



333 W. Hampden Ave., Suite 935, Englewood, CO 80110

October 03, 2023

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

Subject: August 2023 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. Dyste:

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 August 2023 at the Schwartzwalder Mine, monitoring station SW-AWD and SW-BPL. Review of the data indicates 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,

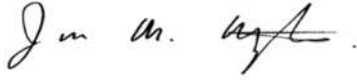
Jim Harrington, Managing Director
COLORADO LEGACY LAND
jim@ColoradoLegacy.Land

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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



August 2023 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	08/18/2023	Sample Suite 2	L82594-01	20.9	7.81	410.6	5.42	185.8
SW-BPL	08/18/2023	Sample Suite 2	L82594-02	20.9	7.82	335.1	6.31	-

Note: SW-BPL ORP was not recorded.

September 27, 2023

Report to:

Nate Lambert
Ensero Solutions
333 W. Hampden Ave
Ste.935
Denver, CO 80110

Bill to:

Pauline Wong
Ensero Solutions
333 W. Hampden Ave. 935
Denver, CO 80110

cc: Ensero/Alexco Importer, Ainsley Stewart

Project ID: 3100 PO 1923

ACZ Project ID: L82594

Nate Lambert:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 22, 2023. This project has been assigned to ACZ's project number, L82594. 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 L82594. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

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

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

All samples and sub-samples associated with this project will be disposed of after October 27, 2023. 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.

Madeleine Murray

Madeleine Murray has reviewed
and approved this report.



Ensero Solutions

Project ID: 3100 PO 1923

Sample ID: SW-AWD

ACZ Sample ID: **L82594-01**

Date Sampled: 08/18/23 13:21

Date Received: 08/22/23

Sample Matrix: Surface Water

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, WAD	SM4500-CN I- distillation								09/05/23 9:34	aps
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								09/06/23 10:41	aps
Total Hot Plate Digestion	M200.2 ICP-MS								08/30/23 13:57	kja
Total Hot Plate Digestion	M200.2 ICP								09/01/23 9:52	aeH
Total Recoverable Digestion	M200.2 ICP-MS								08/31/23 17:24	jrj
Total Recoverable Digestion	M200.2 ICP								08/31/23 10:27	smw

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	09/01/23 19:56	kja
Arsenic, total	M200.8 ICP-MS	1	<0.0002	U		mg/L	0.0002	0.001	08/31/23 15:47	kja
Boron, total	M200.7 ICP	1	<0.03	U		mg/L	0.03	0.1	09/07/23 3:50	aeH
Chromium, total recoverable	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	09/05/23 20:01	aeH
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	09/12/23 16:54	aeH
Molybdenum, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.1	09/08/23 23:08	aeH
Molybdenum, total	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.1	09/07/23 14:01	aeH
Silver, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	09/12/23 14:24	kja
Thallium, total recoverable	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	09/01/23 19:56	kja
Uranium, dissolved	M200.8 ICP-MS	1	0.00165			mg/L	0.0001	0.0005	09/08/23 15:30	kja
Uranium, total	M200.8 ICP-MS	1	0.00180			mg/L	0.0001	0.0005	08/31/23 15:47	kja
Zinc, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	09/08/23 23:08	aeH

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	UH	*	mg/L	0.003	0.01	09/11/23 17:41	gkk
Fluoride	SM4500F-C	1	0.34	BH	*	mg/L	0.15	0.35	09/20/23 18:36	svm
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	<0.02	U		mg/L	0.02	0.1	09/07/23 0:27	pjb
Phosphate, total	Calculation based on total Phosphorus		<0.03	U		mg/L	0.03	0.2	09/27/23 0:00	calc
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	<0.01	U	*	mg/L	0.01	0.05	09/15/23 14:16	gkk
Residue, Filterable (TDS) @180C	SM2540C	1	246			mg/L	20	40	08/24/23 14:07	emk
Residue, Non-Filterable (TSS) @105C	SM2540D	1	<5	U	*	mg/L	5	20	08/25/23 12:15	cm
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	1	11.2			mg/L	1	5	09/13/23 13:56	aps

Ensero Solutions

Project ID: 3100 PO 1923

Sample ID: SW-BPL

ACZ Sample ID: **L82594-02**

Date Sampled: 08/18/23 13:54

Date Received: 08/22/23

Sample Matrix: Surface Water

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, WAD	SM4500-CN I- distillation								09/05/23 9:41	aps
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								09/06/23 10:50	aps
Total Hot Plate Digestion	M200.2 ICP-MS								08/30/23 14:08	kja
Total Hot Plate Digestion	M200.2 ICP								09/01/23 10:06	aeh
Total Recoverable Digestion	M200.2 ICP-MS								08/31/23 17:35	jrj
Total Recoverable Digestion	M200.2 ICP								08/31/23 10:40	smw

