Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 214
Method: 01-MINERALS.mth
Acq Time: 17:04:56 Tue 28-Jul-20
Sample Name: CCV10-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	4234280.000	1.970351	mg/L		3
Mg	24	2530445.000	1.908476	mg/L		3
K	39	3185401.667	1.900421	mg/L		3
Ca	44	78465.000	1.875096	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 215
Method: 01-MINERALS.mth
Acq Time: 17:06:08 Tue 28-Jul-20
Sample Name: CCB10
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	19798.333	0.000847	mg/L		3
Mg	24	4846.667	0.000403	mg/L		3
K	39	175308.333	0.012585	mg/L		3
Ca	44	5345.000	-0.006336	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 216
Method: 01-MINERALS.mth
Acq Time: 17:10:15 Tue 28-Jul-20
Sample Name: 15917.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	19525300.000	45.423441	mg/L		3
Mg	24	11565300.000	43.529692	mg/L		3
K	39	665080.000	1.593851	mg/L		3
Ca	44	1222590.000	156.024753	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 217
Method: 01-MINERALS.mth
Acq Time: 17:11:26 Tue 28-Jul-20
Sample Name: 15917.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	24552171.667	59.290713	mg/L		3
Mg	24	18124166.667	70.819079	mg/L		3
K	39	446416.667	0.963240	mg/L		3
Ca	44	2048758.333	271.925674	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 218
Method: 01-MINERALS.mth
Acq Time: 17:13:15 Tue 28-Jul-20
Sample Name: 15917.01s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	842870.000	47.348470	mg/L		3
Mg	24	484370.000	44.570121	mg/L		3
Ca	44	55088.333	156.243017	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 219
Method: 01-MINERALS.mth
Acq Time: 17:14:27 Tue 28-Jul-20
Sample Name: 15917.02s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	1058103.333	60.415210	mg/L		3
Mg	24	768631.667	71.801818	mg/L		3
Ca	44	87930.000	263.224537	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 220
Method: 01-MINERALS.mth
Acq Time: 17:15:38 Tue 28-Jul-20
Sample Name: 15917.03s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	521488.333	28.475338	mg/L		3
Mg	24	423808.333	38.384970	mg/L		3
K	39	212605.000	4.031827	mg/L		3
Ca	44	39540.000	105.309174	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 221
Method: 01-MINERALS.mth
Acq Time: 17:16:49 Tue 28-Jul-20
Sample Name: 15917.04s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	1484751.667	85.062242	mg/L		3
Mg	24	708126.667	65.990527	mg/L		3
K	39	255720.000	7.781752	mg/L		3
Ca	44	84288.333	251.195066	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 222
Method: 01-MINERALS.mth
Acq Time: 17:18:00 Tue 28-Jul-20
Sample Name: 15917.05s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	887743.333	50.059479	mg/L		3
Mg	24	375211.667	34.530638	mg/L		3
K	39	271201.667	8.824735	mg/L		3
Ca	44	56613.333	161.422068	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 223
Method: 01-MINERALS.mth
Acq Time: 17:19:11 Tue 28-Jul-20
Sample Name: 15917.06s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	528373.333	29.721784	mg/L		3
Mg	24	426885.000	39.789856	mg/L		3
K	39	208380.000	4.163919	mg/L		3
Ca	44	37698.333	102.943093	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 224
Method: 01-MINERALS.mth
Acq Time: 17:20:23 Tue 28-Jul-20
Sample Name: 15917.07s
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	63676.667	2.641776	mg/L		3
Mg	24	14041.667	0.909259	mg/L		3
K	39	189668.333	2.620311	mg/L		3
Ca	44	6051.667	1.372915	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 225
Method: 01-MINERALS.mth
Acq Time: 17:26:29 Tue 28-Jul-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	21983.333	0.001821	mg/L		3
Mg	24	4685.000	0.000267	mg/L		3
K	39	180166.667	0.015128	mg/L		3
Ca	44	5148.333	-0.011910	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 226
Method: 01-MINERALS.mth
Acq Time: 17:27:40 Tue 28-Jul-20
Sample Name: 15917.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	33645.000	0.036636	mg/L		3
Mg	24	8171.667	0.014600	mg/L		3
K	39	180516.667	0.080419	mg/L		3
Ca	44	8738.333	0.405525	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 227
Method: 01-MINERALS.mth
Acq Time: 17:28:51 Tue 28-Jul-20
Sample Name: 15917.05 MS-2.0
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	985473.333	56.411551	mg/L		3
Mg	24	456368.333	42.615272	mg/L		3
K	39	382646.667	17.824571	mg/L		3
Ca	44	56905.000	164.732661	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 228
Method: 01-MINERALS.mth
Acq Time: 17:30:02 Tue 28-Jul-20
Sample Name: 15917.05 MSD
Sample Type: Sample
Matrix: Liquid
Comments: 25/1=125
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	983468.333	56.571681	mg/L		3
Mg	24	455805.000	42.767031	mg/L		3
K	39	381050.000	17.834795	mg/L		3
Ca	44	58321.667	170.050210	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 229
Method: 01-MINERALS.mth
Acq Time: 17:34:47 Tue 28-Jul-20
Sample Name: 15917.05s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 125

