

STATE OF
COLORADO

Eschberger - DNR, Amy <amy.eschberger@state.co.us>

November & December 2021 Schwartzwalder Surface Water Report

Elizabeth Busby <ebusby@ensero.com>

Tue, Feb 1, 2022 at 7:15 PM

To: "Eschberger - DNR, Amy" <amy.eschberger@state.co.us>, "daniel.arnold@denverwater.org" <daniel.arnold@denverwater.org>, Evelyn Rhodes <erhodes@arvada.org>, "eric.mink@state.co.us" <eric.mink@state.co.us>, "bwyant@arvada.org" <bwyant@arvada.org>
Cc: Jim Harrington <jimharrington@ensero.com>, Billy Ray <bray@ensero.com>, Evan Valencia <evalencia@ensero.com>

Ms. Eschberger, Mr. Mink, Mr. Arnold, Mr. Wyant, and Ms. Rhodes,

Here is the latest surface water sampling reports for Ralston Creek. These samples were collected in November and December 2021 from the Schwartzwalder Mine in Golden, Colorado. You can see from the date on the lab packet that our subcontract laboratory is experiencing delays. I understand this is due to COVID-19 supply chain disruptions. Please let me know if you have any questions, Liz

Elizabeth Busby, PE, PMP

Senior Project Manager



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4 attachments



DEC2021_Schwartz_RPT.pdf
753K



NOV2021_Schwartz_RPT.pdf
753K



L70424.csv
12K



L70091.csv
12K



12150 E. Briarwood Ave. Suite 135, Centennial, CO 80112
T. (303) 862-3928

February 2, 2022

Colorado Department of Public Health and Environment
Water Quality Control Division / WQCD-B2-CAS
Compliance Assurance Section
Attention: Eric Mink
4300 Cherry Creek Drive South
Denver, CO 80246-1530

Subject: November 2021 SW-AWD and SW-BPL Surface Monitoring Data for Sampling Stations, Schwartzwalder Mine, Paragraph 26, WQCD Order Number: IO 100601-1, June 1, 2010, Schwartzwalder Mine, Golden, Colorado

Dear Mr. Mink:

Pursuant to Paragraph 26 of the above referenced Order, please find enclosed data reports from contract laboratories as received by Ensero Solutions, Inc working on behalf of Colorado Legacy Land. This data originates from the analysis of the surface water sample collected in November 2021 at the Schwartzwalder Mine, monitoring station SW-AWD and SW-BPL. Review of the data indicates that the total and dissolved uranium concentrations at SW-AWD and SW-BPL were below 30 µg/L.

If you have any questions, please don't hesitate to contact me.

Sincerely,

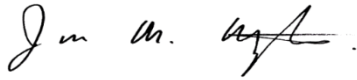
Jim Harrington, Managing Director
COLORADO LEGACY LAND
jim@ColoradoLegacy.Land

Distribution List:

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Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Jim Harrington, Managing Director
COLORADO LEGACY LAND



November 2021 Schwartzwalder Monthly Surface Water Report

Contents:

Sample Location	Sample Date	Analysis	Sample ID	Temp (°C)	Field pH (S.U.)	Conductivity (µS/cm)	DO (mg/L)	ORP (mV)
SW-AWD	11/19/2021	Sample Suite 2	L70091-02	5.9	7.66	286.2	8.50	127.6
SW-BPL	11/19/2021	Sample Suite 2	L70091-01	6.6	7.69	305.9	9.52	113.9

January 27, 2022

Report to:

Christie Brizinski
Ensero Solutions
131 E. Lincoln Ave Ste. 200
Fort Collins, CO 80524

Bill to:

Pauline Wong
Ensero Solutions
131 E. Lincoln Ave Ste. 200
Fort Collins, CO 80524

cc: Ensero/Alexco Importer, Evan Valencia

Project ID: 3100-PO205

ACZ Project ID: L70091

Christie Brizinski:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 23, 2021. This project has been assigned to ACZ's project number, L70091. Please reference this number in all future inquiries.

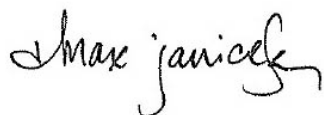
All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L70091. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

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 26, 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.



Max Janicek has reviewed and
approved this report.



Ensero Solutions

January 27, 2022

Project ID: 3100-PO205

ACZ Project ID: L70091

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 2 miscellaneous samples from Ensero Solutions on November 23, 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 L70091. 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:

The below is from WG532433

Qualifier: N1

Applies to:

L70091-01/TOTAL DISSOLVED SOLIDS

L70091-02/TOTAL DISSOLVED SOLIDS

Oven range is 80 C to 91 C. Over the weekend, the oven had a minor low temperature out of range. When the oven temperature was checked on Monday 11/29/21, the min temp read at 69.7' C. The WG was removed from the oven on 11/29/21 when the oven was back in range.

Ensero Solutions

Project ID: 3100-PO205

Sample ID: SW-BPL

ACZ Sample ID: **L70091-01**

Date Sampled: 11/19/21 10:40

Date Received: 11/23/21

Sample Matrix: Surface Water

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, WAD	SM4500-CN I- distillation								12/01/21 9:16	bls
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								12/03/21 11:19	bls
Total Hot Plate Digestion	M200.2 ICP-MS								12/02/21 8:45	mfm
Total Hot Plate Digestion	M200.2 ICP								12/07/21 11:02	jlw
Total Recoverable Digestion	M200.2 ICP-MS								11/30/21 9:10	mfm
Total Recoverable Digestion	M200.2 ICP								12/01/21 16:26	jlw

