021</i>	<i>10-6-21 : 1300</i>	<i>GW</i>	<i>7</i>	<i>X</i>															

Matrix

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

REMARKS

*Please CC report to emails on bottle order email***COPY**

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:

DATE:TIME

RECEIVED BY:

DATE:TIME

<i>Liam Heston</i>	<i>10-7-21 : 1500</i>	<i>UPS</i>	<i>10-7-21 : 1500</i>
		<i>ccw 10/8/21</i>	<i>11:20</i>

FRMAD050.06.14.14

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

L69122-2112141633

Page 65 of 82

69122 Chain of Custody



Tuesday, November 30, 2021

Scott Habermehl
ACZ Laboratories, Inc.
2773 Downhill Drive
Steamboat Springs, CO 80487

Re: ALS Workorder: 2111076

Project Name:

Project Number:

Dear Mr. Habermehl:

Eight water samples were received from ACZ Laboratories, Inc., on 11/3/2021. The samples were scheduled for the following analysis:

Isotopic Thorium

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

 For

ALS Environmental
Janice Winn-Shilling
Project Manager

Accreditations: ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
Arizona	AZ0828
California (CA)	2926
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
Oklahoma	1301
PJLA (DoD ELAP/ISO 170250)	95377
PJLA (DOE-AP/ISO 17025)	95377
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO010992018-1
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	TN02976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280
Virginia	460305

40 CFR Part 136: All analyses for Clean Water Act samples are analyzed using the 40 CFR Part 136 specified method and include all the QC requirements.

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 2111076

Client Name: ACZ Laboratories, Inc.




Client Project Name:

Client Project Number:

Client PO Number: 26439

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
L69101-01	2111076-1		WATER	05-Oct-21	0:00
L69101-07	2111076-2		WATER	05-Oct-21	0:00
L69101-10	2111076-3		WATER	05-Oct-21	0:00
L69122-02	2111076-4		WATER	06-Oct-21	0:00
L69122-07	2111076-5		WATER	06-Oct-21	0:00
L69122-09	2111076-6		WATER	07-Oct-21	0:00
L69122-11	2111076-7		WATER	07-Oct-21	0:00
L69191-02	2111076-8		WATER	07-Oct-21	0:00

2111076

		Accredited Environmental Testing 2773 Downhill Drive Steamboat Springs, CO 80487 (970) 879-6590		CHAIN of CUSTODY	
Report to:					
Name: Scott Habermehl			Address:		
Company: ACZ Laboratories					
E-mail: scotth@acz.com			Telephone:		
Copy of Report to:					
Name:			E-mail:		
Company:			Telephone:		
Invoice to:					
Name: Kelly Huemmer			Address:		
Company: ACZ Laboratories					
E-mail: accountspayable@acz.com			Telephone:		
Copy of Invoice to:					
Name:			Address:		
Company:					
E-mail:			Telephone:		
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 <input type="checkbox"/> NO <input checked="" type="checkbox"/>
<small>If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analysis, even if HT is expired, and data will be qualified.</small>					
Are samples for SDWA Compliance Monitoring?					Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If yes, please include state forms. Results will be reported to PQL for Colorado.					
Sampler's Name:		Sampler's Site Information		State Zip code Time Zone	
*Sampler's Signature:		<small>*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.</small>			
PROJECT INFORMATION					
Quote #:				ANALYSES REQUESTED (attach list or use quote number)	
PO#: 26439					
Reporting state for compliance testing:					
Check box if samples include NRC licensed material?					
SAMPLE IDENTIFICATION		DATE:TIME	Matrix	# of Containers	Thorium230
1	L69101-01	10/5/2021 00:00	GW	1	<input checked="" type="checkbox"/>
2	L69101-07	10/5/2021 00:00	GW	1	<input checked="" type="checkbox"/>
3	L69101-10	10/5/2021 00:00	GW	1	<input checked="" type="checkbox"/>
4	L69122-02	10/6/2021 00:00	GW	1	<input checked="" type="checkbox"/>
5	L69122-07	10/6/2021 00:00	GW	1	<input checked="" type="checkbox"/>
6	L69122-09	10/7/2021 00:00	GW	1	<input checked="" type="checkbox"/>
7	L69122-11	10/7/2021 00:00	GW	1	<input checked="" type="checkbox"/>
8	L69191-02	10/7/2021 00:00	GW	1	<input checked="" type="checkbox"/>
Matrix		SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)			
REMARKS					
Send to : Shiloh Summy Laboratory Director, ALS Environmental 225 Commerce Drive, Fort Collins CO 80524					
Please refer to ACZ's terms & conditions located on the reverse side of this COC.					
RELINQUISHED BY:		DATE:TIME		RECEIVED BY:	
		11/2/21 12:57			
				11/03/21 1230	

Qualtrax ID: 1984

Revision #: 2

White - Return with sample.

Yellow - Retain for your records.



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ACZ Workorder No: 2111076
 Project Manager: JWS Initials: AXK Date: 11/03/2021

	N/A	YES	NO
1. Are airbills / shipping documents present and/or removable?		X	
Tracking number:			
2. Are custody seals on shipping containers intact?		X	
3. Are custody seals on sample containers intact?	X		
4. Is there a COC (chain-of-custody) present?		X	
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)		X	
6. Are short-hold samples present?			X
7. Are all samples within holding times for the requested analyses?		X	
8. Were all sample containers received intact? (not broken or leaking)		X	
9. Is there sufficient sample for the requested analyses?		X	
10. Are samples in proper containers for requested analyses? (form 250, <i>Sample Handling Guidelines</i>)		X	
11. Are all aqueous samples preserved correctly, if required? (excluding volatiles)		X	
12. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	X		
13. Were the samples shipped on ice?			X
14. Were cooler temperatures measured at 0.1-6.0°C?	IR gun used*: #5		RAD ONLY
Cooler #: <u>1</u> Temperature (°C): <u>AMB</u> # of custody seals on cooler: <u>1</u> External µR/hr reading: <u>10</u> Background µR/hr reading: <u>11</u> Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES (If no, see Form 008.)			

* Please provide details here for NO responses to boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.

Were unpreserved bottles pH checked? NA All client bottle ID's vs ALS lab ID's double-checked by: AK

If applicable, was the client contacted? **YES / NO / NA** Contact: [Signature] Date/Time: 11/04/21
 Project Manager Signature / Date: [Signature]

SAMPLE RECEIVING
(970) 879-5590
ACZ LABORATORIES
2773 DOWNHILL DRIVE
STEAMBOAT SPRINGS CO 80487

29 LBS

1 OF 1

SHIP TO:
ALS ANALYTICAL
(970) 490-1511
225 COMMERCE DRIVE
FT COLLINS CO 80524

10-1
AMB

2111076

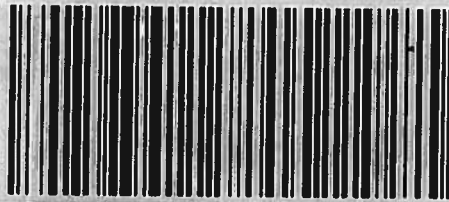


CO 805 0-01



UPS GROUND

TRACKING #: 1Z 810 130 03 4647 0121



BILLING: P/P

WS 24.0.24 Zebra ZP 450 48.0A 07/2021



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This package conforms to 49 CFR 173.4
for domestic and rail transport only.

Client: ACZ Laboratories, Inc.

Date: 30-Nov-21

Project:

Work Order: 2111076

Sample ID: L69101-01

Lab ID: 2111076-1

Legal Location:

Matrix: WATER

Collection Date: 10/5/2021 00:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Isotopic Thorium by Alpha Spectroscopy						
			SOP 714	Prep Date: 11/23/2021		
				PrepBy: SDW		
Tracer: Th-229	55.7		30-110	%REC	DL = NA	11/29/2021 15:03
Th-230	0.057 (+/- 0.078)	U	0.127	pCi/l	NA	11/29/2021 15:03

Client: ACZ Laboratories, Inc.

Date: 30-Nov-21

Project:

Work Order: 2111076

Sample ID: L69101-07

Lab ID: 2111076-2

Legal Location:

Matrix: WATER

Collection Date: 10/5/2021 00:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>						
Isotopic Thorium by Alpha Spectroscopy			SOP 714		Prep Date: 11/23/2021	PrepBy: SDW
Tracer: Th-229	72.5		30-110	%REC	DL = NA	11/29/2021 15:03
Th-230	-0.048 (+/- 0.057)	U	0.112	pCi/l	NA	11/29/2021 15:03

Client: ACZ Laboratories, Inc.

Date: 30-Nov-21

Project:

Work Order: 2111076

Sample ID: L69101-10

Lab ID: 2111076-3

Legal Location:

Matrix: WATER

Collection Date: 10/5/2021 00:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Isotopic Thorium by Alpha Spectroscopy						
			SOP 714	Prep Date: 11/23/2021		
				PrepBy: SDW		
Tracer: Th-229	71.4		30-110	%REC	DL = NA	11/29/2021 15:03
Th-230	0.097 (+/- 0.071)	U	0.106	pCi/l	NA	11/29/2021 15:03

Client: ACZ Laboratories, Inc.

Date: 30-Nov-21

Project:

Work Order: 2111076

Sample ID: L69122-02

Lab ID: 2111076-4

Legal Location:

Matrix: WATER

Collection Date: 10/6/2021 00:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>						
Isotopic Thorium by Alpha Spectroscopy			SOP 714		Prep Date: 11/23/2021	PrepBy: SDW
Tracer: Th-229	79.1		30-110	%REC	DL = NA	11/29/2021 15:05
Th-230	0.04 (+/- 0.067)	U	0.112	pCi/l	NA	11/29/2021 15:05

Client: ACZ Laboratories, Inc.

Date: 30-Nov-21

Project:

Work Order: 2111076

Sample ID: L69122-07

Lab ID: 2111076-5

Legal Location:

Matrix: WATER

Collection Date: 10/6/2021 00:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>						
Isotopic Thorium by Alpha Spectroscopy			SOP 714		Prep Date: 11/23/2021	PrepBy: SDW
Tracer: Th-229	74.8		30-110	%REC	DL = NA	11/29/2021 15:05
Th-230	0.039 (+/- 0.067)	U	0.112	pCi/l	NA	11/29/2021 15:05

Client: ACZ Laboratories, Inc.

Date: 30-Nov-21

Project:

Work Order: 2111076

Sample ID: L69122-09

Lab ID: 2111076-6

Legal Location:

Matrix: WATER

Collection Date: 10/7/2021 00:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>						
Isotopic Thorium by Alpha Spectroscopy			SOP 714		Prep Date: 11/23/2021	PrepBy: SDW
Tracer: Th-229	75.7		30-110	%REC	DL = NA	11/29/2021 15:05
Th-230	0.006 (+/- 0.06)	U	0.108	pCi/l	NA	11/29/2021 15:05

Client: ACZ Laboratories, Inc.

Date: 30-Nov-21

Project:

Work Order: 2111076

Sample ID: L69122-11

Lab ID: 2111076-7

Legal Location:

Matrix: WATER

Collection Date: 10/7/2021 00:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Isotopic Thorium by Alpha Spectroscopy			SOP 714		Prep Date: 11/23/2021	PrepBy: SDW
Tracer: Th-229	73.6		30-110	%REC	DL = NA	11/29/2021 15:05
Th-230	0.019 (+/- 0.064)	U	0.112	pCi/l	NA	11/29/2021 15:05

Client: ACZ Laboratories, Inc.

Date: 30-Nov-21

Project:

Work Order: 2111076

Sample ID: L69191-02

Lab ID: 2111076-8

Legal Location:

Matrix: WATER

Collection Date: 10/7/2021 00:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Isotopic Thorium by Alpha Spectroscopy						
Tracer: Th-229	58.5		SOP 714		Prep Date: 11/23/2021	PrepBy: SDW
			30-110	%REC	DL = NA	11/29/2021 15:05
Th-230	0.004 (+/- 0.069)	U	0.127	pCi/l	NA	11/29/2021 15:05

Client: ACZ Laboratories, Inc.

Date: 30-Nov-21

Project:

Work Order: 2111076

Sample ID: L69191-02

Lab ID: 2111076-8

Legal Location:

Matrix: WATER

Collection Date: 10/7/2021 00:00

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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Explanation of Qualifiers**Radiochemistry:**

- "Report Limit" is the MDC

U or ND - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

G - Sample density differs by more than 15% of LCS density.

D - DER is greater than Control Limit

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met.

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.

E - Analyte concentration exceeds the upper level of the calibration range.

J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).

A - A tentatively identified compound is a suspected aldol-condensation product.

X - The analyte was diluted below an accurate quantitation level.

* - The spike recovery is equal to or outside the control criteria used.

+ - The relative percent difference (RPD) equals or exceeds the control criteria.

G - A pattern resembling gasoline was detected in this sample.

D - A pattern resembling diesel was detected in this sample.

M - A pattern resembling motor oil was detected in this sample.

C - A pattern resembling crude oil was detected in this sample.

4 - A pattern resembling JP-4 was detected in this sample.

5 - A pattern resembling JP-5 was detected in this sample.

H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.

L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.

Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:

- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

ALS -- Fort Collins

Date: 11/30/2021 8:52

Client: ACZ Laboratories, Inc.

QC BATCH REPORT

Work Order: 2111076

Project:

Batch ID: AS211123-1-1

Instrument ID AlphaSpec2

Method: Isotopic Thorium by Alpha Spec

DUP	Sample ID: 2111076-6			Units: pCi/l			Analysis Date: 11/29/2021 15:05				
Client ID: L69122-09		Run ID: AS211123-1TH				Prep Date: 11/23/2021			DF: NA		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Th-230	0.021 (+/- 0.062)	0.107						0.006	0.2	2.1	U
Tracer: Th-229	3.7	0.04	4.667		79.4	30-110		3.53			

LCS	Sample ID: AS211123-1				Units: pCi/l		Analysis Date: 11/29/2021 15:05				
Client ID:		Run ID: AS211123-1TH				Prep Date: 11/23/2021			DF: NA		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Th-230	2.54 (+/- 0.43)	0.06	2.464		103	85-121					P
Tracer: Th-229	1.72	0.02	2.333		73.9	30-110					

MB	Sample ID: AS211123-1				Units: pCi/l		Analysis Date: 11/29/2021 15:05				
Client ID:		Run ID: AS211123-1TH				Prep Date: 11/23/2021			DF: NA		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Th-230	0.013 (+/- 0.031)	0.054									U
Tracer: Th-229	1.78	0.02	2.333		76.4	30-110					

The following samples were analyzed in this batch:

2111076-1	2111076-2	2111076-3
2111076-4	2111076-5	2111076-6
2111076-7	2111076-8	

December 16, 2021

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: Michaela Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Sharon Clouse, Drew Werth, Casandra Woodward, Shubhangi Agarwal, Anupama Subbakrishna, Clark Short, Angela Persico

Project ID: 4510319940

ACZ Project ID: L69101

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 07, 2021. This project has been assigned to ACZ's project number, L69101. 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 L69101. 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 January 15, 2022. 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

December 16, 2021

Project ID: 4510319940

ACZ Project ID: L69101

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 10 groundwater samples from Rio Algom Mining Company on October 7, 2021. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L69101. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic, radiochemistry parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. (N1) Applies to: L69101-10/THORIUM 230

Tracer recovery outside of acceptance limits due to matrix. During step 11.9, sample exhibited very low amount of precip. Sample already run on a dilution.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-05-TRA_10052021

ACZ Sample ID: **L69101-01**

Date Sampled: 10/05/21 10:42

Date Received: 10/07/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	<0.1	U		mg/L	0.1	0.5	10/19/21 16:43	kja
Antimony, dissolved	M200.8 ICP-MS	2	<0.0008	U		mg/L	0.0008	0.004	10/27/21 15:40	mfm
Arsenic, dissolved	M200.8 ICP-MS	2	0.00424			mg/L	0.0004	0.002	10/27/21 15:40	mfm
Barium, dissolved	M200.7 ICP	2	<0.014	U		mg/L	0.014	0.07	10/19/21 16:43	kja
Beryllium, dissolved	M200.8 ICP-MS	2	<0.00016	U		mg/L	0.00016	0.0005	10/27/21 15:40	mfm
Boron, dissolved	M200.7 ICP	2	0.375			mg/L	0.06	0.2	10/19/21 16:43	kja
Cadmium, dissolved	M200.8 ICP-MS	2	<0.0001	U		mg/L	0.0001	0.0005	10/27/21 15:40	mfm
Calcium, dissolved	M200.7 ICP	2	162			mg/L	0.2	1	10/19/21 16:43	kja
Chromium, dissolved	M200.8 ICP-MS	2	<0.001	U		mg/L	0.001	0.004	10/27/21 15:40	mfm
Cobalt, dissolved	M200.7 ICP	2	<0.04	U		mg/L	0.04	0.1	10/19/21 16:43	kja
Copper, dissolved	M200.7 ICP	2	<0.02	U		mg/L	0.02	0.1	10/19/21 16:43	kja
Iron, dissolved	M200.7 ICP	2	<0.12	U		mg/L	0.12	0.3	10/19/21 16:43	kja
Lead, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.001	10/27/21 15:40	mfm
Magnesium, dissolved	M200.7 ICP	2	64.9			mg/L	0.4	2	10/19/21 16:43	kja
Manganese, dissolved	M200.7 ICP	2	0.143			mg/L	0.02	0.1	10/19/21 16:43	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	10/14/21 10:46	mlh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0155			mg/L	0.0004	0.001	10/27/21 15:40	mfm
Nickel, dissolved	M200.8 ICP-MS	2	0.00158	B		mg/L	0.0008	0.002	10/27/21 15:40	mfm
Potassium, dissolved	M200.7 ICP	2	8.17			mg/L	0.4	2	10/19/21 16:43	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	10/13/21 14:49	mlh
Selenium, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.0005	10/27/21 15:40	mfm
Silver, dissolved	M200.7 ICP	2	<0.02	U	*	mg/L	0.02	0.05	10/19/21 16:43	kja
Sodium, dissolved	M200.7 ICP	2	372			mg/L	0.4	2	10/19/21 16:43	kja
Thallium, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.001	10/27/21 15:40	mfm
Uranium, dissolved	M200.8 ICP-MS	2	0.00330			mg/L	0.0002	0.001	10/27/21 15:40	mfm
Zinc, dissolved	M200.7 ICP	2	<0.04	U		mg/L	0.04	0.1	10/19/21 16:43	kja

Rio Algom Mining Company

Project ID: 4510319940
 Sample ID: 30-05-TRA_10052021

ACZ Sample ID: **L69101-01**
 Date Sampled: 10/05/21 10:42
 Date Received: 10/07/21
 Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	158			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	158			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.6			%			12/16/21 0:00	calc
Sum of Anions			31			meq/L			12/16/21 0:00	calc
Sum of Cations			30.0			meq/L			12/16/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	20	42.2		*	mg/L	8	40	10/26/21 19:40	krh
Cyanide, Total	D7511-09	1	<0.003	U	*	mg/L	0.003	0.01	10/11/21 14:35	md
Fluoride	M300.0 - Ion Chromatography	20	<1	U	*	mg/L	1	5	10/26/21 19:40	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	10/28/21 1:39	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	2100			mg/L	20	40	10/11/21 11:31	anc
Sulfate	M300.0 - Ion Chromatography	20	1260			mg/L	8	40	10/26/21 19:40	krh
TDS (calculated)	Calculation		2010			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-06-KD_10052021