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	836978.333	48.304094	mg/L		3
Ca	44	54915.000	160.334470	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 230
Method: 01-MINERALS.mth
Acq Time: 17:36:03 Tue 28-Jul-20
Sample Name: 15917.05 MS-2.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 125

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	5026460.000	287.162195	mg/L		3
Ca	44	132318.333	399.672304	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 231
Method: 01-MINERALS.mth
Acq Time: 17:37:16 Tue 28-Jul-20
Sample Name: CCV11-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	4257563.333	1.954814	mg/L		3
Mg	24	2597846.667	1.933676	mg/L		3
K	39	3260643.333	1.921220	mg/L		3
Ca	44	78756.667	1.855863	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 232
Method: 01-MINERALS.mth
Acq Time: 17:38:28 Tue 28-Jul-20
Sample Name: CCB11
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-4
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	36443.333	0.008557	mg/L		3
Mg	24	13733.333	0.007050	mg/L		3
K	39	187943.333	0.020661	mg/L		3
Ca	44	5860.000	0.006967	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 233
Method: 01-MINERALS.mth
Acq Time: 17:39:38 Tue 28-Jul-20
Sample Name: 072720_5 LCS-1.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2039865.000	0.938883	mg/L		3
Mg	24	1264058.333	0.945862	mg/L		3
K	39	1658493.333	0.936845	mg/L		3
Ca	44	45053.333	1.008541	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 234
Method: 01-MINERALS.mth
Acq Time: 17:42:02 Tue 28-Jul-20
Sample Name: 072720_5 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	21975.000	0.001761	mg/L		3
Mg	24	4768.333	0.000309	mg/L		3
K	39	182470.000	0.015944	mg/L		3
Ca	44	5255.000	-0.009977	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 243
Method: 01-MINERALS.mth
Acq Time: 17:55:15 Tue 28-Jul-20
Sample Name: CCV12-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 07/08/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	4370501.667	2.009136	mg/L		3
Mg	24	2684833.333	2.000786	mg/L		3
K	39	3306143.333	1.951182	mg/L		3
Ca	44	81603.333	1.930517	mg/L		3

Data Set: MT5-20-0728A
Run Date: 07/28/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 244
Method: 01-MINERALS.mth
Acq Time: 17:56:27 Tue 28-Jul-20
Sample Name: CCB12
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0728A.cal
Cal Type: External Calibration
Last Calib: MTD-072720-5
Bkg File:
Int Correct:
Blank File: Blank.013

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	20298.333	0.001016	mg/L		3
Mg	24	4880.000	0.000403	mg/L		3
K	39	178858.333	0.014041	mg/L		3
Ca	44	5296.667	-0.008501	mg/L		3

Metals Digestion 3015A \ 3050B

DATE 7/27/20 PREP BATCH MTD-072720-4

TIME START 10:00 TIME FINISH 10:30 ANALYST CM

Pipet Calibration:

Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria	Pipet #	Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Criteria
2	1			Bias: Mean ± 2% of nominal value Precision: RSD ≤1% of nominal value	3	1			Bias: Mean ± 2% of nominal value Precision: RSD ≤1% of nominal value
	2					2			
	3					3			

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	FINAL VOLUME (ml)	REMARKS	% TOTAL SOLIDS	DILUTION FACTOR
LCS-072720-4	----	50	50		—	1
LRB-072720-4	----	50	50		—	1
15854.01		10		filter & preserve in lab		5
02						
04				filt. & pres. in lab		
04 MS				Cat		
04 MSD				Cat		
05						
07				filt. & pres. in lab		
07 MS						
07 MSD						
08						
15858.01		0.221				226
15917.01		10				5
02						
03						
03 MS						
03 MSD						
04						
05						
05 MS				Cat		
05 MSD				Ca+		
06						
07		25				2