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, total recoverable	M200.8 ICP-MS	1	<0.0004	U		mg/L	0.0004	0.002	12/03/21 14:30	mfm
Arsenic, total	M200.8 ICP-MS	1	0.00035	B		mg/L	0.0002	0.001	12/06/21 22:04	bsu
Boron, total	M200.7 ICP	1	<0.03	U		mg/L	0.03	0.1	12/09/21 11:08	kja
Chromium, total recoverable	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	12/02/21 22:04	kja
Copper, dissolved	M200.7 ICP	1	0.013	B		mg/L	0.01	0.05	12/03/21 17:29	kja
Molybdenum, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.1	12/03/21 17:29	kja
Molybdenum, total	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.1	12/09/21 11:08	kja
Silver, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	12/09/21 12:28	mfm
Thallium, total recoverable	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	12/03/21 14:30	mfm
Uranium, dissolved	M200.8 ICP-MS	1	0.0256			mg/L	0.0001	0.0005	12/08/21 17:39	bsu
Uranium, total	M200.8 ICP-MS	1	0.0251			mg/L	0.0001	0.0005	12/06/21 22:04	bsu
Zinc, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	12/03/21 17:29	kja

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, WAD	SM4500-CN I,E- Colorimetric w/ distillation	0.5	<0.003	U	*	mg/L	0.003	0.01	12/01/21 16:13	mjj1
Fluoride	SM4500F-C	1	0.30	B		mg/L	0.15	0.35	12/08/21 20:17	eep
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.041	B	*	mg/L	0.02	0.1	12/10/21 1:31	pjb
Phosphate, total	Calculation based on total Phosphorus		<0.03	U		mg/L	0.03	0.2	01/27/22 0:00	calc
Phosphorus, total	M365.1 - Auto Ascorbic Acid	1	<0.01	U	*	mg/L	0.01	0.05	12/04/21 22:03	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	260		*	mg/L	20	40	11/24/21 16:41	scd
Residue, Non-Filterable (TSS) @105C	SM2540D	1	<5	U	*	mg/L	5	20	11/24/21 14:04	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	1	39.3		*	mg/L	1	5	12/06/21 21:57	mjj1

Ensero Solutions

Project ID: 3100-PO205

Sample ID: SW-AWD

ACZ Sample ID: **L70091-02**

Date Sampled: 11/19/21 11:20

Date Received: 11/23/21

Sample Matrix: Surface Water

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, WAD	SM4500-CN I- distillation								12/01/21 9:33	bls
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								12/03/21 11:36	bls
Total Hot Plate Digestion	M200.2 ICP-MS								12/02/21 8:45	mfm
Total Hot Plate Digestion	M200.2 ICP								12/07/21 11:16	jlw
Total Recoverable Digestion	M200.2 ICP-MS								11/30/21 9:10	mfm
Total Recoverable Digestion	M200.2 ICP								12/01/21 16:40	jlw

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, total recoverable	M200.8 ICP-MS	1	<0.0004	U		mg/L	0.0004	0.002	12/03/21 14:32	mfm
Arsenic, total	M200.8 ICP-MS	1	<0.0002	U		mg/L	0.0002	0.001	12/06/21 22:09	bsu
Boron, total	M200.7 ICP	1	<0.03	U		mg/L	0.03	0.1	12/09/21 11:11	kja
Chromium, total recoverable	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	12/02/21 22:07	kja
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	12/03/21 17:32	kja
Molybdenum, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.1	12/03/21 17:32	kja
Molybdenum, total	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.1	12/09/21 11:11	kja
Silver, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	12/09/21 12:30	mfm
Thallium, total recoverable	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	12/03/21 14:32	mfm
Uranium, dissolved	M200.8 ICP-MS	1	0.00354			mg/L	0.0001	0.0005	12/08/21 17:41	bsu
Uranium, total	M200.8 ICP-MS	1	0.00348			mg/L	0.0001	0.0005	12/06/21 22:09	bsu
Zinc, dissolved	M200.7 ICP	1	<0.02	U	*	mg/L	0.02	0.05	12/03/21 17:32	kja

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, WAD	SM4500-CN I,E- Colorimetric w/ distillation	0.5	<0.003	U	*	mg/L	0.003	0.01	12/01/21 16:14	mjj1
Fluoride	SM4500F-C	1	0.28	B		mg/L	0.15	0.35	12/08/21 20:37	eep
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	<0.02	U	*	mg/L	0.02	0.1	12/10/21 1:34	pjb
Phosphate, total	Calculation based on total Phosphorus		<0.03	U		mg/L	0.03	0.2	01/27/22 0:00	calc
Phosphorus, total	M365.1 - Auto Ascorbic Acid	1	<0.01	U	*	mg/L	0.01	0.05	12/04/21 22:05	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	254		*	mg/L	20	40	11/24/21 16:43	scd
Residue, Non-Filterable (TSS) @105C	SM2540D	1	<5	U	*	mg/L	5	20	11/24/21 14:07	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	1	31.6		*	mg/L	1	5	12/06/21 21:57	mjj1

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>

ENSERO

ACZ Project ID: **L70091**

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.

Antimony, total recoverable

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG532902													
WG532902ICV	ICV	12/03/21 13:40	MS211013-2	.0201		.01967	mg/L	98	90	110			
WG532902ICB	ICB	12/03/21 13:42				.0005	mg/L		-0.0012	0.0012			
WG532568LRB	LRB	12/03/21 13:43				U	mg/L		-0.00088	0.00088			
WG532568LFB	LFB	12/03/21 13:45	MS211115-2	.01		.01053	mg/L	105	85	115			
WG532902CCV1	CCV	12/03/21 14:01	MS211119-2	.0125		.01176	mg/L	94	90	110			
WG532902CCB1	CCB	12/03/21 14:03				U	mg/L		-0.0012	0.0012			
L70062-02LFM	LFM	12/03/21 14:21	MS211115-2	.01	U	.01109	mg/L	111	70	130			
WG532902CCV2	CCV	12/03/21 14:23	MS211119-2	.0125		.01204	mg/L	96	90	110			
WG532902CCB2	CCB	12/03/21 14:25				U	mg/L		-0.0012	0.0012			
L70062-02LFMD	LFMD	12/03/21 14:27	MS211115-2	.01	U	.01095	mg/L	110	70	130	1	20	
WG532902CCV3	CCV	12/03/21 14:38	MS211119-2	.0125		.01188	mg/L	95	90	110			
WG532902CCB3	CCB	12/03/21 14:39				U	mg/L		-0.0012	0.0012			