ACZ Sample ID: **L69101-02**

Date Sampled: 10/05/21 14:13

Date Received: 10/07/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Beryllium, dissolved	M200.8 ICP-MS	1	0.0145			mg/L	0.00008	0.00025	11/01/21 21:14	bsu

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-45-KDR_10052021

ACZ Sample ID: **L69101-03**

Date Sampled: 10/05/21 12:46

Date Received: 10/07/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0965			mg/L	0.0002	0.0005	10/27/21 15:44	mfm

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 17-VH-9_10042021

ACZ Sample ID: **L69101-04**

Date Sampled: 10/04/21 14:39

Date Received: 10/07/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 11:00	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U		mg/L	0.05	0.25	10/19/21 16:46	kja
Arsenic, dissolved	M200.8 ICP-MS	1	0.00027	B		mg/L	0.0002	0.001	10/27/21 15:47	mfm
Barium, dissolved	M200.7 ICP	1	<0.007	U		mg/L	0.007	0.035	10/19/21 16:46	kja
Cadmium, dissolved	M200.8 ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	10/27/21 15:47	mfm
Calcium, dissolved	M200.7 ICP	1	119			mg/L	0.1	0.5	10/19/21 16:46	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	10/27/21 15:47	mfm
Cobalt, dissolved	M200.8 ICP-MS	1	0.000244	B		mg/L	0.00005	0.00025	10/27/21 15:47	mfm
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	10/19/21 16:46	kja
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	10/19/21 16:46	kja
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	10/27/21 15:47	mfm
Magnesium, dissolved	M200.7 ICP	1	46.9			mg/L	0.2	1	10/19/21 16:46	kja
Manganese, dissolved	M200.7 ICP	1	0.043	B		mg/L	0.01	0.05	10/19/21 16:46	kja
Molybdenum, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.1	10/19/21 16:46	kja
Nickel, dissolved	M200.7 ICP	1	<0.008	U		mg/L	0.008	0.04	10/19/21 16:46	kja
Potassium, dissolved	M200.7 ICP	1	5.29			mg/L	0.2	1	10/19/21 16:46	kja
Selenium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.00025	10/27/21 15:47	mfm
Silver, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	10/29/21 14:42	mfm
Sodium, dissolved	M200.7 ICP	1	262			mg/L	0.2	1	10/19/21 16:46	kja
Uranium, dissolved	M200.8 ICP-MS	1	0.00015	B		mg/L	0.0001	0.0005	10/27/21 15:47	mfm
Zinc, dissolved	M200.7 ICP	1	0.034	B		mg/L	0.02	0.05	10/19/21 16:46	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 17-VH-9_10042021

ACZ Sample ID: **L69101-04**

Date Sampled: 10/04/21 14:39

Date Received: 10/07/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	224			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	5.9	B		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	230			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			12/16/21 0:00	calc
Sum of Anions			22			meq/L			12/16/21 0:00	calc
Sum of Cations			22			meq/L			12/16/21 0:00	calc
Chloride	SM4500Cl-E	1	11.3			mg/L	0.5	2	10/29/21 13:08	md
Fluoride	SM4500F-C	1	0.58			mg/L	0.15	0.35	10/26/21 21:30	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	10/28/21 1:44	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	<0.2	U	*	mg/L	0.2	0.5	10/23/21 1:58	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1430			mg/L	20	40	10/11/21 11:35	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	20	794		*	mg/L	20	100	10/28/21 15:18	wtc
TDS (calculated)	Calculation		1380			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW-35-09_10042021

ACZ Sample ID: **L69101-05**

Date Sampled: 10/04/21 17:07

Date Received: 10/07/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 11:19	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	<0.25	U		mg/L	0.25	1.25	10/19/21 16:49	kja
Arsenic, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.005	10/27/21 15:53	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	10/19/21 16:49	kja
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	10/27/21 15:53	mfm
Calcium, dissolved	M200.7 ICP	5	480			mg/L	0.5	2.5	10/19/21 16:49	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/27/21 15:53	mfm
Cobalt, dissolved	M200.8 ICP-MS	5	0.00510			mg/L	0.00025	0.00125	10/27/21 15:53	mfm
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/19/21 16:49	kja
Iron, dissolved	M200.7 ICP	5	<0.3	U		mg/L	0.3	0.75	10/19/21 16:49	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 15:53	mfm
Magnesium, dissolved	M200.7 ICP	5	213			mg/L	1	5	10/19/21 16:49	kja
Manganese, dissolved	M200.7 ICP	5	1.01			mg/L	0.05	0.25	10/19/21 16:49	kja
Molybdenum, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.5	10/19/21 16:49	kja
Nickel, dissolved	M200.7 ICP	5	<0.04	U		mg/L	0.04	0.2	10/19/21 16:49	kja
Potassium, dissolved	M200.7 ICP	5	6.56			mg/L	1	5	10/19/21 16:49	kja
Selenium, dissolved	M200.8 ICP-MS	5	0.00094	B		mg/L	0.0005	0.00125	10/27/21 15:53	mfm
Silver, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/29/21 14:44	mfm
Sodium, dissolved	M200.7 ICP	5	396			mg/L	1	5	10/19/21 16:49	kja
Uranium, dissolved	M200.8 ICP-MS	5	0.206			mg/L	0.0005	0.0025	10/27/21 15:53	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/19/21 16:49	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW-35-09_10042021

ACZ Sample ID: **L69101-05**

Date Sampled: 10/04/21 17:07

Date Received: 10/07/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	178			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	178			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-4.8			%			12/16/21 0:00	calc
Sum of Anions			65			meq/L			12/16/21 0:00	calc
Sum of Cations			59			meq/L			12/16/21 0:00	calc
Chloride	SM4500Cl-E	1	59.4			mg/L	0.5	2	10/29/21 13:09	md
Fluoride	SM4500F-C	1	1.51			mg/L	0.15	0.35	10/26/21 21:38	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.084	B		mg/L	0.02	0.1	10/28/21 1:45	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.31	B	*	mg/L	0.2	0.5	10/23/21 1:59	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4250			mg/L	40	80	10/11/21 11:38	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	125	2860		*	mg/L	125	625	10/28/21 14:56	wtc
TDS (calculated)	Calculation		4130			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.03						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940
Sample ID: 30W-VH-6_10052021

ACZ Sample ID: **L69101-06**
Date Sampled: 10/05/21 15:00
Date Received: 10/07/21
Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 11:38	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	<0.25	U		mg/L	0.25	1.25	10/19/21 16:52	kja
Arsenic, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.005	10/27/21 15:56	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	10/19/21 16:52	kja
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	10/27/21 15:56	mfm
Calcium, dissolved	M200.7 ICP	5	519			mg/L	0.5	2.5	10/19/21 16:52	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/27/21 15:56	mfm
Cobalt, dissolved	M200.8 ICP-MS	5	0.00120	B		mg/L	0.00025	0.00125	10/27/21 15:56	mfm
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/19/21 16:52	kja
Iron, dissolved	M200.7 ICP	5	<0.3	U		mg/L	0.3	0.75	10/19/21 16:52	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 15:56	mfm
Magnesium, dissolved	M200.7 ICP	5	252			mg/L	1	5	10/19/21 16:52	kja
Manganese, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/19/21 16:52	kja
Molybdenum, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.5	10/19/21 16:52	kja
Nickel, dissolved	M200.7 ICP	5	<0.04	U		mg/L	0.04	0.2	10/19/21 16:52	kja
Potassium, dissolved	M200.7 ICP	5	24.2			mg/L	1	5	10/19/21 16:52	kja
Selenium, dissolved	M200.8 ICP-MS	5	0.00084	B		mg/L	0.0005	0.00125	10/27/21 15:56	mfm
Silver, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/29/21 14:46	mfm
Sodium, dissolved	M200.7 ICP	5	442			mg/L	1	5	10/19/21 16:52	kja
Uranium, dissolved	M200.8 ICP-MS	5	1.75			mg/L	0.0005	0.0025	10/27/21 15:56	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/19/21 16:52	kja

Rio Algom Mining Company

Project ID: 4510319940
Sample ID: 30W-VH-6_10052021

ACZ Sample ID: **L69101-06**
Date Sampled: 10/05/21 15:00
Date Received: 10/07/21
Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	371			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	371			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-8.2			%			12/16/21 0:00	calc
Sum of Anions			79			meq/L			12/16/21 0:00	calc
Sum of Cations			67			meq/L			12/16/21 0:00	calc
Chloride	SM4500Cl-E	5	466			mg/L	2.5	10	10/29/21 13:46	md
Fluoride	SM4500F-C	1	0.16	B		mg/L	0.15	0.35	10/26/21 21:46	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.085	B		mg/L	0.02	0.1	10/28/21 1:47	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	<0.2	U	*	mg/L	0.2	0.5	10/23/21 2:00	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4680	H	*	mg/L	40	80	10/20/21 19:10	jck
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	125	2780		*	mg/L	125	625	10/28/21 14:56	wtc
TDS (calculated)	Calculation		4710			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.99						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-06-TRB_10052021

ACZ Sample ID: **L69101-07**

Date Sampled: 10/05/21 11:15

Date Received: 10/07/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	10	<0.5	U		mg/L	0.5	2.5	10/19/21 16:55	kja
Antimony, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.01	10/27/21 15:58	mfm
Arsenic, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.005	10/27/21 15:58	mfm
Barium, dissolved	M200.7 ICP	10	<0.07	U		mg/L	0.07	0.35	10/19/21 16:55	kja
Beryllium, dissolved	M200.8 ICP-MS	5	<0.0004	U		mg/L	0.0004	0.00125	10/27/21 15:58	mfm
Boron, dissolved	M200.7 ICP	10	0.320	B		mg/L	0.3	1	10/19/21 16:55	kja
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	10/27/21 15:58	mfm
Calcium, dissolved	M200.7 ICP	10	596			mg/L	1	5	10/19/21 16:55	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/27/21 15:58	mfm
Cobalt, dissolved	M200.7 ICP	10	<0.2	U		mg/L	0.2	0.5	10/19/21 16:55	kja
Copper, dissolved	M200.7 ICP	10	<0.1	U		mg/L	0.1	0.5	10/19/21 16:55	kja
Iron, dissolved	M200.7 ICP	10	<0.6	U		mg/L	0.6	1.5	10/19/21 16:55	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 15:58	mfm
Magnesium, dissolved	M200.7 ICP	10	489			mg/L	2	10	10/19/21 16:55	kja
Manganese, dissolved	M200.7 ICP	10	0.334	B		mg/L	0.1	0.5	10/19/21 16:55	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	10/14/21 10:47	mlh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.00260			mg/L	0.001	0.0025	10/27/21 15:58	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.00686			mg/L	0.002	0.005	10/27/21 15:58	mfm
Potassium, dissolved	M200.7 ICP	10	14.9			mg/L	2	10	10/19/21 16:55	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	10/13/21 14:51	mlh
Selenium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.00125	10/27/21 15:58	mfm
Silver, dissolved	M200.7 ICP	10	<0.1	U	*	mg/L	0.1	0.25	10/19/21 16:55	kja
Sodium, dissolved	M200.7 ICP	10	540			mg/L	2	10	10/19/21 16:55	kja
Thallium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 15:58	mfm
Uranium, dissolved	M200.8 ICP-MS	5	0.0723			mg/L	0.0005	0.0025	10/27/21 15:58	mfm
Zinc, dissolved	M200.7 ICP	10	<0.2	U		mg/L	0.2	0.5	10/19/21 16:55	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-06-TRB_10052021

ACZ Sample ID: **L69101-07**

Date Sampled: 10/05/21 11:15

Date Received: 10/07/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	606			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	606			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.1			%			12/16/21 0:00	calc
Sum of Anions			96			meq/L			12/16/21 0:00	calc
Sum of Cations			94			meq/L			12/16/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	758		*	mg/L	20	100	10/26/21 20:16	krh
Cyanide, Total	D7511-09	1	<0.003	U	*	mg/L	0.003	0.01	10/11/21 14:37	md
Fluoride	M300.0 - Ion Chromatography	50	<2.5	U	*	mg/L	2.5	12.5	10/26/21 20:16	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	10/28/21 1:48	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	6330	H	*	mg/L	100	200	10/20/21 19:13	jck
Sulfate	M300.0 - Ion Chromatography	50	3000			mg/L	20	100	10/26/21 20:16	krh
TDS (calculated)	Calculation		5770			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.10						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW-35-10_10042021

ACZ Sample ID: **L69101-08**

Date Sampled: 10/04/21 17:15

Date Received: 10/07/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 11:57	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	<0.1	U		mg/L	0.1	0.5	10/19/21 17:05	kja
Arsenic, dissolved	M200.8 ICP-MS	2	<0.0004	U		mg/L	0.0004	0.002	10/27/21 16:05	mfm
Barium, dissolved	M200.7 ICP	2	<0.014	U		mg/L	0.014	0.07	10/19/21 17:05	kja
Cadmium, dissolved	M200.8 ICP-MS	2	<0.0001	U		mg/L	0.0001	0.0005	10/27/21 16:05	mfm
Calcium, dissolved	M200.7 ICP	2	383			mg/L	0.2	1	10/19/21 17:05	kja
Chromium, dissolved	M200.8 ICP-MS	2	<0.001	U		mg/L	0.001	0.004	10/27/21 16:05	mfm
Cobalt, dissolved	M200.8 ICP-MS	2	0.00178			mg/L	0.0001	0.0005	10/27/21 16:05	mfm
Copper, dissolved	M200.7 ICP	2	<0.02	U		mg/L	0.02	0.1	10/19/21 17:05	kja
Iron, dissolved	M200.7 ICP	2	<0.12	U		mg/L	0.12	0.3	10/19/21 17:05	kja
Lead, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.001	10/27/21 16:05	mfm
Magnesium, dissolved	M200.7 ICP	2	137			mg/L	0.4	2	10/19/21 17:05	kja
Manganese, dissolved	M200.7 ICP	2	0.435			mg/L	0.02	0.1	10/19/21 17:05	kja
Molybdenum, dissolved	M200.7 ICP	2	<0.04	U		mg/L	0.04	0.2	10/19/21 17:05	kja
Nickel, dissolved	M200.7 ICP	2	<0.016	U		mg/L	0.016	0.08	10/19/21 17:05	kja
Potassium, dissolved	M200.7 ICP	2	6.39			mg/L	0.4	2	10/19/21 17:05	kja
Selenium, dissolved	M200.8 ICP-MS	2	0.00027	B		mg/L	0.0002	0.0005	10/27/21 16:05	mfm
Silver, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.001	10/29/21 14:48	mfm
Sodium, dissolved	M200.7 ICP	2	232			mg/L	0.4	2	10/19/21 17:05	kja
Uranium, dissolved	M200.8 ICP-MS	2	0.00417			mg/L	0.0002	0.001	10/27/21 16:05	mfm
Zinc, dissolved	M200.7 ICP	2	<0.04	U		mg/L	0.04	0.1	10/19/21 17:05	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW-35-10_10042021

ACZ Sample ID: **L69101-08**

Date Sampled: 10/04/21 17:15

Date Received: 10/07/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	325			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	325			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.4			%			12/16/21 0:00	calc
Sum of Anions			43			meq/L			12/16/21 0:00	calc
Sum of Cations			41			meq/L			12/16/21 0:00	calc
Chloride	SM4500Cl-E	1	46.1			mg/L	0.5	2	10/29/21 13:11	md
Fluoride	SM4500F-C	1	0.64			mg/L	0.15	0.35	10/26/21 21:54	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	10/28/21 1:50	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	<0.2	U	*	mg/L	0.2	0.5	10/23/21 2:02	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	2890			mg/L	20	40	10/11/21 11:49	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	80	1650		*	mg/L	80	400	10/28/21 15:21	wtc
TDS (calculated)	Calculation		2650			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.09						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940
Sample ID: 30W_VH2_10052021

ACZ Sample ID: **L69101-09**

Date Sampled: 10/05/21 13:00

Date Received: 10/07/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 12:16	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	<0.25	U		mg/L	0.25	1.25	10/19/21 17:08	kja
Arsenic, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.005	10/27/21 16:07	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	10/19/21 17:08	kja
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	10/27/21 16:07	mfm
Calcium, dissolved	M200.7 ICP	5	545			mg/L	0.5	2.5	10/19/21 17:08	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/27/21 16:07	mfm
Cobalt, dissolved	M200.8 ICP-MS	5	0.00153			mg/L	0.00025	0.00125	10/27/21 16:07	mfm
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/19/21 17:08	kja
Iron, dissolved	M200.7 ICP	5	2.03			mg/L	0.3	0.75	10/19/21 17:08	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 16:07	mfm
Magnesium, dissolved	M200.7 ICP	5	207			mg/L	1	5	10/19/21 17:08	kja
Manganese, dissolved	M200.7 ICP	5	1.41			mg/L	0.05	0.25	10/19/21 17:08	kja
Molybdenum, dissolved	M200.7 ICP	5	0.213	B		mg/L	0.1	0.5	10/19/21 17:08	kja
Nickel, dissolved	M200.7 ICP	5	<0.04	U		mg/L	0.04	0.2	10/19/21 17:08	kja
Potassium, dissolved	M200.7 ICP	5	16.5			mg/L	1	5	10/19/21 17:08	kja
Selenium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.00125	10/27/21 16:07	mfm
Silver, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/29/21 14:49	mfm
Sodium, dissolved	M200.7 ICP	5	411			mg/L	1	5	10/19/21 17:08	kja
Uranium, dissolved	M200.8 ICP-MS	5	9.86			mg/L	0.0005	0.0025	10/27/21 16:07	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/19/21 17:08	kja

Rio Algom Mining Company

Project ID: 4510319940
Sample ID: 30W_VH2_10052021

ACZ Sample ID: **L69101-09**
Date Sampled: 10/05/21 13:00
Date Received: 10/07/21
Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	441			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	441			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-5.3			%			12/16/21 0:00	calc
Sum of Anions			70			meq/L			12/16/21 0:00	calc
Sum of Cations			63			meq/L			12/16/21 0:00	calc
Chloride	SM4500Cl-E	5	359			mg/L	2.5	10	10/29/21 13:47	md
Fluoride	SM4500F-C	1	0.26	B		mg/L	0.15	0.35	10/26/21 22:02	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.058	B	*	mg/L	0.02	0.1	10/28/21 1:53	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.46	B	*	mg/L	0.2	0.5	10/23/21 2:05	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4210			mg/L	40	80	10/11/21 11:52	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	125	2440		*	mg/L	125	625	10/28/21 14:58	wtc
TDS (calculated)	Calculation		4250			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.99						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-07-KD_10052021