NOTES: *1) Spike values (unless otherwise stated):*
LCS = 0.05 ppm = 50 mls / 0.50 mls of 5ppm Spiking Solution
Samples: Water = 0.05 ppm = 50 mls / 0.50 mls of 5ppm Spiking Solution
Soil = 0.10 ppm = 50 mls / 1.0 mls of 5ppm Spiking Solution
Spiking Solution – Date Prepared: 7/22/20

2) Spike values for minerals (Ca-Mg-K-Na)
LCS = 1.0 ppm = 50 mls / 0.50 mls HM Stock Solution
Samples (Water or Soil) = 2.0 ppm = 50 mls / 1.0 mls HM Stock Solution
High Purity Stock Solution (HM)- Lot # 1927522-500

3) HNO_3 Lot # 248841

4) Centrifuge Tube Lot # 191129-060

5) Balance ID: M2 M4 CM 8/3/20

Reviewed by CCM *On* 7-29-20

Form 0: Sequence Log

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Filename	*Run Time*	*Sample ID*	*Matrix*	*QC Type*
001	7/23/2020 12:08:13 PM	Calibration Blank	Liquid	
002	7/23/2020 12:10:05 PM	Standard #1	Liquid	
003	7/23/2020 12:11:57 PM	Standard #2	Liquid	
004	7/23/2020 12:13:48 PM	Standard #3	Liquid	
005	7/23/2020 12:15:40 PM	Standard #4	Liquid	
006	7/23/2020 12:17:32 PM	Standard #5	Liquid	
007	7/23/2020 12:19:23 PM	Standard #6	Liquid	
008	7/23/2020 12:22:39 PM	Standard #7	Liquid	
009	7/23/2020 12:26:17 PM	Standard #8	Liquid	
010	7/23/2020 12:29:33 PM	ICV-5.0 ppb	Liquid	ICV
011	7/23/2020 12:32:18 PM	ICB	Liquid	ICB
012	7/23/2020 12:35:56 PM	CCV1-2.0 ppb	Liquid	CCV
013	7/23/2020 12:37:47 PM	CCB1	Liquid	CCB
014	7/23/2020 12:39:39 PM	BS-0.10	Liquid	BS
015	7/23/2020 12:41:30 PM	072320_1 LCS-2.0	Liquid	LCS
016	7/23/2020 12:43:20 PM	072320_1 LRB	Liquid	LRB
017	7/23/2020 12:45:07 PM	15807.01s tclp	Liquid	S
018	7/23/2020 12:46:54 PM	15835.01s tclp	Liquid	S
019	7/23/2020 12:48:42 PM	15837.01s tclp	Liquid	S
020	7/23/2020 12:50:30 PM	15847.01s tclp	Liquid	S
021	7/23/2020 12:52:18 PM	15886.01s	Liquid	S
022	7/23/2020 12:54:06 PM	15904.01s	Liquid	S
023	7/23/2020 12:55:55 PM	15926.02s	Liquid	S
024	7/23/2020 12:57:44 PM	15927.01s	Liquid	S
025	7/23/2020 12:59:31 PM	15931.01s	Liquid	S
026	7/23/2020 1:01:18 PM	15929.01s	Liquid	S
027	7/23/2020 1:03:05 PM	15929.01 MS-2.0	Liquid	MS
028	7/23/2020 1:04:53 PM	15929.01 MSD	Liquid	MSD
029	7/23/2020 1:06:44 PM	CCV2-2.0 ppb	Liquid	CCV
030	7/23/2020 1:08:36 PM	CCB2	Liquid	CCB
031	7/23/2020 1:10:24 PM	15917.01s	Liquid	S
032	7/23/2020 1:12:13 PM	15917.02s	Liquid	S
033	7/23/2020 1:14:03 PM	15917.03s	Liquid	S
034	7/23/2020 1:15:50 PM	15917.04s	Liquid	S
035	7/23/2020 1:17:37 PM	15917.05s	Liquid	S
036	7/23/2020 1:19:25 PM	15917.07s	Liquid	S
037	7/23/2020 1:26:05 PM	15917.06s	Liquid	S
038	7/23/2020 1:27:53 PM	15917.06 MS-2.0	Liquid	MS
039	7/23/2020 1:29:41 PM	15917.06 MSD	Liquid	MSD
040	7/23/2020 1:31:33 PM	CCV3-2.0 ppb	Liquid	CCV
041	7/23/2020 1:33:24 PM	CCB3	Liquid	CCB
042	7/23/2020 1:35:15 PM	072320_2 LCS-2.0	Liquid	LCS
043	7/23/2020 1:37:06 PM	072320_2 LRB	Liquid	LRB
044	7/23/2020 1:38:55 PM	15682.01s	Soil	S
045	7/23/2020 1:40:43 PM	15834.02s	Soil	S
046	7/23/2020 1:42:31 PM	15834.03s	Soil	S
047	7/23/2020 1:44:18 PM	15834.04s	Soil	S
048	7/23/2020 1:46:06 PM	15834.05s	Soil	S
049	7/23/2020 1:47:55 PM	15834.06s	Soil	S
050	7/23/2020 1:49:43 PM	15834.06 MS-2.0	Soil	MS
051	7/23/2020 1:51:33 PM	15834.06 MSD	Soil	MSD
052	7/23/2020 1:53:24 PM	CCV4-2.0 ppb	Liquid	CCV
053	7/23/2020 1:55:16 PM	CCB4	Liquid	CCB
054	7/23/2020 1:57:04 PM	15889.01s	Soil	S
055	7/23/2020 1:58:52 PM	15459.08s	Liquid	
056	7/23/2020 2:00:40 PM	15459.08 dp	Liquid	