Arsenic, total

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG533031													
WG533031ICV	ICV	12/06/21 21:49	MS211013-2	.05		.04828	mg/L	97	90	110			
WG533031ICB	ICB	12/06/21 21:51				U	mg/L		-0.0006	0.0006			
WG532758LRB	LRB	12/06/21 21:53				U	mg/L		-0.00044	0.00044			
WG532758LFB	LFB	12/06/21 21:55	MS211115-2	.05005		.04651	mg/L	93	85	115			
L70045-03LFM	LFM	12/06/21 22:01	MS211115-2	.05005	.0037	.05115	mg/L	95	70	130			
L70045-03LFMD	LFMD	12/06/21 22:03	MS211115-2	.05005	.0037	.05106	mg/L	95	70	130	0	20	
WG533031CCV1	CCV	12/06/21 22:06	MS211119-2	.1001		.09543	mg/L	95	90	110			
WG533031CCB1	CCB	12/06/21 22:08				U	mg/L		-0.0006	0.0006			
WG533031CCV2	CCV	12/06/21 22:26	MS211119-2	.1001		.09729	mg/L	97	90	110			
WG533031CCB2	CCB	12/06/21 22:28				U	mg/L		-0.0006	0.0006			

Boron, total

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG533157													
WG533157ICV	ICV	12/09/21 10:43	II211124-3	2		2.005	mg/L	100	95	105			
WG533157ICB	ICB	12/09/21 10:49				U	mg/L		-0.09	0.09			
WG533157PQV	PQV	12/09/21 10:52	II211130-3	.1001		.108	mg/L	108	70	130			
WG533157SIC	SIC	12/09/21 10:55	II211130-5	.1001		.105	mg/L	105	80	120			
WG533046LRB	LRB	12/09/21 11:02				U	mg/L		-0.066	0.066			
WG533046LFB	LFB	12/09/21 11:05	II211118-4	.5005		.515	mg/L	103	85	115			
L70124-01LFM	LFM	12/09/21 11:20	II211118-4	.5005	.041	.53	mg/L	98	70	130			
L70124-01LFMD	LFMD	12/09/21 11:23	II211118-4	.5005	.041	.531	mg/L	98	70	130	0	20	
WG533157CCV1	CCV	12/09/21 11:32	II211206-1	1		.993	mg/L	99	90	110			
WG533157CCB1	CCB	12/09/21 11:35				U	mg/L		-0.09	0.09			
WG533157CCV2	CCV	12/09/21 12:09	II211206-1	1		1.004	mg/L	100	90	110			
WG533157CCB2	CCB	12/09/21 12:12				U	mg/L		-0.09	0.09			
WG533157CCV3	CCV	12/09/21 12:34	II211206-1	1		1.005	mg/L	101	90	110			
WG533157CCB3	CCB	12/09/21 12:37				U	mg/L		-0.09	0.09			

ENSERO

ACZ Project ID: **L70091**

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.

Chromium, total recoverable

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG532772													
WG532772ICV	ICV	12/02/21 20:28	II211118-1	2		1.934	mg/L	97	95	105			
WG532772ICB	ICB	12/02/21 20:34				U	mg/L		-0.06	0.06			
WG532772PQV	PQV	12/02/21 20:37	II211130-3	.05005		.053	mg/L	106	70	130			
WG532772SIC	SIC	12/02/21 20:40	II211130-4	.1001		.099	mg/L	99	80	120			
WG532672LRB	LRB	12/02/21 20:47				U	mg/L		-0.044	0.044			
WG532672LFB	LFB	12/02/21 20:50	II211118-4	.5005		.486	mg/L	97	85	115			
WG532772CCV1	CCV	12/02/21 21:17	II211118-2	1		.992	mg/L	99	90	110			
WG532772CCB1	CCB	12/02/21 21:20				U	mg/L		-0.06	0.06			
WG532772CCV2	CCV	12/02/21 21:55	II211118-2	1		1	mg/L	100	90	110			
WG532772CCB2	CCB	12/02/21 21:58				U	mg/L		-0.06	0.06			
L70098-01LFM	LFM	12/02/21 22:13	II211118-4	.5005	U	.5	mg/L	100	70	130			
L70098-01LFMD	LFMD	12/02/21 22:16	II211118-4	.5005	U	.495	mg/L	99	70	130	1	20	
WG532772CCV3	CCV	12/02/21 22:19	II211118-2	1		.998	mg/L	100	90	110			
WG532772CCB3	CCB	12/02/21 22:22				U	mg/L		-0.06	0.06			

