

DH-122

Collected date/time: 04/30/22 12:30

## SAMPLE RESULTS - 11

L1489440

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.06		1	05/11/2022 17:38	<a href="#">WG1861143</a>

## Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	738		2.50	1	05/11/2022 17:38	<a href="#">WG1861143</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	1810		25.0	1	05/05/2022 17:03	<a href="#">WG1859268</a>

## Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	309		20.0	1	05/08/2022 08:57	<a href="#">WG1860440</a>
Alkalinity,Bicarbonate	309		20.0	1	05/08/2022 08:57	<a href="#">WG1860440</a>
Alkalinity,Carbonate	ND		20.0	1	05/08/2022 08:57	<a href="#">WG1860440</a>
Alkalinity,Hydroxide	ND		20.0	1	05/08/2022 08:57	<a href="#">WG1860440</a>

## Sample Narrative:

L1489440-11 WG1860440: Endpoint pH 4.5

## Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	138		20.0	20	05/16/2022 02:52	<a href="#">WG1864161</a>
Sulfate	996		100	20	05/16/2022 02:52	<a href="#">WG1864161</a>

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	05/12/2022 15:20	<a href="#">WG1861136</a>
Barium,Dissolved	0.0201		0.00500	1	05/12/2022 15:20	<a href="#">WG1861136</a>
Cadmium,Dissolved	ND		0.00200	1	05/12/2022 15:20	<a href="#">WG1861136</a>
Calcium	192		1.00	1	05/11/2022 17:38	<a href="#">WG1861143</a>
Calcium,Dissolved	193		1.00	1	05/12/2022 15:20	<a href="#">WG1861136</a>
Iron,Dissolved	ND		0.100	1	05/12/2022 15:20	<a href="#">WG1861136</a>
Lead,Dissolved	ND		0.00600	1	05/12/2022 15:20	<a href="#">WG1861136</a>
Magnesium	62.6		1.00	1	05/11/2022 17:38	<a href="#">WG1861143</a>
Magnesium,Dissolved	60.0		1.00	1	05/13/2022 09:36	<a href="#">WG1861136</a>
Manganese,Dissolved	0.431		0.0100	1	05/12/2022 15:20	<a href="#">WG1861136</a>
Molybdenum,Dissolved	0.00891		0.00500	1	05/12/2022 15:20	<a href="#">WG1861136</a>
Selenium,Dissolved	ND		0.0100	1	05/12/2022 15:20	<a href="#">WG1861136</a>
Sodium	316		3.00	1	05/11/2022 17:38	<a href="#">WG1861143</a>
Sodium,Dissolved	313		3.00	1	05/12/2022 15:20	<a href="#">WG1861136</a>

Method Blank (MB)

(MB) R3789233-1 05/05/22 17:03				
Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

L1488430-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1488430-01 05/05/22 17:03 • (DUP) R3789233-3 05/05/22 17:03				
	Original Result	DUP Result	Dilution	DUP RPD
Analyte	mg/l	mg/l		DUP Qualifier
				Limits
Dissolved Solids	733	777	1	5.83

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

L1489440-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1489440-09 05/05/22 17:03 • (DUP) R3789233-4 05/05/22 17:03				
	Original Result	DUP Result	Dilution	DUP RPD
Analyte	mg/l	mg/l		DUP Qualifier
				Limits
Dissolved Solids	973	900	1	1.47

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3789233-2 05/05/22 17:03				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits
Analyte	mg/l	mg/l	%	%
Dissolved Solids	2460	2580	105	81.7-118

Method Blank (MB)

(MB) R3789606-1 05/06/22 12:06				
Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1489440-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1489440-04 05/06/22 12:06 • (DUP) R3789606-3 05/06/22 12:06				
Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD Limits
Dissolved Solids	2310	2300	1	0.434

Laboratory Control Sample (LCS)

(LCS) R3789606-2 05/06/22 12:06				
Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %
Dissolved Solids	2460	2520	102	81.7-118

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

ACCOUNT: American Environmental - CO

PROJECT: COORS

SDG: L1489440

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## Method Blank (MB)

(MB) R3789862-1 05/06/22 16:48

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

## L1489440-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1489440-01 05/06/22 16:48 • (DUP) R3789862-3 05/06/22 16:48

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	3310	3360	1	1.35		5

## L1489440-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1489440-05 05/06/22 16:48 • (DUP) R3789862-4 05/06/22 16:48

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1730	1750	1	1.27		5

## Laboratory Control Sample (LCS)

(LCS) R3789862-2 05/06/22 16:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	2460	2440	99.2	81.7-118	

ACCOUNT:

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Method Blank (MB)

(MB) R3789328-2 05/08/22 07:34

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l	mg/l	mg/l	mg/l
Alkalinity	U		8.45	20.0
Alkalinity,Bicarbonate	U		8.45	20.0
Alkalinity,Carbonate	U		8.45	20.0
Alkalinity,Hydroxide	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1489245-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1489245-01 05/08/22 07:47 • (DUP) R3789328-3 05/08/22 07:50

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Alkalinity	419	423	1	0.916		20
Alkalinity,Bicarbonate	419	423	1	0.916		20
Alkalinity,Carbonate	ND	ND	1	0.000		20
Alkalinity,Hydroxide	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1489440-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1489440-11 05/08/22 08:57 • (DUP) R3789328-4 05/08/22 09:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Alkalinity	309	312	1	0.766		20
Alkalinity,Bicarbonate	309	312	1	0.766		20
Alkalinity,Carbonate	ND	ND	1	0.000		20
Alkalinity,Hydroxide	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3789328-1 05/08/22 07:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	105	105	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

1Cp

2Tc

3Ss

4Cn

5Sr

6Ac

7Gl

8Al

9Sc

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Method Blank (MB)

(MB) R3792317-1 05/14/22 10:40				
Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Sulfate	U		0.594	5.00

L1489428-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1489428-01 05/14/22 18:02 • (DUP) R3792317-5 05/14/22 18:14						
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	
						DUP RPD Limits
	mg/l	mg/l		%		%
Chloride	2.16	2.06	1	4.72		15
Fluoride	ND	ND	1	11.8		15
Sulfate	11.3	11.3	1	20.1	Pl	15

L1489438-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1489438-02 05/14/22 19:29 • (DUP) R3792317-6 05/14/22 19:42						
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	
						DUP RPD Limits
	mg/l	mg/l		%		%
Chloride	3.74	3.72	1	0.462		15
Sulfate	145	145	1	0.431	E	15

Laboratory Control Sample (LCS)

(LCS) R3792317-2 05/14/22 10:53						
Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier	
	mg/l	mg/l	%	%		
Chloride	40.0	40.2	101	80.0-120		
Fluoride	8.00	8.09	101	80.0-120		
Sulfate	40.0	40.7	102	80.0-120		

L1489245-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1489245-08 05/14/22 16:10 • (MS) R3792317-3 05/14/22 16:35 • (MSD) R3792317-4 05/14/22 16:47												
Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Chloride	50.0	2020	1970	1960	0.000	0.000	1	80.0-120	<u>E V</u>	<u>E V</u>	0.0939	15
Fluoride	5.00	ND	2.25	2.21	45.0	44.2	1	80.0-120	<u>J6</u>	<u>J6</u>	1.87	15



Wet Chemistry by Method 9056A

L1489440-01,02,03,04,05,06,07

L1489245-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1489245-08 05/14/22 16:10 • (MS) R3792317-3 05/14/22 16:35 • (MSD) R3792317-4 05/14/22 16:47

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Sulfate	50.0	ND	50.5	50.4	99.0	98.9	1	80.0-120			0.0874	15

L1489438-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1489438-02 05/14/22 19:29 • (MS) R3792317-7 05/14/22 20:19

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	3.74	56.0	104	1	80.0-120	

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3792251-1 05/15/22 19:04

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l	mg/l	mg/l	mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1489063-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1489063-02 05/15/22 22:48 • (DUP) R3792251-3 05/15/22 23:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Chloride	256	255	5	0.358		15
Sulfate	91.2	91.1	5	0.142		15

L1489477-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1489477-02 05/16/22 04:47 • (DUP) R3792251-6 05/16/22 05:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Chloride	15.9	16.0	1	0.724		15
Sulfate	10.2	10.2	1	0.449		15

Laboratory Control Sample (LCS)

(LCS) R3792251-2 05/15/22 19:17

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Chloride	40.0	40.5	101	80.0-120	
Sulfate	40.0	41.0	102	80.0-120	

L1489230-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1489230-02 05/15/22 23:26 • (MS) R3792251-4 05/15/22 23:39 • (MSD) R3792251-5 05/15/22 23:52

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Chloride	50.0	12.5	61.1	62.9	97.2	101	1	80.0-120			2.79	15
Sulfate	50.0	97.1	140	142	85.5	90.2	1	80.0-120	E	E	1.65	15

L1489477-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1489477-02 05/16/22 04:47 • (MS) R3792251-7 05/16/22 05:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	15.9	65.3	98.8	1	80.0-120	
Sulfate	50.0	10.2	59.6	98.9	1	80.0-120	

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

ACCOUNT:

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Method Blank (MB)

(MB) R3792564-1 05/16/22 20:00					
Analyte	MB Result	MB Qualifier	MB MDL	MB RDL	
	mg/l	mg/l	mg/l	mg/l	
Chloride	U		0.379	1.00	
Fluoride	U		0.0640	0.150	
Sulfate	U		0.594	5.00	

L1489930-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1489930-01 05/17/22 02:50 • (DUP) R3792564-3 05/17/22 03:06					
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier
	mg/l	mg/l		%	Limits
Chloride	64.5	64.4	1	0.0506	15
Fluoride	0.303	0.316	1	4.27	15
Sulfate	151	151	1	0.0352	15

L1489930-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1489930-12 05/17/22 07:36 • (DUP) R3792564-7 05/17/22 08:24					
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier
	mg/l	mg/l		%	Limits
Chloride	ND	ND	1	3.33	15
Fluoride	ND	ND	1	0.000	15
Sulfate	ND	ND	1	0.000	15

Laboratory Control Sample (LCS)

(LCS) R3792564-2 05/16/22 20:15					
Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Chloride	40.0	40.7	102	80.0-120	
Fluoride	8.00	8.38	105	80.0-120	
Sulfate	40.0	41.2	103	80.0-120	

L1489930-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1489930-01 05/17/22 02:50 • (MS) R3792564-4 05/17/22 03:22									
Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier		
	mg/l	mg/l	mg/l	%		%			
Chloride	50.0	64.5	114	99.4	1	80.0-120	E		
Fluoride	5.00	0.303	5.47	103	1	80.0-120			
Sulfate	50.0	151	198	93.0	1	80.0-120	E		

L1489930-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1489930-08 05/17/22 05:45 • (MS) R3792564-5 05/17/22 06:01 • (MSD) R3792564-6 05/17/22 06:17													
Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%	
Chloride	50.0	894	902	902	14.6	14.3	1	80.0-120	E V	E V	0.0153	15	<sup>6</sup> Qc
Fluoride	5.00	ND	4.42	4.41	85.7	85.3	1	80.0-120			0.403	15	<sup>7</sup> Gl
Sulfate	50.0	47.5	94.1	94.3	93.2	93.6	1	80.0-120			0.209	15	<sup>9</sup> Sc

<sup>1</sup> Cp <sup>2</sup> Tc <sup>3</sup> Ss <sup>4</sup> Cn <sup>5</sup> Sr <sup>6</sup> Qc <sup>7</sup> Gl <sup>8</sup> Al <sup>9</sup> Sc

Method Blank (MB)

(MB) R3791387-1 05/12/22 14:26

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Antimony, Dissolved	U		0.00430	0.0100
Arsenic, Dissolved	U		0.00440	0.0100
Barium, Dissolved	U		0.000736	0.00500
Boron, Dissolved	U		0.0200	0.200
Cadmium, Dissolved	U		0.000479	0.00200
Calcium, Dissolved	U		0.0793	1.00
Iron, Dissolved	U		0.0780	0.100
Lead, Dissolved	U		0.00299	0.00600
Manganese, Dissolved	U		0.000934	0.0100
Molybdenum, Dissolved	U		0.00716	0.00500
Potassium, Dissolved	0.740	J	0.261	2.00
Selenium, Dissolved	U		0.00735	0.0100
Sodium, Dissolved	1.19	J	0.504	3.00

Method Blank (MB)

(MB) R3791612-1 05/13/22 08:39

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Magnesium, Dissolved	U		0.0853	1.00

Laboratory Control Sample (LCS)

(LCS) R3791387-2 05/12/22 14:29

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Antimony, Dissolved	1.00	0.976	97.6	80.0-120	
Arsenic, Dissolved	1.00	0.977	97.7	80.0-120	
Barium, Dissolved	1.00	1.01	101	80.0-120	
Boron, Dissolved	1.00	0.941	94.1	80.0-120	
Cadmium, Dissolved	1.00	0.969	96.9	80.0-120	
Calcium, Dissolved	10.0	9.42	94.2	80.0-120	
Iron, Dissolved	10.0	9.66	96.6	80.0-120	
Lead, Dissolved	1.00	0.961	96.1	80.0-120	
Manganese, Dissolved	1.00	0.963	96.3	80.0-120	
Molybdenum, Dissolved	1.00	1.04	104	80.0-120	
Potassium, Dissolved	10.0	9.79	97.9	80.0-120	
Selenium, Dissolved	1.00	0.993	99.3	80.0-120	
Sodium, Dissolved	10.0	10.4	104	80.0-120	