Form 0: Sequence Log

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Filename	*Run Time*	*Sample ID*	*Matrix*	*QC Type*
057	7/23/2020 2:02:32 PM	CCV5-2.0 ppb	Liquid	CCV
058	7/23/2020 2:04:24 PM	CCB5	Liquid	CCB
059	7/23/2020 2:25:48 PM	15459.08s	Soil	
060	7/23/2020 2:27:37 PM	15459.08 dp	Soil	
061	7/23/2020 2:29:28 PM	CCV6-2.0 ppb	Liquid	CCV
062	7/23/2020 2:31:20 PM	CCB6	Liquid	CCB
063	7/23/2020 2:49:09 PM	15459.08s	Soil	S
064	7/23/2020 2:50:57 PM	15459.08 dp	Soil	S
065	7/23/2020 2:52:48 PM	CCV6-2.0 ppb	Liquid	CCV
066	7/23/2020 2:54:40 PM	CCB6	Liquid	CCB
067	7/23/2020 2:56:31 PM	072320_3 LCS-2.0	Liquid	LCS
068	7/23/2020 2:58:21 PM	072320_3 LRB	Liquid	LRB
069	7/23/2020 3:00:10 PM	15849.01s tclp	Liquid	S
070	7/23/2020 3:01:59 PM	15888.01s tclp	Liquid	S
071	7/23/2020 3:03:48 PM	15889.01s tclp	Liquid	S
072	7/23/2020 3:05:37 PM	15889.02s tclp	Liquid	S
073	7/23/2020 3:07:25 PM	15889.02 MS-2.0	Liquid	MS
074	7/23/2020 3:09:14 PM	15889.02 MSD	Liquid	MSD
075	7/23/2020 3:11:05 PM	CCV7-2.0 ppb	Liquid	CCV
076	7/23/2020 3:12:57 PM	CCB7	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Lab Sample ID: S15917.01
Sample Tag: MW-1 L007009-01
Date Collected: 07/21/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Lab Sample ID: S15917.02
Sample Tag: MW-2 L007009-02
Date Collected: 07/21/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Lab Sample ID: S15917.03
Sample Tag: MW-4 L007009-03
Date Collected: 07/21/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Lab Sample ID: S15917.04
Sample Tag: MW-5 L007009-04
Date Collected: 07/21/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Lab Sample ID: S15917.05
Sample Tag: MW-6 L007009-05
Date Collected: 07/21/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Lab Sample ID: S15917.06
Sample Tag: MW-4 Duplicate L007009-06
Date Collected: 07/21/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Lab Sample ID: S15917.07
Sample Tag: Field Blank L007009-07
Date Collected: 07/21/2020
Matrix: Water

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	07/23/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Note/Qualifier Key	
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Sample Name	*QC Type*	*Dilute*	*Element*	*Sample Conc*	*Actual Conc*	*%Rec*	*LCL/UCL*	*Units*	*Matrix*
010 ICV-5.0 ppb	ICV	1.0	Hg	5.298	5.0	106	90/110	ug/L	Liquid
012 CCV1-2.0 ppb	CCV	1.0	Hg	2.024	2.0	101	90/110	ug/L	Liquid
029 CCV2-2.0 ppb	CCV	1.0	Hg	1.915	2.0	96	90/110	ug/L	Liquid
040 CCV3-2.0 ppb	CCV	1.0	Hg	2.047	2.0	102	90/110	ug/L	Liquid
052 CCV4-2.0 ppb	CCV	1.0	Hg	2.053	2.0	103	90/110	ug/L	Liquid
057 CCV5-2.0 ppb	CCV	1.0	Hg	2.068	2.0	103	90/110	ug/L	Liquid
061 CCV6-2.0 ppb	CCV	1.0	Hg	2.035	2.0	102	90/110	ug/L	Liquid
065 CCV6-2.0 ppb	CCV	1.0	Hg	2.042	2.0	102	90/110	ug/L	Liquid
075 CCV7-2.0 ppb	CCV	1.0	Hg	2.015	2.0	101	90/110	ug/L	Liquid