Copper, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG532898													
WG532898ICV	ICV	12/03/21 16:24	II211118-1	2		1.973	mg/L	99	95	105			
WG532898ICB	ICB	12/03/21 16:30				U	mg/L		-0.03	0.03			
WG532898PQV	PQV	12/03/21 16:34	II211130-3	.05		.047	mg/L	94	70	130			
WG532898SIC	SIC	12/03/21 16:37	II211130-4	.1		.101	mg/L	101	80	120			
WG532898LFB	LFB	12/03/21 16:44	II211118-4	.5		.481	mg/L	96	85	115			
L70045-02AS	AS	12/03/21 17:00	II211118-4	.5	U	.472	mg/L	94	85	115			
L70045-02ASD	ASD	12/03/21 17:03	II211118-4	.5	U	.546	mg/L	109	85	115	15	20	
WG532898CCV1	CCV	12/03/21 17:16	II211118-2	1		.924	mg/L	92	90	110			
WG532898CCB1	CCB	12/03/21 17:19				U	mg/L		-0.03	0.03			
WG532898CCV2	CCV	12/03/21 17:55	II211118-2	1		.98	mg/L	98	90	110			
WG532898CCB2	CCB	12/03/21 17:58				U	mg/L		-0.03	0.03			
L70126-01AS	AS	12/03/21 18:05	II211118-4	.5	.64	1.086	mg/L	89	85	115			
L70126-01ASD	ASD	12/03/21 18:08	II211118-4	.5	.64	1.077	mg/L	87	85	115	1	20	
WG532898CCV3	CCV	12/03/21 18:17	II211118-2	1		.961	mg/L	96	90	110			
WG532898CCB3	CCB	12/03/21 18:21				U	mg/L		-0.03	0.03			

ENSERO

ACZ Project ID: **L70091**

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

Cyanide, WAD

SM4500-CN I,E-Colorimetric w/ distillation

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG532732													
WG532732ICV	ICV	12/01/21 16:09	WI211124-5	.3		.2932	mg/L	98	90	110			
WG532732ICB	ICB	12/01/21 16:10				U	mg/L		-0.003	0.003			
WG532661LRB	LRB	12/01/21 16:11				U	mg/L		-0.003	0.003			
WG532661LFB	LFB	12/01/21 16:12	WI211124-3	.2		.1896	mg/L	95	90	110			
L70091-01DUP	DUP	12/01/21 16:14			U	U	mg/L				0	20	RA
L70104-01LFM	LFM	12/01/21 16:16	WI211124-3	.2	.0037	.1586	mg/L	77	90	110			M2
WG532732CCV1	CCV	12/01/21 16:19	WI211122-16	.25		.2461	mg/L	98	90	110			
WG532732CCB1	CCB	12/01/21 16:20				U	mg/L		-0.003	0.003			
WG532732CCV2	CCV	12/01/21 16:30	WI211122-16	.25		.2456	mg/L	98	90	110			
WG532732CCB2	CCB	12/01/21 16:30				U	mg/L		-0.003	0.003			
WG532732CCV3	CCV	12/01/21 16:38	WI211122-16	.25		.2463	mg/L	99	90	110			
WG532732CCB3	CCB	12/01/21 16:39				U	mg/L		-0.003	0.003			

Fluoride

SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG533168													
WG533168ICV	ICV	12/08/21 17:10	WC211129-1	2.002		2.13	mg/L	106	90	110			
WG533168ICB	ICB	12/08/21 17:14				U	mg/L		-0.3	0.3			
WG533168PQV	PQV	12/08/21 17:19	WC211203-1	.3514		.36	mg/L	102	70	130			
WG533168LFB1	LFB	12/08/21 17:23	WC210803-9	5.02		5.17	mg/L	103	90	110			
WG533168CCV1	CCV	12/08/21 18:49	WC211129-1	2.002		2.17	mg/L	108	90	110			
WG533168CCB1	CCB	12/08/21 18:57				U	mg/L		-0.3	0.3			
WG533168CCV2	CCV	12/08/21 20:21	WC211129-1	2.002		2.18	mg/L	109	90	110			
WG533168CCB2	CCB	12/08/21 20:29				U	mg/L		-0.3	0.3			
L70102-02AS	AS	12/08/21 20:53	WC210803-9	5.02	.21	5.27	mg/L	101	90	110			
L70102-02ASD	ASD	12/08/21 21:01	WC210803-9	5.02	.21	5.19	mg/L	99	90	110	2	20	
WG533168LFB2	LFB	12/08/21 21:13	WC210803-9	5.02		5.29	mg/L	105	90	110			
WG533168CCV3	CCV	12/08/21 21:33	WC211129-1	2.002		2.17	mg/L	108	90	110			
WG533168CCB3	CCB	12/08/21 21:41				U	mg/L		-0.3	0.3			
WG533168CCV4	CCV	12/08/21 22:52	WC211129-1	2.002		2.2	mg/L	110	90	110			
WG533168CCB4	CCB	12/08/21 22:57				U	mg/L		-0.3	0.3			

ENSERO

ACZ Project ID: **L70091**

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
WG532898													
WG532898ICV	ICV	12/03/21 16:24	II211118-1	2		1.993	mg/L	100	95	105			
WG532898ICB	ICB	12/03/21 16:30				U	mg/L		-0.06	0.06			
WG532898PQV	PQV	12/03/21 16:34	II211130-3	.1002		.101	mg/L	101	70	130			
WG532898SIC	SIC	12/03/21 16:37	II211130-4	.1002		.091	mg/L	91	80	120			
WG532898LFB	LFB	12/03/21 16:44	II211118-4	.501		.495	mg/L	99	85	115			
L70045-02AS	AS	12/03/21 17:00	II211118-4	.501	U	.476	mg/L	95	85	115			
L70045-02ASD	ASD	12/03/21 17:03	II211118-4	.501	U	.458	mg/L	91	85	115	4	20	
WG532898CCV1	CCV	12/03/21 17:16	II211118-2	1		.938	mg/L	94	90	110			
WG532898CCB1	CCB	12/03/21 17:19				U	mg/L		-0.06	0.06			
WG532898CCV2	CCV	12/03/21 17:55	II211118-2	1		.988	mg/L	99	90	110			
WG532898CCB2	CCB	12/03/21 17:58				U	mg/L		-0.06	0.06			
L70126-01AS	AS	12/03/21 18:05	II211118-4	.501	U	.482	mg/L	96	85	115			
L70126-01ASD	ASD	12/03/21 18:08	II211118-4	.501	U	.478	mg/L	95	85	115	1	20	
WG532898CCV3	CCV	12/03/21 18:17	II211118-2	1		.97	mg/L	97	90	110			
WG532898CCB3	CCB	12/03/21 18:21				U	mg/L		-0.06	0.06			