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	09/01/23 19:58	kja
Arsenic, total	M200.8 ICP-MS	1	0.00231			mg/L	0.0002	0.001	08/31/23 15:49	kja
Boron, total	M200.7 ICP	1	0.068	B		mg/L	0.03	0.1	09/07/23 3:54	aeh
Chromium, total recoverable	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	09/05/23 20:04	aeh
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	09/12/23 16:57	aeh
Molybdenum, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.1	09/08/23 23:11	aeh
Molybdenum, total	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.1	09/07/23 14:04	aeh
Silver, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	09/12/23 14:26	kja
Thallium, total recoverable	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	09/01/23 19:58	kja
Uranium, dissolved	M200.8 ICP-MS	1	0.0123			mg/L	0.0001	0.0005	09/08/23 15:31	kja
Uranium, total	M200.8 ICP-MS	1	0.0124			mg/L	0.0001	0.0005	08/31/23 15:49	kja
Zinc, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	09/08/23 23:11	aeh

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	UH	*	mg/L	0.003	0.01	09/11/23 17:42	gkk
Fluoride	SM4500F-C	1	0.31	BH	*	mg/L	0.15	0.35	09/20/23 18:48	svm
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.202			mg/L	0.02	0.1	09/07/23 0:29	pjb
Phosphate, total	Calculation based on total Phosphorus		<0.03	U		mg/L	0.03	0.2	09/27/23 0:00	calc
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	<0.01	U	*	mg/L	0.01	0.05	09/15/23 14:18	gkk
Residue, Filterable (TDS) @180C	SM2540C	1	190			mg/L	20	40	08/24/23 14:09	emk
Residue, Non-Filterable (TSS) @105C	SM2540D	1	<5	U	*	mg/L	5	20	08/25/23 12:17	cm
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	1	12.0			mg/L	1	5	09/13/23 13:57	aps


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: **L82594**

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
WG573476													
WG573476ICV	ICV	09/01/23 19:45	MS230712-3	.02002		.01919	mg/L	96	90	110			
WG573476ICB	ICB	09/01/23 19:47				U	mg/L		-0.0012	0.0012			
WG573428LRB	LRB	09/01/23 19:49				U	mg/L		-0.00088	0.00088			
WG573428LFB	LFB	09/01/23 19:51	MS230825-2	.01		.01035	mg/L	104	85	115			
WG573476CCV1	CCV	09/01/23 20:04	MS230830-3	.0125		.01249	mg/L	100	90	110			
WG573476CCB1	CCB	09/01/23 20:05				U	mg/L		-0.0012	0.0012			
L82767-05LFM	LFM	09/01/23 20:15	MS230825-2	.01	U	.0039	mg/L	39	70	130			M2
L82767-05LFMD	LFMD	09/01/23 20:17	MS230825-2	.01	U	.00375	mg/L	38	70	130	4	20	M2
WG573476CCV2	CCV	09/01/23 20:26	MS230830-3	.0125		.01235	mg/L	99	90	110			
WG573476CCB2	CCB	09/01/23 20:28				U	mg/L		-0.0012	0.0012			
WG573476CCV3	CCV	09/01/23 20:44	MS230830-3	.0125		.01246	mg/L	100	90	110			
WG573476CCB3	CCB	09/01/23 20:46				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
WG573422													
WG573422ICV	ICV	08/31/23 15:21	MS230712-3	.05		.05192	mg/L	104	90	110			
WG573422ICB	ICB	08/31/23 15:23				U	mg/L		-0.0006	0.0006			
WG573282LRB	LRB	08/31/23 15:25				U	mg/L		-0.00044	0.00044			
WG573282LFB	LFB	08/31/23 15:27	MS230825-2	.0501		.05108	mg/L	102	85	115			
L82584-03LFM	LFM	08/31/23 15:36	MS230825-2	.0501	.00071	.05019	mg/L	99	70	130			
L82584-03LFMD	LFMD	08/31/23 15:38	MS230825-2	.0501	.00071	.05054	mg/L	99	70	130	1	20	
WG573422CCV1	CCV	08/31/23 15:40	MS230830-3	.1002		.09748	mg/L	97	90	110			
WG573422CCB1	CCB	08/31/23 15:42				U	mg/L		-0.0006	0.0006			
WG573422CCV2	CCV	08/31/23 16:02	MS230830-3	.1002		.0981	mg/L	98	90	110			
WG573422CCB2	CCB	08/31/23 16:03				U	mg/L		-0.0006	0.0006			
WG573422CCV3	CCV	08/31/23 16:20	MS230830-3	.1002		.10032	mg/L	100	90	110			
WG573422CCB3	CCB	08/31/23 16:22				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
WG573695													
WG573695ICV	ICV	09/07/23 3:18	II230905-1	2		2.032	mg/L	102	95	105			
WG573695ICB	ICB	09/07/23 3:25				U	mg/L		-0.09	0.09			
WG573695PQV	PQV	09/07/23 3:28	II230821-2	.1001		.1	mg/L	100	70	130			
WG573695SIC	SIC	09/07/23 3:31	II230821-4	.1001		.091	mg/L	91	80	120			
WG573484LRB	LRB	09/07/23 3:37				U	mg/L		-0.066	0.066			
WG573484LFB	LFB	09/07/23 3:41	II230831-6	.5005		.489	mg/L	98	85	115			
L82628-01LFM	LFM	09/07/23 4:00	II230831-6	.5005	.069	.563	mg/L	99	70	130			
L82628-01LFMD	LFMD	09/07/23 4:03	II230831-6	.5005	.069	.572	mg/L	100	70	130	2	20	
WG573695CCV1	CCV	09/07/23 4:10	II230821-6	1		1.023	mg/L	102	90	110			
WG573695CCB1	CCB	09/07/23 4:13				U	mg/L		-0.09	0.09			
WG573695CCV2	CCV	09/07/23 4:48	II230821-6	1		1.015	mg/L	102	90	110			
WG573695CCB2	CCB	09/07/23 4:52				U	mg/L		-0.09	0.09			
WG573695CCV3	CCV	09/07/23 5:14	II230821-6	1		1.012	mg/L	101	90	110			
WG573695CCB3	CCB	09/07/23 5:17				U	mg/L		-0.09	0.09			