Form 3: Blanks

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Sample Name	*QC Type*	*Dilute*	*Element*	*Sample Conc*	*Raw Conc*	*Units*	*Matrix*
011 ICB	ICB	1.0	Hg	<0.05	-0.0291	ug/L	Liquid
013 CCB1	CCB	1.0	Hg	<0.05	-0.0293	ug/L	Liquid
016 072320_1 LRB	LRB	1.0	Hg	<0.05	-0.0511	ug/L	Liquid
030 CCB2	CCB	1.0	Hg	<0.05	-0.1335	ug/L	Liquid
041 CCB3	CCB	1.0	Hg	<0.05	-0.0305	ug/L	Liquid
043 072320_2 LRB	LRB	1.0	Hg	<0.05	-0.0548	ug/L	Liquid
053 CCB4	CCB	1.0	Hg	<0.05	-0.0284	ug/L	Liquid
058 CCB5	CCB	1.0	Hg	<0.05	-0.0297	ug/L	Liquid
062 CCB6	CCB	1.0	Hg	<0.05	-0.0297	ug/L	Liquid
066 CCB6	CCB	1.0	Hg	<0.05	-0.0280	ug/L	Liquid
068 072320_3 LRB	LRB	1.0	Hg	<0.05	-0.0542	ug/L	Liquid
076 CCB7	CCB	1.0	Hg	<0.05	-0.0304	ug/L	Liquid

Form 5A: Matrix Spike Sample Recovery

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Spike Name	Sample Name	Dilute	Element	Spike Conc	Sample Conc	Spike Amount	%Rec	LCL/UCL	Units	Matrix
014 BS-0.10		1.0	Hg	0.079	ND	0.10	79	70/130	ug/L	Liquid
027 15929.01 MS-2.0	**026 15929.01s**	1.0	Hg	1.759	<0.2	2.0	88	80/120	ug/L	Liquid
038 15917.06 MS-2.0	**037 15917.06s**	1.0	Hg	1.917	<0.2	2.0	96	80/120	ug/L	Liquid
050 15834.06 MS-2.0	**049 15834.06s**	68.5	Hg	141.5	<50	137.0	103	80/120	ug/kg	Soil
073 15889.02 MS-2.0	**072 15889.02s tclp**	2.0	Hg	4.054	<0.2	4.0	101	80/120	ug/L	Liquid

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Duplicate Name	*Sample Name*	*Dilute*	*Element*	*Dup Conc*	*Samp Conc*	*%RPD*	*LCL/UCL*	*Units*	*Matrix*
028 15929.01 MSD	**027 15929.01 MS-2.0**	1.0	Hg	1.782	1.759	1	0/20	ug/L	Liquid
039 15917.06 MSD	**038 15917.06 MS-2.0**	1.0	Hg	1.930	1.917	1	0/20	ug/L	Liquid
051 15834.06 MSD	**050 15834.06 MS-2.0**	67.0	Hg	138.8	141.5	2	0/20	ug/kg	Soil
074 15889.02 MSD	**073 15889.02 MS-2.0**	2.0	Hg	4.188	4.054	3	0/20	ug/L	Liquid

Form 7: Laboratory Control Sample

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Sample Name	*Dilute*	*Element*	*Sample Conc*	*Actual Conc*	*%Rec*	*LCL/UCL*	*Units*	*Matrix*
015 072320_1 LCS-2.0	1.0	Hg	2.000	2.0	100	85/115	ug/L	Liquid
042 072320_2 LCS-2.0	1.0	Hg	1.996	2.0	100	85/115	ug/L	Liquid
067 072320_3 LCS-2.0	1.0	Hg	1.990	2.0	100	85/115	ug/L	Liquid