ACZ Sample ID: **L69101-10**

Date Sampled: 10/05/21 15:25

Date Received: 10/07/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	<0.25	U		mg/L	0.25	1.25	10/19/21 17:11	kja
Antimony, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.01	10/27/21 16:09	mfm
Arsenic, dissolved	M200.8 ICP-MS	5	0.00381	B		mg/L	0.001	0.005	10/27/21 16:09	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	10/19/21 17:11	kja
Beryllium, dissolved	M200.8 ICP-MS	5	<0.0004	U		mg/L	0.0004	0.00125	10/27/21 16:09	mfm
Boron, dissolved	M200.7 ICP	5	<0.15	U		mg/L	0.15	0.5	10/19/21 17:11	kja
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	10/27/21 16:09	mfm
Calcium, dissolved	M200.7 ICP	5	656			mg/L	0.5	2.5	10/19/21 17:11	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/27/21 16:09	mfm
Cobalt, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/19/21 17:11	kja
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/19/21 17:11	kja
Iron, dissolved	M200.7 ICP	5	8.07			mg/L	0.3	0.75	10/19/21 17:11	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 16:09	mfm
Magnesium, dissolved	M200.7 ICP	5	217			mg/L	1	5	10/19/21 17:11	kja
Manganese, dissolved	M200.7 ICP	5	12.8			mg/L	0.05	0.25	10/19/21 17:11	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	10/14/21 10:50	mlh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.00499			mg/L	0.001	0.0025	10/27/21 16:09	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.0179			mg/L	0.002	0.005	10/27/21 16:09	mfm
Potassium, dissolved	M200.7 ICP	5	15.4			mg/L	1	5	10/19/21 17:11	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	10/13/21 14:57	mlh
Selenium, dissolved	M200.8 ICP-MS	5	0.00227			mg/L	0.0005	0.00125	10/27/21 16:09	mfm
Silver, dissolved	M200.7 ICP	5	<0.05	U	*	mg/L	0.05	0.125	10/19/21 17:11	kja
Sodium, dissolved	M200.7 ICP	5	352			mg/L	1	5	10/19/21 17:11	kja
Thallium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 16:09	mfm
Uranium, dissolved	M200.8 ICP-MS	5	0.0366			mg/L	0.0005	0.0025	10/27/21 16:09	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/19/21 17:11	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-07-KD_10052021

ACZ Sample ID: **L69101-10**

Date Sampled: 10/05/21 15:25

Date Received: 10/07/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	287			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	287			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.4			%			12/16/21 0:00	calc
Sum of Anions			70			meq/L			12/16/21 0:00	calc
Sum of Cations			68			meq/L			12/16/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	20	805		*	mg/L	8	40	10/27/21 22:04	krh
Cyanide, Total	D7511-09	1	0.010		*	mg/L	0.003	0.01	10/11/21 14:39	md
Fluoride	M300.0 - Ion Chromatography	20	<1	U	*	mg/L	1	5	10/27/21 22:04	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	10/28/21 1:54	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4240			mg/L	40	80	10/11/21 11:56	anc
Sulfate	M300.0 - Ion Chromatography	20	1990			mg/L	8	40	10/27/21 22:04	krh
TDS (calculated)	Calculation		4230			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.00						12/16/21 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>

QUIVIRA

ACZ Project ID: **L69101**

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
WG529511													
WG529511PBW1	PBW	10/14/21 18:36				7.9	mg/L		-20	20			
WG529511LCSW3	LCSW	10/14/21 18:55	WC210930-12	820.0001		807.1	mg/L	98	90	110			
WG529511LCSW6	LCSW	10/14/21 22:28	WC210930-12	820.0001		795.7	mg/L	97	90	110			
WG529511PBW2	PBW	10/14/21 22:36				2.1	mg/L		-20	20			
L69101-04DUP	DUP	10/15/21 2:03			230	229.1	mg/L				0	20	
WG529511LCSW9	LCSW	10/15/21 2:23	WC210930-12	820.0001		810	mg/L	99	90	110			
WG529511PBW3	PBW	10/15/21 2:30				U	mg/L		-20	20			
L69133-03DUP	DUP	10/15/21 4:09			499	520.5	mg/L				4	20	
WG529511LCSW12	LCSW	10/15/21 6:01	WC210930-12	820.0001		816.4	mg/L	100	90	110			
WG529511PBW4	PBW	10/15/21 6:09				2.7	mg/L		-20	20			
WG529511LCSW15	LCSW	10/15/21 9:41	WC210930-12	820.0001		823.9	mg/L	100	90	110			

Aluminum, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		1.978	mg/L	99	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.15	0.15			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	1.0008		1.01	mg/L	101	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	1.0008	U	.994	mg/L	99	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	1.0008	U	1.014	mg/L	101	85	115	2	20	

Antimony, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.0201		.01903	mg/L	95	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00088	0.00088			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.01		.00987	mg/L	99	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.01	U	.00977	mg/L	98	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.01	U	.01026	mg/L	103	70	130	5	20	

Arsenic, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.04993	mg/L	100	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00044	0.00044			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.04876	mg/L	97	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05005	.00027	.04828	mg/L	96	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05005	.00027	.05071	mg/L	101	70	130	5	20	

Barium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		2.0385	mg/L	102	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.021	0.021			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5		.5105	mg/L	102	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5	.018	.5369	mg/L	104	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5	.018	.5376	mg/L	104	85	115	0	20	

QUIVIRA

ACZ Project ID: **L69101**

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.

Beryllium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.050395	mg/L	101	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.000176	0.000176			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.049766	mg/L	99	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05005	U	.046388	mg/L	93	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05005	U	.047659	mg/L	95	70	130	3	20	

WG530760

WG530760ICV	ICV	11/01/21 21:01	MS211013-2	.05		.051014	mg/L	102	90	110			
WG530760ICB	ICB	11/01/21 21:02				.00014	mg/L		-0.000176	0.000176			
WG530760LFB	LFB	11/01/21 21:04	MS210927-3	.05005		.048748	mg/L	97	85	115			
L69190-02AS	AS	11/01/21 21:22	MS210927-3	.05005	U	.043062	mg/L	86	70	130			
L69190-02ASD	ASD	11/01/21 21:24	MS210927-3	.05005	U	.045985	mg/L	92	70	130	7	20	

Boron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		2.029	mg/L	101	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.09	0.09			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5005		.516	mg/L	103	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5005	.039	.563	mg/L	105	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5005	.039	.573	mg/L	107	85	115	2	20	

Cadmium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.051188	mg/L	102	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00011	0.00011			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.050356	mg/L	101	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05005	U	.052267	mg/L	104	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05005	U	.053115	mg/L	106	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
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	100		100.85	mg/L	101	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.3	0.3			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	67.98972		70.12	mg/L	103	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	67.98972	55.3	123	mg/L	100	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	67.98972	55.3	124.8	mg/L	102	85	115	1	20	

QUIVIRA

ACZ Project ID: **L69101**

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.

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528109													
WG528109ICV	ICV	09/24/21 18:47	WI210924-2	19.96		19.83	mg/L	99	90	110			
WG528109ICB	ICB	09/24/21 19:05				U	mg/L		-0.4	0.4			
WG530287													
WG530287LFB1	LFB	10/26/21 19:22	WI210907-6	30		30.11	mg/L	100	90	110			
L69101-01DUP	DUP	10/26/21 19:58			42.2	42.12	mg/L				0	20	RA
L69101-07AS	AS	10/26/21 20:34	WI210907-6	1500	758	2254.21	mg/L	100	90	110			
WG530287LFB2	LFB	10/27/21 4:02	WI210907-6	30		30.18	mg/L	101	90	110			

Chloride SM4500CI-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530473													
WG530473ICV	ICV	10/29/21 13:06	WI210503-1	54.89		56.37	mg/L	103	90	110			
WG530473ICB	ICB	10/29/21 13:07				U	mg/L		-1.5	1.5			
WG530473LFB1	LFB	10/29/21 13:08	WI210908-11	29.97		30.35	mg/L	101	90	110			
L69101-04AS	AS	10/29/21 13:09	WI210908-11	29.97	11.3	41.65	mg/L	101	90	110			
L69101-05DUP	DUP	10/29/21 13:10			59.4	60.18	mg/L				1	20	
WG530473LFB2	LFB	10/29/21 13:23	WI210908-11	29.97		30.26	mg/L	101	90	110			

Chromium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.05094	mg/L	102	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.0011	0.0011			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05		.04856	mg/L	97	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05	U	.04633	mg/L	93	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05	U	.04814	mg/L	96	70	130	4	20	

Cobalt, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2.01		2	mg/L	100	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.06	0.06			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5005		.505	mg/L	101	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5005	.04	.533	mg/L	99	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5005	.04	.544	mg/L	101	85	115	2	20	

Cobalt, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.051646	mg/L	103	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00011	0.00011			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.050687	mg/L	101	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05005	.000244	.052089	mg/L	104	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05005	.000244	.053581	mg/L	107	70	130	3	20	

QUIVIRA

ACZ Project ID: **L69101**

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.

Copper, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		1.989	mg/L	99	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.03	0.03			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5		.511	mg/L	102	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5	U	.516	mg/L	103	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5	U	.516	mg/L	103	85	115	0	20	

Cyanide, Total

D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529095													
WG529095ICV	ICV	10/11/21 14:15	WI210928-5	.3		.3098	mg/L	103	90	110			
WG529095ICB	ICB	10/11/21 14:17				U	mg/L		-0.003	0.003			
WG529095LFB	LFB	10/11/21 14:23	WI210928-2	.1		.11	mg/L	110	84	116			
L68879-01AS	AS	10/11/21 14:27	WI210928-2	.1	.014	.0573	mg/L	43	84	116			MC
L68879-01ASD	ASD	10/11/21 14:29	WI210928-2	.1	.014	.0592	mg/L	45	84	116	3	20	MC

Fluoride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528109													
WG528109ICV	ICV	09/24/21 18:47	WI210924-2	4.004		4.082	mg/L	102	90	110			
WG528109ICB	ICB	09/24/21 19:05				U	mg/L		-0.05	0.05			
WG530287													
WG530287LFB1	LFB	10/26/21 19:22	WI210907-6	1.5		1.456	mg/L	97	90	110			
L69101-01DUP	DUP	10/26/21 19:58			U	U	mg/L				0	20	RA
L69101-07AS	AS	10/26/21 20:34	WI210907-6	75	U	72.189	mg/L	96	90	110			
WG530287LFB2	LFB	10/27/21 4:02	WI210907-6	1.5		1.449	mg/L	97	90	110			

Fluoride

SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530309													
WG530309ICV	ICV	10/26/21 14:13	WC211019-3	2.002		2.17	mg/L	108	90	110			
WG530309ICB	ICB	10/26/21 14:18				U	mg/L		-0.3	0.3			
WG530342													
WG530342ICV	ICV	10/26/21 21:06	WC211019-3	2.002		2.21	mg/L	110	90	110			
WG530342ICB	ICB	10/26/21 21:14				U	mg/L		-0.3	0.3			
WG530342LFB1	LFB	10/26/21 21:22	WC210803-9	5.02		5.37	mg/L	107	90	110			
L69122-06AS	AS	10/26/21 23:02	WC210803-9	5.02	1.48	6.86	mg/L	107	90	110			
L69122-06ASD	ASD	10/26/21 23:10	WC210803-9	5.02	1.48	6.73	mg/L	105	90	110	2	20	
WG530342LFB2	LFB	10/27/21 1:01	WC210803-9	5.02		5.42	mg/L	108	90	110			

QUIVIRA

ACZ Project ID: **L69101**

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.

Iron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		1.965	mg/L	98	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.18	0.18			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	1.0001		1.009	mg/L	101	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	1.0001	U	1.025	mg/L	102	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	1.0001	U	1.028	mg/L	103	85	115	0	20	

Lead, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.0509	mg/L	102	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00022	0.00022			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.05048	mg/L	101	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05005	U	.05521	mg/L	110	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05005	U	.05658	mg/L	113	70	130	2	20	

Magnesium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	100		97.32	mg/L	97	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.6	0.6			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	49.99828		48.4	mg/L	97	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	49.99828	60.9	108.9	mg/L	96	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	49.99828	60.9	110.1	mg/L	98	85	115	1	20	

Manganese, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		1.958	mg/L	98	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.03	0.03			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5005		.504	mg/L	101	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5005	U	.519	mg/L	104	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5005	U	.517	mg/L	103	85	115	0	20	

Mercury, total

M245.1 CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529403													
WG529403ICV	ICV	10/14/21 10:37	HG211004-3	.00501		.00524	mg/L	105	95	105			
WG529403ICB	ICB	10/14/21 10:38				U	mg/L		-0.0002	0.0002			
WG529403LRB	LRB	10/14/21 10:39				U	mg/L		-0.00044	0.00044			
WG529403LFB	LFB	10/14/21 10:40	HG211004-6	.002002		.0021	mg/L	105	85	115			
L69037-01LFM	LFM	10/14/21 10:42	HG211004-6	.002002	U	.002	mg/L	100	85	115			
L69037-01LFMD	LFMD	10/14/21 10:43	HG211004-6	.002002	U	.00213	mg/L	106	85	115	6	20	

QUIVIRA

ACZ Project ID: **L69101**

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.

Molybdenum, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		1.996	mg/L	100	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.06	0.06			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.501		.5	mg/L	100	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.501	U	.491	mg/L	98	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.501	U	.507	mg/L	101	85	115	3	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.01992		.01939	mg/L	97	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00044	0.00044			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.04786	mg/L	96	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05005	.0009	.05499	mg/L	108	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05005	.0009	.05616	mg/L	110	70	130	2	20	

Nickel, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		2.0115	mg/L	101	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.024	0.024			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5		.5181	mg/L	104	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5	.137	.6446	mg/L	102	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5	.137	.6488	mg/L	102	85	115	1	20	

Nickel, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.05112	mg/L	102	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00088	0.00088			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05		.04793	mg/L	96	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05	U	.04285	mg/L	86	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05	U	.04492	mg/L	90	70	130	5	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
WG530441													
WG530441ICV	ICV	10/27/21 23:38	WI210904-1	2.4161		2.356	mg/L	98	90	110			
WG530441ICB	ICB	10/27/21 23:39				U	mg/L		-0.02	0.02			
WG530448													
WG530448LFB	LFB	10/28/21 1:27	WI211001-5	2		2.018	mg/L	101	90	110			
L69061-04AS	AS	10/28/21 1:30	WI211001-5	2	.922	2.966	mg/L	102	90	110			
L69061-05DUP	DUP	10/28/21 1:33			1.86	1.853	mg/L				0	20	
L69101-07AS	AS	10/28/21 1:49	WI211001-5	2	U	1.979	mg/L	99	90	110			
L69101-08DUP	DUP	10/28/21 1:52			U	U	mg/L				0	20	RA

QUIVIRA

ACZ Project ID: **L69101**

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.

Nitrogen, total Kjeldahl

M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530123													
WG530123ICV	ICV	10/23/21 1:49	WI211022-3	4		3.95	mg/L	99	90	110			
WG530123ICB	ICB	10/23/21 1:50				U	mg/L		-0.2	0.2			
WG529285LRB	LRB	10/23/21 1:51				U	mg/L		-0.2	0.2			
WG529285LFB	LFB	10/23/21 1:52	WI210714-5	2.5		2.53	mg/L	101	90	110			
L69011-01LFM	LFM	10/23/21 1:55	WI210714-5	2.5	U	2.5	mg/L	100	90	110			
L69011-02DUP	DUP	10/23/21 1:57			U	U	mg/L				0	20	RA

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	20		20.05	mg/L	100	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.6	0.6			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	99.96008		101.1	mg/L	101	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	99.96008	3.64	105.8	mg/L	102	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	99.96008	3.64	107.1	mg/L	104	85	115	1	20	

Residue, Filterable (TDS) @180C

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529120													
WG529120PBW	PBW	10/11/21 10:38				U	mg/L		-20	20			
WG529120LCSW	LCSW	10/11/21 10:41	PCN64135	1000		978	mg/L	98	80	120			
L69101-10DUP	DUP	10/11/21 12:00			4240	4188	mg/L				1	10	
WG529968													
WG529968PBW	PBW	10/20/21 19:00				U	mg/L		-20	20			
WG529968LCSW	LCSW	10/20/21 19:02	PCN64121	1000		1004	mg/L	100	80	120			
L69154-03DUP	DUP	10/20/21 19:28			154	150	mg/L				3	10	RA

Selenium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.05079	mg/L	102	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00022	0.00022			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05		.04997	mg/L	100	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05	U	.05226	mg/L	105	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05	U	.05334	mg/L	107	70	130	2	20	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529292													
WG529292ICV	ICV	10/13/21 13:03	SE211005-1	.025		.0265	mg/L	106	90	110			
WG529292ICB	ICB	10/13/21 13:05				U	mg/L		-0.006	0.006			
WG529294													
WG529294LRB	LRB	10/13/21 14:45				U	mg/L		-0.006	0.006			
WG529294LFB	LFB	10/13/21 14:47	SE210901-2	.0225		.0227	mg/L	101	85	115			
L69101-07LFM	LFM	10/13/21 14:53	SE210901-2	.0225	U	.0207	mg/L	92	85	115			
L69101-07LFMD	LFMD	10/13/21 14:55	SE210901-2	.0225	U	.0207	mg/L	92	85	115	0	20	

QUIVIRA

ACZ Project ID: **L69101**

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.

Silver, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	1		1.01	mg/L	101	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.03	0.03			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5		.492	mg/L	98	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5	U	.409	mg/L	82	85	115			MA ZA
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5	U	.445	mg/L	89	85	115	8	20	

Silver, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530616													
WG530616ICV	ICV	10/29/21 14:35	MS211013-2	.02		.02149	mg/L	107	90	110			
WG530616ICB	ICB	10/29/21 14:37				U	mg/L		-0.00022	0.00022			
WG530616LFB	LFB	10/29/21 14:38	MS210927-3	.01		.00956	mg/L	96	85	115			
L69159-02AS	AS	10/29/21 15:02	MS210927-3	.1	U	.08735	mg/L	87	70	130			
L69159-02ASD	ASD	10/29/21 15:04	MS210927-3	.1	U	.08783	mg/L	88	70	130	1	20	

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	100		101.65	mg/L	102	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.6	0.6			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	100.007		102	mg/L	102	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	100.007	12.7	114.6	mg/L	102	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	100.007	12.7	116.4	mg/L	104	85	115	2	20	

Sulfate

D516-02/-07/-11 - TURBIDIMETRIC

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530511													
WG530511ICB	ICB	10/28/21 9:40				U	mg/L		-3	3			
WG530511ICV	ICV	10/28/21 9:40	WI211027-1	20.46		19.4	mg/L	95	90	110			
WG530511LFB	LFB	10/28/21 14:05	WI210105-3	10		9.3	mg/L	93	90	110			
L69101-05AS	AS	10/28/21 14:56	SO4TURB25X	50	2860	2725.8	mg/L	-268	90	110			M3
L69101-04DUP	DUP	10/28/21 15:18			794	791.3	mg/L				0	20	

Sulfate

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528109													
WG528109ICV	ICV	09/24/21 18:47	WI210924-2	51.15		48.67	mg/L	95	90	110			
WG528109ICB	ICB	09/24/21 19:05				U	mg/L		-0.4	0.4			
WG530287													
WG530287LFB1	LFB	10/26/21 19:22	WI210907-6	30		29.56	mg/L	99	90	110			
L69101-01DUP	DUP	10/26/21 19:58			1260	1253.36	mg/L				1	20	
L69101-07AS	AS	10/26/21 20:34	WI210907-6	1500	3000	4402.77	mg/L	94	90	110			
WG530287LFB2	LFB	10/27/21 4:02	WI210907-6	30		28.98	mg/L	97	90	110			

QUIVIRA

ACZ Project ID: **L69101**

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.