ENSERO

ACZ Project ID: **L82594**

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
WG573576													
WG573576ICV	ICV	09/05/23 19:29	II230831-3	2		2.001	mg/L	100	95	105			
WG573576ICB	ICB	09/05/23 19:35				U	mg/L		-0.06	0.06			
WG573576PQV	PQV	09/05/23 19:39	II230821-2	.05005		.051	mg/L	102	70	130			
WG573576SIC	SIC	09/05/23 19:42	II230821-5	.1001		.105	mg/L	105	80	120			
WG573362LRB	LRB	09/05/23 19:48				U	mg/L		-0.044	0.044			
WG573362LFB	LFB	09/05/23 19:51	II230804-2	.5005		.506	mg/L	101	85	115			
WG573576CCV1	CCV	09/05/23 20:20	II230815-1	1		1.01	mg/L	101	90	110			
WG573576CCB1	CCB	09/05/23 20:24				U	mg/L		-0.06	0.06			
L82681-01LFM	LFM	09/05/23 20:36	II230804-2	.5005	U	.507	mg/L	101	70	130			
L82681-01LFMD	LFMD	09/05/23 20:40	II230804-2	.5005	U	.507	mg/L	101	70	130	0	20	
WG573576CCV2	CCV	09/05/23 20:59	II230815-1	1		1.006	mg/L	101	90	110			
WG573576CCB2	CCB	09/05/23 21:02				U	mg/L		-0.06	0.06			
WG573576CCV3	CCV	09/05/23 21:25	II230815-1	1		.99	mg/L	99	90	110			
WG573576CCB3	CCB	09/05/23 21:28				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
WG574068													
WG574068ICV	ICV	09/12/23 16:14	II230905-2	2		1.893	mg/L	95	95	105			
WG574068ICB	ICB	09/12/23 16:20				U	mg/L		-0.03	0.03			
WG574068PQV	PQV	09/12/23 16:23	II230821-2	.05005		.051	mg/L	102	70	130			
WG574068SIC	SIC	09/12/23 16:26	II230821-5	.1001		.096	mg/L	96	80	120			
WG574068LFB	LFB	09/12/23 16:33	II230907-5	.5005		.488	mg/L	98	85	115			
L82036-11AS	AS	09/12/23 16:42	II230907-5	.5005	U	.488	mg/L	98	85	115			
L82036-11ASD	ASD	09/12/23 16:45	II230907-5	.5005	U	.494	mg/L	99	85	115	1	20	
WG574068CCV1	CCV	09/12/23 17:03	II230906-1	1		.958	mg/L	96	90	110			
WG574068CCB1	CCB	09/12/23 17:06				U	mg/L		-0.03	0.03			
WG574068CCV2	CCV	09/12/23 17:41	II230906-1	1		.948	mg/L	95	90	110			
WG574068CCB2	CCB	09/12/23 17:44				U	mg/L		-0.03	0.03			
WG574068CCV3	CCV	09/12/23 18:03	II230906-1	1		.946	mg/L	95	90	110			
WG574068CCB3	CCB	09/12/23 18:06				U	mg/L		-0.03	0.03			