Molybdenum, total

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG533157													
WG533157ICV	ICV	12/09/21 10:43	II211124-3	2		2	mg/L	100	95	105			
WG533157ICB	ICB	12/09/21 10:49				U	mg/L		-0.06	0.06			
WG533157PQV	PQV	12/09/21 10:52	II211130-3	.1002		.1	mg/L	100	70	130			
WG533157SIC	SIC	12/09/21 10:55	II211130-5	.1002		.092	mg/L	92	80	120			
WG533046LRB	LRB	12/09/21 11:02				U	mg/L		-0.044	0.044			
WG533046LFB	LFB	12/09/21 11:05	II211118-4	.501		.512	mg/L	102	85	115			
L70124-01LFM	LFM	12/09/21 11:20	II211118-4	.501	U	.494	mg/L	99	70	130			
L70124-01LFMD	LFMD	12/09/21 11:23	II211118-4	.501	U	.494	mg/L	99	70	130	0	20	
WG533157CCV1	CCV	12/09/21 11:32	II211206-1	1		.987	mg/L	99	90	110			
WG533157CCB1	CCB	12/09/21 11:35				U	mg/L		-0.06	0.06			
WG533157CCV2	CCV	12/09/21 12:09	II211206-1	1		.999	mg/L	100	90	110			
WG533157CCB2	CCB	12/09/21 12:12				U	mg/L		-0.06	0.06			
WG533157CCV3	CCV	12/09/21 12:34	II211206-1	1		.998	mg/L	100	90	110			
WG533157CCB3	CCB	12/09/21 12:37				U	mg/L		-0.06	0.06			

ENSERO

ACZ Project ID: **L70091**

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
WG533310													
WG533310ICV	ICV	12/10/21 0:15	WI211205-1	2.4161		2.344	mg/L	97	90	110			
WG533310ICB	ICB	12/10/21 0:16				U	mg/L		-0.02	0.02			
WG533313													
WG533313CCV1	CCV	12/10/21 1:26	WI211209-1	2		1.903	mg/L	95	90	110			
WG533313CCB1	CCB	12/10/21 1:29				U	mg/L		-0.02	0.02			
WG533313LFB1	LFB	12/10/21 1:30	WI211001-5	2		1.897	mg/L	95	90	110			
L70091-01AS	AS	12/10/21 1:33	WI211001-5	2	.041	2.01	mg/L	98	90	110			
L70091-02DUP	DUP	12/10/21 1:35			U	U	mg/L				0	20	RA
WG533313CCV2	CCV	12/10/21 1:43	WI211209-1	2		1.969	mg/L	98	90	110			
WG533313CCB2	CCB	12/10/21 1:46				U	mg/L		-0.02	0.02			
WG533313CCV3	CCV	12/10/21 2:00	WI211209-1	2		1.945	mg/L	97	90	110			
WG533313CCB3	CCB	12/10/21 2:03				U	mg/L		-0.02	0.02			
WG533313LFB2	LFB	12/10/21 2:11	WI211001-5	2		1.926	mg/L	96	90	110			
WG533313CCV4	CCV	12/10/21 2:19	WI211209-1	2		1.939	mg/L	97	90	110			
WG533313CCB4	CCB	12/10/21 2:22				U	mg/L		-0.02	0.02			

Phosphorus, total

M365.1 - Auto Ascorbic Acid (digest)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG532928													
WG532928ICV	ICV	12/04/21 21:54	WI211112-2	.65228		.673	mg/L	103	90	110			
WG532928ICB	ICB	12/04/21 21:57				U	mg/L		-0.01	0.01			
L70021-02LFM	LFM	12/04/21 22:01	WI211130-4	.5	U	.484	mg/L	97	90	110			
L70091-01DUP	DUP	12/04/21 22:04			U	U	mg/L				0	20	RA
WG532928CCV1	CCV	12/04/21 22:09	WI211112-4	.5		.495	mg/L	99	90	110			
WG532928CCB1	CCB	12/04/21 22:10				U	mg/L		-0.01	0.01			
WG532928CCV2	CCV	12/04/21 22:23	WI211112-4	.5		.499	mg/L	100	90	110			
WG532928CCB2	CCB	12/04/21 22:24				U	mg/L		-0.01	0.01			
WG532860LRB	LRB	12/04/21 22:32				U	mg/L		-0.01	0.01			
WG532860LFB	LFB	12/04/21 22:33	WI211130-4	.5		.496	mg/L	99	90	110			
WG532928CCV3	CCV	12/04/21 22:38	WI211112-4	.5		.501	mg/L	100	90	110			
WG532928CCB3	CCB	12/04/21 22:39				U	mg/L		-0.01	0.01			

Residue, Filterable (TDS) @180C

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG532433													
WG532433PBW	PBW	11/24/21 16:10				U	mg/L		-20	20			
WG532433LCSW	LCSW	11/24/21 16:11	PCN64720	1000		988	mg/L	99	80	120			
WG532433PQV	PQV	11/24/21 16:13	WC210907-8	40		42	mg/L	105	50	150			
L70091-02DUP	DUP	11/24/21 16:44			254	252	mg/L				1	10	

Residue, Non-Filterable (TSS) @105C

SM2540D

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG532423													
WG532423PBW	PBW	11/24/21 13:28				U	mg/L		-5	5			
WG532423LCSW	LCSW	11/24/21 13:30	PCN64720	100		99	mg/L	99	80	120			
L70103-03DUP	DUP	11/24/21 14:28			U	U	mg/L				0	10	RA