<sup>1</sup> Cp <sup>2</sup> Tc <sup>3</sup> Ss <sup>4</sup> Cn <sup>5</sup> Sr <sup>6</sup> Qc <sup>7</sup> Gl <sup>8</sup> Al <sup>9</sup> Sc



Laboratory Control Sample (LCS)

(LCS) R3791612-2 05/13/22 08:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier	
Magnesium, Dissolved	10.0	9.51	95.1	80.0-120		

L1489440-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1489440-01 05/12/22 14:33 • (MS) R3791387-4 05/12/22 14:39 • (MSD) R3791387-5 05/12/22 14:42

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier		MSD Qualifier		RPD %	RPD Limits %
Antimony, Dissolved	1.00	ND	1.04	1.04	104	103	1	75.0-125					0.302	20
Arsenic, Dissolved	1.00	ND	1.06	1.07	106	107	1	75.0-125					0.563	20
Barium, Dissolved	1.00	0.0122	0.999	0.999	98.6	98.7	1	75.0-125					0.0392	20
Boron, Dissolved	1.00	0.529	1.47	1.47	94.3	94.3	1	75.0-125					0.0531	20
Cadmium, Dissolved	1.00	ND	1.03	1.03	103	103	1	75.0-125					0.147	20
Calcium, Dissolved	10.0	485	484	488	0.000	32.3	1	75.0-125					0.867	20
Iron, Dissolved	10.0	ND	9.51	9.49	95.1	94.9	1	75.0-125					0.205	20
Lead, Dissolved	1.00	ND	0.984	0.981	98.4	98.1	1	75.0-125					0.296	20
Manganese, Dissolved	1.00	ND	0.953	0.956	95.1	95.4	1	75.0-125					0.309	20
Molybdenum, Dissolved	1.00	ND	1.04	1.04	103	104	1	75.0-125					0.229	20
Potassium, Dissolved	10.0	12.7	23.3	23.4	106	107	1	75.0-125					0.322	20
Selenium, Dissolved	1.00	0.0913	1.20	1.20	111	111	1	75.0-125					0.0605	20
Sodium, Dissolved	10.0	382	386	388	47.0	60.0	1	75.0-125					0.338	20

L1489440-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1489440-01 05/13/22 08:45 • (MS) R3791612-4 05/13/22 08:50 • (MSD) R3791612-5 05/13/22 08:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier		MSD Qualifier		RPD %	RPD Limits %
Magnesium, Dissolved	10.0	90.8	97.2	97.2	63.6	63.5	1	75.0-125					0.077	20



Method Blank (MB)

(MB) R3790890-1 05/11/22 20:27					
Analyte	MB Result	MB Qualifier	MB MDL	MB RDL	
	mg/l		mg/l	mg/l	
Calcium	U		0.0793	1.00	
Magnesium	U		0.0853	1.00	
Sodium	U		0.504	3.00	

Laboratory Control Sample (LCS)

(LCS) R3790890-2 05/11/22 20:30					
Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Calcium	10.0	10.3	103	80.0-120	
Magnesium	10.0	9.57	95.7	80.0-120	
Sodium	10.0	10.4	104	80.0-120	

L1489245-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1489245-08 05/11/22 20:33 • (MS) R3790890-4 05/11/22 20:38 • (MSD) R3790890-5 05/11/22 20:41													
Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%	
Calcium	10.0	571	566	571	0.000	6.46	1	75.0-125	✓	✓	0.995	20	
Magnesium	10.0	155	160	162	52.2	69.0	1	75.0-125	✓	✓	1.04	20	
Sodium	10.0	158	165	164	72.2	64.6	1	75.0-125	✓	✓	0.461	20	

<sup>1</sup> Cp <sup>2</sup> Tc <sup>3</sup> Ss <sup>4</sup> Cn <sup>5</sup> Sr <sup>6</sup> Qc <sup>7</sup> Gl <sup>8</sup> Al <sup>9</sup> Sc

ACCOUNT:

American Environmental - CO

PROJECT:

COORS

SDG:

L1489440

DATE/TIME:

05/11/22 12:43

PAGE:

31 of 36

## Method Blank (MB)

(MB) R3790812-1 05/11/22 16:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	0.0871	1	0.0793	1.00
Magnesium	U		0.0853	1.00
Sodium	U		0.504	3.00

## Laboratory Control Sample (LCS)

(LCS) R3790812-2 05/11/22 16:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	10.0	9.73	97.3	80.0-120	
Magnesium	10.0	9.75	97.5	80.0-120	
Sodium	10.0	10.8	108	80.0-120	

## L1488703-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1488703-07 05/11/22 16:49 • (MS) R3790812-4 05/11/22 16:54 • (MSD) R3790812-5 05/11/22 16:56

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium	10.0	7.43	17.2	17.0	97.2	95.8	1	75.0-125			0.805	20
Magnesium	10.0	3.38	13.4	13.1	100	97.7	1	75.0-125			1.79	20
Sodium	10.0	ND	11.7	11.3	101	97.0	1	75.0-125			3.29	20

<sup>1</sup> Cp <sup>2</sup> Tc <sup>3</sup> Ss <sup>4</sup> Cn <sup>5</sup> Sr <sup>6</sup> Qc <sup>7</sup> Gl <sup>8</sup> Al <sup>9</sup> Sc



# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

## Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V	The sample concentration is too high to evaluate accurate spike recoveries.

## ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>2</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1 4</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1 4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



**American Environmental - CO**

8191 Southpark Lane  
Suite 107  
Littleton, CO 80120

Report to:  
**Skyler Elder**

Project Description:  
**Keeneburg Mine**

Phone: **303-948-7733**

Collected by (print):  
**SSE**

Collected by (signature):  
*Skyler Elder*

Immediately Packed on ice N ☒ Y ☒

**Billing Information:**

Accounts Payable  
8191 Southpark Lane  
Suite 107  
Littleton, CO 80120

Email To:  
seider@aecedenver.com; cahrendsen@aecedenver

City/State Collected: **Keeneburg, CO** Please Circle: **PT** **MT** **CT** **ET**

Lab Project # **AMEENVLCO-KEENESBURG**

P.O. #

Rush? (Lab MUST Be Notified)

Same Day ☐ Five Day ☐  
Next Day ☐ 5 Day (Rad Only) ☐  
Two Day ☐ 10 Day (Rad Only) ☐

Quote #

Date Results Needed

Sample ID

Comp/Grab

Matrix \*

Depth

Date

Time

Crits

Pres  
Chk

**Analytic / Container / Preservation**

ALKBI, ALKCA 250ml HDPE-NoPres  
CI, F, SO4 125ml HDPE-NoPres  
Diss Metals 250ml HDPE-NoPres  
HARD 250ml HDPE-HNO3  
SAR 250ml HDPE-HNO3  
TDS 250ml HDPE-NoPres  
V8260 40ml Amb-HCl-Bik

**Chain of Custody**

Page 1 of 1



MT JULIET, TN

12055 Lebanon Rd, Mount Juliet, TN 37122  
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions, found at: <http://www.paceanalytical.com/pdf/chain-of-custody-terms.pdf>

SOG # **L4489446**

**D227**

Account: **AMEENVLCO**

Template: **T160430**

Prelogin: **P920944**

PM: **824 - Chris Ward**

PS:

Shipped Via: **FedEx Ground**

Remarks Sample # (Lab only)

PC-1		GW		5/11/22	7:00pm	6	X	X	X	X	X	X	X						01
PC-2		GW		5/11/22	7:15pm	6	X	X	X	X	X	X	X						02
PC-5		GW		5/11/22	7:15pm	6	X	X	X	X	X	X	X						03
PC-6		GW		5/11/22	7:45	6	X	X	X	X	X	X	X						04
AMW-1		GW		5/11/22	2:15	6	X	X	X	X	X	X	X						05
AMW-2		GW		5/11/22	6:45pm	6	X	X	X	X	X	X	X						06
SMW-2		GW		5/11/22	5:30pm	6	X	X	X	X	X	X	X						07
DUP		GW				6	X	X	X	X	X	X	X						08
FPW		GW		4/30/22	4:45	6	X	X	X	X	X	X	X						09
		GW				1	X	X	X	X	X	X	X						10

\* Matrix: SS - Soil AIR - Air F - Filter  
GW - Groundwater B - Bioassay  
WW - Wastewater  
DW - Drinking Water  
OT - Other

Remarks: Diss Metals=As, Ba, B, Ca, Cd, Fe, Kd, Mg, Mn, Na, Pb, Sb, Se  
PC-1, PC-2, PC-6, AMW-1, AMW-2, SMW-2, Fluoride, SBDICP, BDICP, KDICP  
AMW-1, AMW-2, SMW-2, FPW, DH-96, DH-122, ALKOH, ALK

Sample Receipt Checklist  
COC Seal Present/Intact: ☒ ☐  
COC Signed/Accurate: ☒ ☐  
Bottles arrive intact: ☒ ☐  
Correct bottles used: ☒ ☐  
Sufficient volume sent: ☒ ☐  
If Applicable  
VOA Zero Headspace: ☒ ☐  
Preservation Correct/Checked: ☒ ☐  
BAD Screen <0.5 ml/hr: ☒ ☐

Samples returned via:  
UPS ☐ FedEx ☐ Courier ☐

Tracking # **5433 8388 1198**

Relinquished by: (Signature)

Date: **5/12/22**

Time: **5:00pm**

Received by: (Signature)

Date: **5/12/22**

Time: **5:00pm**

Received by: (Signature)

Relinquished by: (Signature)

Date: **5/12/22**

Time: **5:00pm**

Received by: (Signature)

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Received by: (Signature)

Relinquished by: (Signature)

Date: **5/12/22**

Time: **5:00pm**

Received by: (Signature)

Date: **5/12/22**

Time: **5:00pm**

Received by: (Signature)

*D. B. Anderson*

Date: **5-3-22**

Time: **9:30**

Received by: (Signature)

Date: **5-3-22**

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Received by: (Signature)

Date: **5-3-22**

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**ATTACHMENT 3.2**

**SEPTEMBER 2022 REPORT**



# ANALYTICAL REPORT

October 25, 2022

## American Environmental - CO

Sample Delivery Group: L1541409  
Samples Received: 09/30/2022  
Project Number:  
Description: Keenesburg Mine  
  
Report To: Skyler Elder  
8191 Southpark Lane  
Suite 107  
Littleton, CO 80120

Entire Report Reviewed By:

*Chris Ward*

Chris Ward  
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

**Pace Analytical National**

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

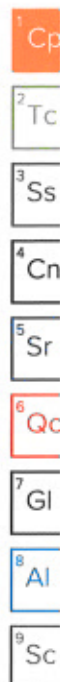
ACCOUNT:  
American Environmental - CO

PROJECT:

SDG:  
L1541409

DATE/TIME:  
10/25/22 15:23

PAGE:  
1 of 36





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AMW-2 L1541409-06	12
SMW-2 L1541409-07	13
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<sup>1</sup> Cp
<sup>2</sup> Tc
<sup>3</sup> Ss
<sup>4</sup> Cn
<sup>5</sup> Sr
<sup>6</sup> Qc
<sup>7</sup> Gl
<sup>8</sup> Al
<sup>9</sup> Sc

# SAMPLE SUMMARY

PC-1 L1541409-01 GW

Collected by  
SJE

Collected date/time  
09/28/22 16:45

Received date/time  
09/30/22 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1941473	1	10/14/22 20:58	10/14/22 20:58	KMG	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1937521	1	10/05/22 11:11	10/05/22 13:19	SLP	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1936158	1	10/03/22 11:39	10/03/22 11:39	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1935554	5	10/03/22 18:16	10/03/22 18:16	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1935554	50	10/03/22 18:29	10/03/22 18:29	GEB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1938250	1	10/18/22 04:23	10/19/22 10:54	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1941473	1	10/14/22 08:53	10/14/22 20:58	KMG	Mt. Juliet, TN

PC-2 L1541409-02 GW

Collected by  
SJE

Collected date/time  
09/28/22 11:45

Received date/time  
09/30/22 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1941473	1	10/14/22 22:12	10/14/22 22:12	JDG	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1937521	1	10/05/22 11:11	10/05/22 13:19	SLP	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1936139	1	10/03/22 08:45	10/03/22 08:45	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1935554	10	10/04/22 03:50	10/04/22 03:50	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1935554	100	10/04/22 04:02	10/04/22 04:02	GEB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1938250	1	10/18/22 04:23	10/19/22 10:57	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1938250	5	10/18/22 04:23	10/19/22 14:03	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1941473	5	10/14/22 08:53	10/14/22 22:12	KMG	Mt. Juliet, TN