ENSERO

ACZ Project ID: **L82594**

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
WG574001													
WG574001ICV	ICV	09/11/23 16:46	WI230901-3	.3003		.2913	mg/L	97	90	110			
WG574001ICB	ICB	09/11/23 16:47				U	mg/L		-0.003	0.003			
WG574010													
WG574010CCV1	CCV	09/11/23 17:35	WI230906-16	.25		.2502	mg/L	100	90	110			
WG574010CCB1	CCB	09/11/23 17:36				U	mg/L		-0.003	0.003			
WG573530LRB	LRB	09/11/23 17:37				U	mg/L		-0.003	0.003			
WG573530LFB	LFB	09/11/23 17:38	WI230827-3	.2002		.1925	mg/L	96	90	110			
WG574010CCV2	CCV	09/11/23 17:45	WI230906-16	.25		.2489	mg/L	100	90	110			
WG574010CCB2	CCB	09/11/23 17:46				U	mg/L		-0.003	0.003			
L82610-07LFM	LFM	09/11/23 17:48	WI230827-3	.2002	U	.185	mg/L	92	90	110			
L82610-09DUP	DUP	09/11/23 17:50			U	U	mg/L				0	20	RA
WG574010CCV3	CCV	09/11/23 17:56	WI230906-16	.25		.2482	mg/L	99	90	110			
WG574010CCB3	CCB	09/11/23 17:57				U	mg/L		-0.003	0.003			
WG574010CCV4	CCV	09/11/23 18:05	WI230906-16	.25		.2484	mg/L	99	90	110			
WG574010CCB4	CCB	09/11/23 18:05				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
WG574693													
WG574693ICV	ICV	09/20/23 13:42	WC230915-1	2.002		2.08	mg/L	104	90	110			
WG574693ICB	ICB	09/20/23 13:48				U	mg/L		-0.3	0.3			
WG574742													
WG574742ICV	ICV	09/20/23 18:05	WC230915-1	2.002		2.11	mg/L	105	90	110			
WG574742ICB	ICB	09/20/23 18:13				U	mg/L		-0.3	0.3			
WG574742PQV	PQV	09/20/23 18:19	WC230814-1	.35035		.39	mg/L	111	70	130			
WG574742LFB1	LFB	09/20/23 18:23	WC230825-1	5.005		5.37	mg/L	107	90	110			
L82594-01AS	AS	09/20/23 18:40	WC230825-1	5.005	.34	5.23	mg/L	98	90	110			
L82594-01ASD	ASD	09/20/23 18:43	WC230825-1	5.005	.34	5.23	mg/L	98	90	110	0	20	
WG574742CCV1	CCV	09/20/23 19:11	WC230915-1	2.002		2.132	mg/L	106	90	110			
WG574742CCB1	CCB	09/20/23 19:16				U	mg/L		-0.3	0.3			
WG574742CCV2	CCV	09/20/23 20:13	WC230915-1	2.002		2.032	mg/L	101	90	110			
WG574742CCB2	CCB	09/20/23 20:17				U	mg/L		-0.3	0.3			
WG574742LFB2	LFB	09/20/23 20:53	WC230825-1	5.005		4.65	mg/L	93	90	110			
WG574742CCB3	CCB	09/20/23 21:20				U	mg/L		-0.3	0.3			
WG574742CCB4	CCB	09/20/23 22:16				U	mg/L		-0.3	0.3			
WG574742CCV5	CCV	09/20/23 23:00	WC230915-1	2.002		2.071	mg/L	103	90	110			
WG574742CCB5	CCB	09/20/23 23:08				U	mg/L		-0.3	0.3			
WG574742CCV6	CCV	09/20/23 23:24	WC230915-1	2.002		2.204	mg/L	110	90	110			
WG574742CCB6	CCB	09/20/23 23:32				U	mg/L		-0.3	0.3			

ENSERO

ACZ Project ID: **L82594**

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
WG573902													
WG573902ICV	ICV	09/08/23 22:10	II230905-2	2		1.953	mg/L	98	95	105			
WG573902ICB	ICB	09/08/23 22:16				U	mg/L		-0.06	0.06			
WG573902PQV	PQV	09/08/23 22:19	II230821-2	.1001		.102	mg/L	102	70	130			
WG573902SIC	SIC	09/08/23 22:23	II230821-5	.1001		.094	mg/L	94	80	120			
WG573902LFB	LFB	09/08/23 22:29	II230907-5	.5005		.508	mg/L	101	85	115			
L76863-45AS	AS	09/08/23 22:52	II230907-5	.5005	U	.494	mg/L	99	85	115			
L76863-45ASD	ASD	09/08/23 22:55	II230907-5	.5005	U	.498	mg/L	100	85	115	1	20	
WG573902CCV1	CCV	09/08/23 23:01	II230906-1	1		.975	mg/L	98	90	110			
WG573902CCB1	CCB	09/08/23 23:04				U	mg/L		-0.06	0.06			
WG573902CCV2	CCV	09/08/23 23:30	II230906-1	1		.974	mg/L	97	90	110			
WG573902CCB2	CCB	09/08/23 23:33				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
WG573786													
WG573786ICV	ICV	09/07/23 13:36	II230905-1	2		1.95	mg/L	98	95	105			
WG573786ICB	ICB	09/07/23 13:42				U	mg/L		-0.06	0.06			
WG573786PQV	PQV	09/07/23 13:45	II230821-2	.1001		.104	mg/L	104	70	130			
WG573786SIC	SIC	09/07/23 13:48	II230821-4	.1001		.095	mg/L	95	80	120			
WG573484LRB	LRB	09/07/23 13:55				U	mg/L		-0.044	0.044			
WG573484LFB	LFB	09/07/23 13:58	II230831-6	.5005		.49	mg/L	98	85	115			
L82628-01LFM	LFM	09/07/23 14:11	II230831-6	.5005	U	.493	mg/L	99	70	130			
L82628-01LFMD	LFMD	09/07/23 14:14	II230831-6	.5005	U	.489	mg/L	98	70	130	1	20	
WG573786CCV1	CCV	09/07/23 14:26	II230821-6	1		.991	mg/L	99	90	110			
WG573786CCB1	CCB	09/07/23 14:29				U	mg/L		-0.06	0.06			
WG573786CCV2	CCV	09/07/23 15:04	II230821-6	1		.981	mg/L	98	90	110			
WG573786CCB2	CCB	09/07/23 15:07				U	mg/L		-0.06	0.06			