ENSERO

ACZ Project ID: **L70091**

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

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG533254													
WG533254ICV	ICV	12/09/21 12:23	MS211013-2	.02		.01935	mg/L	97	90	110			
WG533254ICB	ICB	12/09/21 12:24				U	mg/L		-0.00022	0.00022			
WG533254LFB	LFB	12/09/21 12:26	MS211115-2	.01		.0092	mg/L	92	85	115			
L70123-01AS	AS	12/09/21 12:33	MS211115-2	.01	U	.0086	mg/L	86	70	130			
L70123-01ASD	ASD	12/09/21 12:35	MS211115-2	.01	U	.00871	mg/L	87	70	130	1	20	
WG533254CCV1	CCV	12/09/21 12:44	MS211119-2	.02505		.02525	mg/L	101	90	110			
WG533254CCB1	CCB	12/09/21 12:46				U	mg/L		-0.0003	0.0003			
WG533254CCV2	CCV	12/09/21 13:06	MS211119-2	.02505		.02514	mg/L	100	90	110			
WG533254CCB2	CCB	12/09/21 13:08				U	mg/L		-0.0003	0.0003			
WG533254CCV3	CCV	12/09/21 13:17	MS211119-2	.02505		.02462	mg/L	98	90	110			
WG533254CCB3	CCB	12/09/21 13:19				U	mg/L		-0.0003	0.0003			

Sulfate

D516-02/-07/-11 - TURBIDIMETRIC

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG533039													
WG533039ICB	ICB	12/06/21 18:46				U	mg/L		-3	3			
WG533039ICV	ICV	12/06/21 18:46	WI211129-1	20		20.4	mg/L	102	90	110			
WG533039CCV1	CCV	12/06/21 21:53	WI211129-2	25		25.1	mg/L	100	90	110			
WG533039CCB1	CCB	12/06/21 21:53				U	mg/L		-3	3			
WG533039LFB	LFB	12/06/21 21:53	WI210105-3	10		10	mg/L	100	90	110			
WG533039CCV2	CCV	12/06/21 21:56	WI211129-2	25		25	mg/L	100	90	110			
WG533039CCB2	CCB	12/06/21 21:56				U	mg/L		-3	3			
L67718-17DUP	DUP	12/06/21 21:56			U	U	mg/L				0	20	M3 RA
WG533039CCV3	CCV	12/06/21 21:57	WI211129-2	25		25.1	mg/L	100	90	110			
WG533039CCB3	CCB	12/06/21 21:57				U	mg/L		-3	3			
WG533039CCV4	CCV	12/06/21 21:59	WI211129-2	25		25	mg/L	100	90	110			
WG533039CCB4	CCB	12/06/21 21:59				U	mg/L		-3	3			
WG533039CCV5	CCV	12/06/21 22:40	WI211129-2	25		25	mg/L	100	90	110			
WG533039CCB5	CCB	12/06/21 22:40				U	mg/L		-3	3			
L67719-17AS	AS	12/06/21 22:40	SO4TURB25X	10	492	498.9	mg/L	69	90	110			M3
WG533039CCV6	CCV	12/06/21 22:42	WI211129-2	25		25	mg/L	100	90	110			
WG533039CCB6	CCB	12/06/21 22:42				U	mg/L		-3	3			

Thallium, total recoverable

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG532902													
WG532902ICV	ICV	12/03/21 13:40	MS211013-2	.05		.05303	mg/L	106	90	110			
WG532902ICB	ICB	12/03/21 13:42				U	mg/L		-0.0003	0.0003			
WG532568LRB	LRB	12/03/21 13:43				U	mg/L		-0.00022	0.00022			
WG532568LFB	LFB	12/03/21 13:45	MS211115-2	.05		.04797	mg/L	96	85	115			
WG532902CCV1	CCV	12/03/21 14:01	MS211119-2	.1		.10017	mg/L	100	90	110			
WG532902CCB1	CCB	12/03/21 14:03				U	mg/L		-0.0003	0.0003			
L70062-02LFM	LFM	12/03/21 14:21	MS211115-2	.05	U	.05011	mg/L	100	70	130			
WG532902CCV2	CCV	12/03/21 14:23	MS211119-2	.1		.10131	mg/L	101	90	110			
WG532902CCB2	CCB	12/03/21 14:25				U	mg/L		-0.0003	0.0003			
L70062-02LFMD	LFMD	12/03/21 14:27	MS211115-2	.05	U	.0495	mg/L	99	70	130	1	20	
WG532902CCV3	CCV	12/03/21 14:38	MS211119-2	.1		.10054	mg/L	101	90	110			
WG532902CCB3	CCB	12/03/21 14:39				U	mg/L		-0.0003	0.0003			

ENSERO

ACZ Project ID: **L70091**

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
WG533177													
WG533177ICV	ICV	12/08/21 17:26	MS211013-2	.05		.0543	mg/L	109	90	110			
WG533177ICB	ICB	12/08/21 17:28				U	mg/L		-0.00022	0.00022			
WG533177LFB	LFB	12/08/21 17:30	MS211115-2	.05		.04954	mg/L	99	85	115			
L70064-01AS	AS	12/08/21 17:36	MS211115-2	.05	.00085	.05536	mg/L	109	70	130			
L70064-01ASD	ASD	12/08/21 17:38	MS211115-2	.05	.00085	.05629	mg/L	111	70	130	2	20	
WG533177CCV1	CCV	12/08/21 17:43	MS211119-2	.1		.09965	mg/L	100	90	110			
WG533177CCB1	CCB	12/08/21 17:44				U	mg/L		-0.0003	0.0003			
WG533177CCV2	CCV	12/08/21 18:02	MS211119-2	.1		.09939	mg/L	99	90	110			E6
WG533177CCB2	CCB	12/08/21 18:03				U	mg/L		-0.0003	0.0003			
WG533177CCV3	CCV	12/08/21 18:16	MS211119-2	.1		.10006	mg/L	100	90	110			
WG533177CCB3	CCB	12/08/21 18:18				U	mg/L		-0.0003	0.0003			