Thallium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.05235	mg/L	105	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00022	0.00022			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05		.05039	mg/L	101	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05	U	.05426	mg/L	109	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05	U	.05536	mg/L	111	70	130	2	20	

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.05072	mg/L	101	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00022	0.00022			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05		.04969	mg/L	99	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05	.00015	.05894	mg/L	118	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05	.00015	.06012	mg/L	120	70	130	2	20	

Zinc, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		1.999	mg/L	100	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.06	0.06			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.50045		.519	mg/L	104	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.50045	.183	.693	mg/L	102	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.50045	.183	.713	mg/L	106	85	115	3	20	

Rio Algom Mining CompanyACZ Project ID: **L69101**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69101-01	WG530287	Chloride	M300.0 - Ion Chromatography	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).
	WG529095	Cyanide, Total	D7511-09	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
	WG530287	Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	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).
	WG529808	Silver, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
L69101-04	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530511	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.
L69101-05	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530511	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.
L69101-06	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG529968	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
			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).
	WG530511	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.

Rio Algom Mining Company

ACZ Project ID: **L69101**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69101-07	WG530287	Chloride	M300.0 - Ion Chromatography	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).
	WG529095	Cyanide, Total	D7511-09	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
	WG530287	Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	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).
	WG530448	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG529968	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
			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).
	WG529808	Silver, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
L69101-08	WG530448	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530511	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.
L69101-09	WG530448	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530511	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.

Rio Algom Mining CompanyACZ Project ID: **L69101**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69101-10	WG530287	Chloride	M300.0 - Ion Chromatography	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).
	WG529095	Cyanide, Total	D7511-09	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
	WG530287	Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	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).
	WG530448	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG529808	Silver, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-05-TRA_10052021

Locator:

ACZ Sample ID: **L69101-01**

Date Sampled: 10/05/21 10:42

Date Received: 10/07/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	11/16/21 21:07		0.18	1	2.5	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	11/29/21 21:59		0.434	2.5	3.1	pCi/L	*	ess

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:05		0.64	0.1	0.33	pCi/L		fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		2.2	1.3	2.8	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	11/29/21 13:23		0.924	0.61	0.89	pCi/L	*	amk

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 17-VH-9_10042021

Locator:

ACZ Sample ID: **L69101-04**

Date Sampled: 10/04/21 14:39

Date Received: 10/07/21

Sample Matrix: *Groundwater*

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:07		1.2	0.13	0.37	pCi/L		fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		1.6	0.86	1.9	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW-35-09_10042021

Locator:

ACZ Sample ID: **L69101-05**

Date Sampled: 10/04/21 17:07

Date Received: 10/07/21

Sample Matrix: Groundwater

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:10		0.29	0.08	0.29	pCi/L		fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		1.2	0.73	1.7	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30W-VH-6_10052021

Locator:

ACZ Sample ID: **L69101-06**

Date Sampled: 10/05/21 15:00

Date Received: 10/07/21

Sample Matrix: Groundwater

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:11		1.3	0.16	0.48	pCi/L		fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		1.5	1	2.2	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-06-TRB_10052021

Locator:

ACZ Sample ID: **L69101-07**

Date Sampled: 10/05/21 11:15

Date Received: 10/07/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	11/16/21 21:07		7.2	2	4.1	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	11/29/21 21:59		0.0	21	2.9	pCi/L	*	ess

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:14		1.5	0.22	0.52	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		5.8	0.92	1.8	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	11/29/21 13:23		0.726	0.34	0.38	pCi/L	*	amk

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW-35-10_10042021

Locator:

ACZ Sample ID: **L69101-08**

Date Sampled: 10/04/21 17:15

Date Received: 10/07/21

Sample Matrix: Groundwater

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:15		0.95	0.11	0.31	pCi/L		fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		2.5	0.96	2.2	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30W_VH2_10052021

Locator:

ACZ Sample ID: **L69101-09**

Date Sampled: 10/05/21 13:00

Date Received: 10/07/21

Sample Matrix: Groundwater

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:17		29	0.63	0.43	pCi/L		fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		3.1	1.5	3.6	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-07-KD_10052021

Locator:

ACZ Sample ID: **L69101-10**

Date Sampled: 10/05/21 15:25

Date Received: 10/07/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	11/16/21 21:07		1.4	1.3	3	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	11/29/21 21:59		0.401	2.8	3.5	pCi/L	*	ess

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:18		2.2	0.24	0.4	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		4.2	1.6	3.3	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	12/14/21 17:29		0.564	1.7	3.1	pCi/L	*	amk

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.
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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://aczk.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf>

QUIVIRA

ACZ Project ID: **L69101**

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.

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
WG530302																
WG530302PBW	PBW	11/10/21						.83	1.6	3.9			7.8			
WG530302LCSW	LCSW	11/10/21	PCN64361	99.53				77	3.2	3.6	77	55	121			
L69101-07DUP	DUP-RER	11/16/21			7.2	2	4.1	4.1	1.2	2.5				1.33	2	
L69101-07DUP	DUP-RPD	11/16/21			7.2	2	4.1	4.1	1.2	2.5				55	20	RG
L68594-01DUP	DUP-RPD	11/16/21			-0.23	2.8	6.9	.23	2.4	5.9				92	20	RG
L68594-01DUP	DUP-RER	11/16/21			-0.23	2.8	6.9	.23	2.4	5.9				0.12	2	
L69122-02MS	MS	11/17/21	PCN64361	99.52	3.2	2.1	4.8	80	3	2.7	77	55	121			

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
WG532364																
WG532364LCSW	LCSW	11/29/21	PCN64360	500				510	110	2.8	102	51	128			
WG532364PBW	PBW	11/29/21						.362	1.7	2.2			4.4			
L69101-01DUP	DUP-RER	11/29/21			0.434	2.5	3.1	0	39	5.3				0.01	2	
L69101-01DUP	DUP-RPD	11/29/21			0.434	2.5	3.1	0	39	5.3				200	20	RG
L69122-09MS	MS	12/01/21	PCN64360	500	0.672	1.7	2	509	110	2	102	51	128			

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
WG532082																
WG532082LCSW	LCSW	12/06/21	PCN64374	20				17	0.49	0.45	85	43	148			
WG532082PBW	PBW	12/06/21						.12	0.1	0.76			1.52			
L69101-04DUP	DUP-RPD	12/06/21			1.2	0.13	0.37	1.1	0.13	0.31				9	20	
L69101-06MS	MS	12/06/21	PCN64374	20	1.3	0.16	0.48	15	0.41	0.19	69	43	148			
L69349-02DUP	DUP-RPD	12/06/21			0.18	0.07	0.27	.12	0.08	0.1				40	20	RG
L69349-02DUP	DUP-RER	12/06/21			0.18	0.07	0.27	.12	0.08	0.1				0.56	2	

QUIVIRA

ACZ Project ID: **L69101**

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, 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
WG529971																
WG529971LCSW	LCSW	10/24/21	PCN63356	9.33				8	1.2	2.1	86	47	123			
WG529971PBW	PBW	10/24/21						0	1.1	2.4				4.8		
L69101-04DUP	DUP-RPD	10/24/21			1.6	0.86	1.9	1.8	1	2.2				12	20	
L69122-12DUP	DUP-RER	10/24/21			2.8	1.4	3.3	3.8	1	2.2				0.58	2	
L69122-12DUP	DUP-RPD	10/24/21			2.8	1.4	3.3	3.8	1	2.2				30	20	M1 RG
L69122-01MS	MS	10/24/21	PCN63356	11.67	3.9	1.4	3.1	28	2.5	3.9	207	47	123			M1

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
WG531618																
L68426-05DUP	DUP-RPD	11/29/21			0.496	0.18	0.13	1.69	0.61	0.66				109	20	RG
L68426-05DUP	DUP-RER	11/29/21			0.496	0.18	0.13	1.69	0.61	0.66				1.88	2	
L68426-07MS	MS	11/29/21	PCN58726	200	0.341	0.24	0.33	208	26	0.4	104	91	126			
L69490-02DUP	DUP-RPD	11/30/21			0.618	0.35	0.43	.529	0.42	0.63				16	20	
WG531618LCSW	LCSW	12/01/21	PCN58726	200				208	26	0.41	104	91	126			
WG531618PBW	PBW	12/01/21						4999999999	0.22	0.26			0.5296			
WG533201																
WG533201LCSW	LCSW	12/14/21	PCN58726	200				223	28	0.54	112	91	126			
L69904-03DUP	DUP-RER	12/14/21			0.247	0.43	0.76	.596	0.57	0.9				0.49	2	
L69904-03DUP	DUP-RPD	12/14/21			0.247	0.43	0.76	.596	0.57	0.9				83	20	RG
WG533201PBW	PBW	12/15/21						1.96	0.88	1.1			2.2			
L70054-02MS	MS	12/15/21	PCN58726	200	0	1.8	1.8	218	28	0.62	109	91	126			

Rio Algom Mining Company

ACZ Project ID: L69101

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69101-01	WG530302	Lead 210, dissolved	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.
	WG532364	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.
	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG531618	Thorium 230, dissolved	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.
L69101-04	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69101-05	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69101-06	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69101-07	WG530302	Lead 210, dissolved	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.
	WG532364	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.
	WG532082	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG531618	Thorium 230, dissolved	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.
L69101-08	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69101-09	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69101-10	WG530302	Lead 210, dissolved	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.
	WG532364	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.
	WG532082	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG533201	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			ESM 4506	N1	See Case Narrative.
			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 CompanyACZ Project ID: **L69101**

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

November 03, 2021

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: Michaela Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Clark Short, Angela Persico

Project ID: 4510319940
ACZ Project ID: L67960

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 21, 2021. This project has been assigned to ACZ's project number, L67960. 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 L67960. 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 December 03, 2021. 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.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.



Rio Algom Mining Company

November 03, 2021

Project ID: 4510319940

ACZ Project ID: L67960

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 4 groundwater samples from Rio Algom Mining Company on August 21, 2021. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L67960. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

Any analyses not performed within EPA recommended holding times have been qualified with an "H" flag.

Sample Analysis

These samples were analyzed for inorganic, radiochemistry parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. (N1A) Applies to: /LEAD 210

Matrix Spike carrier recovery outside of acceptance limits. This is attributable to matrix interference. MS exhibited abnormal precip during step 11.7 and was unable to reach a pH of 8 during step 11.11.1. Sample did not dissolve at step 11.13

2. (B1) Applies to: /LEAD 210

Analyte detected in blank above acceptance limits. PBW fails high by ~0.8 pCi while having an error of 1.53 pCi.

3. (N1) Applies to: L67960-02/LEAD 210

Lead carrier recovery outside of acceptance limits. This is attributable to matrix interference.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-03 KD-20210819

ACZ Sample ID: **L67960-01**

Date Sampled: 08/19/21 11:47

Date Received: 08/21/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U		mg/L	0.05	0.25	08/25/21 17:06	kja
Arsenic, dissolved	M200.8 ICP-MS	1	0.0130			mg/L	0.0002	0.001	08/27/21 16:05	mfm
Barium, dissolved	M200.7 ICP	1	0.0258	B		mg/L	0.007	0.035	08/25/21 17:06	kja
Beryllium, dissolved	M200.8 ICP-MS	1	<0.00008	U		mg/L	0.00008	0.00025	08/27/21 16:05	mfm
Boron, dissolved	M200.7 ICP	1	0.055	B		mg/L	0.03	0.1	08/25/21 17:06	kja
Cadmium, dissolved	M200.8 ICP-MS	1	0.000576			mg/L	0.00005	0.00025	08/27/21 16:05	mfm
Calcium, dissolved	M200.7 ICP	1	703		*	mg/L	0.1	0.5	08/25/21 17:06	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	08/27/21 16:05	mfm
Cobalt, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	08/25/21 17:06	kja
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	08/25/21 17:06	kja
Iron, dissolved	M200.7 ICP	1	2.30		*	mg/L	0.06	0.15	08/25/21 17:06	kja
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/27/21 16:05	mfm
Magnesium, dissolved	M200.7 ICP	1	399		*	mg/L	0.2	1	08/25/21 17:06	kja
Manganese, dissolved	M200.7 ICP	1	6.90		*	mg/L	0.01	0.05	08/25/21 17:06	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	08/24/21 14:52	mlh
Molybdenum, dissolved	M200.8 ICP-MS	20	2.12			mg/L	0.004	0.01	08/31/21 17:12	bsu
Nickel, dissolved	M200.8 ICP-MS	1	0.00675			mg/L	0.0004	0.001	08/27/21 16:05	mfm
Potassium, dissolved	M200.7 ICP	1	16.6			mg/L	0.2	1	08/25/21 17:06	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/25/21 12:40	mlh
Selenium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.00025	08/27/21 16:05	mfm
Silver, dissolved	M200.7 ICP	1	<0.01	U	*	mg/L	0.01	0.025	08/25/21 17:06	kja
Sodium, dissolved	M200.7 ICP	1	638		*	mg/L	0.2	1	08/25/21 17:06	kja
Thallium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/27/21 16:05	mfm
Uranium, dissolved	M200.8 ICP-MS	1	0.0113			mg/L	0.0001	0.0005	08/27/21 16:05	mfm
Zinc, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	08/25/21 17:06	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-03 KD-20210819

ACZ Sample ID: **L67960-01**

Date Sampled: 08/19/21 11:47

Date Received: 08/21/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	269			mg/L	2	20	08/30/21 0:00	emk
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/30/21 0:00	emk
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/30/21 0:00	emk
Total Alkalinity		1	269			mg/L	2	20	08/30/21 0:00	emk
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.5			%			11/03/21 0:00	calc
Sum of Anions			96			meq/L			11/03/21 0:00	calc
Sum of Cations			97.0			meq/L			11/03/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	1500		*	mg/L	20	100	08/26/21 20:47	krh
Cyanide, Total	D7511-09	1	<0.003	U		mg/L	0.003	0.01	08/26/21 11:36	md
Fluoride	M300.0 - Ion Chromatography	50	<2.5	U	*	mg/L	2.5	12.5	08/26/21 20:47	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	09/02/21 0:51	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	5950	H	*	mg/L	40	80	09/02/21 14:32	anc
Sulfate	M300.0 - Ion Chromatography	50	2310		*	mg/L	20	100	08/26/21 20:47	krh
TDS (calculated)	Calculation		5740			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-08 TRA-20210819

ACZ Sample ID: **L67960-02**

Date Sampled: 08/19/21 13:03

Date Received: 08/21/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U		mg/L	0.05	0.25	08/25/21 17:09	kja
Arsenic, dissolved	M200.8 ICP-MS	1	0.00067	B		mg/L	0.0002	0.001	08/27/21 16:10	mfm
Barium, dissolved	M200.7 ICP	1	0.0153	B		mg/L	0.007	0.035	08/25/21 17:09	kja
Beryllium, dissolved	M200.8 ICP-MS	20	<0.0016	U		mg/L	0.0016	0.005	08/31/21 17:14	bsu
Boron, dissolved	M200.7 ICP	1	0.394			mg/L	0.03	0.1	08/25/21 17:09	kja
Cadmium, dissolved	M200.8 ICP-MS	20	0.00249	B		mg/L	0.001	0.005	08/31/21 17:14	bsu
Calcium, dissolved	M200.7 ICP	1	463		*	mg/L	0.1	0.5	08/25/21 17:09	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	08/27/21 16:10	mfm
Cobalt, dissolved	M200.7 ICP	1	0.069			mg/L	0.02	0.05	08/25/21 17:09	kja
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	08/25/21 17:09	kja
Iron, dissolved	M200.7 ICP	1	<0.06	U	*	mg/L	0.06	0.15	08/25/21 17:09	kja
Lead, dissolved	M200.8 ICP-MS	20	<0.002	U		mg/L	0.002	0.01	08/31/21 17:14	bsu
Magnesium, dissolved	M200.7 ICP	10	5710			mg/L	2	10	08/26/21 19:55	kja
Manganese, dissolved	M200.7 ICP	1	8.97		*	mg/L	0.01	0.05	08/25/21 17:09	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	08/24/21 14:53	mlh
Molybdenum, dissolved	M200.8 ICP-MS	20	0.00492	B		mg/L	0.004	0.01	08/31/21 17:14	bsu
Nickel, dissolved	M200.8 ICP-MS	1	0.0834			mg/L	0.0004	0.001	08/27/21 16:10	mfm
Potassium, dissolved	M200.7 ICP	1	21.6			mg/L	0.2	1	08/25/21 17:09	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	5	0.124			mg/L	0.01	0.025	08/31/21 12:53	mlh
Selenium, dissolved	M200.8 ICP-MS	20	0.131			mg/L	0.002	0.005	08/31/21 17:14	bsu
Silver, dissolved	M200.7 ICP	1	<0.01	U	*	mg/L	0.01	0.025	08/25/21 17:09	kja
Sodium, dissolved	M200.7 ICP	1	452		*	mg/L	0.2	1	08/25/21 17:09	kja
Thallium, dissolved	M200.8 ICP-MS	20	<0.002	U		mg/L	0.002	0.01	08/31/21 17:14	bsu
Uranium, dissolved	M200.8 ICP-MS	20	0.0146			mg/L	0.002	0.01	08/31/21 17:14	bsu
Zinc, dissolved	M200.7 ICP	1	0.123			mg/L	0.02	0.05	08/25/21 17:09	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-08 TRA-20210819

ACZ Sample ID: **L67960-02**

Date Sampled: 08/19/21 13:03

Date Received: 08/21/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	575			mg/L	2	20	08/30/21 0:00	emk
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/30/21 0:00	emk
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/30/21 0:00	emk
Total Alkalinity		1	575			mg/L	2	20	08/30/21 0:00	emk
Cation-Anion Balance	Calculation									
Cation-Anion Balance			6.2			%			11/03/21 0:00	calc
Sum of Anions			452			meq/L			11/03/21 0:00	calc
Sum of Cations			512			meq/L			11/03/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	200	733		*	mg/L	80	400	08/26/21 21:05	krh
Cyanide, Total	D7511-09	1	0.005	B	*	mg/L	0.003	0.01	08/23/21 13:00	md
Fluoride	M300.0 - Ion Chromatography	200	<10	U	*	mg/L	10	50	08/26/21 21:05	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	50	117		*	mg/L	1	5	09/02/21 1:15	pjb
Residue, Filterable (TDS) @180C	SM2540C	10	32200	H	*	mg/L	200	400	09/09/21 13:44	emk
Sulfate	M300.0 - Ion Chromatography	500	20000			mg/L	200	1000	08/27/21 16:51	krh
TDS (calculated)	Calculation		27700			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.16						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-07 KD-20210819