Nitrate/Nitrite as N

M353.2 - H2SO4 preserved

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG573720													
WG573720ICV	ICV	09/06/23 23:17	WI230701-1	2.416		2.409	mg/L	100	90	110			
WG573720ICB	ICB	09/06/23 23:18				U	mg/L		-0.02	0.02			
WG573722													
WG573722CCV1	CCV	09/07/23 0:21	WI230906-15	2		2.014	mg/L	101	90	110			
WG573722CCB1	CCB	09/07/23 0:24				U	mg/L		-0.02	0.02			
WG573722LFB	LFB	09/07/23 0:25	WI230829-3	2		2.128	mg/L	106	90	110			
L82594-01AS	AS	09/07/23 0:28	WI230829-3	2	U	2.087	mg/L	104	90	110			
L82594-02DUP	DUP	09/07/23 0:30			.202	.202	mg/L				0	20	
WG573722CCV2	CCV	09/07/23 0:38	WI230906-15	2		2.016	mg/L	101	90	110			
WG573722CCB2	CCB	09/07/23 0:41				U	mg/L		-0.02	0.02			
WG573722CCV3	CCV	09/07/23 0:54	WI230906-15	2		2.03	mg/L	102	90	110			
WG573722CCB3	CCB	09/07/23 0:57				U	mg/L		-0.02	0.02			
WG573722CCV4	CCV	09/07/23 1:08	WI230906-15	2		2.032	mg/L	102	90	110			
WG573722CCB4	CCB	09/07/23 1:11				U	mg/L		-0.02	0.02			

ENSERO

ACZ Project ID: **L82594**

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.

Phosphorus, total M365.1 - Auto Ascorbic Acid (digest)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG574384													
WG574384ICV	ICV	09/15/23 14:05	WI230815-6	.65228		.68	mg/L	104	90	110			
WG574384ICB	ICB	09/15/23 14:07				U	mg/L		-0.01	0.01			
WG573637LRB	LRB	09/15/23 14:08				U	mg/L		-0.01	0.01			
WG573637LFB	LFB	09/15/23 14:10	WI230906-2	.5		.491	mg/L	98	90	110			
WG574384CCV1	CCV	09/15/23 14:20	WI230913-12	.5		.51	mg/L	102	90	110			
WG574384CCB1	CCB	09/15/23 14:21				U	mg/L		-0.01	0.01			
WG574384CCV2	CCV	09/15/23 14:33	WI230913-12	.5		.507	mg/L	101	90	110			
WG574384CCB2	CCB	09/15/23 14:34				U	mg/L		-0.01	0.01			
L82591-01LFM	LFM	09/15/23 14:35	PT20X	10	13.7	14.726	mg/L	10	90	110			M2
L82591-02DUP	DUP	09/15/23 14:38			U	U	mg/L				0	20	RA
WG574384CCV3	CCV	09/15/23 14:40	WI230913-12	.5		.504	mg/L	101	90	110			
WG574384CCB3	CCB	09/15/23 14:42				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
WG572920													
WG572920PBW	PBW	08/24/23 14:00				U	mg/L		-20	20			
WG572920LCSW	LCSW	08/24/23 14:01	PCN625514	1000		982	mg/L	98	80	120			
L82610-11DUP	DUP	08/24/23 14:23			402	402	mg/L				0	10	

Residue, Non-Filterable (TSS) @105C SM2540D

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG572989													
WG572989PBW	PBW	08/25/23 12:10				U	mg/L		-5	5			
WG572989LCSW	LCSW	08/25/23 12:12	PCN625514	100		107	mg/L	107	80	120			
L82610-15DUP	DUP	08/25/23 12:41			U	U	mg/L				0	10	RA