Uranium, total

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG533031													
WG533031ICV	ICV	12/06/21 21:49	MS211013-2	.05		.05138	mg/L	103	90	110			
WG533031ICB	ICB	12/06/21 21:51				U	mg/L		-0.0003	0.0003			
WG532758LRB	LRB	12/06/21 21:53				U	mg/L		-0.00022	0.00022			
WG532758LFB	LFB	12/06/21 21:55	MS211115-2	.05		.04894	mg/L	98	85	115			
L70045-03LFM	LFM	12/06/21 22:01	MS211115-2	.05	.00087	.0502	mg/L	99	70	130			
L70045-03LFMD	LFMD	12/06/21 22:03	MS211115-2	.05	.00087	.05034	mg/L	99	70	130	0	20	
WG533031CCV1	CCV	12/06/21 22:06	MS211119-2	.1		.09829	mg/L	98	90	110			
WG533031CCB1	CCB	12/06/21 22:08				U	mg/L		-0.0003	0.0003			
WG533031CCV2	CCV	12/06/21 22:26	MS211119-2	.1		.09831	mg/L	98	90	110			
WG533031CCB2	CCB	12/06/21 22:28				U	mg/L		-0.0003	0.0003			

Zinc, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG532898													
WG532898ICV	ICV	12/03/21 16:24	II211118-1	2		1.999	mg/L	100	95	105			
WG532898ICB	ICB	12/03/21 16:30				U	mg/L		-0.06	0.06			
WG532898PQV	PQV	12/03/21 16:34	II211130-3	.05015		.055	mg/L	110	70	130			
WG532898SIC	SIC	12/03/21 16:37	II211130-4	.1003		.1	mg/L	100	80	120			
WG532898LFB	LFB	12/03/21 16:44	II211118-4	.50045		.507	mg/L	101	85	115			
L70045-02AS	AS	12/03/21 17:00	II211118-4	.50045	U	.501	mg/L	100	85	115			
L70045-02ASD	ASD	12/03/21 17:03	II211118-4	.50045	U	.484	mg/L	97	85	115	3	20	
WG532898CCV1	CCV	12/03/21 17:16	II211118-2	1		.942	mg/L	94	90	110			
WG532898CCB1	CCB	12/03/21 17:19				U	mg/L		-0.06	0.06			
WG532898CCV2	CCV	12/03/21 17:55	II211118-2	1		1.004	mg/L	100	90	110			
WG532898CCB2	CCB	12/03/21 17:58				U	mg/L		-0.06	0.06			
L70126-01AS	AS	12/03/21 18:05	II211118-4	.50045	5.37	5.525	mg/L	31	85	115			M3
L70126-01ASD	ASD	12/03/21 18:08	II211118-4	.50045	5.37	5.511	mg/L	28	85	115	0	20	M3
WG532898CCV3	CCV	12/03/21 18:17	II211118-2	1		.978	mg/L	98	90	110			
WG532898CCB3	CCB	12/03/21 18:21				U	mg/L		-0.06	0.06			

Ensero Solutions

ACZ Project ID: **L70091**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70091-01	WG532732	Cyanide, WAD	SM4500-CN I,E-Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500-CN I,E-Colorimetric w/ distillation	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).
	WG533313	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).
	WG532928	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	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).
	WG532433	Residue, Filterable (TDS) @180C	SM2540C	N1	See Case Narrative.
	WG532423	Residue, Non-Filterable (TSS) @105C	SM2540D	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).
			SM2540D	Z3	Sample volume yielded a residue less than 2.5 mg
			D516-02/-07/-11 - TURBIDIMETRIC	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02/-07/-11 - TURBIDIMETRIC	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).
	WG533039	Sulfate			
L70091-02	WG532732	Cyanide, WAD	SM4500-CN I,E-Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500-CN I,E-Colorimetric w/ distillation	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).
	WG533313	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).
	WG532928	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	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).
	WG532433	Residue, Filterable (TDS) @180C	SM2540C	N1	See Case Narrative.
	WG532423	Residue, Non-Filterable (TSS) @105C	SM2540D	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).
			SM2540D	Z3	Sample volume yielded a residue less than 2.5 mg
			D516-02/-07/-11 - TURBIDIMETRIC	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02/-07/-11 - TURBIDIMETRIC	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).
	WG532898	Zinc, 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.

Ensero Solutions

Project ID: 3100-PO205

Sample ID: SW-BPL

Locator:

ACZ Sample ID: **L70091-01**

Date Sampled: 11/19/21 10:40

Date Received: 11/23/21

Sample Matrix: Surface Water

Combined Radium (total)

Prep Method:

Calculation (RA226 + RA228)

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Combined Radium (total)	01/27/22 11:31		0.15			pCi/L		calc

Gross Alpha & Beta, total

Prep Method:

M900.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	12/21/21 0:05		13	4.2	6	pCi/L	*	ttg
Gross Beta	12/21/21 0:05		15	3.7	11	pCi/L	*	ttg

Radium 226, total

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, total	01/26/22 0:15		0.15	0.07	0.15	pCi/L		fdw

Radium 228, total

Prep Method:

M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, total	12/31/21 13:43		0.06	0.95	2.1	pCi/L	*	ttg

Ensero Solutions

Project ID: 3100-PO205

Sample ID: SW-AWD

Locator:

ACZ Sample ID: **L70091-02**

Date Sampled: 11/19/21 11:20

Date Received: 11/23/21

Sample Matrix: *Surface Water*

Combined Radium (total)

Prep Method:

Calculation (RA226 + RA228)

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Combined Radium (total)	01/27/22 11:31		0			pCi/L		calc

Gross Alpha & Beta, total

Prep Method:

M900.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	12/21/21 0:07		2.5	2.3	7.5	pCi/L	*	ttg
Gross Beta	12/21/21 0:07		4.2	3.1	7.8	pCi/L	*	ttg

Radium 226, total

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, total	01/26/22 0:18		0.08	0.05	0.25	pCi/L		fdw

Radium 228, total

Prep Method:

M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, total	12/31/21 17:57		-0.14	0.88	2.2	pCi/L	*	ttg

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>

ENSERO

ACZ Project ID: **L70091**

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.