ACZ Sample ID: **L67960-03**

Date Sampled: 08/19/21 14:22

Date Received: 08/21/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U		mg/L	0.05	0.25	08/25/21 17:12	kja
Arsenic, dissolved	M200.8 ICP-MS	1	0.00228			mg/L	0.0002	0.001	08/27/21 16:12	mfm
Barium, dissolved	M200.7 ICP	1	0.0236	B		mg/L	0.007	0.035	08/25/21 17:12	kja
Beryllium, dissolved	M200.8 ICP-MS	1	0.000405			mg/L	0.00008	0.00025	08/27/21 16:12	mfm
Boron, dissolved	M200.7 ICP	1	0.191			mg/L	0.03	0.1	08/25/21 17:12	kja
Cadmium, dissolved	M200.8 ICP-MS	1	0.000097	B		mg/L	0.00005	0.00025	08/27/21 16:12	mfm
Calcium, dissolved	M200.7 ICP	1	649			mg/L	0.1	0.5	08/25/21 17:12	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	08/27/21 16:12	mfm
Cobalt, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	08/25/21 17:12	kja
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	08/25/21 17:12	kja
Iron, dissolved	M200.7 ICP	1	14.2			mg/L	0.06	0.15	08/25/21 17:12	kja
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/27/21 16:12	mfm
Magnesium, dissolved	M200.7 ICP	1	231			mg/L	0.2	1	08/25/21 17:12	kja
Manganese, dissolved	M200.7 ICP	1	12.1			mg/L	0.01	0.05	08/25/21 17:12	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	08/24/21 14:54	mlh
Molybdenum, dissolved	M200.8 ICP-MS	1	0.00203			mg/L	0.0002	0.0005	08/27/21 16:12	mfm
Nickel, dissolved	M200.8 ICP-MS	1	0.01000			mg/L	0.0004	0.001	08/27/21 16:12	mfm
Potassium, dissolved	M200.7 ICP	1	16.6			mg/L	0.2	1	08/25/21 17:12	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/25/21 12:45	mlh
Selenium, dissolved	M200.8 ICP-MS	1	0.00146			mg/L	0.0001	0.00025	08/27/21 16:12	mfm
Silver, dissolved	M200.7 ICP	1	<0.01	U	*	mg/L	0.01	0.025	08/25/21 17:12	kja
Sodium, dissolved	M200.7 ICP	1	360		*	mg/L	0.2	1	08/25/21 17:12	kja
Thallium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/27/21 16:12	mfm
Uranium, dissolved	M200.8 ICP-MS	1	0.0296			mg/L	0.0001	0.0005	08/27/21 16:12	mfm
Zinc, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	08/25/21 17:12	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-07 KD-20210819

ACZ Sample ID: **L67960-03**

Date Sampled: 08/19/21 14:22

Date Received: 08/21/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	284			mg/L	2	20	08/30/21 0:00	emk
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/30/21 0:00	emk
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/30/21 0:00	emk
Total Alkalinity		1	284			mg/L	2	20	08/30/21 0:00	emk
Cation-Anion Balance	Calculation									
Cation-Anion Balance			1.5			%			11/03/21 0:00	calc
Sum of Anions			67			meq/L			11/03/21 0:00	calc
Sum of Cations			69			meq/L			11/03/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	791		*	mg/L	20	100	08/26/21 21:41	krh
Cyanide, Total	D7511-09	1	0.009	B		mg/L	0.003	0.01	08/23/21 13:02	md
Fluoride	M300.0 - Ion Chromatography	50	<2.5	U	*	mg/L	2.5	12.5	08/26/21 21:41	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.030	B	*	mg/L	0.02	0.1	09/02/21 1:08	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4340	H	*	mg/L	40	80	09/02/21 14:40	anc
Sulfate	M300.0 - Ion Chromatography	50	1840			mg/L	20	100	08/26/21 21:41	krh
TDS (calculated)	Calculation		4090			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.06						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-04 TRA-20210820

ACZ Sample ID: **L67960-04**

Date Sampled: 08/20/21 10:30

Date Received: 08/21/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U		mg/L	0.05	0.25	08/25/21 17:16	kja
Arsenic, dissolved	M200.8 ICP-MS	1	0.00125			mg/L	0.0002	0.001	08/27/21 16:17	mfm
Barium, dissolved	M200.7 ICP	1	0.0138	B		mg/L	0.007	0.035	08/25/21 17:16	kja
Beryllium, dissolved	M200.8 ICP-MS	1	<0.00008	U		mg/L	0.00008	0.00025	08/27/21 16:17	mfm
Boron, dissolved	M200.7 ICP	1	0.404			mg/L	0.03	0.1	08/25/21 17:16	kja
Cadmium, dissolved	M200.8 ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	08/27/21 16:17	mfm
Calcium, dissolved	M200.7 ICP	1	176			mg/L	0.1	0.5	08/25/21 17:16	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	08/27/21 16:17	mfm
Cobalt, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	08/25/21 17:16	kja
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	08/25/21 17:16	kja
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	08/25/21 17:16	kja
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/27/21 16:17	mfm
Magnesium, dissolved	M200.7 ICP	1	58.6			mg/L	0.2	1	08/25/21 17:16	kja
Manganese, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	08/25/21 17:16	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	08/24/21 14:58	mlh
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0119			mg/L	0.0002	0.0005	08/27/21 16:17	mfm
Nickel, dissolved	M200.8 ICP-MS	1	0.00074	B		mg/L	0.0004	0.001	08/27/21 16:17	mfm
Potassium, dissolved	M200.7 ICP	1	8.22			mg/L	0.2	1	08/25/21 17:16	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/25/21 12:51	mlh
Selenium, dissolved	M200.8 ICP-MS	1	0.00035			mg/L	0.0001	0.00025	08/27/21 16:17	mfm
Silver, dissolved	M200.7 ICP	1	<0.01	U	*	mg/L	0.01	0.025	08/25/21 17:16	kja
Sodium, dissolved	M200.7 ICP	1	268		*	mg/L	0.2	1	08/25/21 17:16	kja
Thallium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/27/21 16:17	mfm
Uranium, dissolved	M200.8 ICP-MS	1	0.00582			mg/L	0.0001	0.0005	08/27/21 16:17	mfm
Zinc, dissolved	M200.7 ICP	1	0.094			mg/L	0.02	0.05	08/25/21 17:16	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-04 TRA-20210820

ACZ Sample ID: **L67960-04**

Date Sampled: 08/20/21 10:30

Date Received: 08/21/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	140			mg/L	2	20	08/30/21 0:00	emk
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/30/21 0:00	emk
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/30/21 0:00	emk
Total Alkalinity		1	140			mg/L	2	20	08/30/21 0:00	emk
Cation-Anion Balance	Calculation									
Cation-Anion Balance			4.0			%			11/03/21 0:00	calc
Sum of Anions			24			meq/L			11/03/21 0:00	calc
Sum of Cations			26			meq/L			11/03/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	10	25.7		*	mg/L	4	20	08/27/21 18:02	krh
Cyanide, Total	D7511-09	1	<0.003	U		mg/L	0.003	0.01	08/23/21 13:04	md
Fluoride	M300.0 - Ion Chromatography	10	<0.5	U	*	mg/L	0.5	2.5	08/27/21 18:02	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.146		*	mg/L	0.02	0.1	09/02/21 0:56	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1720		*	mg/L	20	40	08/25/21 9:57	anc
Sulfate	M300.0 - Ion Chromatography	10	984			mg/L	4	20	08/27/21 18:02	krh
TDS (calculated)	Calculation		1610			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.07						11/03/21 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>

QUIVIRA

ACZ Project ID: **L67960**

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
WG526219													
WG526219PBW1	PBW	08/30/21 17:04				U	mg/L		-20	20			
WG526219LCSW3	LCSW	08/30/21 17:24	WC210821-1	820.0001		803.3	mg/L	98	90	110			
WG526219LCSW6	LCSW	08/30/21 20:38	WC210821-1	820.0001		791	mg/L	96	90	110			
WG526219PBW2	PBW	08/30/21 20:46				2.3	mg/L		-20	20			
L67963-01DUP	DUP	08/30/21 23:23			211	208.7	mg/L				1	20	
WG526219LCSW9	LCSW	08/31/21 1:02	WC210821-1	820.0001		811.9	mg/L	99	90	110			
WG526219PBW3	PBW	08/31/21 1:09				3	mg/L		-20	20			
WG526219LCSW12	LCSW	08/31/21 4:19	WC210821-1	820.0001		813.3	mg/L	99	90	110			
WG526219PBW4	PBW	08/31/21 4:27				2.2	mg/L		-20	20			
WG526219LCSW15	LCSW	08/31/21 7:21	WC210821-1	820.0001		801.6	mg/L	98	90	110			

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	2		1.983	mg/L	99	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.15	0.15			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	1.0008		1.037	mg/L	104	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	1.0008	.503	1.535	mg/L	103	85	115			
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	1.0008	.503	1.56	mg/L	106	85	115	2	20	
L67963-01AS	AS	08/25/21 17:42	II210810-2	1.0008	U	1.042	mg/L	104	85	115			
L67963-01ASD	ASD	08/25/21 17:45	II210810-2	1.0008	U	1.065	mg/L	106	85	115	2	20	

Arsenic, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.05179	mg/L	104	90	110			
WG526107ICB	ICB	08/27/21 15:25				.00036	mg/L		-0.00044	0.00044			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05005		.05233	mg/L	105	85	115			
L67960-03AS	AS	08/27/21 16:14	MS210827-2	.05005	.00228	.04945	mg/L	94	70	130			
L67960-03ASD	ASD	08/27/21 16:16	MS210827-2	.05005	.00228	.04842	mg/L	92	70	130	2	20	

Barium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	2		2.0082	mg/L	100	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.021	0.021			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	.5		.5012	mg/L	100	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	.5	.0157	.5141	mg/L	100	85	115			
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	.5	.0157	.5155	mg/L	100	85	115	0	20	
L67963-01AS	AS	08/25/21 17:42	II210810-2	.5	U	.5063	mg/L	101	85	115			
L67963-01ASD	ASD	08/25/21 17:45	II210810-2	.5	U	.5078	mg/L	102	85	115	0	20	

QUIVIRA

ACZ Project ID: **L67960**

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.

Beryllium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.053279	mg/L	107	90	110			
WG526107ICB	ICB	08/27/21 15:25				.000108	mg/L		-0.000176	0.000176			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05005		.052655	mg/L	105	85	115			
L67960-03AS	AS	08/27/21 16:14	MS210827-2	.05005	.000405	.045654	mg/L	90	70	130			
L67960-03ASD	ASD	08/27/21 16:16	MS210827-2	.05005	.000405	.043543	mg/L	86	70	130	5	20	
WG526316													
WG526316ICV	ICV	08/31/21 16:53	MS210727-2	.05		.048789	mg/L	98	90	110			
WG526316ICB	ICB	08/31/21 16:55				U	mg/L		-0.000176	0.000176			
WG526316LFB	LFB	08/31/21 17:11	MS210827-2	.05005		.049027	mg/L	98	85	115			
L68044-01AS	AS	08/31/21 17:26	MS210827-2	.05005	U	.051274	mg/L	102	70	130			
L68044-01ASD	ASD	08/31/21 17:28	MS210827-2	.05005	U	.050962	mg/L	102	70	130	1	20	

Boron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	2		1.99	mg/L	100	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.09	0.09			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	.5005		.515	mg/L	103	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	.5005	.444	.908	mg/L	93	85	115			
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	.5005	.444	.9	mg/L	91	85	115	1	20	
L67963-01AS	AS	08/25/21 17:42	II210810-2	.5005	U	.529	mg/L	106	85	115			
L67963-01ASD	ASD	08/25/21 17:45	II210810-2	.5005	U	.528	mg/L	105	85	115	0	20	

Cadmium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.052141	mg/L	104	90	110			
WG526107ICB	ICB	08/27/21 15:25				.000083	mg/L		-0.00011	0.00011			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05005		.050945	mg/L	102	85	115			
L67960-03AS	AS	08/27/21 16:14	MS210827-2	.05005	.000097	.045925	mg/L	92	70	130			
L67960-03ASD	ASD	08/27/21 16:16	MS210827-2	.05005	.000097	.044272	mg/L	88	70	130	4	20	
WG526316													
WG526316ICV	ICV	08/31/21 16:53	MS210727-2	.05		.05018	mg/L	100	90	110			
WG526316ICB	ICB	08/31/21 16:55				U	mg/L		-0.00011	0.00011			
WG526316LFB	LFB	08/31/21 17:11	MS210827-2	.05005		.049626	mg/L	99	85	115			
L68044-01AS	AS	08/31/21 17:26	MS210827-2	.05005	.000119	.050688	mg/L	101	70	130			
L68044-01ASD	ASD	08/31/21 17:28	MS210827-2	.05005	.000119	.049591	mg/L	99	70	130	2	20	

QUIVIRA

ACZ Project ID: **L67960**

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.

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	100		97.86	mg/L	98	95	105			
WG525911ICB	ICB	08/25/21 16:11				.11	mg/L		-0.3	0.3			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	67.99734		68.63	mg/L	101	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	67.99734	556	589.5	mg/L	49	85	115			M3
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	67.99734	556	591.8	mg/L	53	85	115	0	20	M3
L67963-01AS	AS	08/25/21 17:42	II210810-2	67.99734	50.8	119	mg/L	100	85	115			
L67963-01ASD	ASD	08/25/21 17:45	II210810-2	67.99734	50.8	119.1	mg/L	100	85	115	0	20	

Chloride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523874													
WG523874ICV	ICV	07/22/21 20:38	WI210719-3	19.96		19.83	mg/L	99	90	110			
WG523874ICB	ICB	07/22/21 20:56				U	mg/L		-0.4	0.4			
WG525977													
WG525977LFB	LFB	08/26/21 16:36	WI210329-1	30		29.1	mg/L	97	90	110			
L67869-01DUP	DUP	08/26/21 17:12			U	U	mg/L				0	20	RA
L67924-03AS	AS	08/26/21 17:48	WI210329-1	1500	U	1478.54	mg/L	99	90	110			
L67960-02DUP	DUP	08/26/21 21:23			733	733.43	mg/L				0	20	RA
L67960-03AS	AS	08/26/21 21:59	WI210329-1	1500	791	2240.25	mg/L	97	90	110			
WG525977LFB	LFB	08/27/21 13:16	WI210329-1	30		29.41	mg/L	98	90	110			

Chromium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.05154	mg/L	103	90	110			
WG526107ICB	ICB	08/27/21 15:25				U	mg/L		-0.0011	0.0011			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05		.05128	mg/L	103	85	115			
L67960-03AS	AS	08/27/21 16:14	MS210827-2	.05	U	.04616	mg/L	92	70	130			
L67960-03ASD	ASD	08/27/21 16:16	MS210827-2	.05	U	.04511	mg/L	90	70	130	2	20	

Cobalt, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	2.004		1.96	mg/L	98	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.06	0.06			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	.5005		.492	mg/L	98	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	.5005	.192	.62	mg/L	86	85	115			
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	.5005	.192	.615	mg/L	85	85	115	1	20	
L67963-01AS	AS	08/25/21 17:42	II210810-2	.5005	U	.496	mg/L	99	85	115			
L67963-01ASD	ASD	08/25/21 17:45	II210810-2	.5005	U	.494	mg/L	99	85	115	0	20	

QUIVIRA

ACZ Project ID: **L67960**

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.

Copper, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	2		1.941	mg/L	97	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.03	0.03			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	.5		.499	mg/L	100	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	.5	U	.501	mg/L	100	85	115			
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	.5	U	.503	mg/L	101	85	115	0	20	
L67963-01AS	AS	08/25/21 17:42	II210810-2	.5	U	.505	mg/L	101	85	115			
L67963-01ASD	ASD	08/25/21 17:45	II210810-2	.5	U	.507	mg/L	101	85	115	0	20	

Cyanide, Total

D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525747													
WG525747ICV	ICV	08/23/21 12:28	WI210823-4	.3		.3271	mg/L	109	90	110			
WG525747ICB	ICB	08/23/21 12:30				U	mg/L		-0.003	0.003			
WG525747LFB	LFB	08/23/21 12:36	WI210823-7	.1		.0976	mg/L	98	84	116			
WG525747ICV1	ICV	08/23/21 15:33	WI210823-4	.3		.3214	mg/L	107	90	110			
WG525747ICB1	ICB	08/23/21 15:35				U	mg/L		-0.003	0.003			
L67918-01AS	AS	08/23/21 15:41	WI210823-7	.1	.015	.1044	mg/L	89	84	116			
L67918-01ASD	ASD	08/23/21 15:43	WI210823-7	.1	.015	.1042	mg/L	89	84	116	0	20	
WG525879													
WG525879ICV	ICV	08/26/21 11:12	WI210823-4	.3		.306	mg/L	102	90	110			
WG525879ICB	ICB	08/26/21 11:14				U	mg/L		-0.003	0.003			
L67960-01AS	AS	08/26/21 11:44	WI210823-7	.1	U	.0875	mg/L	88	84	116			
L67960-01ASD	ASD	08/26/21 11:46	WI210823-7	.1	U	.0893	mg/L	89	84	116	2	20	
WG525383PBS	PBS	08/26/21 11:48				U	mg/L		-0.003	0.003			
WG525879LFB	LFB	08/26/21 12:10	WI210823-7	.1		.102	mg/L	102	84	116			

Fluoride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523874													
WG523874ICV	ICV	07/22/21 20:38	WI210719-3	4.004		4.04	mg/L	101	90	110			
WG523874ICB	ICB	07/22/21 20:56				U	mg/L		-0.05	0.05			
WG525977													
WG525977LFB	LFB	08/26/21 16:36	WI210329-1	1.5		1.441	mg/L	96	90	110			
L67869-01DUP	DUP	08/26/21 17:12			U	U	mg/L				0	20	RA
L67924-03AS	AS	08/26/21 17:48	WI210329-1	75	U	71.933	mg/L	96	90	110			
L67960-02DUP	DUP	08/26/21 21:23			U	U	mg/L				0	20	RA
L67960-03AS	AS	08/26/21 21:59	WI210329-1	75	U	70.604	mg/L	94	90	110			
WG525977LFB	LFB	08/27/21 13:16	WI210329-1	1.5		1.437	mg/L	96	90	110			

QUIVIRA

ACZ Project ID: **L67960**

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.