Silver, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG574060													
WG574060ICV	ICV	09/12/23 14:19	MS230908-1	.02		.02083	mg/L	104	90	110			
WG574060ICB	ICB	09/12/23 14:20				U	mg/L		-0.00022	0.00022			
WG574060LFB	LFB	09/12/23 14:22	MS230825-2	.01001		.00978	mg/L	98	85	115			
L82620-01AS	AS	09/12/23 14:31	MS230825-2	.01001	U	.00868	mg/L	87	70	130			
L82620-01ASD	ASD	09/12/23 14:33	MS230825-2	.01001	U	.00869	mg/L	87	70	130	0	20	
WG574060CCV1	CCV	09/12/23 14:37	MS230830-3	.025025		.02527	mg/L	101	90	110			
WG574060CCB1	CCB	09/12/23 14:39				U	mg/L		-0.0003	0.0003			
WG574060CCV2	CCV	09/12/23 14:59	MS230830-3	.025025		.02485	mg/L	99	90	110			
WG574060CCB2	CCB	09/12/23 15:01				U	mg/L		-0.0003	0.0003			
WG574060CCV3	CCV	09/12/23 15:15	MS230830-3	.025025		.02486	mg/L	99	90	110			
WG574060CCB3	CCB	09/12/23 15:17				U	mg/L		-0.0003	0.0003			

ENSERO

ACZ Project ID: **L82594**

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
WG574175													
WG574175ICB	ICB	09/13/23 13:35				U	mg/L		-3	3			
WG574175ICV	ICV	09/13/23 13:35	WI230911-4	20		20.8	mg/L	104	90	110			
WG574175CCV1	CCV	09/13/23 13:56	WI230911-5	25		25.7	mg/L	103	90	110			
WG574175CCB1	CCB	09/13/23 13:56				U	mg/L		-3	3			
WG574175LFB	LFB	09/13/23 13:56	WI230119-9	10		9.6	mg/L	96	90	110			
L82594-01AS	AS	09/13/23 13:57	WI230119-9	10	11.2	22	mg/L	108	90	110			
L82594-02DUP	DUP	09/13/23 13:57			12	11.9	mg/L				1	20	
WG574175CCV2	CCV	09/13/23 13:59	WI230911-5	25		25.6	mg/L	102	90	110			
WG574175CCB2	CCB	09/13/23 13:59				U	mg/L		-3	3			
WG574175CCV3	CCV	09/13/23 14:00	WI230911-5	25		25.4	mg/L	102	90	110			
WG574175CCB3	CCB	09/13/23 14:00				U	mg/L		-3	3			
WG574175CCV4	CCV	09/13/23 14:29	WI230911-5	25		25.2	mg/L	101	90	110			
WG574175CCB4	CCB	09/13/23 14:29				U	mg/L		-3	3			
WG574175CCV5	CCV	09/13/23 14:33	WI230911-5	25		25.6	mg/L	102	90	110			
WG574175CCB5	CCB	09/13/23 14:33				U	mg/L		-3	3			
WG574175CCV6	CCV	09/13/23 14:36	WI230911-5	25		25.7	mg/L	103	90	110			
WG574175CCB6	CCB	09/13/23 14:36				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
WG573476													
WG573476ICV	ICV	09/01/23 19:45	MS230712-3	.05		.05347	mg/L	107	90	110			
WG573476ICB	ICB	09/01/23 19:47				U	mg/L		-0.0003	0.0003			
WG573428LRB	LRB	09/01/23 19:49				U	mg/L		-0.00022	0.00022			
WG573428LFB	LFB	09/01/23 19:51	MS230825-2	.0501		.04856	mg/L	97	85	115			
WG573476CCV1	CCV	09/01/23 20:04	MS230830-3	.1002		.10066	mg/L	100	90	110			
WG573476CCB1	CCB	09/01/23 20:05				U	mg/L		-0.0003	0.0003			
L82767-05LFM	LFM	09/01/23 20:15	MS230825-2	.0501	.0002	.05033	mg/L	100	70	130			
L82767-05LFMD	LFMD	09/01/23 20:17	MS230825-2	.0501	.0002	.04999	mg/L	99	70	130	1	20	
WG573476CCV2	CCV	09/01/23 20:26	MS230830-3	.1002		.10083	mg/L	101	90	110			
WG573476CCB2	CCB	09/01/23 20:28				U	mg/L		-0.0003	0.0003			
WG573476CCV3	CCV	09/01/23 20:44	MS230830-3	.1002		.10072	mg/L	101	90	110			
WG573476CCB3	CCB	09/01/23 20:46				U	mg/L		-0.0003	0.0003			