Form 13: Analysis Run Log

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Filename	*Run Time*	*Matrix*	*Analytes*
001 Calibration Blank	7/23/2020 12:08:13 PM	Liquid	Hg
002 Standard #1	7/23/2020 12:10:05 PM	Liquid	Hg
003 Standard #2	7/23/2020 12:11:57 PM	Liquid	Hg
004 Standard #3	7/23/2020 12:13:48 PM	Liquid	Hg
005 Standard #4	7/23/2020 12:15:40 PM	Liquid	Hg
006 Standard #5	7/23/2020 12:17:32 PM	Liquid	Hg
007 Standard #6	7/23/2020 12:19:23 PM	Liquid	Hg
008 Standard #7	7/23/2020 12:22:39 PM	Liquid	Hg
009 Standard #8	7/23/2020 12:26:17 PM	Liquid	Hg
010 ICV-5.0 ppb	7/23/2020 12:29:33 PM	Liquid	Hg
011 ICB	7/23/2020 12:32:18 PM	Liquid	Hg
012 CCV1-2.0 ppb	7/23/2020 12:35:56 PM	Liquid	Hg
013 CCB1	7/23/2020 12:37:47 PM	Liquid	Hg
014 BS-0.10	7/23/2020 12:39:39 PM	Liquid	Hg
015 072320_1 LCS-2.0	7/23/2020 12:41:30 PM	Liquid	Hg
016 072320_1 LRB	7/23/2020 12:43:20 PM	Liquid	Hg
017 15807.01s tclp	7/23/2020 12:45:07 PM	Liquid	Hg
018 15835.01s tclp	7/23/2020 12:46:54 PM	Liquid	Hg
019 15837.01s tclp	7/23/2020 12:48:42 PM	Liquid	Hg
020 15847.01s tclp	7/23/2020 12:50:30 PM	Liquid	Hg
021 15886.01s	7/23/2020 12:52:18 PM	Liquid	Hg
022 15904.01s	7/23/2020 12:54:06 PM	Liquid	Hg
023 15926.02s	7/23/2020 12:55:55 PM	Liquid	Hg
024 15927.01s	7/23/2020 12:57:44 PM	Liquid	Hg
025 15931.01s	7/23/2020 12:59:31 PM	Liquid	Hg
026 15929.01s	7/23/2020 1:01:18 PM	Liquid	Hg
027 15929.01 MS-2.0	7/23/2020 1:03:05 PM	Liquid	Hg
028 15929.01 MSD	7/23/2020 1:04:53 PM	Liquid	Hg
029 CCV2-2.0 ppb	7/23/2020 1:06:44 PM	Liquid	Hg
030 CCB2	7/23/2020 1:08:36 PM	Liquid	Hg
031 15917.01s	7/23/2020 1:10:24 PM	Liquid	Hg
032 15917.02s	7/23/2020 1:12:13 PM	Liquid	Hg
033 15917.03s	7/23/2020 1:14:03 PM	Liquid	Hg
034 15917.04s	7/23/2020 1:15:50 PM	Liquid	Hg
035 15917.05s	7/23/2020 1:17:37 PM	Liquid	Hg
036 15917.07s	7/23/2020 1:19:25 PM	Liquid	Hg
037 15917.06s	7/23/2020 1:26:05 PM	Liquid	Hg
038 15917.06 MS-2.0	7/23/2020 1:27:53 PM	Liquid	Hg
039 15917.06 MSD	7/23/2020 1:29:41 PM	Liquid	Hg
040 CCV3-2.0 ppb	7/23/2020 1:31:33 PM	Liquid	Hg
041 CCB3	7/23/2020 1:33:24 PM	Liquid	Hg
042 072320_2 LCS-2.0	7/23/2020 1:35:15 PM	Liquid	Hg
043 072320_2 LRB	7/23/2020 1:37:06 PM	Liquid	Hg
044 15682.01s	7/23/2020 1:38:55 PM	Soil	Hg
045 15834.02s	7/23/2020 1:40:43 PM	Soil	Hg
046 15834.03s	7/23/2020 1:42:31 PM	Soil	Hg
047 15834.04s	7/23/2020 1:44:18 PM	Soil	Hg
048 15834.05s	7/23/2020 1:46:06 PM	Soil	Hg
049 15834.06s	7/23/2020 1:47:55 PM	Soil	Hg
050 15834.06 MS-2.0	7/23/2020 1:49:43 PM	Soil	Hg
051 15834.06 MSD	7/23/2020 1:51:33 PM	Soil	Hg
052 CCV4-2.0 ppb	7/23/2020 1:53:24 PM	Liquid	Hg
053 CCB4	7/23/2020 1:55:16 PM	Liquid	Hg
054 15889.01s	7/23/2020 1:57:04 PM	Soil	Hg
055 15459.08s	7/23/2020 1:58:52 PM	Liquid	Hg
056 15459.08 dup	7/23/2020 2:00:40 PM	Liquid	Hg