Iron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	2		1.977	mg/L	99	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.18	0.18			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	1.0001		1.081	mg/L	108	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	1.0001	182	173.8	mg/L	-820	85	115			M3
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	1.0001	182	174.4	mg/L	-760	85	115	0	20	M3
L67963-01AS	AS	08/25/21 17:42	II210810-2	1.0001	1.77	2.72	mg/L	95	85	115			
L67963-01ASD	ASD	08/25/21 17:45	II210810-2	1.0001	1.77	2.717	mg/L	95	85	115	0	20	

Lead, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.05254	mg/L	105	90	110			
WG526107ICB	ICB	08/27/21 15:25				.00019	mg/L		-0.00022	0.00022			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05005		.05185	mg/L	104	85	115			
L67960-03AS	AS	08/27/21 16:14	MS210827-2	.05005	U	.0428	mg/L	86	70	130			
L67960-03ASD	ASD	08/27/21 16:16	MS210827-2	.05005	U	.04126	mg/L	82	70	130	4	20	
WG526316													
WG526316ICV	ICV	08/31/21 16:53	MS210727-2	.05		.04987	mg/L	100	90	110			
WG526316ICB	ICB	08/31/21 16:55				U	mg/L		-0.00022	0.00022			
WG526316LFB	LFB	08/31/21 17:11	MS210827-2	.05005		.04903	mg/L	98	85	115			
L68044-01AS	AS	08/31/21 17:26	MS210827-2	.05005	.00012	.04775	mg/L	95	70	130			
L68044-01ASD	ASD	08/31/21 17:28	MS210827-2	.05005	.00012	.04656	mg/L	93	70	130	3	20	

Magnesium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	100		95.9	mg/L	96	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.6	0.6			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	50.00074		48.86	mg/L	98	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	50.00074	1510	1477	mg/L	-66	85	115			M3
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	50.00074	1510	1489	mg/L	-42	85	115	1	20	M3
L67963-01AS	AS	08/25/21 17:42	II210810-2	50.00074	16.3	65.6	mg/L	99	85	115			
L67963-01ASD	ASD	08/25/21 17:45	II210810-2	50.00074	16.3	66	mg/L	99	85	115	1	20	
WG525985													
WG525985ICV	ICV	08/26/21 19:12	II210803-4	100		97.55	mg/L	98	95	105			
WG525985ICB	ICB	08/26/21 19:19				U	mg/L		-0.6	0.6			
WG525985LFB	LFB	08/26/21 19:32	II210810-2	50.00074		50.8	mg/L	102	85	115			
L67927-04AS	AS	08/26/21 19:38	II210810-2	50.00074	7.98	57.4	mg/L	99	85	115			
L67927-04ASD	ASD	08/26/21 19:41	II210810-2	50.00074	7.98	57.05	mg/L	98	85	115	1	20	

QUIVIRA

ACZ Project ID: **L67960**

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.

Manganese, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	2		1.947	mg/L	97	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.03	0.03			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	.5005		.51	mg/L	102	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	.5005	31.7	30.61	mg/L	-218	85	115			M3
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	.5005	31.7	30.78	mg/L	-184	85	115	1	20	M3
L67963-01AS	AS	08/25/21 17:42	II210810-2	.5005	.716	1.183	mg/L	93	85	115			
L67963-01ASD	ASD	08/25/21 17:45	II210810-2	.5005	.716	1.186	mg/L	94	85	115	0	20	

Mercury, total

M245.1 CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525822													
WG525822ICV	ICV	08/24/21 13:20	HG210817-3	.00501		.00499	mg/L	100	95	105			
WG525822ICB	ICB	08/24/21 13:21				U	mg/L		-0.0002	0.0002			
WG525841													
WG525841LRB	LRB	08/24/21 14:48				U	mg/L		-0.00044	0.00044			
WG525841LFB	LFB	08/24/21 14:49	HG210817-6	.002002		.00194	mg/L	97	85	115			
L67960-03LFM	LFM	08/24/21 14:54	HG210817-6	.002002	U	.00186	mg/L	93	85	115			
L67960-03LFMD	LFMD	08/24/21 14:55	HG210817-6	.002002	U	.00188	mg/L	94	85	115	1	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.01992		.0201	mg/L	101	90	110			
WG526107ICB	ICB	08/27/21 15:25				U	mg/L		-0.00044	0.00044			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05005		.04983	mg/L	100	85	115			
L67960-03AS	AS	08/27/21 16:14	MS210827-2	.05005	.00203	.05771	mg/L	111	70	130			
L67960-03ASD	ASD	08/27/21 16:16	MS210827-2	.05005	.00203	.05558	mg/L	107	70	130	4	20	
WG526316													
WG526316ICV	ICV	08/31/21 16:53	MS210727-2	.01992		.01833	mg/L	92	90	110			
WG526316ICB	ICB	08/31/21 16:55				U	mg/L		-0.00044	0.00044			
WG526316LFB	LFB	08/31/21 17:11	MS210827-2	.05005		.04831	mg/L	97	85	115			
L68044-01AS	AS	08/31/21 17:26	MS210827-2	.05005	.00134	.04912	mg/L	95	70	130			
L68044-01ASD	ASD	08/31/21 17:28	MS210827-2	.05005	.00134	.04882	mg/L	95	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
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.05387	mg/L	108	90	110			
WG526107ICB	ICB	08/27/21 15:25				.00079	mg/L		-0.00088	0.00088			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05		.05292	mg/L	106	85	115			
L67960-03AS	AS	08/27/21 16:14	MS210827-2	.05	.01	.04969	mg/L	79	70	130			
L67960-03ASD	ASD	08/27/21 16:16	MS210827-2	.05	.01	.04892	mg/L	78	70	130	2	20	

QUIVIRA

ACZ Project ID: **L67960**

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.

Nitrate/Nitrite as N M353.2 - H2SO4 preserved

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526441													
WG526441ICV	ICV	09/01/21 23:35	WI210603-7	2.416		2.405	mg/L	100	90	110			
WG526441ICB	ICB	09/01/21 23:36				U	mg/L		-0.02	0.02			
WG526443													
WG526443LFB	LFB	09/02/21 0:28	WI210331-13	2		2.061	mg/L	103	90	110			
L65078-22AS	AS	09/02/21 0:50	WI210331-13	2	U	2.061	mg/L	103	90	110			
L67960-01DUP	DUP	09/02/21 0:53			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	20		19.62	mg/L	98	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.6	0.6			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	99.99574		100.1	mg/L	100	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	99.99574	52.1	154.4	mg/L	102	85	115			
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	99.99574	52.1	154.4	mg/L	102	85	115	0	20	
L67963-01AS	AS	08/25/21 17:42	II210810-2	99.99574	2.54	104	mg/L	101	85	115			
L67963-01ASD	ASD	08/25/21 17:45	II210810-2	99.99574	2.54	104.8	mg/L	102	85	115	1	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525889													
WG525889PBW	PBW	08/25/21 9:05				U	mg/L		-20	20			
WG525889LCSW	LCSW	08/25/21 9:10	PCN64124	1000		992	mg/L	99	80	120			
L67985-01DUP	DUP	08/25/21 10:07			82	72	mg/L				13	10	RA
WG526510													
WG526510PBW	PBW	09/02/21 14:24				U	mg/L		-20	20			
WG526510LCSW	LCSW	09/02/21 14:28	PCN64123	1000		962	mg/L	96	80	120			
L68202-05DUP	DUP	09/02/21 15:14			138	130	mg/L				6	10	RA
WG526853													
WG526853PBW	PBW	09/09/21 13:15				U	mg/L		-20	20			
WG526853LCSW	LCSW	09/09/21 13:16	PCN64129	1000		996	mg/L	100	80	120			
L68224-14DUP	DUP	09/09/21 13:59			46400	46000	mg/L				1	10	

QUIVIRA

ACZ Project ID: **L67960**

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.

Selenium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.05146	mg/L	103	90	110			
WG526107ICB	ICB	08/27/21 15:25				U	mg/L		-0.00022	0.00022			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05		.05192	mg/L	104	85	115			
L67960-03AS	AS	08/27/21 16:14	MS210827-2	.05	.00146	.05608	mg/L	109	70	130			
L67960-03ASD	ASD	08/27/21 16:16	MS210827-2	.05	.00146	.05495	mg/L	107	70	130	2	20	
WG526316													
WG526316ICV	ICV	08/31/21 16:53	MS210727-2	.05		.05124	mg/L	102	90	110			
WG526316ICB	ICB	08/31/21 16:55				U	mg/L		-0.00022	0.00022			
WG526316LFB	LFB	08/31/21 17:11	MS210827-2	.05		.05007	mg/L	100	85	115			
L68044-01AS	AS	08/31/21 17:26	MS210827-2	.05	.00032	.05637	mg/L	112	70	130			
L68044-01ASD	ASD	08/31/21 17:28	MS210827-2	.05	.00032	.05572	mg/L	111	70	130	1	20	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525888													
WG525888ICV	ICV	08/25/21 12:22	SE210707-1	.025		.0251	mg/L	100	90	110			
WG525888ICB	ICB	08/25/21 12:24				U	mg/L		-0.006	0.006			
WG525888LRB	LRB	08/25/21 12:26				U	mg/L		-0.006	0.006			
WG525888LFB	LFB	08/25/21 12:28	SE210601-8	.0225		.0219	mg/L	97	85	115			
L67959-03LFM	LFM	08/25/21 12:36	SE210601-8	.0225	.0035	.023	mg/L	87	85	115			
L67959-03LFMD	LFMD	08/25/21 12:38	SE210601-8	.0225	.0035	.0232	mg/L	88	85	115	1	20	
WG526235													
WG526235ICV	ICV	08/31/21 12:17	SE210707-1	.025		.0254	mg/L	102	90	110			
WG526235ICB	ICB	08/31/21 12:19				U	mg/L		-0.006	0.006			
WG526254													
WG526254LRB	LRB	08/31/21 12:49				U	mg/L		-0.006	0.006			
WG526254LFB	LFB	08/31/21 12:51	SE210601-8	.0225		.0224	mg/L	100	85	115			
L68078-01LFM	LFM	08/31/21 12:57	SE210601-8	.0225	U	.0239	mg/L	106	85	115			
L68078-01LFMD	LFMD	08/31/21 12:59	SE210601-8	.0225	U	.0227	mg/L	101	85	115	5	20	

Silver, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	1		1.002	mg/L	100	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.03	0.03			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	.502		.503	mg/L	100	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	.502	U	.41	mg/L	82	85	115			MA ZA
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	.502	U	.425	mg/L	85	85	115	4	20	
L67963-01AS	AS	08/25/21 17:42	II210810-2	.502	U	.399	mg/L	79	85	115			M2 ZA
L67963-01ASD	ASD	08/25/21 17:45	II210810-2	.502	U	.393	mg/L	78	85	115	2	20	M2 ZA

QUIVIRA

ACZ Project ID: **L67960**

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
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	100		99.72	mg/L	100	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.6	0.6			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	100.0109		101	mg/L	101	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	100.0109	1580	1592	mg/L	12	85	115			M3
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	100.0109	1580	1604	mg/L	24	85	115	1	20	M3
L67963-01AS	AS	08/25/21 17:42	II210810-2	100.0109	16.2	116.1	mg/L	100	85	115			
L67963-01ASD	ASD	08/25/21 17:45	II210810-2	100.0109	16.2	117	mg/L	101	85	115	1	20	

Sulfate

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523874													
WG523874ICV	ICV	07/22/21 20:38	WI210719-3	51.15		49.54	mg/L	97	90	110			
WG523874ICB	ICB	07/22/21 20:56				U	mg/L		-0.4	0.4			
WG525977													
WG525977LFB	LFB	08/26/21 16:36	WI210329-1	29.97		28.22	mg/L	94	90	110			
L67869-01DUP	DUP	08/26/21 17:12			U	U	mg/L				0	20	RA
L67960-03AS	AS	08/26/21 21:59	WI210329-1	1498.5	1840	3191.87	mg/L	90	90	110			
WG525977LFB	LFB	08/27/21 13:16	WI210329-1	29.97		28.51	mg/L	95	90	110			
L67924-03AS	AS	08/27/21 14:27	WI210329-1	1498.5	2400	3741.43	mg/L	90	90	110			
L67960-02DUP	DUP	08/27/21 17:09			20000	20018.4	mg/L				0	20	

Thallium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.05411	mg/L	108	90	110			
WG526107ICB	ICB	08/27/21 15:25				U	mg/L		-0.00022	0.00022			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05		.05156	mg/L	103	85	115			
L67960-03AS	AS	08/27/21 16:14	MS210827-2	.05	U	.04431	mg/L	89	70	130			
L67960-03ASD	ASD	08/27/21 16:16	MS210827-2	.05	U	.04276	mg/L	86	70	130	4	20	
WG526316													
WG526316ICV	ICV	08/31/21 16:53	MS210727-2	.05		.05191	mg/L	104	90	110			
WG526316ICB	ICB	08/31/21 16:55				U	mg/L		-0.00022	0.00022			
WG526316LFB	LFB	08/31/21 17:11	MS210827-2	.05		.05011	mg/L	100	85	115			
L68044-01AS	AS	08/31/21 17:26	MS210827-2	.05	U	.04876	mg/L	98	70	130			
L68044-01ASD	ASD	08/31/21 17:28	MS210827-2	.05	U	.04875	mg/L	98	70	130	0	20	

QUIVIRA

ACZ Project ID: **L67960**

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.

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.05264	mg/L	105	90	110			
WG526107ICB	ICB	08/27/21 15:25				U	mg/L		-0.00022	0.00022			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05		.05188	mg/L	104	85	115			
L67960-03AS	AS	08/27/21 16:14	MS210827-2	.05	.0296	.07491	mg/L	91	70	130			
L67960-03ASD	ASD	08/27/21 16:16	MS210827-2	.05	.0296	.07275	mg/L	86	70	130	3	20	
WG526316													
WG526316ICV	ICV	08/31/21 16:53	MS210727-2	.05		.05205	mg/L	104	90	110			
WG526316ICB	ICB	08/31/21 16:55				U	mg/L		-0.00022	0.00022			
WG526316LFB	LFB	08/31/21 17:11	MS210827-2	.05		.05041	mg/L	101	85	115			
L68044-01AS	AS	08/31/21 17:26	MS210827-2	.05	U	.05164	mg/L	103	70	130			
L68044-01ASD	ASD	08/31/21 17:28	MS210827-2	.05	U	.0507	mg/L	101	70	130	2	20	

Zinc, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	2		1.892	mg/L	95	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.06	0.06			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	.50045		.511	mg/L	102	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	.50045	.055	.469	mg/L	86	85	115			
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	.50045	.055	.468	mg/L	85	85	115	0	20	
L67963-01AS	AS	08/25/21 17:42	II210810-2	.50045	U	.521	mg/L	104	85	115			
L67963-01ASD	ASD	08/25/21 17:45	II210810-2	.50045	U	.522	mg/L	104	85	115	0	20	

Rio Algom Mining Company

ACZ Project ID: **L67960**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67960-01	WG525911	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.
	WG525977	Chloride	M300.0 - Ion Chromatography	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).
		Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	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).
	WG525911	Iron, 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.
		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.
		Manganese, 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.
	WG526443	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG526510	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
			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).
	WG525911	Silver, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
		Sodium, dissolved	M200.7 ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			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.
	WG525977	Sulfate	M300.0 - Ion Chromatography	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).

Rio Algom Mining CompanyACZ Project ID: **L67960**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67960-02	WG525911	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.
	WG525977	Chloride	M300.0 - Ion Chromatography	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).
	WG525747	Cyanide, Total	D7511-09	Q3	Sample received with improper or inadequate chemical preservation.
	WG525977	Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	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).
	WG525911	Iron, 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.
		Manganese, 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.
	WG526443	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG526853	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
	WG525911	Silver, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
		Sodium, dissolved	M200.7 ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
			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.
L67960-03	WG525977	Chloride	M300.0 - Ion Chromatography	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).
		Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	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).
				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).
	WG526443	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG526510	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
			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).
	WG525911	Silver, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
		Sodium, dissolved	M200.7 ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.

Rio Algom Mining CompanyACZ Project ID: **L67960**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67960-04	WG525977	Chloride	M300.0 - Ion Chromatography	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).
		Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	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).
	WG526443	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG525889	Residue, Filterable (TDS) @180C	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).
	WG525911	Silver, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
		Sodium, dissolved	M200.7 ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-03 KD-20210819

Locator:

ACZ Sample ID: **L67960-01**

Date Sampled: 08/19/21 11:47

Date Received: 08/21/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/21 16:24		3.8	1.9	3	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	10/01/21 8:10		0.0	26	3.8	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/21/21 0:30		4.5	0.42	0.22	pCi/L		djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/23/21 16:44		7.4	1	1.6	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/13/21 8:00		0.358	0.29	0.43	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-08 TRA-20210819

Locator:

ACZ Sample ID: **L67960-02**

Date Sampled: 08/19/21 13:03

Date Received: 08/21/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/21 16:24		110	47	73	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	10/01/21 8:10		0.0	35	4.6	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/21/21 0:31		1.1	0.37	0.3	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/23/21 16:44		6.4	0.97	1.6	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/28/21 12:15		1.85	0.79	0.79	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-07 KD-20210819

Locator:

ACZ Sample ID: **L67960-03**

Date Sampled: 08/19/21 14:22

Date Received: 08/21/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/21 16:24		3.7	2	3.2	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	10/01/21 8:10		0.0	32	4.7	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/21/21 0:33		0.99	0.22	0.09	pCi/L		djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/23/21 16:44		4.1	1.6	3.4	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/30/21 14:47		1.01	0.37	0.32	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-04 TRA-20210820

Locator:

ACZ Sample ID: **L67960-04**

Date Sampled: 08/20/21 10:30

Date Received: 08/21/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/21 16:24		1.6	2.7	4.6	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	10/01/21 8:10		0.449	2.2	2.6	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/21/21 0:34		0.0	0.13	0.09	pCi/L		djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/23/21 16:44		1.1	0.78	1.7	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/28/21 12:15		0.723	0.32	0.31	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.
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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>

QUIVIRA

ACZ Project ID: **L67960**

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.