PC-5 L1541409-03 GW

Collected by  
SJE

Collected date/time  
09/27/22 10:30

Received date/time  
09/30/22 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1941473	1	10/14/22 22:06	10/14/22 22:06	JDG	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1936913	1	10/04/22 12:15	10/04/22 14:37	AEC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1936139	1	10/03/22 08:53	10/03/22 08:53	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1935554	10	10/03/22 19:06	10/03/22 19:06	GEB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1938259	1	10/17/22 16:02	10/18/22 09:28	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1938259	5	10/17/22 16:02	10/21/22 14:58	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1941473	1	10/14/22 08:53	10/14/22 22:06	KMG	Mt. Juliet, TN

PC-6 L1541409-04 GW

Collected by  
SJE

Collected date/time  
09/27/22 11:15

Received date/time  
09/30/22 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1941473	1	10/14/22 22:09	10/14/22 22:09	JDG	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1936913	1	10/04/22 12:15	10/04/22 14:37	AEC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1936158	1	10/03/22 11:42	10/03/22 11:42	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1935554	10	10/03/22 19:31	10/03/22 19:31	GEB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1938259	1	10/17/22 16:02	10/18/22 09:41	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1941473	1	10/14/22 08:53	10/14/22 22:09	KMG	Mt. Juliet, TN

AMW-1 L1541409-05 GW

Collected by  
SJE

Collected date/time  
09/27/22 12:00

Received date/time  
09/30/22 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1941473	1	10/14/22 21:10	10/14/22 21:10	KMG	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1936972	1	10/04/22 14:14	10/04/22 15:54	AEC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1936139	1	10/03/22 12:23	10/03/22 12:23	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1935554	1	10/03/22 20:21	10/03/22 20:21	GEB	Mt. Juliet, TN

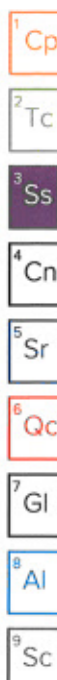
ACCOUNT:  
American Environmental - CO

PROJECT:

SDG:  
L1541409

DATE/TIME:  
10/25/22 15:23

PAGE:  
3 of 36





# SAMPLE SUMMARY

## AMW-1 L1541409-05 GW

			Collected by SJE	Collected date/time 09/27/22 12:00	Received date/time 09/30/22 10:00		
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Wet Chemistry by Method 9056A	WG1935554	10	10/03/22 20:58	10/03/22 20:58	GEB	Mt. Juliet, TN	1 Cp
Metals (ICP) by Method 6010B	WG1938259	1	10/17/22 16:02	10/18/22 09:44	CCE	Mt. Juliet, TN	2 Tc
Metals (ICP) by Method 6010B	WG1941473	1	10/14/22 08:53	10/14/22 21:10	KMG	Mt. Juliet, TN	3 Ss

## AMW-2 L1541409-06 GW

			Collected by SJE	Collected date/time 09/28/22 18:00	Received date/time 09/30/22 10:00		
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Calculated Results	WG1941473	1	10/14/22 22:15	10/14/22 22:15	JDG	Mt. Juliet, TN	4 Cn
Gravimetric Analysis by Method 2540 C-2011	WG1937521	1	10/05/22 11:11	10/05/22 13:19	SLP	Mt. Juliet, TN	5 Sr
Wet Chemistry by Method 2320 B-2011	WG1936139	1	10/03/22 09:00	10/03/22 09:00	ARD	Mt. Juliet, TN	6 Qc
Wet Chemistry by Method 9056A	WG1935554	10	10/03/22 21:11	10/03/22 21:11	GEB	Mt. Juliet, TN	7 Gl
Wet Chemistry by Method 9056A	WG1935554	100	10/03/22 21:23	10/03/22 21:23	GEB	Mt. Juliet, TN	8 Al
Metals (ICP) by Method 6010B	WG1938259	1	10/17/22 16:02	10/18/22 09:47	CCE	Mt. Juliet, TN	9 Sc
Metals (ICP) by Method 6010B	WG1938259	5	10/17/22 16:02	10/21/22 15:01	CCE	Mt. Juliet, TN	
Metals (ICP) by Method 6010B	WG1941473	5	10/14/22 08:53	10/14/22 22:15	KMG	Mt. Juliet, TN	

## SMW-2 L1541409-07 GW

			Collected by SJE	Collected date/time 09/27/22 15:45	Received date/time 09/30/22 10:00		
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Calculated Results	WG1941473	1	10/14/22 22:18	10/14/22 22:18	JDG	Mt. Juliet, TN	
Gravimetric Analysis by Method 2540 C-2011	WG1936972	1	10/04/22 14:14	10/04/22 15:54	AEC	Mt. Juliet, TN	
Wet Chemistry by Method 2320 B-2011	WG1936139	1	10/03/22 09:03	10/03/22 09:03	ARD	Mt. Juliet, TN	
Wet Chemistry by Method 9056A	WG1935554	10	10/03/22 21:36	10/03/22 21:36	GEB	Mt. Juliet, TN	
Wet Chemistry by Method 9056A	WG1935554	100	10/03/22 21:48	10/03/22 21:48	GEB	Mt. Juliet, TN	
Metals (ICP) by Method 6010B	WG1938259	1	10/17/22 16:02	10/18/22 09:50	CCE	Mt. Juliet, TN	
Metals (ICP) by Method 6010B	WG1938259	5	10/17/22 16:02	10/21/22 15:04	CCE	Mt. Juliet, TN	
Metals (ICP) by Method 6010B	WG1941473	5	10/14/22 08:53	10/14/22 22:18	KMG	Mt. Juliet, TN	

## DUP L1541409-08 GW

			Collected by SJE	Collected date/time 09/27/22 12:30	Received date/time 09/30/22 10:00		
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Calculated Results	WG1941473	1	10/14/22 21:19	10/14/22 21:19	KMG	Mt. Juliet, TN	
Gravimetric Analysis by Method 2540 C-2011	WG1936913	1	10/04/22 12:15	10/04/22 14:37	AEC	Mt. Juliet, TN	
Wet Chemistry by Method 2320 B-2011	WG1936139	1	10/03/22 09:07	10/03/22 09:07	ARD	Mt. Juliet, TN	
Wet Chemistry by Method 9056A	WG1935554	10	10/03/22 22:01	10/03/22 22:01	GEB	Mt. Juliet, TN	
Metals (ICP) by Method 6010B	WG1938259	1	10/17/22 16:02	10/18/22 09:59	CCE	Mt. Juliet, TN	
Metals (ICP) by Method 6010B	WG1938259	1	10/17/22 16:02	10/21/22 14:46	CCE	Mt. Juliet, TN	
Metals (ICP) by Method 6010B	WG1941473	1	10/14/22 08:53	10/14/22 21:19	KMG	Mt. Juliet, TN	

## FPW L1541409-09 GW

			Collected by SJE	Collected date/time 09/28/22 16:00	Received date/time 09/30/22 10:00		
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Calculated Results	WG1941473	1	10/14/22 21:21	10/14/22 21:21	KMG	Mt. Juliet, TN	
Gravimetric Analysis by Method 2540 C-2011	WG1937521	1	10/05/22 11:11	10/05/22 13:19	SLP	Mt. Juliet, TN	
Wet Chemistry by Method 2320 B-2011	WG1936139	1	10/03/22 09:11	10/03/22 09:11	ARD	Mt. Juliet, TN	
Wet Chemistry by Method 9056A	WG1935554	1	10/03/22 22:51	10/03/22 22:51	GEB	Mt. Juliet, TN	
Metals (ICP) by Method 6010B	WG1938259	1	10/17/22 16:02	10/18/22 10:02	CCE	Mt. Juliet, TN	
Metals (ICP) by Method 6010B	WG1938259	1	10/17/22 16:02	10/21/22 14:49	CCE	Mt. Juliet, TN	



## SAMPLE SUMMARY

FPW L1541409-09 GW

Collected by  
SJE

Collected date/time  
09/28/22 16:00

Received date/time  
09/30/22 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1941473	1	10/14/22 08:53	10/14/22 21:21	KMG	Mt. Juliet, TN

DH-96 L1541409-10 GW

Collected by  
SJE

Collected date/time  
09/28/22 15:30

Received date/time  
09/30/22 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1941473	1	10/14/22 21:29	10/14/22 21:29	KMG	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1937521	1	10/05/22 11:11	10/05/22 13:19	SLP	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1936158	1	10/03/22 11:46	10/03/22 11:46	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1935554	10	10/03/22 23:15	10/03/22 23:15	GEB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1938259	1	10/17/22 16:02	10/18/22 10:05	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1938259	1	10/17/22 16:02	10/21/22 14:52	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1941473	1	10/14/22 08:53	10/14/22 21:29	KMG	Mt. Juliet, TN

DH-122 L1541409-11 GW

Collected by  
SJE

Collected date/time  
09/28/22 13:30

Received date/time  
09/30/22 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1941473	1	10/14/22 21:32	10/14/22 21:32	KMG	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1937521	1	10/05/22 11:11	10/05/22 13:19	SLP	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1936139	1	10/03/22 09:23	10/03/22 09:23	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1935554	20	10/03/22 23:28	10/03/22 23:28	GEB	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1938259	1	10/17/22 16:02	10/18/22 10:08	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1938259	1	10/17/22 16:02	10/21/22 14:55	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1941473	1	10/14/22 08:53	10/14/22 21:32	KMG	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

## CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris Ward  
Project Manager

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

PC-1

Collected date/time: 09/28/22 16:45

## SAMPLE RESULTS - 01

L1541409

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.29		1	10/14/2022 20:58	<a href="#">WG1941473</a>

## Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	1560		2.50	1	10/14/2022 20:58	<a href="#">WG1941473</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	9500		50.0	1	10/05/2022 13:19	<a href="#">WG1937521</a>

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	283		20.0	1	10/03/2022 11:39	<a href="#">WG1936158</a>
Alkalinity,Carbonate	ND		20.0	1	10/03/2022 11:39	<a href="#">WG1936158</a>

## Sample Narrative:

L1541409-01 WG1936158: Endpoint pH 4.5 Headspace

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	18.3		5.00	5	10/03/2022 18:16	<a href="#">WG1935554</a>
Fluoride	1.86		0.750	5	10/03/2022 18:16	<a href="#">WG1935554</a>
Sulfate	2120		250	50	10/03/2022 18:29	<a href="#">WG1935554</a>

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/19/2022 10:54	<a href="#">WG1938250</a>
Arsenic,Dissolved	ND		0.0100	1	10/19/2022 10:54	<a href="#">WG1938250</a>
Barium,Dissolved	0.0141		0.00500	1	10/19/2022 10:54	<a href="#">WG1938250</a>
Boron,Dissolved	0.569		0.200	1	10/19/2022 10:54	<a href="#">WG1938250</a>
Cadmium,Dissolved	ND		0.00200	1	10/19/2022 10:54	<a href="#">WG1938250</a>
Calcium	475		1.00	1	10/14/2022 20:58	<a href="#">WG1941473</a>
Calcium,Dissolved	491		1.00	1	10/19/2022 10:54	<a href="#">WG1938250</a>
Iron,Dissolved	ND		0.100	1	10/19/2022 10:54	<a href="#">WG1938250</a>
Lead,Dissolved	ND		0.00600	1	10/19/2022 10:54	<a href="#">WG1938250</a>
Magnesium	92.1		1.00	1	10/14/2022 20:58	<a href="#">WG1941473</a>
Magnesium,Dissolved	99.4		1.00	1	10/19/2022 10:54	<a href="#">WG1938250</a>
Manganese,Dissolved	ND		0.0100	1	10/19/2022 10:54	<a href="#">WG1938250</a>
Molybdenum,Dissolved	ND		0.00500	1	10/19/2022 10:54	<a href="#">WG1938250</a>
Potassium,Dissolved	10.7		2.00	1	10/19/2022 10:54	<a href="#">WG1938250</a>
Selenium,Dissolved	0.0776	<u>B</u>	0.0100	1	10/19/2022 10:54	<a href="#">WG1938250</a>
Sodium	390		3.00	1	10/14/2022 20:58	<a href="#">WG1941473</a>
Sodium,Dissolved	418		3.00	1	10/19/2022 10:54	<a href="#">WG1938250</a>



PC-2

Collected date/time: 09/28/22 11:45

## SAMPLE RESULTS - 02

L1541409

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	23.3		1	10/14/2022 22:12	<a href="#">WG1941473</a>

## Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	2770		12.5	1	10/14/2022 22:12	<a href="#">WG1941473</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	3540		200	1	10/05/2022 13:19	<a href="#">WG1937521</a>

## Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	892		20.0	1	10/03/2022 08:45	<a href="#">WG1936139</a>
Alkalinity,Carbonate	ND		20.0	1	10/03/2022 08:45	<a href="#">WG1936139</a>

## Sample Narrative:

L1541409-02 WG1936139: Endpoint pH 4.5

## Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	895		10.0	10	10/04/2022 03:50	<a href="#">WG1935554</a>
Fluoride	ND		1.50	10	10/04/2022 03:50	<a href="#">WG1935554</a>
Sulfate	5920		500	100	10/04/2022 04:02	<a href="#">WG1935554</a>