Form 13: Analysis Run Log

Data Set ID: HG2-HG3-20-0723A
Instrument ID: HG QuickTrace
Analysis Date: 07/23/20
Analyst: JRH

Filename	*Run Time*	*Matrix*	*Analytes*
057 CCV5-2.0 ppb	7/23/2020 2:02:32 PM	Liquid	Hg
058 CCB5	7/23/2020 2:04:24 PM	Liquid	Hg
059 15459.08s	7/23/2020 2:25:48 PM	Soil	Hg
060 15459.08 dp	7/23/2020 2:27:37 PM	Soil	Hg
061 CCV6-2.0 ppb	7/23/2020 2:29:28 PM	Liquid	Hg
062 CCB6	7/23/2020 2:31:20 PM	Liquid	Hg
063 15459.08s	7/23/2020 2:49:09 PM	Soil	Hg
064 15459.08 dp	7/23/2020 2:50:57 PM	Soil	Hg
065 CCV6-2.0 ppb	7/23/2020 2:52:48 PM	Liquid	Hg
066 CCB6	7/23/2020 2:54:40 PM	Liquid	Hg
067 072320_3 LCS-2.0	7/23/2020 2:56:31 PM	Liquid	Hg
068 072320_3 LRB	7/23/2020 2:58:21 PM	Liquid	Hg
069 15849.01s tclp	7/23/2020 3:00:10 PM	Liquid	Hg
070 15888.01s tclp	7/23/2020 3:01:59 PM	Liquid	Hg
071 15889.01s tclp	7/23/2020 3:03:48 PM	Liquid	Hg
072 15889.02s tclp	7/23/2020 3:05:37 PM	Liquid	Hg
073 15889.02 MS-2.0	7/23/2020 3:07:25 PM	Liquid	Hg
074 15889.02 MSD	7/23/2020 3:09:14 PM	Liquid	Hg
075 CCV7-2.0 ppb	7/23/2020 3:11:05 PM	Liquid	Hg
076 CCB7	7/23/2020 3:12:57 PM	Liquid	Hg