Alpha		M900.0										Units: pCi/L				
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG533476																
WG533476PBW	PBW	12/21/21						.95	0.98	4.2			8.4			
WG533476LCSWA	LCSW	12/21/21	PCN64375	100				120	9.3	4.7	120	67	144			
L70164-01DUP	DUP-RPD	12/21/21			-0.36	1.7	7.6	2.6	2.4	13				264	20	RG
L70164-01DUP	DUP-RER	12/21/21			-0.36	1.7	7.6	2.6	2.4	13				1.01	2	
L70355-01MSA	MS	12/21/21	PCN64375	1000	43	36	280	760	110	270	72	67	144			
L70385-01DUP	DUP-RPD	12/21/21			180	22	17	160	19	13				12	20	

Beta		M900.0										Units: pCi/L				
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG533476																
WG533476PBW	PBW	12/21/21						1.2	1.8	5.1			10.2			
WG533476LCSWB	LCSW	12/21/21	PCN63439	99.8				110	6.9	13	110	82	122			
L70164-01DUP	DUP-RPD	12/21/21			1.9	3.2	9.7	5	3.2	14				90	20	RG
L70164-01DUP	DUP-RER	12/21/21			1.9	3.2	9.7	5	3.2	14				0.69	2	
L70355-02MSB	MS	12/21/21	PCN63439	998	-8.6	28	87	1100	75	66	111	82	122			
L70385-01DUP	DUP-RPD	12/21/21			55	7.2	9.2	56	7.5	16				2	20	

Radium 226, total		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
WG533488																
WG533488LCSW	LCSW	01/26/22	PCN64374	20				16	0.4	0.06	80	43	148			
WG533488PBW	PBW	01/26/22						.01	0.07	0.08			0.16			
L69999-05DUP	DUP-RPD	01/26/22			0.05	0.06	0.32	.05	0.05	0.31				0	20	
L70091-01MS	MS	01/26/22	PCN64374	20	0.15	0.07	0.15	15	0.39	0.23	74	43	148			
L70387-01DUP	DUP-RPD	01/26/22			0.09	0.05	0.24	.09	0.05	0.2				0	20	

ENSERO

ACZ Project ID: **L70091**

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

Radium 228, total

M904.0

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG533765																
WG533765LCSW	LCSW	12/31/21	PCN64684	9.74				7.8	1.5	2.8	80	47	123			
WG533765PBW	PBW	12/31/21						.34	0.55	1.4			2.8			
L70059-01DUP	DUP-RER	12/31/21			-0.66	1.1	2.5	.39	1	2.5				0.71	2	
L70059-01DUP	DUP-RPD	12/31/21			-0.66	1.1	2.5	.39	1	2.5				778	20	RG
L70059-02MS	MS	12/31/21	PCN64684	9.74	0.02	0.92	2.2	7.5	1.3	2.3	77	47	123			
L70164-01DUP	DUP-RPD	12/31/21			0.81	0.91	2.4	-.68	0.99	2.4				2292	20	RG
L70164-01DUP	DUP-RER	12/31/21			0.81	0.91	2.4	-.68	0.99	2.4				1.11	2	

Ensero Solutions

ACZ Project ID: **L70091**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70091-01	WG533476	Gross Alpha	M900.0	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.
		Gross Beta	M900.0	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.
	WG533765	Radium 228, total	M904.0	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.
L70091-02	WG533476	Gross Alpha	M900.0	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.
		Gross Beta	M900.0	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.
	WG533765	Radium 228, total	M904.0	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.

Ensero Solutions

ACZ Project ID: **L70091**

No certification qualifiers associated with this analysis

Ensero Solutions
3100-PO205

ACZ Project ID: L70091
Date Received: 11/23/2021 12:40
Received By:
Date Printed: 11/24/2021

Receipt Verification

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

Samples/Containers

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

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?
-----	-----	-----	-----	-----
6657	2.5	<=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.

Ensero Solutions
3100-PO205

ACZ Project ID: L70091

Date Received: 11/23/2021 12:40

Received By:

Date Printed: 11/24/2021

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).

**Laboratories, Inc.***L70091***CHAIN of CUSTODY**

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

Report to:

Name: Christie Brizinski

Company: Ensero Solutions

E-mail: cbrizinski@ensero.com

Address: 131 E. Lincoln Ave Ste. 200

Fort Collins, CO 80524

Telephone: 867-668-6463, ext 229

Copy of Report to:

Name: Evan Valencia

Company: Ensero Solutions

E-mail: evalencia@ensero.com

Telephone: 818-688-1839

Invoice to:

Name: Pauline Wong

Company: Ensero Solutions

E-mail: ap@ensero.com

Address: 131 E. Lincoln Ave Ste. 200

Fort Collins, CO 80524

Telephone: 778-404-1182

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: EV, JW

Sampler's Site Information

State CO

Zip code 80401

Time Zone MTN

*Sampler's Signature: *Evan Valencia*

*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 #: Ensero-2020

PO#: 3100-PO205

Reporting state for compliance testing: CO

Check box if samples include NRC licensed material?



SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	TSS	Sample suite #1	Sample suite #2	COD	LLH	Sample suite #3	TDS	
SW-BPL	11-19-2021: 10:40	SW	8	☐	☐	☒	☐	☐	☐	☐	☐
SW-AWD	11-19-2021: 11:20	SW	8	☐	☐	☒	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
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