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
WG528510																
WG528510LCSW	LCSW	10/28/1921	PCN64361	99.69				89	4.2	3	89	55	121			
WG528510PBW	PBW	10/28/1921						5.2	1.5	2.2			4.4			B1
L67827-01DUP	DUP-RPD	10/28/1921			2.2	1.4	2.3	.65	1.7	2.9				109	20	N1A RG
L67827-01DUP	DUP-RER	10/28/1921			2.2	1.4	2.3	.65	1.7	2.9				0.7	2	
L67960-02MS	MS	10/28/21	PCN64361	99.69	110	47	73	44	13	19	-66	55	121			M2 N1A
L68078-03DUP	DUP-RPD	10/29/21			2.2	1.5	2.4	2.1	1.5	2.5				5	20	

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
WG528203																
WG528203LCSW	LCSW	09/30/21	PCN64361	500				511	110	3.7	102	51	128			
WG528203PBW	PBW	09/30/21						0	20	2.6			5.2			
L67766-01DUP	DUP-RER	10/01/21			0.326	2.3	2.9	0	41	5.2				0.01	2	
L67766-01DUP	DUP-RPD	10/01/21			0.326	2.3	2.9	0	41	5.2				200	20	RG
L67959-01DUP	DUP-RPD	10/01/21			0	23	3.2	0	24	3.5				0	20	
L67828-01MS	MS	10/01/21	PCN64361	500	0	22	3.2	512	110	3.3	102	51	128			

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
WG527389																
WG527389PBW	PBW	09/21/21						-.12	0.19	0.22			0.44			
WG527389LCSW	LCSW	09/21/21	PCN62879	20				17	0.8	0.21	85	43	148			
L67848-02DUP1	DUP-RPD	09/21/21			0.14	0.24	0.4	.23	0.16	0.2				49	20	RG
L67848-02DUP1	DUP-RER	09/21/21			0.14	0.24	0.4	.23	0.16	0.2				0.31	2	
L67859-01MS	MS	09/21/21	PCN62879	20	0.03	0.28	0.3	19	0.87	0.24	95	43	148			
L67902-02DUP2	DUP-RPD	09/21/21			1.4	0.39	0.37	1.7	0.32	0.41				19	20	

QUIVIRA

ACZ Project ID: **L67960**

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, 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
WG526900																
WG526900LCSW	LCSW	09/22/21	PCN63356	9.43				8.2	1.1	0.83	87	47	123			
WG526900PBW	PBW	09/22/21						-.01	0.46	0.48			0.96			
L67561-01DUP	DUP-RPD	09/22/21			0.34	0.45	0.46	.39	0.35	0.35				14	20	
L67834-01MS	MS	09/22/21	PCN63356	9.43	10	1.3	2.2	6.3	0.88	1.5	-39	47	123			M2
L67960-02DUP	DUP-RPD	09/23/21			6.4	0.97	1.6	6.5	0.89	1.5				2	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
WG526666																
WG526666LCSW	LCSW	09/12/21	PCN58726	200				211	26	0.44	106	91	126			
WG526666PBW	PBW	09/12/21						.301	0.23	0.33			0.66			
L67827-01MS	MS	09/12/21	PCN58726	200	0.576	0.33	0.43	224	28	0.47	112	91	126			
L67918-02DUP	DUP-RER	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				0.54	2	
L67918-02DUP	DUP-RPD	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				83	20	RG
L67766-01DUP	DUP-RPD	09/13/21			0.744	0.33	0.35	.741	0.38	0.49				0	20	
WG527570																
WG527570PBW	PBW	09/28/21						.377	0.28	0.4			0.8			
WG527570LCSW	LCSW	09/28/21	PCN58726	200				206	26	0.41	103	91	126			
L68280-01DUP	DUP-RPD	09/29/21			0.578	0.32	0.4	.205	0.21	0.34				95	20	RG
L68280-01DUP	DUP-RER	09/29/21			0.578	0.32	0.4	.205	0.21	0.34				0.97	2	
L68280-04DUP	DUP-RER	09/29/21			0.806	0.33	0.3	.487	0.32	0.45				0.69	2	
L68280-04DUP	DUP-RPD	09/29/21			0.806	0.33	0.3	.487	0.32	0.45				49	20	RG
L68280-02MS	MS	09/29/21	PCN58726	200	0.147	0.22	0.37	212	27	0.32	106	91	126			

Rio Algom Mining CompanyACZ Project ID: **L67960**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67960-01	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1A	See Case Narrative.
	WG526900	Radium 228, dissolved	M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG526666	Thorium 230, dissolved	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.
L67960-02	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1	See Case Narrative.
			EICHROM, OTW01	N1A	See Case Narrative.
	WG527389	Radium 226, dissolved	M903.1	D1	Sample required dilution due to matrix.
	WG526900	Radium 228, dissolved	M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527570	Thorium 230, dissolved	ESM 4506	D1	Sample required dilution due to matrix.
			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.
L67960-03	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1A	See Case Narrative.
	WG526900	Radium 228, dissolved	M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527570	Thorium 230, dissolved	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.
L67960-04	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1A	See Case Narrative.
	WG526900	Radium 228, dissolved	M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527570	Thorium 230, dissolved	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 CompanyACZ Project ID: **L67960**

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
4510319940

ACZ Project ID: L67960
Date Received: 08/21/2021 10:30
Received By:
Date Printed: 8/23/2021

Receipt Verification

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

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) Are all labels on containers and are they intact and legible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11) For preserved bottle types, was the pH checked and within limits? ¹	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12) Is there sufficient sample volume to perform all requested work?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13) Is the custody seal intact on all containers?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14) Are samples that require zero headspace acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15) Are all sample containers appropriate for analytical requirements?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16) Is there an Hg-1631 trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17) Is there a VOA trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18) Were all samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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?
-----	-----	-----	-----	-----
6750	3.4	<=6.0	15	Yes
6017	4.2	<=6.0	15	Yes

Was ice present in the shipment container(s)?

Yes - Wet ice was present in the shipment container(s).

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

Rio Algom Mining Company
4510319940

ACZ Project ID: L67960

Date Received: 08/21/2021 10:30

Received By:

Date Printed: 8/23/2021

¹ 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), Na₂S₂O₃ preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

October 05, 2021

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: Michaela Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Clark Short, Angela Persico

Project ID: 4510319940
ACZ Project ID: L67828

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 14, 2021. This project has been assigned to ACZ's project number, L67828. 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 L67828. 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 November 04, 2021. 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.



Sue Webber has reviewed and
approved this report.



Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-06TRB-20210812

ACZ Sample ID: **L67828-01**

Date Sampled: 08/12/21 10:25

Date Received: 08/14/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U	*	mg/L	0.05	0.25	08/18/21 16:42	kja
Arsenic, dissolved	M200.8 ICP-MS	1	0.00047	B		mg/L	0.0002	0.001	08/23/21 14:24	bsu
Barium, dissolved	M200.7 ICP	1	0.0211	B		mg/L	0.007	0.035	08/18/21 16:42	kja
Beryllium, dissolved	M200.8 ICP-MS	1	<0.00008	U		mg/L	0.00008	0.00025	08/23/21 14:24	bsu
Boron, dissolved	M200.7 ICP	1	0.443			mg/L	0.03	0.1	08/18/21 16:42	kja
Cadmium, dissolved	M200.8 ICP-MS	1	0.000089	B		mg/L	0.00005	0.00025	08/23/21 14:24	bsu
Calcium, dissolved	M200.7 ICP	1	584		*	mg/L	0.1	0.5	08/18/21 16:42	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	08/23/21 14:24	bsu
Cobalt, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	08/18/21 16:42	kja
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	08/18/21 16:42	kja
Iron, dissolved	M200.7 ICP	1	0.164			mg/L	0.06	0.15	08/18/21 16:42	kja
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/23/21 14:24	bsu
Magnesium, dissolved	M200.7 ICP	1	537		*	mg/L	0.2	1	08/18/21 16:42	kja
Manganese, dissolved	M200.7 ICP	1	0.445			mg/L	0.01	0.05	08/18/21 16:42	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	08/20/21 13:14	mlh
Molybdenum, dissolved	M200.8 ICP-MS	1	0.00242			mg/L	0.0002	0.0005	08/23/21 14:24	bsu
Nickel, dissolved	M200.8 ICP-MS	1	0.00715			mg/L	0.0004	0.001	08/23/21 14:24	bsu
Potassium, dissolved	M200.7 ICP	1	15.5			mg/L	0.2	1	08/18/21 16:42	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/18/21 14:08	mlh
Selenium, dissolved	M200.8 ICP-MS	1	0.00023	B		mg/L	0.0001	0.00025	08/23/21 14:24	bsu
Silver, dissolved	M200.7 ICP	1	<0.01	U	*	mg/L	0.01	0.025	08/18/21 16:42	kja
Sodium, dissolved	M200.7 ICP	1	552		*	mg/L	0.2	1	08/18/21 16:42	kja
Thallium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/23/21 14:24	bsu
Uranium, dissolved	M200.8 ICP-MS	1	0.0704			mg/L	0.0001	0.0005	08/23/21 14:24	bsu
Zinc, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	08/18/21 16:42	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-06TRB-20210812

ACZ Sample ID: **L67828-01**

Date Sampled: 08/12/21 10:25

Date Received: 08/14/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	598			mg/L	2	20	08/21/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Total Alkalinity		1	598			mg/L	2	20	08/21/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			1.6			%			10/05/21 0:00	calc
Sum of Anions			95			meq/L			10/05/21 0:00	calc
Sum of Cations			98.0			meq/L			10/05/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	744			mg/L	20	100	08/20/21 18:25	krh
Cyanide, Total	D7511-09	1	<0.003	U		mg/L	0.003	0.01	08/16/21 11:30	md
Fluoride	M300.0 - Ion Chromatography	1	0.076	B	*	mg/L	0.05	0.25	08/19/21 23:42	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	08/25/21 1:13	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	6300	H	*	mg/L	40	80	08/25/21 13:08	anc
Sulfate	M300.0 - Ion Chromatography	50	2940			mg/L	20	100	08/20/21 18:25	krh
TDS (calculated)	Calculation		5740			mg/L			10/05/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.10						10/05/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-05YRA-20210812

ACZ Sample ID: **L67828-02**

Date Sampled: 08/12/21 11:30

Date Received: 08/14/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U	*	mg/L	0.05	0.25	08/18/21 16:46	kja
Arsenic, dissolved	M200.8 ICP-MS	1	0.00461			mg/L	0.0002	0.001	08/23/21 14:26	bsu
Barium, dissolved	M200.7 ICP	1	0.0238	B		mg/L	0.007	0.035	08/18/21 16:46	kja
Beryllium, dissolved	M200.8 ICP-MS	1	<0.00008	U		mg/L	0.00008	0.00025	08/23/21 14:26	bsu
Boron, dissolved	M200.7 ICP	1	0.428			mg/L	0.03	0.1	08/18/21 16:46	kja
Cadmium, dissolved	M200.8 ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	08/23/21 14:26	bsu
Calcium, dissolved	M200.7 ICP	1	162		*	mg/L	0.1	0.5	08/18/21 16:46	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	08/23/21 14:26	bsu
Cobalt, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	08/18/21 16:46	kja
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	08/18/21 16:46	kja
Iron, dissolved	M200.7 ICP	1	0.094	B		mg/L	0.06	0.15	08/18/21 16:46	kja
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/23/21 14:26	bsu
Magnesium, dissolved	M200.7 ICP	1	67.5		*	mg/L	0.2	1	08/18/21 16:46	kja
Manganese, dissolved	M200.7 ICP	1	0.186			mg/L	0.01	0.05	08/18/21 16:46	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	08/20/21 13:15	mlh
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0159			mg/L	0.0002	0.0005	08/23/21 14:26	bsu
Nickel, dissolved	M200.8 ICP-MS	1	0.00167			mg/L	0.0004	0.001	08/23/21 14:26	bsu
Potassium, dissolved	M200.7 ICP	1	8.44			mg/L	0.2	1	08/18/21 16:46	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/18/21 14:11	mlh
Selenium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.00025	08/23/21 14:26	bsu
Silver, dissolved	M200.7 ICP	1	<0.01	U	*	mg/L	0.01	0.025	08/18/21 16:46	kja
Sodium, dissolved	M200.7 ICP	1	384		*	mg/L	0.2	1	08/18/21 16:46	kja
Thallium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/23/21 14:26	bsu
Uranium, dissolved	M200.8 ICP-MS	1	0.00327			mg/L	0.0001	0.0005	08/23/21 14:26	bsu
Zinc, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	08/18/21 16:46	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-05YRA-20210812

ACZ Sample ID: **L67828-02**

Date Sampled: 08/12/21 11:30

Date Received: 08/14/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	174			mg/L	2	20	08/21/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Total Alkalinity		1	174			mg/L	2	20	08/21/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			1.6			%			10/05/21 0:00	calc
Sum of Anions			30			meq/L			10/05/21 0:00	calc
Sum of Cations			31			meq/L			10/05/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	1	42.5			mg/L	0.4	2	08/20/21 0:00	krh
Cyanide, Total	D7511-09	1	<0.003	U		mg/L	0.003	0.01	08/16/21 11:32	md
Fluoride	M300.0 - Ion Chromatography	1	0.250		*	mg/L	0.05	0.25	08/20/21 0:00	krh
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	<0.02	U	*	mg/L	0.02	0.1	08/25/21 1:18	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	2110			mg/L	20	40	08/19/21 11:56	anc
Sulfate	M300.0 - Ion Chromatography	20	1190			mg/L	8	40	08/20/21 18:43	krh
TDS (calculated)	Calculation		1960			mg/L			10/05/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.08						10/05/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-07KD-20210812

ACZ Sample ID: **L67828-03**

Date Sampled: 08/12/21 12:45

Date Received: 08/14/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U	*	mg/L	0.05	0.25	08/18/21 16:49	kja
Arsenic, dissolved	M200.8 ICP-MS	1	0.00198			mg/L	0.0002	0.001	08/23/21 14:31	bsu
Barium, dissolved	M200.7 ICP	1	0.0222	B		mg/L	0.007	0.035	08/18/21 16:49	kja
Beryllium, dissolved	M200.8 ICP-MS	1	<0.00008	U		mg/L	0.00008	0.00025	08/23/21 14:31	bsu
Boron, dissolved	M200.7 ICP	1	0.201			mg/L	0.03	0.1	08/18/21 16:49	kja
Cadmium, dissolved	M200.8 ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	08/23/21 14:31	bsu
Calcium, dissolved	M200.7 ICP	1	652		*	mg/L	0.1	0.5	08/18/21 16:49	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	08/23/21 14:31	bsu
Cobalt, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	08/18/21 16:49	kja
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	08/18/21 16:49	kja
Iron, dissolved	M200.7 ICP	1	1.13			mg/L	0.06	0.15	08/18/21 16:49	kja
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/23/21 14:31	bsu
Magnesium, dissolved	M200.7 ICP	1	160		*	mg/L	0.2	1	08/18/21 16:49	kja
Manganese, dissolved	M200.7 ICP	1	2.45			mg/L	0.01	0.05	08/18/21 16:49	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	08/20/21 13:16	mlh
Molybdenum, dissolved	M200.8 ICP-MS	1	0.00334			mg/L	0.0002	0.0005	08/23/21 14:31	bsu
Nickel, dissolved	M200.8 ICP-MS	1	0.00099	B		mg/L	0.0004	0.001	08/23/21 14:31	bsu
Potassium, dissolved	M200.7 ICP	1	12.0			mg/L	0.2	1	08/18/21 16:49	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/18/21 14:13	mlh
Selenium, dissolved	M200.8 ICP-MS	1	0.00015	B		mg/L	0.0001	0.00025	08/23/21 14:31	bsu
Silver, dissolved	M200.7 ICP	1	<0.01	U	*	mg/L	0.01	0.025	08/18/21 16:49	kja
Sodium, dissolved	M200.7 ICP	1	376		*	mg/L	0.2	1	08/18/21 16:49	kja
Thallium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/23/21 14:31	bsu
Uranium, dissolved	M200.8 ICP-MS	1	0.00083			mg/L	0.0001	0.0005	08/23/21 14:31	bsu
Zinc, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	08/18/21 16:49	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-07KD-20210812

ACZ Sample ID: **L67828-03**

Date Sampled: 08/12/21 12:45

Date Received: 08/14/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	281			mg/L	2	20	08/21/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Total Alkalinity		1	281			mg/L	2	20	08/21/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			3.3			%			10/05/21 0:00	calc
Sum of Anions			59			meq/L			10/05/21 0:00	calc
Sum of Cations			63			meq/L			10/05/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	409			mg/L	20	100	08/20/21 19:01	krh
Cyanide, Total	D7511-09	1	0.013			mg/L	0.003	0.01	08/16/21 11:40	md
Fluoride	M300.0 - Ion Chromatography	1	0.122	B	*	mg/L	0.05	0.25	08/20/21 0:18	krh
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	<0.02	U	*	mg/L	0.02	0.1	08/25/21 1:19	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	3780		*	mg/L	20	40	08/19/21 12:03	anc
Sulfate	M300.0 - Ion Chromatography	50	2010			mg/L	20	100	08/20/21 19:01	krh
TDS (calculated)	Calculation		3790			mg/L			10/05/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.00						10/05/21 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: **L67828**

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
WG525722													
WG525722PBW1	PBW	08/21/21 14:22				U	mg/L		-20	20			
WG525722LCSW2	LCSW	08/21/21 14:35	WC210806-1	820.0001		786.4	mg/L	96	90	110			
WG525722LCSW4	LCSW	08/21/21 17:54	WC210806-1	820.0001		791.7	mg/L	97	90	110			
WG525722PBW2	PBW	08/21/21 18:01				U	mg/L		-20	20			
L67829-01DUP	DUP	08/21/21 21:28			302	303.6	mg/L				1	20	
WG525722LCSW6	LCSW	08/21/21 21:43	WC210806-1	820.0001		811.7	mg/L	99	90	110			

Aluminum, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	2		1.999	mg/L	100	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.15	0.15			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	1.0008		1.035	mg/L	103	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	1.0008	U	1.1	mg/L	110	85	115			
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	1.0008	U	1.165	mg/L	116	85	115	6	20	MA

Arsenic, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525768													
WG525768ICV	ICV	08/23/21 13:15	MS210727-2	.05		.05157	mg/L	103	90	110			
WG525768ICB	ICB	08/23/21 13:17				U	mg/L		-0.00044	0.00044			
WG525768LFB	LFB	08/23/21 13:47	MS210727-5	.05005		.04706	mg/L	94	85	115			
L67761-04AS	AS	08/23/21 14:16	MS210727-5	.05005	.0142	.06942	mg/L	110	70	130			
L67761-04ASD	ASD	08/23/21 14:18	MS210727-5	.05005	.0142	.06802	mg/L	108	70	130	2	20	

Barium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	2		2.0045	mg/L	100	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.021	0.021			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	.5		.5038	mg/L	101	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	.5	.015	.5382	mg/L	105	85	115			
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	.5	.015	.5523	mg/L	107	85	115	3	20	

Beryllium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525768													
WG525768ICV	ICV	08/23/21 13:15	MS210727-2	.05		.050678	mg/L	101	90	110			
WG525768ICB	ICB	08/23/21 13:17				.000082	mg/L		-0.000176	0.000176			
WG525768LFB	LFB	08/23/21 13:47	MS210727-5	.05005		.048286	mg/L	96	85	115			
L67761-04AS	AS	08/23/21 14:16	MS210727-5	.05005	U	.053269	mg/L	106	70	130			
L67761-04ASD	ASD	08/23/21 14:18	MS210727-5	.05005	U	.052905	mg/L	106	70	130	1	20	

Rio Algom Mining Company

ACZ Project ID: **L67828**

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.