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/19/2022 10:57	<a href="#">WG1938250</a>
Arsenic,Dissolved	ND		0.0100	1	10/19/2022 10:57	<a href="#">WG1938250</a>
Barium,Dissolved	0.0132		0.00500	1	10/19/2022 10:57	<a href="#">WG1938250</a>
Boron,Dissolved	0.300		0.200	1	10/19/2022 10:57	<a href="#">WG1938250</a>
Cadmium,Dissolved	ND		0.00200	1	10/19/2022 10:57	<a href="#">WG1938250</a>
Calcium	477		5.00	5	10/14/2022 22:12	<a href="#">WG1941473</a>
Calcium,Dissolved	451		1.00	1	10/19/2022 10:57	<a href="#">WG1938250</a>
Iron,Dissolved	ND		0.100	1	10/19/2022 10:57	<a href="#">WG1938250</a>
Lead,Dissolved	ND		0.00600	1	10/19/2022 10:57	<a href="#">WG1938250</a>
Magnesium	382		5.00	5	10/14/2022 22:12	<a href="#">WG1941473</a>
Magnesium,Dissolved	377		1.00	1	10/19/2022 10:57	<a href="#">WG1938250</a>
Manganese,Dissolved	2.27		0.0100	1	10/19/2022 10:57	<a href="#">WG1938250</a>
Molybdenum,Dissolved	ND		0.00500	1	10/19/2022 10:57	<a href="#">WG1938250</a>
Potassium,Dissolved	21.6		2.00	1	10/19/2022 10:57	<a href="#">WG1938250</a>
Selenium,Dissolved	ND		0.0100	1	10/19/2022 10:57	<a href="#">WG1938250</a>
Sodium	2820		15.0	5	10/14/2022 22:12	<a href="#">WG1941473</a>
Sodium,Dissolved	2620		15.0	5	10/19/2022 14:03	<a href="#">WG1938250</a>

PC-5

Collected date/time: 09/27/22 10:30

## SAMPLE RESULTS - 03

L1541409

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.61		1	10/14/2022 22:06	<a href="#">WG1941473</a>

## Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	2030		2.50	1	10/14/2022 22:06	<a href="#">WG1941473</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	2970		50.0	1	10/04/2022 14:37	<a href="#">WG1936913</a>

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	574		20.0	1	10/03/2022 08:53	<a href="#">WG1936139</a>
Alkalinity,Carbonate	ND		20.0	1	10/03/2022 08:53	<a href="#">WG1936139</a>

## Sample Narrative:

L1541409-03 WG1936139: Endpoint pH 4.5

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	135		10.0	10	10/03/2022 19:06	<a href="#">WG1935554</a>
Fluoride	ND		1.50	10	10/03/2022 19:06	<a href="#">WG1935554</a>
Sulfate	1860		50.0	10	10/03/2022 19:06	<a href="#">WG1935554</a>

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/18/2022 09:28	<a href="#">WG1938259</a>
Arsenic,Dissolved	ND		0.0100	1	10/18/2022 09:28	<a href="#">WG1938259</a>
Barium,Dissolved	0.0400	<a href="#">Q1</a>	0.00500	1	10/18/2022 09:28	<a href="#">WG1938259</a>
Boron,Dissolved	ND		0.200	1	10/18/2022 09:28	<a href="#">WG1938259</a>
Cadmium,Dissolved	ND		0.00200	1	10/18/2022 09:28	<a href="#">WG1938259</a>
Calcium	555		1.00	1	10/14/2022 22:06	<a href="#">WG1941473</a>
Calcium,Dissolved	597	<a href="#">Q1 V</a>	1.00	1	10/18/2022 09:28	<a href="#">WG1938259</a>
Iron,Dissolved	ND		0.100	1	10/18/2022 09:28	<a href="#">WG1938259</a>
Lead,Dissolved	ND		0.00600	1	10/18/2022 09:28	<a href="#">WG1938259</a>
Magnesium	156		1.00	1	10/14/2022 22:06	<a href="#">WG1941473</a>
Magnesium,Dissolved	172	<a href="#">Q1</a>	1.00	1	10/18/2022 09:28	<a href="#">WG1938259</a>
Manganese,Dissolved	18.4		0.0500	5	10/21/2022 14:58	<a href="#">WG1938259</a>
Molybdenum,Dissolved	ND		0.00500	1	10/18/2022 09:28	<a href="#">WG1938259</a>
Potassium,Dissolved	18.5	<a href="#">Q1</a>	2.00	1	10/18/2022 09:28	<a href="#">WG1938259</a>
Selenium,Dissolved	ND		0.0100	1	10/18/2022 09:28	<a href="#">WG1938259</a>
Sodium	270		3.00	1	10/14/2022 22:06	<a href="#">WG1941473</a>
Sodium,Dissolved	306	<a href="#">Q1 V</a>	3.00	1	10/18/2022 09:28	<a href="#">WG1938259</a>



PC-6

Collected date/time: 09/27/22 11:15

## SAMPLE RESULTS - 04

L1541409

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	6.98		1	10/14/2022 22:09	<a href="#">WG1941473</a>

## Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	744		2.50	1	10/14/2022 22:09	<a href="#">WG1941473</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1760	<a href="#">J3</a>	50.0	1	10/04/2022 14:37	<a href="#">WG1936913</a>

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	309		20.0	1	10/03/2022 11:42	<a href="#">WG1936158</a>
Alkalinity,Carbonate	ND		20.0	1	10/03/2022 11:42	<a href="#">WG1936158</a>

## Sample Narrative:

L1541409-04 WG1936158: Endpoint pH 4.5

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	56.3		10.0	10	10/03/2022 19:31	<a href="#">WG1935554</a>
Fluoride	3.19		1.50	10	10/03/2022 19:31	<a href="#">WG1935554</a>
Sulfate	1320		50.0	10	10/03/2022 19:31	<a href="#">WG1935554</a>

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/18/2022 09:41	<a href="#">WG1938259</a>
Arsenic,Dissolved	ND		0.0100	1	10/18/2022 09:41	<a href="#">WG1938259</a>
Barium,Dissolved	0.0168		0.00500	1	10/18/2022 09:41	<a href="#">WG1938259</a>
Boron,Dissolved	0.632		0.200	1	10/18/2022 09:41	<a href="#">WG1938259</a>
Cadmium,Dissolved	ND		0.00200	1	10/18/2022 09:41	<a href="#">WG1938259</a>
Calcium	165		1.00	1	10/14/2022 22:09	<a href="#">WG1941473</a>
Calcium,Dissolved	181		1.00	1	10/18/2022 09:41	<a href="#">WG1938259</a>
Iron,Dissolved	ND		0.100	1	10/18/2022 09:41	<a href="#">WG1938259</a>
Lead,Dissolved	ND		0.00600	1	10/18/2022 09:41	<a href="#">WG1938259</a>
Magnesium	80.5		1.00	1	10/14/2022 22:09	<a href="#">WG1941473</a>
Magnesium,Dissolved	89.4		1.00	1	10/18/2022 09:41	<a href="#">WG1938259</a>
Manganese,Dissolved	ND		0.0100	1	10/18/2022 09:41	<a href="#">WG1938259</a>
Molybdenum,Dissolved	0.00531		0.00500	1	10/18/2022 09:41	<a href="#">WG1938259</a>
Potassium,Dissolved	7.48		2.00	1	10/18/2022 09:41	<a href="#">WG1938259</a>
Selenium,Dissolved	0.0720		0.0100	1	10/18/2022 09:41	<a href="#">WG1938259</a>
Sodium	438		3.00	1	10/14/2022 22:09	<a href="#">WG1941473</a>
Sodium,Dissolved	504		3.00	1	10/18/2022 09:41	<a href="#">WG1938259</a>



AMW-1

Collected date/time: 09/27/22 12:00

## SAMPLE RESULTS - 05

L1541409

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.85		1	10/14/2022 21:10	<a href="#">WG1941473</a>

## Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	950		2.50	1	10/14/2022 21:10	<a href="#">WG1941473</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1630		25.0	1	10/04/2022 15:54	<a href="#">WG1936972</a>

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	204		20.0	1	10/03/2022 12:23	<a href="#">WG1936139</a>
Alkalinity,Bicarbonate	204		20.0	1	10/03/2022 12:23	<a href="#">WG1936139</a>
Alkalinity,Carbonate	ND		20.0	1	10/03/2022 12:23	<a href="#">WG1936139</a>
Alkalinity,Hydroxide	ND		20.0	1	10/03/2022 12:23	<a href="#">WG1936139</a>

## Sample Narrative:

L1541409-05 WG1936139: Endpoint pH 4.5

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	30.5		1.00	1	10/03/2022 20:21	<a href="#">WG1935554</a>
Fluoride	1.06		0.150	1	10/03/2022 20:21	<a href="#">WG1935554</a>
Sulfate	855	V	50.0	10	10/03/2022 20:58	<a href="#">WG1935554</a>

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/18/2022 09:44	<a href="#">WG1938259</a>
Arsenic,Dissolved	ND		0.0100	1	10/18/2022 09:44	<a href="#">WG1938259</a>
Barium,Dissolved	0.0303		0.00500	1	10/18/2022 09:44	<a href="#">WG1938259</a>
Boron,Dissolved	ND		0.200	1	10/18/2022 09:44	<a href="#">WG1938259</a>
Cadmium,Dissolved	ND		0.00200	1	10/18/2022 09:44	<a href="#">WG1938259</a>
Calcium	258		1.00	1	10/14/2022 21:10	<a href="#">WG1941473</a>
Calcium,Dissolved	265		1.00	1	10/18/2022 09:44	<a href="#">WG1938259</a>
Iron,Dissolved	ND		0.100	1	10/18/2022 09:44	<a href="#">WG1938259</a>
Lead,Dissolved	ND		0.00600	1	10/18/2022 09:44	<a href="#">WG1938259</a>
Magnesium	74.1		1.00	1	10/14/2022 21:10	<a href="#">WG1941473</a>
Magnesium,Dissolved	79.6		1.00	1	10/18/2022 09:44	<a href="#">WG1938259</a>
Manganese,Dissolved	ND		0.0100	1	10/18/2022 09:44	<a href="#">WG1938259</a>
Molybdenum,Dissolved	ND		0.00500	1	10/18/2022 09:44	<a href="#">WG1938259</a>
Potassium,Dissolved	3.45		2.00	1	10/18/2022 09:44	<a href="#">WG1938259</a>
Selenium,Dissolved	0.0187		0.0100	1	10/18/2022 09:44	<a href="#">WG1938259</a>
Sodium	131		3.00	1	10/14/2022 21:10	<a href="#">WG1941473</a>
Sodium,Dissolved	147		3.00	1	10/18/2022 09:44	<a href="#">WG1938259</a>

## AMW-2

Collected date/time: 09/28/22 18:00

## SAMPLE RESULTS - 06

L1541409

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	14.8		1	10/14/2022 22:15	<a href="#">WG1941473</a>

## Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	1840		12.5	1	10/14/2022 22:15	<a href="#">WG1941473</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	5140		100	1	10/05/2022 13:19	<a href="#">WG1937521</a>

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	756		20.0	1	10/03/2022 09:00	<a href="#">WG1936139</a>
Alkalinity,Bicarbonate	756		20.0	1	10/03/2022 09:00	<a href="#">WG1936139</a>
Alkalinity,Carbonate	ND		20.0	1	10/03/2022 09:00	<a href="#">WG1936139</a>
Alkalinity,Hydroxide	ND		20.0	1	10/03/2022 09:00	<a href="#">WG1936139</a>

## Sample Narrative:

L1541409-06 WG1936139: Endpoint pH 4.5

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	373		10.0	10	10/03/2022 21:11	<a href="#">WG1935554</a>
Fluoride	ND		1.50	10	10/03/2022 21:11	<a href="#">WG1935554</a>
Sulfate	3830		500	100	10/03/2022 21:23	<a href="#">WG1935554</a>

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/18/2022 09:47	<a href="#">WG1938259</a>
Arsenic,Dissolved	ND		0.0100	1	10/18/2022 09:47	<a href="#">WG1938259</a>
Barium,Dissolved	0.0201		0.00500	1	10/18/2022 09:47	<a href="#">WG1938259</a>
Boron,Dissolved	0.261		0.200	1	10/18/2022 09:47	<a href="#">WG1938259</a>
Cadmium,Dissolved	ND		0.00200	1	10/18/2022 09:47	<a href="#">WG1938259</a>
Calcium	446		5.00	5	10/14/2022 22:15	<a href="#">WG1941473</a>
Calcium,Dissolved	471		1.00	1	10/18/2022 09:47	<a href="#">WG1938259</a>
Iron,Dissolved	ND		0.100	1	10/18/2022 09:47	<a href="#">WG1938259</a>
Lead,Dissolved	ND		0.00600	1	10/18/2022 09:47	<a href="#">WG1938259</a>
Magnesium	177		5.00	5	10/14/2022 22:15	<a href="#">WG1941473</a>
Magnesium,Dissolved	191		1.00	1	10/18/2022 09:47	<a href="#">WG1938259</a>
Manganese,Dissolved	3.90		0.0100	1	10/18/2022 09:47	<a href="#">WG1938259</a>
Molybdenum,Dissolved	ND		0.00500	1	10/18/2022 09:47	<a href="#">WG1938259</a>
Potassium,Dissolved	29.5		2.00	1	10/18/2022 09:47	<a href="#">WG1938259</a>
Selenium,Dissolved	ND		0.0100	1	10/18/2022 09:47	<a href="#">WG1938259</a>
Sodium	1460		15.0	5	10/14/2022 22:15	<a href="#">WG1941473</a>
Sodium,Dissolved	1700		15.0	5	10/21/2022 15:01	<a href="#">WG1938259</a>