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG573886													
WG573886ICV	ICV	09/08/23 15:24	MS230712-3	.05		.04815	mg/L	96	90	110			
WG573886ICB	ICB	09/08/23 15:26				U	mg/L		-0.00022	0.00022			
WG573886LFB	LFB	09/08/23 15:28	MS230825-2	.05		.05086	mg/L	102	85	115			
L82594-02AS	AS	09/08/23 15:33	MS230825-2	.05	.0123	.06344	mg/L	102	70	130			
L82594-02ASD	ASD	09/08/23 15:35	MS230825-2	.05	.0123	.06495	mg/L	105	70	130	2	20	
WG573886CCV1	CCV	09/08/23 15:42	MS230830-3	.1		.09988	mg/L	100	90	110			
WG573886CCB1	CCB	09/08/23 15:44				U	mg/L		-0.0003	0.0003			
WG573886CCV2	CCV	09/08/23 16:04	MS230830-3	.1		.09992	mg/L	100	90	110			
WG573886CCB2	CCB	09/08/23 16:06				U	mg/L		-0.0003	0.0003			
WG573886CCV3	CCV	09/08/23 16:21	MS230830-3	.1		.10046	mg/L	100	90	110			
WG573886CCB3	CCB	09/08/23 16:22				U	mg/L		-0.0003	0.0003			

ENSERO

ACZ Project ID: **L82594**

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, total

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG573422													
WG573422ICV	ICV	08/31/23 15:21	MS230712-3	.05		.05335	mg/L	107	90	110			
WG573422ICB	ICB	08/31/23 15:23				U	mg/L		-0.0003	0.0003			
WG573282LRB	LRB	08/31/23 15:25				U	mg/L		-0.00022	0.00022			
WG573282LFB	LFB	08/31/23 15:27	MS230825-2	.05		.05046	mg/L	101	85	115			
L82584-03LFM	LFM	08/31/23 15:36	MS230825-2	.05	.0161	.06822	mg/L	104	70	130			
L82584-03LFMD	LFMD	08/31/23 15:38	MS230825-2	.05	.0161	.06872	mg/L	105	70	130	1	20	
WG573422CCV1	CCV	08/31/23 15:40	MS230830-3	.1		.10033	mg/L	100	90	110			
WG573422CCB1	CCB	08/31/23 15:42				U	mg/L		-0.0003	0.0003			
WG573422CCV2	CCV	08/31/23 16:02	MS230830-3	.1		.10084	mg/L	101	90	110			
WG573422CCB2	CCB	08/31/23 16:03				U	mg/L		-0.0003	0.0003			
WG573422CCV3	CCV	08/31/23 16:20	MS230830-3	.1		.10066	mg/L	101	90	110			
WG573422CCB3	CCB	08/31/23 16:22				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
WG573902													
WG573902ICV	ICV	09/08/23 22:10	II230905-2	2		1.947	mg/L	97	95	105			
WG573902ICB	ICB	09/08/23 22:16				U	mg/L		-0.06	0.06			
WG573902PQV	PQV	09/08/23 22:19	II230821-2	.05005		.051	mg/L	102	70	130			
WG573902SIC	SIC	09/08/23 22:23	II230821-5	.1001		.092	mg/L	92	80	120			
WG573902LFB	LFB	09/08/23 22:29	II230907-5	.50045		.524	mg/L	105	85	115			
L76863-45AS	AS	09/08/23 22:52	II230907-5	.50045	U	.514	mg/L	103	85	115			
L76863-45ASD	ASD	09/08/23 22:55	II230907-5	.50045	U	.52	mg/L	104	85	115	1	20	
WG573902CCV1	CCV	09/08/23 23:01	II230906-1	1		.969	mg/L	97	90	110			
WG573902CCB1	CCB	09/08/23 23:04				U	mg/L		-0.06	0.06			
WG573902CCV2	CCV	09/08/23 23:30	II230906-1	1		.968	mg/L	97	90	110			
WG573902CCB2	CCB	09/08/23 23:33				U	mg/L		-0.06	0.06			

Ensero Solutions

ACZ Project ID: **L82594**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION	
L82594-01	WG573476	Antimony, total recoverable	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.	
	WG574010	Cyanide, WAD	SM4500-CN I,E-Colorimetric w/ distillation	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.	
			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).	
	WG574742	Fluoride	SM4500F-C	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.	
	WG574384	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.	
			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).	
	WG572989	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	
	L82594-02	WG573476	Antimony, total recoverable	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		WG574010	Cyanide, WAD	SM4500-CN I,E-Colorimetric w/ distillation	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
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).	
WG574742		Fluoride	SM4500F-C	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.	
WG574384		Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.	
			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).	
WG572989		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	

Ensero Solutions

Project ID: 3100 PO 1923

Sample ID: SW-AWD

Locator:

ACZ Sample ID: **L82594-01**

Date Sampled: 08/18/23 13:21

Date Received: 08/22/23

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)	09/27/23 14:42		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	08/29/23 0:10		-0.05	1.3	6.7	pCi/L	*	trt
Gross Beta	08/29/23 0:10		3.4	3.1	9.5	pCi/L	*	trt

Radium 226, total

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, total	09/05/23 0:08		0.35	0.08	0.4	pCi/L	*	ang

Radium 228, total

Prep Method:

M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, total	09/07/23 19:10		1	0.95	2.3	pCi/L	*	trt

Ensero Solutions

Project ID: 3100 PO 1923

Sample ID: SW-BPL

Locator:

ACZ Sample ID: **L82594-02**

Date Sampled: 08/18/23 13:54

Date Received: 08/22/23

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)	09/27/23 14:42		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	08/29/23 0:12		6.9	2.9	16	pCi/L	*	trt
Gross Beta	08/29/23 0:12		3.8	2.9	22	pCi/L	*	trt

Radium 226, total

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, total	09/05/23 0:10		0.16	0.1	0.42	pCi/L	*	ang

Radium 228, total

Prep Method:

M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, total	09/07/23 19:10		0.36	1.5	3.8	pCi/L	*	trt

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>

ENSERO

ACZ Project ID: **L82594**

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
WG573045																
WG573045PBW	PBW	08/29/23						-49	0.94	15			30			
WG573045LCSW A	LCSW	08/29/23	PCN625402	100				95	8.3	6.3	95	67	144			
L82594-01DUP	DUP-RPD	08/29/23			-0.05	1.3	6.7	1	1.6	17				221	20	RG
L82594-01DUP	DUP-RER	08/29/23			-0.05	1.3	6.7	1	1.6	17				0.51	2	
L82594-02MS A	MS	08/29/23	PCN625402	100	6.9	2.9	16	100	10	8.7	93	67	144			
L82620-02DUP	DUP-RER	08/29/23			50	9.8	10	50	10	21				0	2	
L82620-02DUP	DUP-RPD	08/29/23			50	9.8	10	50	10	21				0	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
WG573045																
WG573045PBW	PBW	08/29/23						1.4	2.7	22			44			
WG573045LCSW B	LCSW	08/29/23	RC230516-10	100				100	6.8	5.8	100	82	122			
L82594-01DUP	DUP-RPD	08/29/23			3.4	3.1	9.5	5.2	3.3	21				42	20	RG
L82594-01DUP	DUP-RER	08/29/23			3.4	3.1	9.5	5.2	3.3	21				0.4	2	
L82620-02DUP	DUP-RER	08/29/23			22	4.5	11	24	4.3	15				0.32	2	
L82620-02DUP	DUP-RPD	08/29/23			22	4.5	11	24	4.3	15				9	20	
L82648-01MS B	MS	08/29/23	RC230516-10	100	11	3.5	8.1	110	7.3	9.9	99	82	122			

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
WG573133																
WG573133LCSW	LCSW	09/05/23	PCN624896	20				18	0.49	0.06	90	43	148			
WG573133PBW	PBW	09/05/23						.07	0.06	0.06			0.12			
L82595-02DUP	DUP-RPD	09/05/23			7.8	0.3	0.65	10	0.42	0.63				25	20	RM
L82595-03MS	MS	09/05/23	PCN624896	20	6	0.26	0.32	25	0.55	0.4	95	43	148			
L82620-03DUP	DUP-RPD	09/05/23			15	0.41	0.68	16	0.44	0.33				6	20	

ENSERO

ACZ Project ID: **L82594**

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
WG573369																
WG573369LCSW	LCSW	09/07/23	PCN623727	8.94				6.2	1.1	0.82	69	47	123			
WG573369PBW	PBW	09/07/23						.23	0.32	0.32			0.64			
L82566-01DUP	DUP-RER	09/07/23			0.83	0.81	1.9	.64	0.83	2				0.16	2	
L82566-01DUP	DUP-RPD	09/07/23			0.83	0.81	1.9	.64	0.83	2				26	20	RG
L82594-02DUP	DUP-RPD	09/07/23			0.36	1.5	3.8	1	2.1	5.1				94	20	RG
L82567-02MS	MS	09/07/23	PCN623727	8.94	1.3	2.4	6.9	12	1.7	3.1	120	47	123			
L82594-02DUP	DUP-RER	09/07/23			0.36	1.5	3.8	1	2.1	5.1				0.25	2	

Ensero Solutions

ACZ Project ID: **L82594**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L82594-01	WG573045	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.
	WG573133	Radium 226, total	M903.1	D1	Sample required dilution due to matrix.
			M903.1	RM	For a water matrix, the duplicate precision assessment (RPD or RER) exceeded the control limit. High sediment, turbidity, or presence of an immiscible liquid attributed to non-homogeneity of the sample.
	WG573369	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.
L82594-02	WG573045	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.
	WG573133	Radium 226, total	M903.1	D1	Sample required dilution due to matrix.
			M903.1	RM	For a water matrix, the duplicate precision assessment (RPD or RER) exceeded the control limit. High sediment, turbidity, or presence of an immiscible liquid attributed to non-homogeneity of the sample.
	WG573369	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: **L82594**

No certification qualifiers associated with this analysis

Ensero Solutions
3100 PO 1923

ACZ Project ID: L82594
Date Received: 08/22/2023 10:32
Received By:
Date Printed: 8/23/2023

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?
NA41054	5.2	<=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.

Ensero Solutions
3100 PO 1923

ACZ Project ID: L82594

Date Received: 08/22/2023 10:32

Received By:

Date Printed: 8/23/2023

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).