Boron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	2		1.988	mg/L	99	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.09	0.09			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	.5005		.52	mg/L	104	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	.5005	.258	.763	mg/L	101	85	115			
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	.5005	.258	.798	mg/L	108	85	115	4	20	

Cadmium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525768													
WG525768ICV	ICV	08/23/21 13:15	MS210727-2	.05		.051926	mg/L	104	90	110			
WG525768ICB	ICB	08/23/21 13:17				U	mg/L		-0.00011	0.00011			
WG525768LFB	LFB	08/23/21 13:47	MS210727-5	.05005		.047453	mg/L	95	85	115			
L67761-04AS	AS	08/23/21 14:16	MS210727-5	.05005	U	.052469	mg/L	105	70	130			
L67761-04ASD	ASD	08/23/21 14:18	MS210727-5	.05005	U	.051657	mg/L	103	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
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	100		97.75	mg/L	98	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.3	0.3			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	67.99734		68.34	mg/L	101	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	67.99734	582	597.8	mg/L	23	85	115			M3
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	67.99734	582	648.6	mg/L	98	85	115	8	20	

Chloride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523874													
WG523874ICV	ICV	07/22/21 20:38	WI210719-3	19.96		19.83	mg/L	99	90	110			
WG523874ICB	ICB	07/22/21 20:56				U	mg/L		-0.4	0.4			
WG525592													
WG525592LFB	LFB	08/19/21 21:55	WI210329-1	30		30.36	mg/L	101	90	110			
L67747-01AS	AS	08/19/21 23:06	WI210329-1	300	14.8	319.18	mg/L	101	90	110			
L67673-01DUP	DUP	08/20/21 18:07			794	794.57	mg/L				0	20	

Chromium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525768													
WG525768ICV	ICV	08/23/21 13:15	MS210727-2	.05		.05189	mg/L	104	90	110			
WG525768ICB	ICB	08/23/21 13:17				U	mg/L		-0.0011	0.0011			
WG525768LFB	LFB	08/23/21 13:47	MS210727-5	.05		.04712	mg/L	94	85	115			
L67761-04AS	AS	08/23/21 14:16	MS210727-5	.05	U	.05326	mg/L	107	70	130			
L67761-04ASD	ASD	08/23/21 14:18	MS210727-5	.05	U	.05248	mg/L	105	70	130	1	20	

Rio Algom Mining Company

ACZ Project ID: **L67828**

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.

Cobalt, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	2.004		1.951	mg/L	97	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.06	0.06			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	.5005		.493	mg/L	99	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	.5005	U	.475	mg/L	95	85	115			
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	.5005	U	.496	mg/L	99	85	115	4	20	

Copper, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	2		1.937	mg/L	97	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.03	0.03			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	.5		.504	mg/L	101	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	.5	U	.531	mg/L	106	85	115			
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	.5	U	.549	mg/L	110	85	115	3	20	

Cyanide, Total

D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525306													
WG525306ICV	ICV	08/16/21 11:08	WI210803-6	.3		.3141	mg/L	105	90	110			
WG525306ICB	ICB	08/16/21 11:10				U	mg/L		-0.003	0.003			
WG525306LFB	LFB	08/16/21 11:16	WI210803-5	.1		.1089	mg/L	109	84	116			
L67766-01AS	AS	08/16/21 11:20	WI210803-5	.1	U	.1077	mg/L	108	84	116			
L67766-01ASD	ASD	08/16/21 11:22	WI210803-5	.1	U	.1036	mg/L	104	84	116	4	20	

Fluoride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523874													
WG523874ICV	ICV	07/22/21 20:38	WI210719-3	4.004		4.04	mg/L	101	90	110			
WG523874ICB	ICB	07/22/21 20:56				U	mg/L		-0.05	0.05			
WG525592													
WG525592LFB	LFB	08/19/21 21:55	WI210329-1	1.5		1.519	mg/L	101	90	110			
L67747-01AS	AS	08/19/21 23:06	WI210329-1	15	U	14.783	mg/L	99	90	110			
L67673-01DUP	DUP	08/20/21 18:07			4.03	4.046	mg/L				0	20	RA

Iron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	2		1.999	mg/L	100	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.18	0.18			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	1.0001		1.027	mg/L	103	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	1.0001	U	1.037	mg/L	104	85	115			
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	1.0001	U	1.09	mg/L	109	85	115	5	20	

Rio Algom Mining Company

ACZ Project ID: **L67828**

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.

Lead, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525768													
WG525768ICV	ICV	08/23/21 13:15	MS210727-2	.05		.05143	mg/L	103	90	110			
WG525768ICB	ICB	08/23/21 13:17				U	mg/L		-0.00022	0.00022			
WG525768LFB	LFB	08/23/21 13:47	MS210727-5	.05005		.04747	mg/L	95	85	115			
L67761-04AS	AS	08/23/21 14:16	MS210727-5	.05005	.0001	.05288	mg/L	105	70	130			
L67761-04ASD	ASD	08/23/21 14:18	MS210727-5	.05005	.0001	.05225	mg/L	104	70	130	1	20	

Magnesium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	100		95.77	mg/L	96	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.6	0.6			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	50.00074		48.49	mg/L	97	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	50.00074	313	349.1	mg/L	72	85	115			M3
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	50.00074	313	371.8	mg/L	118	85	115	6	20	M3

Manganese, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	2		1.947	mg/L	97	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.03	0.03			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	.5005		.508	mg/L	101	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	.5005	.068	.575	mg/L	101	85	115			
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	.5005	.068	.601	mg/L	106	85	115	4	20	

Mercury, total

M245.1 CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525656													
WG525656ICV	ICV	08/20/21 13:07	HG210817-3	.00501		.00517	mg/L	103	95	105			
WG525656ICB	ICB	08/20/21 13:08				U	mg/L		-0.0002	0.0002			
WG525656LRB	LRB	08/20/21 13:09				U	mg/L		-0.00044	0.00044			
WG525656LFB	LFB	08/20/21 13:10	HG210817-6	.002002		.00173	mg/L	86	85	115			
L67806-01LFM	LFM	08/20/21 13:12	HG210817-6	.002002	U	.00176	mg/L	88	85	115			
L67806-01LFMD	LFMD	08/20/21 13:13	HG210817-6	.002002	U	.00173	mg/L	86	85	115	2	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525768													
WG525768ICV	ICV	08/23/21 13:15	MS210727-2	.01992		.01977	mg/L	99	90	110			
WG525768ICB	ICB	08/23/21 13:17				U	mg/L		-0.00044	0.00044			
WG525768LFB	LFB	08/23/21 13:47	MS210727-5	.0501		.04751	mg/L	95	85	115			
L67761-04AS	AS	08/23/21 14:16	MS210727-5	.0501	.00962	.05981	mg/L	100	70	130			
L67761-04ASD	ASD	08/23/21 14:18	MS210727-5	.0501	.00962	.05974	mg/L	100	70	130	0	20	

Rio Algom Mining Company

ACZ Project ID: **L67828**

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.

Nickel, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525768													
WG525768ICV	ICV	08/23/21 13:15	MS210727-2	.05		.05224	mg/L	104	90	110			
WG525768ICB	ICB	08/23/21 13:17				U	mg/L		-0.00088	0.00088			
WG525768LFB	LFB	08/23/21 13:47	MS210727-5	.05		.04671	mg/L	93	85	115			
L67761-04AS	AS	08/23/21 14:16	MS210727-5	.05	U	.05165	mg/L	103	70	130			
L67761-04ASD	ASD	08/23/21 14:18	MS210727-5	.05	U	.051	mg/L	102	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
WG525873													
WG525873ICV	ICV	08/24/21 23:25	WI210603-7	2.416		2.269	mg/L	94	90	110			
WG525873ICB	ICB	08/24/21 23:27				U	mg/L		-0.02	0.02			
WG525876													
WG525876LFB	LFB	08/25/21 0:44	WI210331-13	2		1.908	mg/L	95	90	110			
L67826-03DUP	DUP	08/25/21 1:09			.077	.07	mg/L				10	20	RA
L67826-02AS	AS	08/25/21 1:24	WI210331-13	2	U	2.09	mg/L	105	90	110			

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	20		19.79	mg/L	99	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.6	0.6			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	99.99574		100.6	mg/L	101	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	99.99574	4.2	112.9	mg/L	109	85	115			
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	99.99574	4.2	118.5	mg/L	114	85	115	5	20	

Residue, Filterable (TDS) @180C

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525585													
WG525585PBW	PBW	08/19/21 11:09				U	mg/L		-20	20			
WG525585LCSW	LCSW	08/19/21 11:12	PCN63839	1000		992	mg/L	99	80	120			
L67828-02DUP	DUP	08/19/21 11:59			2110	2092	mg/L				1	10	
L67880-01DUP	DUP	08/19/21 12:39			108	102	mg/L				6	10	RA
WG525920													
WG525920PBW	PBW	08/25/21 11:50				U	mg/L		-20	20			
WG525920LCSW	LCSW	08/25/21 11:53	PCN64124	1000		998	mg/L	100	80	120			
L67830-04DUP	DUP	08/25/21 13:20			7780	7656	mg/L				2	10	

Rio Algom Mining Company

ACZ Project ID: **L67828**

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.

Selenium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525768													
WG525768ICV	ICV	08/23/21 13:15	MS210727-2	.05		.05097	mg/L	102	90	110			
WG525768ICB	ICB	08/23/21 13:17				.00011	mg/L		-0.00022	0.00022			
WG525768LFB	LFB	08/23/21 13:47	MS210727-5	.05		.04637	mg/L	93	85	115			
L67761-04AS	AS	08/23/21 14:16	MS210727-5	.05	.00186	.05665	mg/L	110	70	130			
L67761-04ASD	ASD	08/23/21 14:18	MS210727-5	.05	.00186	.05554	mg/L	107	70	130	2	20	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525470													
WG525470ICV	ICV	08/18/21 11:01	SE210707-1	.025		.0263	mg/L	105	90	110			
WG525470ICB	ICB	08/18/21 11:03				U	mg/L		-0.006	0.006			
WG525495													
WG525495LRB	LRB	08/18/21 13:54				U	mg/L		-0.006	0.006			
WG525495LFB	LFB	08/18/21 13:56	SE210601-8	.0225		.0224	mg/L	100	85	115			
L67827-01LFM	LFM	08/18/21 14:04	SE210601-8	.0225	U	.0213	mg/L	95	85	115			
L67827-01LFMD	LFMD	08/18/21 14:06	SE210601-8	.0225	U	.0218	mg/L	97	85	115	2	20	

Silver, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	1		1.013	mg/L	101	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.03	0.03			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	.502		.52	mg/L	104	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	.502	U	.396	mg/L	79	85	115			M2 ZA
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	.502	U	.401	mg/L	80	85	115	1	20	M2 ZA

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	100		100.1	mg/L	100	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.6	0.6			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	100.0109		101.1	mg/L	101	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	100.0109	471	540.4	mg/L	69	85	115			M3
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	100.0109	471	570.2	mg/L	99	85	115	5	20	

Sulfate

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523874													
WG523874ICV	ICV	07/22/21 20:38	WI210719-3	51.15		49.54	mg/L	97	90	110			
WG523874ICB	ICB	07/22/21 20:56				U	mg/L		-0.4	0.4			
WG525592													
WG525592LFB	LFB	08/19/21 21:55	WI210329-1	29.97		28.69	mg/L	96	90	110			
L67747-01AS	AS	08/19/21 23:06	WI210329-1	299.7	574	845.62	mg/L	91	90	110			
L67673-01DUP	DUP	08/20/21 18:07			362	362.09	mg/L				0	20	

Rio Algom Mining Company

ACZ Project ID: **L67828**

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.

Thallium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525768													
WG525768ICV	ICV	08/23/21 13:15	MS210727-2	.05		.05259	mg/L	105	90	110			
WG525768ICB	ICB	08/23/21 13:17				U	mg/L		-0.00022	0.00022			
WG525768LFB	LFB	08/23/21 13:47	MS210727-5	.05		.04786	mg/L	96	85	115			
L67761-04AS	AS	08/23/21 14:16	MS210727-5	.05	U	.05375	mg/L	108	70	130			
L67761-04ASD	ASD	08/23/21 14:18	MS210727-5	.05	U	.05297	mg/L	106	70	130	1	20	

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525768													
WG525768ICV	ICV	08/23/21 13:15	MS210727-2	.05		.0517	mg/L	103	90	110			
WG525768ICB	ICB	08/23/21 13:17				U	mg/L		-0.00022	0.00022			
WG525768LFB	LFB	08/23/21 13:47	MS210727-5	.05		.04735	mg/L	95	85	115			
L67761-04AS	AS	08/23/21 14:16	MS210727-5	.05	.00103	.05472	mg/L	107	70	130			
L67761-04ASD	ASD	08/23/21 14:18	MS210727-5	.05	.00103	.05407	mg/L	106	70	130	1	20	

Zinc, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	2		1.956	mg/L	98	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.06	0.06			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	.50045		.513	mg/L	103	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	.50045	U	.513	mg/L	103	85	115			
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	.50045	U	.551	mg/L	110	85	115	7	20	

Rio Algom Mining Company

ACZ Project ID: **L67828**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67828-01	WG525491	Aluminum, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		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.
	WG525592	Fluoride	M300.0 - Ion Chromatography	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).
	WG525491	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.
	WG525876	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG525920	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
	WG525491	Silver, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
		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.
L67828-02	WG525491	Aluminum, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		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.
	WG525592	Fluoride	M300.0 - Ion Chromatography	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).
	WG525491	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.
	WG525876	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG525491	Silver, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
		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.

Rio Algom Mining Company

ACZ Project ID: **L67828**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67828-03	WG525491	Aluminum, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		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.
	WG525592	Fluoride	M300.0 - Ion Chromatography	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).
	WG525491	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.
	WG525876	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	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).
	WG525585	Residue, Filterable (TDS) @180C	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).
	WG525491	Silver, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
		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.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-06TRB-20210812

Locator:

ACZ Sample ID: **L67828-01**

Date Sampled: 08/12/21 10:25

Date Received: 08/14/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	09/09/21 15:13		-2.2	3.7	8.8	pCi/L	*	cer

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 8:53		0.0	22	3.2	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/17/21 0:27		1.8	0.21	0.14	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/13/21 17:43		5.1	0.94	1.8	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/12/21 16:26		0.511	0.26	0.27	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-05YRA-20210812

Locator:

ACZ Sample ID: **L67828-02**

Date Sampled: 08/12/21 11:30

Date Received: 08/14/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	09/09/21 15:13		2.5	2.6	5.8	pCi/L	*	cer

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 8:53		0.0	16	2.3	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/17/21 0:28		0.41	0.09	0.1	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/13/21 17:43		2	0.85	1.9	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/13/21 14:13		0.654	0.31	0.34	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-07KD-20210812

Locator:

ACZ Sample ID: **L67828-03**

Date Sampled: 08/12/21 12:45

Date Received: 08/14/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	09/09/21 15:13		3	3	6.7	pCi/L	*	cer

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 8:53		0.0	24	3.3	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/17/21 0:30		2	0.17	0.22	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/13/21 17:43		4	1.2	2.5	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/12/21 16:26		0.55	0.34	0.47	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.
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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://aczk.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf>

QUIVIRA

ACZ Project ID: **L67828**

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.

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
WG525663																
WG525663PBW	PBW	09/08/1921						2.3	1.4	3.3			6.6			
WG525663LCSW	LCSW	09/08/1921	PCN59614	93.77				88	3.1	2.9	94	55	121			
L67313-08DUP	DUP-RPD	09/09/21			5	3	6.5	4.2	4.5	10				17	20	
L67828-03MS	MS	09/09/21	PCN59614	187.53	3	3	6.7	170	6.4	5.8	89	55	121			
L67829-01DUP	DUP-RER	09/09/21			3.4	3.1	6.8	4.8	2.4	5.1				0.36	2	
L67829-01DUP	DUP-RPD	09/09/21			3.4	3.1	6.8	4.8	2.4	5.1				34	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
WG528203																
WG528203LCSW	LCSW	09/30/21	PCN64361	500				511	110	3.7	102	51	128			
WG528203PBW	PBW	09/30/21						0	20	2.6			5.2			
L67766-01DUP	DUP-RPD	10/01/21			0.326	2.3	2.9	0	41	5.2				200	20	RG
L67766-01DUP	DUP-RER	10/01/21			0.326	2.3	2.9	0	41	5.2				0.01	2	
L67959-01DUP	DUP-RPD	10/01/21			0	23	3.2	0	24	3.5				0	20	
L67828-01MS	MS	10/01/21	PCN64361	500	0	22	3.2	512	110	3.3	102	51	128			

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
WG526665																
WG526665PBW	PBW	09/17/21						.12	0.08	0.08			0.16			
WG526665LCSW	LCSW	09/17/21	PCN62879	20				19	0.52	0.09	95	43	148			
L67644-01DUP1	DUP-RPD	09/17/21			2	0.17	0.02	2.2	0.22	0.12				10	20	
L67644-02MS	MS	09/17/21	PCN62879	20	2.5	0.21	0.08	19	0.58	0.11	83	43	148			
L67756-01DUP2	DUP-RER	09/17/21			-0.01	0.06	0.08	.3	0.16	0.21				1.81	2	
L67756-01DUP2	DUP-RPD	09/17/21			-0.01	0.06	0.08	.3	0.16	0.21				214	20	RG

QUIVIRA

ACZ Project ID: **L67828**

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, 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
WG526233																
WG526233PBW	PBW	09/11/21						-.24	1.3	3.2			6.4			
WG526233LCSW	LCSW	09/11/21	PCN63356	9.47				7.6	1.2	2.3	80	47	123			
L67673-01DUP	DUP-RPD	09/11/21			1.7	0.85	1.9	2	1.5	3.7				16	20	
L67741-01MS	MS	09/11/21	PCN63356	9.47	0.92	0.71	1.7	7.7	1.1	1.8	72	47	123			
L67906-01DUP	DUP-RER	09/13/21			0.95	0.94	2.3	.18	0.88	2.1				0.6	2	
L67906-01DUP	DUP-RPD	09/13/21			0.95	0.94	2.3	.18	0.88	2.1				136	20	RG

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
WG526666																
WG526666LCSW	LCSW	09/12/21	PCN58726	200				211	26	0.44	106	91	126			
WG526666PBW	PBW	09/12/21						.301	0.23	0.33			0.66			
L67827-01MS	MS	09/12/21	PCN58726	200	0.576	0.33	0.43	224	28	0.47	112	91	126			
L67918-02DUP	DUP-RER	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				0.54	2	
L67918-02DUP	DUP-RPD	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				83	20	RG
L67766-01DUP	DUP-RPD	09/13/21			0.744	0.33	0.35	.741	0.38	0.49				0	20	

Rio Algom Mining Company

ACZ Project ID: **L67828**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67828-01	WG525663	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.
	WG528203	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.
	WG526665	Radium 226, dissolved	M903.1	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.
	WG526233	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.
L67828-02	WG525663	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.
	WG528203	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.
	WG526665	Radium 226, dissolved	M903.1	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.
	WG526233	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.
L67828-03	WG525663	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.
	WG528203	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.
	WG526665	Radium 226, dissolved	M903.1	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.
	WG526233	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.

Rio Algom Mining Company

ACZ Project ID: **L67828**

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
4510319940

ACZ Project ID: L67828

Date Received: 08/14/2021 10:10

Received By:

Date Printed: 8/17/2021

Receipt Verification

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

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) Are all labels on containers and are they intact and legible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11) For preserved bottle types, was the pH checked and within limits? ¹	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12) Is there sufficient sample volume to perform all requested work?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13) Is the custody seal intact on all containers?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14) Are samples that require zero headspace acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15) Are all sample containers appropriate for analytical requirements?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16) Is there an Hg-1631 trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17) Is there a VOA trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18) Were all samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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?
6554	22.7	NA	15	Yes
6579	1.2	<=6.0	15	Yes

Was ice present in the shipment container(s)?

Yes - Wet ice was present in the shipment container(s).

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

Rio Algom Mining Company
4510319940

ACZ Project ID: L67828

Date Received: 08/14/2021 10:10

Received By:

Date Printed: 8/17/2021

¹ 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), Na₂S₂O₃ preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