## SMW-2

Collected date/time: 09/27/22 15:45

## SAMPLE RESULTS - 07

L1541409

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	16.0		1	10/14/2022 22:18	<a href="#">WG1941473</a>

## Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	1830		12.5	1	10/14/2022 22:18	<a href="#">WG1941473</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	5900	J3	100	1	10/04/2022 15:54	<a href="#">WG1936972</a>

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	1000		20.0	1	10/03/2022 09:03	<a href="#">WG1936139</a>
Alkalinity,Bicarbonate	1000		20.0	1	10/03/2022 09:03	<a href="#">WG1936139</a>
Alkalinity,Carbonate	ND		20.0	1	10/03/2022 09:03	<a href="#">WG1936139</a>
Alkalinity,Hydroxide	ND		20.0	1	10/03/2022 09:03	<a href="#">WG1936139</a>

## Sample Narrative:

L1541409-07 WG1936139: Endpoint pH 4.5

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	750		10.0	10	10/03/2022 21:36	<a href="#">WG1935554</a>
Fluoride	ND		1.50	10	10/03/2022 21:36	<a href="#">WG1935554</a>
Sulfate	3570		500	100	10/03/2022 21:48	<a href="#">WG1935554</a>

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/18/2022 09:50	<a href="#">WG1938259</a>
Arsenic,Dissolved	ND		0.0100	1	10/18/2022 09:50	<a href="#">WG1938259</a>
Barium,Dissolved	0.0114		0.00500	1	10/18/2022 09:50	<a href="#">WG1938259</a>
Boron,Dissolved	0.372		0.200	1	10/18/2022 09:50	<a href="#">WG1938259</a>
Cadmium,Dissolved	ND		0.00200	1	10/18/2022 09:50	<a href="#">WG1938259</a>
Calcium	450		5.00	5	10/14/2022 22:18	<a href="#">WG1941473</a>
Calcium,Dissolved	482		1.00	1	10/18/2022 09:50	<a href="#">WG1938259</a>
Iron,Dissolved	ND		0.100	1	10/18/2022 09:50	<a href="#">WG1938259</a>
Lead,Dissolved	ND		0.00600	1	10/18/2022 09:50	<a href="#">WG1938259</a>
Magnesium	171		5.00	5	10/14/2022 22:18	<a href="#">WG1941473</a>
Magnesium,Dissolved	186		1.00	1	10/18/2022 09:50	<a href="#">WG1938259</a>
Manganese,Dissolved	0.532		0.0100	1	10/18/2022 09:50	<a href="#">WG1938259</a>
Molybdenum,Dissolved	ND		0.00500	1	10/18/2022 09:50	<a href="#">WG1938259</a>
Potassium,Dissolved	17.3		2.00	1	10/18/2022 09:50	<a href="#">WG1938259</a>
Selenium,Dissolved	ND		0.0100	1	10/18/2022 09:50	<a href="#">WG1938259</a>
Sodium	1570		15.0	5	10/14/2022 22:18	<a href="#">WG1941473</a>
Sodium,Dissolved	1690		15.0	5	10/21/2022 15:04	<a href="#">WG1938259</a>

DUP

Collected date/time: 09/27/22 12:30

## SAMPLE RESULTS - 08

L1541409

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.89		1	10/14/2022 21:19	<a href="#">WG1941473</a>

## Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	950		2.50	1	10/14/2022 21:19	<a href="#">WG1941473</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1540	<u>J3</u>	25.0	1	10/04/2022 14:37	<a href="#">WG1936913</a>

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	201		20.0	1	10/03/2022 09:07	<a href="#">WG1936139</a>
Alkalinity,Bicarbonate	201		20.0	1	10/03/2022 09:07	<a href="#">WG1936139</a>
Alkalinity,Carbonate	ND		20.0	1	10/03/2022 09:07	<a href="#">WG1936139</a>
Alkalinity,Hydroxide	ND		20.0	1	10/03/2022 09:07	<a href="#">WG1936139</a>

## Sample Narrative:

L1541409-08 WG1936139: Endpoint pH 4.5

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	31.9		10.0	10	10/03/2022 22:01	<a href="#">WG1935554</a>
Fluoride	ND		1.50	10	10/03/2022 22:01	<a href="#">WG1935554</a>
Sulfate	866		50.0	10	10/03/2022 22:01	<a href="#">WG1935554</a>

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/18/2022 09:59	<a href="#">WG1938259</a>
Arsenic,Dissolved	ND		0.0100	1	10/18/2022 09:59	<a href="#">WG1938259</a>
Barium,Dissolved	0.0292		0.00500	1	10/18/2022 09:59	<a href="#">WG1938259</a>
Boron,Dissolved	ND		0.200	1	10/18/2022 09:59	<a href="#">WG1938259</a>
Cadmium,Dissolved	ND		0.00200	1	10/18/2022 09:59	<a href="#">WG1938259</a>
Calcium	256		1.00	1	10/14/2022 21:19	<a href="#">WG1941473</a>
Calcium,Dissolved	255		1.00	1	10/18/2022 09:59	<a href="#">WG1938259</a>
Iron,Dissolved	ND		0.100	1	10/18/2022 09:59	<a href="#">WG1938259</a>
Lead,Dissolved	ND		0.00600	1	10/21/2022 14:46	<a href="#">WG1938259</a>
Magnesium	75.6		1.00	1	10/14/2022 21:19	<a href="#">WG1941473</a>
Magnesium,Dissolved	77.7		1.00	1	10/18/2022 09:59	<a href="#">WG1938259</a>
Manganese,Dissolved	ND		0.0100	1	10/18/2022 09:59	<a href="#">WG1938259</a>
Molybdenum,Dissolved	ND		0.00500	1	10/18/2022 09:59	<a href="#">WG1938259</a>
Potassium,Dissolved	3.42		2.00	1	10/18/2022 09:59	<a href="#">WG1938259</a>
Selenium,Dissolved	0.0196		0.0100	1	10/18/2022 09:59	<a href="#">WG1938259</a>
Sodium	134		3.00	1	10/14/2022 21:19	<a href="#">WG1941473</a>
Sodium,Dissolved	143		3.00	1	10/18/2022 09:59	<a href="#">WG1938259</a>



FPW

Collected date/time: 09/28/22 16:00

## SAMPLE RESULTS - 09

L1541409

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.28		1	10/14/2022 21:21	<a href="#">WG1941473</a>

## Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	562		2.50	1	10/14/2022 21:21	<a href="#">WG1941473</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	648		20.0	1	10/05/2022 13:19	<a href="#">WG1937521</a>

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	201		20.0	1	10/03/2022 09:11	<a href="#">WG1936139</a>
Alkalinity,Bicarbonate	201		20.0	1	10/03/2022 09:11	<a href="#">WG1936139</a>
Alkalinity,Carbonate	ND		20.0	1	10/03/2022 09:11	<a href="#">WG1936139</a>
Alkalinity,Hydroxide	ND		20.0	1	10/03/2022 09:11	<a href="#">WG1936139</a>

## Sample Narrative:

L1541409-09 WG1936139: Endpoint pH 4.5

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	53.4		1.00	1	10/03/2022 22:51	<a href="#">WG1935554</a>
Sulfate	176		5.00	1	10/03/2022 22:51	<a href="#">WG1935554</a>

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	10/18/2022 10:02	<a href="#">WG1938259</a>
Barium,Dissolved	0.0781		0.00500	1	10/18/2022 10:02	<a href="#">WG1938259</a>
Cadmium,Dissolved	ND		0.00200	1	10/18/2022 10:02	<a href="#">WG1938259</a>
Calcium	151		1.00	1	10/14/2022 21:21	<a href="#">WG1941473</a>
Calcium,Dissolved	159		1.00	1	10/18/2022 10:02	<a href="#">WG1938259</a>
Iron,Dissolved	ND		0.100	1	10/18/2022 10:02	<a href="#">WG1938259</a>
Lead,Dissolved	ND		0.00600	1	10/21/2022 14:49	<a href="#">WG1938259</a>
Magnesium	45.0		1.00	1	10/14/2022 21:21	<a href="#">WG1941473</a>
Magnesium,Dissolved	48.5		1.00	1	10/18/2022 10:02	<a href="#">WG1938259</a>
Manganese,Dissolved	ND		0.0100	1	10/18/2022 10:02	<a href="#">WG1938259</a>
Molybdenum,Dissolved	ND		0.00500	1	10/18/2022 10:02	<a href="#">WG1938259</a>
Selenium,Dissolved	ND		0.0100	1	10/18/2022 10:02	<a href="#">WG1938259</a>
Sodium	69.5		3.00	1	10/14/2022 21:21	<a href="#">WG1941473</a>
Sodium,Dissolved	74.9		3.00	1	10/18/2022 10:02	<a href="#">WG1938259</a>

DH-96

Collected date/time: 09/28/22 15:30

## SAMPLE RESULTS - 10

L1541409

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.38		1	10/14/2022 21:29	<a href="#">WG1941473</a>

## Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	474		2.50	1	10/14/2022 21:29	<a href="#">WG1941473</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1250		20.0	1	10/05/2022 13:19	<a href="#">WG1937521</a>

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	287		20.0	1	10/03/2022 11:46	<a href="#">WG1936158</a>
Alkalinity,Bicarbonate	287		20.0	1	10/03/2022 11:46	<a href="#">WG1936158</a>
Alkalinity,Carbonate	ND		20.0	1	10/03/2022 11:46	<a href="#">WG1936158</a>
Alkalinity,Hydroxide	ND		20.0	1	10/03/2022 11:46	<a href="#">WG1936158</a>

## Sample Narrative:

L1541409-10 WG1936158: Endpoint pH 4.5 Headspace

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	34.6		10.0	10	10/03/2022 23:15	<a href="#">WG1935554</a>
Sulfate	711		50.0	10	10/03/2022 23:15	<a href="#">WG1935554</a>

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	10/18/2022 10:05	<a href="#">WG1938259</a>
Barium,Dissolved	0.0100		0.00500	1	10/18/2022 10:05	<a href="#">WG1938259</a>
Cadmium,Dissolved	ND		0.00200	1	10/18/2022 10:05	<a href="#">WG1938259</a>
Calcium	106		1.00	1	10/14/2022 21:29	<a href="#">WG1941473</a>
Calcium,Dissolved	110		1.00	1	10/18/2022 10:05	<a href="#">WG1938259</a>
Iron,Dissolved	ND		0.100	1	10/18/2022 10:05	<a href="#">WG1938259</a>
Lead,Dissolved	ND		0.00600	1	10/21/2022 14:52	<a href="#">WG1938259</a>
Magnesium	50.9		1.00	1	10/14/2022 21:29	<a href="#">WG1941473</a>
Magnesium,Dissolved	54.1		1.00	1	10/18/2022 10:05	<a href="#">WG1938259</a>
Manganese,Dissolved	0.592		0.0100	1	10/18/2022 10:05	<a href="#">WG1938259</a>
Molybdenum,Dissolved	0.00784		0.00500	1	10/18/2022 10:05	<a href="#">WG1938259</a>
Selenium,Dissolved	ND		0.0100	1	10/18/2022 10:05	<a href="#">WG1938259</a>
Sodium	269		3.00	1	10/14/2022 21:29	<a href="#">WG1941473</a>
Sodium,Dissolved	291		3.00	1	10/18/2022 10:05	<a href="#">WG1938259</a>



DH-122

Collected date/time: 09/28/22 13:30

## SAMPLE RESULTS - 11

L1541409

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.21		1	10/14/2022 21:32	<a href="#">WG1941473</a>

## Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	718		2.50	1	10/14/2022 21:32	<a href="#">WG1941473</a>

## Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1430	<a href="#">J3</a>	50.0	1	10/05/2022 13:19	<a href="#">WG1937521</a>

## Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	299		20.0	1	10/03/2022 09:23	<a href="#">WG1936139</a>
Alkalinity,Bicarbonate	299		20.0	1	10/03/2022 09:23	<a href="#">WG1936139</a>
Alkalinity,Carbonate	ND		20.0	1	10/03/2022 09:23	<a href="#">WG1936139</a>
Alkalinity,Hydroxide	ND		20.0	1	10/03/2022 09:23	<a href="#">WG1936139</a>

## Sample Narrative:

L1541409-11 WG1936139: Endpoint pH 4.5

## Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	131		20.0	20	10/03/2022 23:28	<a href="#">WG1935554</a>
Sulfate	930		100	20	10/03/2022 23:28	<a href="#">WG1935554</a>

## Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	10/18/2022 10:08	<a href="#">WG1938259</a>
Barium,Dissolved	0.0244		0.00500	1	10/18/2022 10:08	<a href="#">WG1938259</a>
Cadmium,Dissolved	ND		0.00200	1	10/18/2022 10:08	<a href="#">WG1938259</a>
Calcium	183		1.00	1	10/14/2022 21:32	<a href="#">WG1941473</a>
Calcium,Dissolved	196		1.00	1	10/18/2022 10:08	<a href="#">WG1938259</a>
Iron,Dissolved	ND		0.100	1	10/18/2022 10:08	<a href="#">WG1938259</a>
Lead,Dissolved	ND		0.00600	1	10/21/2022 14:55	<a href="#">WG1938259</a>
Magnesium	63.3		1.00	1	10/14/2022 21:32	<a href="#">WG1941473</a>
Magnesium,Dissolved	69.0		1.00	1	10/18/2022 10:08	<a href="#">WG1938259</a>
Manganese,Dissolved	0.995		0.0100	1	10/18/2022 10:08	<a href="#">WG1938259</a>
Molybdenum,Dissolved	0.00807		0.00500	1	10/18/2022 10:08	<a href="#">WG1938259</a>
Selenium,Dissolved	ND		0.0100	1	10/18/2022 10:08	<a href="#">WG1938259</a>
Sodium	321		3.00	1	10/14/2022 21:32	<a href="#">WG1941473</a>
Sodium,Dissolved	362		3.00	1	10/18/2022 10:08	<a href="#">WG1938259</a>

Method Blank (MB)

(MB) R3846244-1 10/04/22 14:37				
Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1541409-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1541409-04 10/04/22 14:37 • (DUP) R3846244-3 10/04/22 14:37				
	Original Result	DUP Result	Dilution	DUP RPD
Analyte	mg/l	mg/l		%
Dissolved Solids	1760	2160	1	20.2
				3
				5

L1541409-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1541409-08 10/04/22 14:37 • (DUP) R3846244-4 10/04/22 14:37				
	Original Result	DUP Result	Dilution	DUP RPD
Analyte	mg/l	mg/l		%
Dissolved Solids	1540	1660	1	7.34
				3
				5

Laboratory Control Sample (LCS)

(LCS) R3846244-2 10/04/22 14:37				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits
Analyte	mg/l	mg/l	%	%
Dissolved Solids	8800	8360	95.0	77.3-123



Method Blank (MB)

(MB) R3846141-1 10/04/22 15:54				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l	mg/l	mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1541409-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1541409-05 10/04/22 15:54 • (DUP) R3846141-3 10/04/22 15:54				
	Original Result	DUP Result	Dilution	DUP RPD
Analyte	mg/l	mg/l	%	DUP Qualifier
				Limits
Dissolved Solids	1630	1650	1	1.07
				5

L1541409-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1541409-07 10/04/22 15:54 • (DUP) R3846141-4 10/04/22 15:54				
	Original Result	DUP Result	Dilution	DUP RPD
Analyte	mg/l	mg/l	%	DUP Qualifier
				Limits
Dissolved Solids	5900	7110	1	18.6
				23
				5

Laboratory Control Sample (LCS)

(LCS) R3846141-2 10/04/22 15:54				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits
Analyte	mg/l	mg/l	%	%
Dissolved Solids	8800	8160	92.7	77.3-123

Method Blank (MB)

(MB) R3846632-1 10/05/22 13:19				
Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1541409-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1541409-10 10/05/22 13:19 • (DUP) R3846632-6 10/05/22 13:19				
Analyte	Original Result	DUP Result	Dilution	DUP RPD
	mg/l	mg/l		%
Dissolved Solids	1250	1250	1	0.000

L1541409-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1541409-11 10/05/22 13:19 • (DUP) R3846632-7 10/05/22 13:19				
Analyte	Original Result	DUP Result	Dilution	DUP RPD
	mg/l	mg/l		%
Dissolved Solids	1430	1730	1	19.0

Laboratory Control Sample (LCS)

(LCS) R3846632-5 10/05/22 13:19				
Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits
	mg/l	mg/l	%	%
Dissolved Solids	8800	8300	94.3	77.3-123



Method Blank (MB)

(MB) R3844021-2 10/03/22 08:36

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	U		8.45	20.0
Alkalinity,Bicarbonate	U		8.45	20.0
Alkalinity,Carbonate	U		8.45	20.0
Alkalinity,Hydroxide	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1541409-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1541409-02 10/03/22 08:45 • (DUP) R3844021-3 10/03/22 08:49

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	892	899	1	0.845		20
Alkalinity,Bicarbonate	892	899	1	0.845		20
Alkalinity,Carbonate	ND	ND	1	0.000		20
Alkalinity,Hydroxide	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

L1541431-20 Original Sample (OS) • Duplicate (DUP)

(OS) L1541431-20 10/03/22 10:07 • (DUP) R3844021-4 10/03/22 10:10

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	211	213	1	0.953		20
Alkalinity,Bicarbonate	211	213	1	0.953		20
Alkalinity,Carbonate	ND	ND	1	0.000		20
Alkalinity,Hydroxide	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3844021-1 10/03/22 08:32

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	106	106	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

ACCOUNT:

American Environmental - CO

PROJECT:

SDG:

L1541409

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Method Blank (MB)

(MB) R3844022-2 10/03/22 10:34

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Alkalinity	U		8.45	20.0
Alkalinity,Bicarbonate	U		8.45	20.0
Alkalinity,Carbonate	U		8.45	20.0
Alkalinity,Hydroxide	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1541327-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1541327-01 10/03/22 11:06 • (DUP) R3844022-3 10/03/22 11:09

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Alkalinity	543	543	1	0.0339		20
Alkalinity,Bicarbonate	543	543	1	0.0339		20
Alkalinity,Carbonate	ND	ND	1	0.000		20
Alkalinity,Hydroxide	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1541409-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1541409-10 10/03/22 11:46 • (DUP) R3844022-4 10/03/22 11:50

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Alkalinity	287	290	1	0.997		20
Alkalinity,Bicarbonate	287	290	1	0.997		20
Alkalinity,Carbonate	ND	ND	1	0.000		20
Alkalinity,Hydroxide	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3844022-1 10/03/22 10:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	103	103	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

ACCOUNT:

American Environmental - CO

PROJECT:

SDG:

L1541409

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Method Blank (MB)

(MB) R3844904-1 10/03/22 12:32				
Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Sulfate	U		0.594	5.00

L1541409-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1541409-08 10/03/22 22:01 • (DUP) R3844904-5 10/03/22 22:38						
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Chloride	31.9	30.7	10	3.80		15
Fluoride	ND	ND	10	14.8		15
Sulfate	866	836	10	3.48		15

L1541537-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1541537-03 10/04/22 00:05 • (DUP) R3844904-6 10/04/22 00:18						
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Chloride	519	518	10	0.226		15
Fluoride	ND	ND	10	0.000		15
Sulfate	ND	ND	10	0.000		15

Laboratory Control Sample (LCS)

(LCS) R3844904-2 10/03/22 12:45					
Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Chloride	40.0	39.8	99.5	80.0-120	
Fluoride	8.00	8.26	103	80.0-120	
Sulfate	40.0	40.3	101	80.0-120	

L1541409-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1541409-05 10/03/22 20:21 • (MS) R3844904-3 10/03/22 20:34 • (MSD) R3844904-4 10/03/22 20:46													
Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
mg/l	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%	
Chloride	50.0	30.5	78.7	78.6	96.4	96.2	1	80.0-120			0.141	15	<sup>2</sup> Tc
Fluoride	5.00	1.06	5.88	5.87	96.2	96.1	1	80.0-120			0.0971	15	<sup>3</sup> Ss
Sulfate	50.0	814	829	824	30.4	211	1	80.0-120	<u>EV</u>	<u>EV</u>	0.564	15	<sup>4</sup> Cn

L1541577-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1541577-05 10/04/22 02:47 • (MS) R3844904-7 10/04/22 03:00													
Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier						
mg/l	mg/l	mg/l	mg/l	%		%							
Chloride	50.0	39.9	87.9	96.1	1	80.0-120							<sup>5</sup> Sr
Fluoride	5.00	3.15	7.89	94.8	1	80.0-120							<sup>6</sup> Qc
Sulfate	50.0	518	538	40.6	1	80.0-120	<u>EV</u>						<sup>7</sup> Gl

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3850369-1 10/19/22 09:11

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Antimony, Dissolved	U		0.00430	0.0100
Arsenic, Dissolved	U		0.00440	0.0100
Barium, Dissolved	U		0.000736	0.00500
Boron, Dissolved	U		0.0200	0.200
Cadmium, Dissolved	U		0.000479	0.00200
Calcium, Dissolved	U		0.0793	1.00
Iron, Dissolved	U		0.0180	0.100
Lead, Dissolved	U		0.00299	0.00600
Magnesium, Dissolved	U		0.0853	1.00
Manganese, Dissolved	U		0.000934	0.0100
Molybdenum, Dissolved	U		0.00716	0.00500
Potassium, Dissolved	U		0.261	2.00
Selenium, Dissolved	0.00854	J	0.00735	0.0100
Sodium, Dissolved	U		0.504	3.00

Laboratory Control Sample (LCS)

(LCS) R3850369-2 10/19/22 09:14

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Antimony, Dissolved	1.00	0.947	94.7	80.0-120	
Arsenic, Dissolved	1.00	0.906	90.6	80.0-120	
Barium, Dissolved	1.00	0.979	97.9	80.0-120	
Boron, Dissolved	1.00	0.995	99.5	80.0-120	
Cadmium, Dissolved	1.00	0.939	93.9	80.0-120	
Calcium, Dissolved	10.0	9.72	97.2	80.0-120	
Iron, Dissolved	10.0	9.04	90.4	80.0-120	
Lead, Dissolved	1.00	0.935	93.5	80.0-120	
Magnesium, Dissolved	10.0	10.2	102	80.0-120	
Manganese, Dissolved	1.00	0.956	95.6	80.0-120	
Molybdenum, Dissolved	1.00	0.932	93.2	80.0-120	
Potassium, Dissolved	10.0	9.01	90.1	80.0-120	
Selenium, Dissolved	1.00	0.933	93.3	80.0-120	
Sodium, Dissolved	10.0	9.54	95.4	80.0-120	

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc



L1541006-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1541006-02 10/19/22 09:16 • (MS) R3850369-4 10/19/22 09:24 • (MSD) R3850369-5 10/19/22 09:27

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Potassium, Dissolved	10.0	ND	10.8	10.7	92.4	91.6	1	75.0-125			0.753	20
Sodium, Dissolved	10.0	16.6	27.1	27.2	105	105	1	75.0-125			0.0723	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3849759-1 10/18/22 09:22

Analyte	MB Result	MB Qualifier		MB MDL	MB RDL
		mg/l			
Antimony, Dissolved	U		0.00430	0.0100	
Arsenic, Dissolved	U		0.00440	0.0100	
Barium, Dissolved	U		0.000736	0.00500	
Boron, Dissolved	U		0.0200	0.200	
Cadmium, Dissolved	U		0.000479	0.00200	
Calcium, Dissolved	U		0.0793	1.00	
Iron, Dissolved	U		0.0180	0.100	
Lead, Dissolved	U		0.00299	0.00600	
Magnesium, Dissolved	U		0.0853	1.00	
Manganese, Dissolved	U		0.000934	0.0100	
Molybdenum, Dissolved	U		0.00116	0.00500	
Potassium, Dissolved	U		0.261	2.00	
Selenium, Dissolved	U		0.00735	0.0100	
Sodium, Dissolved	U		0.504	3.00	

Laboratory Control Sample (LCS)

(LCS) R3849759-2 10/18/22 09:25

Analyte	Spike Amount	LCS Result	LCS Rec.		Rec. Limits	LCS Qualifier	
	mg/l	mg/l	%		%		
Antimony, Dissolved	1.00	1.00	100		80.0-120		
Arsenic, Dissolved	1.00	0.907	90.7		80.0-120		
Barium, Dissolved	1.00	1.02	102		80.0-120		
Boron, Dissolved	1.00	1.06	106		80.0-120		
Cadmium, Dissolved	1.00	0.972	97.2		80.0-120		
Calcium, Dissolved	10.0	9.99	99.9		80.0-120		
Iron, Dissolved	10.0	9.91	99.1		80.0-120		
Lead, Dissolved	1.00	0.889	88.9		80.0-120		
Magnesium, Dissolved	10.0	10.5	105		80.0-120		
Manganese, Dissolved	1.00	1.03	103		80.0-120		
Molybdenum, Dissolved	1.00	0.951	95.1		80.0-120		
Potassium, Dissolved	10.0	9.39	93.9		80.0-120		
Selenium, Dissolved	1.00	0.942	94.2		80.0-120		
Sodium, Dissolved	10.0	9.76	97.6		80.0-120		

QUALITY CONTROL SUMMARY

L1541409-03.04.05.06.07.08.09.10.11

L1541409-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1541409-03 10/18/22 09:28 • (MS) R3849759-4 10/18/22 09:34 • (MSD) R3849759-5 10/18/22 09:37

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony, Dissolved	1.00	ND	1.10	1.09	110	109	1	75.0-125			0.872	20
Arsenic, Dissolved	1.00	ND	1.01	1.02	101	102	1	75.0-125			0.226	20
Barium, Dissolved	1.00	0.0400	1.07	1.07	103	103	1	75.0-125			0.0543	20
Boron, Dissolved	1.00	ND	1.20	1.20	109	108	1	75.0-125			0.433	20
Cadmium, Dissolved	1.00	ND	1.05	1.05	105	105	1	75.0-125			0.0802	20
Calcium, Dissolved	10.0	597	594	594	0.000	0.000	1	75.0-125	Y	Y	0.0216	20
Iron, Dissolved	10.0	ND	9.96	9.95	99.6	99.5	1	75.0-125			0.111	20
Lead, Dissolved	1.00	ND	0.905	0.906	90.5	90.6	1	75.0-125			0.0801	20
Magnesium, Dissolved	10.0	172	180	180	76.4	84.8	1	75.0-125			0.463	20
Manganese, Dissolved	1.00	20.3	20.8	20.7	51.4	37.0	1	75.0-125	EY	EY	0.697	20
Molybdenum, Dissolved	1.00	ND	0.980	0.971	98.0	97.1	1	75.0-125			0.951	20
Potassium, Dissolved	10.0	18.5	28.0	28.1	94.4	95.5	1	75.0-125			0.394	20
Selenium, Dissolved	1.00	ND	1.09	1.08	109	108	1	75.0-125			0.940	20
Sodium, Dissolved	10.0	306	310	309	39.0	27.4	1	75.0-125	Y	Y	0.375	20

<sup>1</sup> Cp <sup>2</sup> Tc <sup>3</sup> Ss <sup>4</sup> Cn <sup>5</sup> Sr <sup>6</sup> Qc <sup>7</sup> Gl <sup>8</sup> Al <sup>9</sup> Sc

ACCOUNT:

American Environmental - CO

PROJECT:

SDG: L1541409

DATE/TIME:

10/25/22 15:23

PAGE:

30 of 36



Method Blank (MB)

(MB) R3848739-1 10/14/22 20:23				
Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Calcium	U		0.0793	1.00
Magnesium	U		0.0853	1.00
Sodium	U		0.504	3.00

Laboratory Control Sample (LCS)

(LCS) R3848739-2 10/14/22 20:25				
Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits
	mg/l	mg/l	%	%
Calcium	10.0	9.82	98.2	80.0-120
Magnesium	10.0	10.2	102	80.0-120
Sodium	10.0	10.0	100	80.0-120

L1541428-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1541428-04 10/14/22 20:28 • (MS) R3848739-4 10/14/22 20:33 • (MSD) R3848739-5 10/14/22 20:36											
Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD
	mg/l	mg/l	mg/l	mg/l	%	%		%			%
Calcium	10.0	39.0	47.5	47.3	85.3	83.3	1	75.0-125			0.424
Magnesium	10.0	9.41	18.8	18.8	93.9	94.2	1	75.0-125			0.116
Sodium	10.0	3.02	12.4	12.5	94.2	94.5	1	75.0-125			0.183

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

### Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
V	The sample concentration is too high to evaluate accurate spike recoveries.

## ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>2</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1 6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1 4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>6</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 <sup>3</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



Company Name/Address: <b>American Environmental - CO</b>						Billing Information: Accounts Payable 8191 Southpark Lane Suite 107 Littleton, CO 80120						Chain of Custody Page ____ of ____  PROFESSIONAL ADVISORY SERVICES																																			
Report to: Skyler Elder						Email To: seider@aeeddenver.com; cahrenden@aeeddenver																																									
Project Description: Keenesburg Mine						City/State Collected:						Please Circle: PT MT CT ET																																			
Phone: 303-948-7733						Client Project #						Lab Project # AMEENVLCO-KEENESBURG																																			
Collected by (print): SSE						Site/Facility ID #						P.O. #																																			
Collected by (signature): Skyler Bz						Rush? (Lab MUST Be Notified) ____ Same Day _____ Five Day ____ Next Day _____ 5 Day (Rad Only) ____ Two Day _____ 10 Day (Rad Only) ____ Three Day _____						Quote #																																			
Packed on Ice N ___ Y ___						Date Results Needed						No. of Cntrs																																			
Sample ID						Comp/Grab						Matrix *						Depth						Date						Time																	
PC-1						GW						9/28						4:45pm						X						ALKBI, ALKCA 250ml HDPE-NoPres																	
PC-2						GW						9/28						11:45am						X						CI, F, SO4 125ml HDPE-NoPres																	
PC-5						GW						9/27						10:30am						X						Diss Metals 250ml HDPE-NoPres																	
AMW-1						GW						9/27						11:15am						X						HARD 250ml HDPE-HNO3																	
AMW-2						GW						9/27						12:00pm						X						SAR 250ml HDPE-HNO3																	
SMW-2						GW						9/27						3:45pm						X						TDS 1L-HDPE-NoPres																	
DUP						GW						9/27						12:30pm						X						V8260 40ml Amb-HCl-Blk																	
FPW						GW						9/28						4:00pm						X																							
Remarks: Diss Metals=As,Ba,Cd,Fe,Kd,Mg,Mn,Na,Pb,Sb,Se PC-1, PC-2, PC-6, AMW-1, AMW-2, SMW-2: Fluoride, SBDICP, BDICP, KDICP AMW-1, AMW-2, SMW-2, FPW, DH-96, DH-122: ALKOH, ALK						pH _____ Temp _____ Flow _____ Other _____						Trip Blank Received: Yes / No TBR						COC Seal Present/Intact: _____ NE _____ NW _____ SE _____ SW _____ Bottles arrive intact: _____ Correct bottles used: _____ Sufficient volume sent: _____ If applicable: VOA Zero Headspace: _____ Preservation Correct/Checked: _____ RAD Screen <0.5 mBq/m: _____						SDG # U5414004 F020						Acctnum: AMEENVLCO Template: T160430 Prelogin: P951767 PM: 824 - Chris Ward PB: _____ Shipped Via: FedEx Ground Remarks Sample # (lab only)																	
Relinquished by: (Signature) Skyler Bz						Date: 9/28/22 10:00am						Received by: (Signature)						Temp: _____ °C Bottle Received: 46						Hold: _____						Condition: OK																	
Relinquished by: (Signature)						Date:						Received by: (Signature)						Temp: _____ °C Bottle Received:						Hold:						Condition: OK																	



**American Environmental - CO**

8191 Southpark Lane  
Suite 107  
Littleton, CO 80120

Report to:

Project Description:  
Keenesburg Mine

Phone: 303-948-7733

Collected by (print):  
**SJE**

Collected by (signature):  
*Shirley B...*

Immediately Packed on Ice N    Y   

Sample ID

Comp/Grab

Matrix \*

Depth

Date

Time

No. of

Chrs

Remarks

Sample # (100 only)

**Billing Information:**

Accounts Payable  
8191 Southpark Lane  
Suite 107  
Littleton, CO 80120

Email To: [selder@aecdenver.com](mailto:selder@aecdenver.com); [calhrendsen@aecdenver.com](mailto:calhrendsen@aecdenver.com)

City/State Collected: Please Circle: PT MT CT ET

Client Project # Lab Project # AMEENVLCO-KEENESBURG

P.O. #

Quote #

Rush? (Lab MUST Be Notified)

Same Day Next Day Two Day Three Day

Five Day 10 Day (Rad Only)

Date Results Needed

No. of

Chrs

ALKBI, ALKCA 250ml HDPE-NoPres

CI, F, SO4 125ml HDPE-NoPres

Diss Metals 250ml HDPE-NoPres

HARD 250ml HDPE-HNO3

SAR 250ml HDPE-HNO3

TDS 1L-HDPE-NoPres

V8260 40ml Amb-HCl-Bik

**Analysis / Container / Preservative**

**Chain of Custody**

Page    of   



PACE ADVANCING SCIENCE

MT JULIET, TN

32065 Lebanon Rd, Mount Juliet, TN 37122  
Submitting a sample via this chain of custody certifies acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/labinfo-standard-terms.pdf>

SDG # U1541409

Table #

Account: AMEENVLCO

Template: T160430

Prelogin: P951767

PM: 824 - Chris Ward

PG:

Shipped Via: FedEx Ground

Remarks

\* Matrix:

SS - Soil AIR - Air F - Filter  
GW - Groundwater B - Bioassay  
WW - Wastewater  
DW - Drinking Water  
OT - Other

Remarks: Diss Metals=As, Ba, B, Ca, Cd, Fe, Kd, Mg, Mn, Na, Pb, Sb, Se  
PC-1, PC-2PC-6, AMW-1, AMW-2, SMW-2: Fluoride, SBDICP, BDICP, KDICP  
AMW-1, AMW-2, SMW-2, FPW, DH-96, DH-122: ALKOH, ALK

pH    Temp     
Flow    Other   

Sample Receipt Checklist  
COC Seal Present/Intact:    NE    N     
COC Signed/Accurate:    N     
Bottles arrive intact:    N     
Correct bottles used:    N     
Sufficient volume sent:    N     
If Applicable  
VQA Zero Headspace:    N     
Preservation Correct/Checked:    N     
RAD Screen <0.5 mB/hr:    N   

Relinquished by: (Signature)

Date: 9/29/22

Time: 10:00am

Received by: (Signature)

Date: 9/30/22

Time: 10:00am

Received by: (Signature)

Date: 9/30/22

Time: 10:00am

Received by: (Signature)

Date: 9/30/22

Time: 10:00am

Received by: (Signature)

Date: 9/30/22

Time: 10:00am

Received by: (Signature)

Date: 9/30/22

Time: 10:00am

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Date: 9/29/22

Time: 10:00am

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Time: 10:00am

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Time: 10:00am

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Date: 9/29/22

Time: 10:00am

Received by: (Signature)

Date: 9/29/22

Time: 10:00am

Received by: (Signature)

Date: 9/29/22

Time: 10:00am

Received by: (Signature)



L1541409

<u>Tracking Numbers</u>		<u>Temperature</u>
58296694 1511		NSA-6 $3.8 \pm 0 = 3.8$
1522		NSA-6 $3.2 \pm 0 = 3.2$



# SURFACE WATER HYDROLOGY

## 2022

## SURFACE WATER HYDROLOGY

The site drainage plan and descriptions of associated structures for the CEC Keenesburg Mine site are found in Appendix K of the Permit. Historically, as part of the reclamation process, CEC continues to maintain the diversion ditches, drainage ditches and drainage swales along the roads and around the north and east sides of the Permit Area. These features serve to convey all surface water runoff to Sediment Pond 2. The present drainage facilities, as well as existing site topographic features, are identified on the Existing Surface Features and Utilities Map. Certain surface water control features have been designated permanent facilities (by Permit revision, and at the direction of CDMG and others). These features will remain following the completion of all site reclamation activities. The permanent features include:

- Sediment Pond #2,
- The East and the West Perimeter Ditches
- The Dugout Pond

These permanent drainage features are identified on the existing Reclamation Contour and Drainage Plan Map.

With the exception of Sediment Pond 2 and the Dugout Pond, all previously existing man-made temporary pond sites have been closed and deleted from the drainage control mapping and monitoring requirement. This action was deemed appropriate because: 1) the sedimentation infill of Sediment Pond 2 has been virtually non-existent after more than fifteen years of continuous use; 2) Sediment Pond 2 has not had significant amounts of water stored in it for more than brief periods (except during the unusual and prolonged periods of excess precipitation in 1995, 1999, 2013, and 2018), and 3) even considering those unusual events of 1995, 1999, 2013, and 2018, to date there has not been an observed discharge from Sediment Pond 2. The rain event of 2018 took right up to the spillway, but significant outflow was not observed based on natural debris at the spillway.

Further, CEC implemented a dewatering scheme for Sediment Pond 2 in 1997, in conjunction with the preparation of a, "Spill Prevention, Control and Countermeasures Plan" for the site. This plan was last updated in 2003, but has been the subject of annual review. According to the plan, and when conditions warrant, CEC personnel will pump excess runoff water accumulated in Sediment Pond 2 back to the Dugout Pond, located about 700 feet slightly upgradient and to the south-southeast on the CEC property. The Dugout Pond has an available storage capacity exceeding the total contributing runoff volume associated with a 100-year,



24-hour design storm event (Technical Revision, "Drainage Control Plan II", January 1995). Pumps can be employed, as needed, to move the accumulated runoff water in Sediment Pond 2 back to the Dugout Pond within a maximum time frame of 72 hours, thus meeting a reasonable evacuation time period for Sediment Pond 2 dewatering. In this manner, CEC can maintain a continued lowered pond level in Sediment Pond 2 during prolonged periods of excess rainfall and runoff at the site (similar to that which was experienced during the spring of 1995). CEC did have occasion to employ this plan during rainfall events in April and May, 1999. This plan was also deployed in May and June of 2018 successfully. The system functioned in accordance with the design.

Except for the surface water accumulation from "recent" rainfall events, the practice of encouraging standing water to "pond" in the former mining pits (now confined to ash disposal B-Pit) has been eliminated. Deep eolian sand deposits (in some places as much as thirty feet in thickness) exist across much of the mine site. The sand's high infiltration characteristic contributes to a significant loss of surface moisture due to the "deep percolation" of rainfall during most storm events. The result is that normally only a minimal runoff is experienced. As additional segments of the Permit site are reclaimed (topsanded and seeded), less and less runoff has been observed.

# DISPOSAL ACTIVITIES DATA 2022



## DISPOSAL ACTIVITIES

### Ash Disposal

For the calendar year 2022, no mixed fly and bottom ash were transported to, and disposed of at the Coors Energy Company, Keenesburg Mine site. Thus, the total ash disposal activity for the B-Pit ash volume remains at 816,024 tons. The total amount of ash disposed of at the Keenesburg Mine between 1987 and the end of ash disposal was 1,066,044 tons. The last load of ash was disposed of in March 2016. No further ash will be accepted.

In accordance with the conditions of the Permit, the Keenesburg site continued to accept only ash that is the by-product of the coal combustion process, and which is generated at the power plant located in Golden, Colorado, the MillerCoors, LLC (formerly Coors Brewing Company) plant location. Since September, 1995 this power plant has been owned and operated by Colorado-Golden Energy Corporation (CGEC). (formerly Trigen-Colorado Energy Corporation). According to the agreements between CGEC and CEC, ash from this power plant will continue to be transported to, and used for reclamation at the Keenesburg site until the reclamation requirement has been satisfied. As of March 2016, coal is no longer used at the power plant, as such no more ash will be deposited into the Keenesburg mine.

### Mine Waste Rock Disposal

CEC obtained approvals from CDRMS (Minor Revision #34), from CDPHE, and from Weld County, to dispose of mine waste rock at the Keenesburg Mine site. During 1998 and 1999 a total of 12,467 tons of mine waste rock, the residual material from “hard rock” mine reclamation sites in the Clear Creek drainage, near Idaho Springs, Colorado, was transported to the Keenesburg site for disposal. This material was placed, in a layer approximately four feet thick, between layers of ash in the existing disposal pit (B-Pit). The specific intent of this method of mine waste rock disposal, as described in MR #34, was to isolate the material and thus minimize the possibility for future contamination.

No additional mine waste rock was received for disposal after calendar year 1999. The total quantity of this material placed at the Keenesburg site is still

12,467 tons. The placement location and horizontal extent of the mine waste rock has been identified on the Existing Surface Features and Utilities Map.

The site has been fully reclaimed, no further ash or rocks will be accepted or placed at the mine. All areas have been graded to final elevations and seeded.



# RECLAMATION REPORT 2022

## RECLAMATION REPORT

Coors Energy Company (CEC) continues to contract for the consultant engineering services of American Environmental Consulting, LLC, Littleton, Colorado (includes preparation of computer-generated drawings of the mine site, and compilation of volume and area estimates). In 2012, AzTec Consultants, Inc. provided surveying services for the new control points located for subsequent mapping work. No topo was taken in 2022 as the site remains unchanged.

Note: To facilitate easier reference to, and discussion of the various acreage parcels shown on the Vegetation/Revegetation Map (see page 218) a numeric designation has been assigned to each revegetated parcel. This system, initiated for the 2002 AHR Report, has been carried forward with new designations assigned as parcels were first seeded with the reclamation seed mix. Reclamation sitework is now complete.

No additional acreage was "disturbed" during 2022. In fact, the mine closure activities were completed in 2020 and the mine is in post-closure monitoring. As such, no aerial photo was taken in 2022.

There was minor reseeding completed in 2022 to accommodate ground rework and organic material placement on the historic road alignments. These areas were reworked in 2022 due to substandard growth from previous work. More details are included in the vegetation report.

Because of the national debate over classification of ash (hazardous vs nonhazardous), a management decision was made in 2010 to fill in as much of the bottom layer of B-Pit as soon as possible. The ash is normally placed in the pit in two layers, or lifts, before it is covered with spoils (6 feet) and topsand (2 feet). Additionally, management determined that a change from coal fuel to natural gas is economically sound and April 22, 2016 saw the last load of ash disposed of in the facility. The remaining fill into the B-Pit was completed using overburden materials from the onsite soils excavated during previous mining operations.

CEC will also use this opportunity to note that control efforts are being employed, specifically with respect to *Bromus tectorum* (cheatgrass). This



particular noxious weed (Classification list "C" species on the State's noxious weed listing), has been the subject of discussions following more recent AHR Report submittals, and most recently the Application for Phase III bond release (SL-06). In response to concerns over this issue, CEC has followed the recommendation of CDRMS and others in pursuing a test application of a control herbicide [Panoramic 2SL, manufactured by Alligare]. The test application was first made during the fall of 2010, specifically to Area 25. Then, following evidence of a successful control effort, the herbicide was applied to areas with noxious weeds.

In 2016, a technical revision to the permit was submitted and included removing approximately 212.45 acres from the mine permit. The reclamation summary for the end of 2021 is unchanged from 2016 and is as follows:

#### RECLAMATION ACREAGE SUMMARY

Total area remaining to be reclaimed 0 acres

Total area reclaimed and revegetated 225.10 ± acres

Grand Total 225.10 ± acres

[Note: It is still important to recognize that these acreage values vary significantly from the 2005 and earlier AHR Reports. These variances result from the improved accuracy of the photo mapping tools, and a redetermination of total site acreage following the assignment of acreage values to all parcels within the Permit area boundary. The results of this effort were submitted and approved as part of the Permit Renewal Application process in 2006. The most significant change was in the number of acres left "undisturbed" by mining activities, yet still within the Permit Area (a total of 173± acres before TR #42). Additionally, while the Permit Area boundary was changed (adjusted inward) in 2011 by TR #42, this Reclamation Acreage Summary accounts for all acreage reclaimed, whether now inside or outside of the boundary line.]

#### Additional Reclamation Information:

The total 435± acres "originally disturbed" by the Keenesburg Mine coal extraction operation can presently be assigned to one or more of the following categories:

- Acreage in previously active mining areas that has been reclaimed (includes the Long Term Spoil Area)
- Acreage backfilled and graded that has been previously seeded and growing

- Acreage designated as long-term mining or reclamation facilities (includes Access Road and SAE's)
- Acreage removed from Permit Area through approval of TR #42

# Colorado Division of Reclamation, Mining and Safety

## Annual Reclamation Report for Calendar Year – 2021

Kennesburg Mine

C-1981-028

Coors Energy Company

Mine Name

Permit Number

Permittee

PO Box 4030 Golden, CO 80402

Address

This report, required by Rule 2.04.13, is due by February 15 of each year, or other date, as agreed upon by the Division. It should include text, discussion, and maps, at a minimum, in addition to any other reclamation monitoring data as required by the approved permit. The location of the acreage reported under each land status category and year of seeding (if applicable) should be clearly identified on a map included with the report.

Land Category	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Acreage in Active Mining Areas <sup>1</sup>	0	0	0	=	0.00

Land Category	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Acres Disturbed <sup>2</sup>	443.53	0	0	=	443.53
Acres Backfilled and Graded	373.16	0	0	=	373.16
Acres Topsoiled	373.16	0	0	=	373.16

Acreage in Long-term Facilities <sup>3</sup>	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Non-Permanent Facilities	0	0	0	=	0
Permanent Facilities (permitted)	70.37	0	0	=	70.37
Totals	70.37			=	70.37

Acres Seeded (permanent)	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
9 Years and Less	129.68	0	3.65	=	126.03
10 Years and Greater	233.59	0	170.98	=	62.61
Totals	363.27			=	363.27

Bond Release	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Phase I Released	333.36	101.28	0	=	434.64
Phase II Released	272.07	0	0	=	272.07
Phase III Released	263.70	0	0	=	263.70

<sup>1</sup>Includes pits, topsoil stripped areas in advance of pits, and spoil not backfilled and graded

<sup>2</sup>Surface Mine Acres Disturbed = B&G + Long-Term Facilities + Active Mining Areas; Underground Mine Acres Disturbed = B&G + Long-Term Facilities; Separately-permitted Loadouts = B&G + Long-Term Facilities

<sup>3</sup>Includes haul, access and light-use roads, temporary dams and impoundments; permanent dams and impoundments; diversion and collector ditches, water and air monitoring sites; topsoil stockpiles; overburden stockpiles; repair, storage and construction areas; office area, repair shops, and parking; coal stockpiles, loading, and processing areas; railroads; coal conveyors; refuse piles and coal mine waste impoundments; head-of-hollow fills; valley fills; ventilation shafts and entryways; and non-coal waste disposal area (garbage dumps and coal combustion by-products disposal areas).



## MASS BALANCE

CEC stopped accepting fly and bottom ash for disposal following 2016 and no ash was disposed of in 2022. Reclamation work has been completed. All overburden material from the Long-Term Spoil Area was previously used as fill for the remaining portion of the B-Pit, and as the 6-foot final cover over the top layer of ash in the filled area of the B Pit. No additional overburden was placed after 2022. The 2019 to 2020 topo shows that there is no remaining topsand to be removed and placed for reclamation. No mine waste rock was delivered to the Keenesburg site for disposal during the year. In 2020, the reclamation activities included the final placement of topsand material, seeding approximately 55.55 acres (Areas 43, 38, 35, and 36), and continuing to maintain the quality of the revegetation. Some minor site work was completed in 2022, including tilling the old road alignments and adding in some organic material to aid in vegetation growth.

Remaining B-Pit Airspace Volume 0 BCY (final reclamation contours achieved)

Remaining A-Pit Airspace Volume 0 BCY (final reclamation contours achieved)

[A-PIT AND B-PIT ARE CLOSED]

Long-Term Spoil Remaining on Site                      0 BCY

Topsand Stockpiled on Site                                0 BCY

### Review of 2003 versus 2008 Topographic Surfaces

Since reliability of the topographic map work is essential to most activities relative to reclamation, it is important to build reliability into this database. In 2003 through 2005, CEC had the site flown and contoured at 2-foot intervals in the disturbed “active reclamation” areas, as opposed to the 5-foot interval used prior to 2003. For 2006 and after, the entire site has been

flown and contoured at the 2-foot interval. This more detailed topographic mapping has resulted in consecutive years of more accurate elevation mapping and better estimates of the volumes of materials used and their placement. CEC has concluded that the expanded 2-foot contour interval mapping for the entire site is a long-term benefit worth the additional investment.

### Review of 2011, 2012, and 2013 Topographic Surfaces

In 2012, CEC had the site resurveyed and new control points added for future mapping and volume calculations. The new survey also moved the coordinate system to State Plane coordinates from the previously used local coordinates, however the volumes for 2012 were still calculated based on the local grid system. In 2013, and in subsequent mapping events, the state plane coordinate system alone was used to prepare the surfaces and calculate

volumes to ensure mapping activities into the future more accurately estimate the volumes of materials used and their placement and more accurate comparisons for future activities. This change from local to state plane coordinate system resulted in a change in elevation across the site which also results in a recalculated volume of materials. The following note has been added to each drawing to explain the change:

The October 2012 Aerial survey of Keenesburg Mine was compiled and triangulated on Colorado State Plane North (surface) and reprojected to Local Mine datum using follow report:

**Horizontal Reprojection to Local Mine Datum:**

Translation north: -1282156.5640 ft  
Translation east: -3240307.3930 ft  
Rotation: 0°01'39.45"  
Origin north: 1318616.5640 ft  
Origin east: 3280875.3930 ft  
Scale factor: 1.00148829949

**Vertical Reprojection to Local Mine Datum:**

Note: there is a vertical plane between the New Vertical Datum and Local Mine Datum.

The following points were best fit to match Local Mine Datum.

X 36620.749 Y 28971.406	-3.834 ft	at power pole
X 36498.977 Y 36412.435	-0.25 ft	at control point 1101
X 40568.000 Y 36460.000	1.273	at control point 1103
X 41733.435 Y 28217.937	-1.834 ft	at power pole

In 2013, and in subsequent mapping events, the flyover was mapped in state plane coordinates to match the 2012 change. Additionally, the volume calculations were conducted using Carlson software, arguably more accurate software than the previously used AutoCAD Land Development software (see note below). The two changes together result in a more accurate assessment of the remaining airspace for filling and soils available for use as cover during reclamation.

Computer-Aided Drafting System Software Explanation

As noted above, the volumes for the 2020 AHR Report were computed using the Triangulation by Two Surface Volumes method provided in the Carlson Software programs rather than the previously used AutoCAD Land Development Desktop software. Carlson software, arguably, results in more accurate volume calculations. These methods calculate faster in most cases than other methods and are the most accurate because it uses true TIN to TIN prismatic volumes. The Triangulation method re-triangulates a new surface based on the points from both surfaces (TIN). It uses the points from both surfaces (TIN), as well as any location where the triangle edges between the two surfaces cross. The Triangulation method then calculates the new surface elevations based on the difference between the elevations of the two surfaces.

## PERMIT ACTIVITY SUMMARY FOR 2022

<u>Minor Revisions</u>	<u>Approved</u>	<u>Description of Revision</u>
NA		

<u>Technical Revisions</u>	<u>Approved</u>	<u>Description</u>
NA		

<u>"Other"</u>	<u>Approved</u>	<u>Description</u>
RN-8	05-24-2022	Permit Renewal
SL-11	12-02-2022	Bond Release