Data Set: HG2-HG3-20-0723A
Run Date: 07/23/20

Mercury Summary Report

Analyst: JRH
Instrument: HG QuickTrace

Element	Seq #	Acquisition Time	Sample Name	Peak	Concentration	Units	Matrix	Dilution	Sample Wt.	Sample Vol.
Hg	001	7/23/2020 12:08:13 PM	Calibration Blank	640.7000	0.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	002	7/23/2020 12:10:05 PM	Standard #1	2072.0000	0.1000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	003	7/23/2020 12:11:57 PM	Standard #2	3742.0000	0.2000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	004	7/23/2020 12:13:48 PM	Standard #3	7659.0000	0.5000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	005	7/23/2020 12:15:40 PM	Standard #4	14530.0000	1.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	006	7/23/2020 12:17:32 PM	Standard #5	28190.0000	2.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	007	7/23/2020 12:19:23 PM	Standard #6	82420.0000	6.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	008	7/23/2020 12:22:39 PM	Standard #7	108500.0000	8.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	009	7/23/2020 12:26:17 PM	Standard #8	134800.0000	10.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	010	7/23/2020 12:29:33 PM	ICV-5.0 ppb	72210.0000	5.2980	ug/L	Liquid	1.0	1.0000	1.0000
Hg	011	7/23/2020 12:32:18 PM	ICB	612.2000	-0.0291	ug/L	Liquid	1.0	1.0000	1.0000
Hg	012	7/23/2020 12:35:56 PM	CCV1-2.0 ppb	28200.0000	2.0240	ug/L	Liquid	1.0	1.0000	1.0000
Hg	013	7/23/2020 12:37:47 PM	CCB1	610.1000	-0.0293	ug/L	Liquid	1.0	1.0000	1.0000
Hg	014	7/23/2020 12:39:39 PM	BS-0.10	2067.0000	0.0791	ug/L	Liquid	1.0	1.0000	1.0000
Hg	015	7/23/2020 12:41:30 PM	072320_1 LCS-2.0	27880.0000	2.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	016	7/23/2020 12:43:20 PM	072320_1 LRB	316.4000	-0.0511	ug/L	Liquid	1.0	1.0000	1.0000
Hg	029	7/23/2020 1:06:44 PM	CCV2-2.0 ppb	26740.0000	1.9150	ug/L	Liquid	1.0	1.0000	1.0000
Hg	030	7/23/2020 1:08:36 PM	CCB2	-791.2000	-0.1335	ug/L	Liquid	1.0	1.0000	1.0000
Hg	031	7/23/2020 1:10:24 PM	15917.01s	-836.3000	-0.1369	ug/L	Liquid	1.0	1.0000	1.0000
Hg	032	7/23/2020 1:12:13 PM	15917.02s	-660.1000	-0.1238	ug/L	Liquid	1.0	1.0000	1.0000
Hg	033	7/23/2020 1:14:03 PM	15917.03s	-694.3000	-0.1263	ug/L	Liquid	1.0	1.0000	1.0000
Hg	034	7/23/2020 1:15:50 PM	15917.04s	-583.5000	-0.1181	ug/L	Liquid	1.0	1.0000	1.0000
Hg	035	7/23/2020 1:17:37 PM	15917.05s	-921.6000	-0.1432	ug/L	Liquid	1.0	1.0000	1.0000
Hg	036	7/23/2020 1:19:25 PM	15917.07s	-865.7000	-0.1391	ug/L	Liquid	1.0	1.0000	1.0000
Hg	037	7/23/2020 1:26:05 PM	15917.06s	344.7000	-0.0490	ug/L	Liquid	1.0	1.0000	1.0000
Hg	038	7/23/2020 1:27:53 PM	15917.06 MS-2.0	26770.0000	1.9170	ug/L	Liquid	1.0	1.0000	1.0000
Hg	039	7/23/2020 1:29:41 PM	15917.06 MSD	26940.0000	1.9300	ug/L	Liquid	1.0	1.0000	1.0000
Hg	040	7/23/2020 1:31:33 PM	CCV3-2.0 ppb	28510.0000	2.0470	ug/L	Liquid	1.0	1.0000	1.0000
Hg	041	7/23/2020 1:33:24 PM	CCB3	593.9000	-0.0305	ug/L	Liquid	1.0	1.0000	1.0000
Hg	042	7/23/2020 1:35:15 PM	072320_2 LCS-2.0	27830.0000	1.9960	ug/L	Liquid	1.0	1.0000	1.0000
Hg	043	7/23/2020 1:37:06 PM	072320_2 LRB	267.4000	-0.0548	ug/L	Liquid	1.0	1.0000	1.0000
Hg	052	7/23/2020 1:53:24 PM	CCV4-2.0 ppb	28590.0000	2.0530	ug/L	Liquid	1.0	1.0000	1.0000
Hg	053	7/23/2020 1:55:16 PM	CCB4	622.2000	-0.0284	ug/L	Liquid	1.0	1.0000	1.0000
Hg	057	7/23/2020 2:02:32 PM	CCV5-2.0 ppb	28790.0000	2.0680	ug/L	Liquid	1.0	1.0000	1.0000
Hg	058	7/23/2020 2:04:24 PM	CCB5	604.5000	-0.0297	ug/L	Liquid	1.0	1.0000	1.0000
Hg	061	7/23/2020 2:29:28 PM	CCV6-2.0 ppb	28350.0000	2.0350	ug/L	Liquid	1.0	1.0000	1.0000
Hg	062	7/23/2020 2:31:20 PM	CCB6	604.5000	-0.0297	ug/L	Liquid	1.0	1.0000	1.0000
Hg	065	7/23/2020 2:52:48 PM	CCV6-2.0 ppb	28450.0000	2.0420	ug/L	Liquid	1.0	1.0000	1.0000
Hg	066	7/23/2020 2:54:40 PM	CCB6	626.8000	-0.0280	ug/L	Liquid	1.0	1.0000	1.0000
Hg	067	7/23/2020 2:56:31 PM	072320_3 LCS-2.0	27750.0000	1.9900	ug/L	Liquid	1.0	1.0000	1.0000
Hg	068	7/23/2020 2:58:21 PM	072320_3 LRB	274.5000	-0.0542	ug/L	Liquid	1.0	1.0000	1.0000
Hg	075	7/23/2020 3:11:05 PM	CCV7-2.0 ppb	28080.0000	2.0150	ug/L	Liquid	1.0	1.0000	1.0000
Hg	076	7/23/2020 3:12:57 PM	CCB7	594.7000	-0.0304	ug/L	Liquid	1.0	1.0000	1.0000

Mercury Digestion
Method # 245.1, 7471B, 7470A (OHIO VAP)

TIME START: 945
TIME FINISH: 1145
PREP BATCH: HGD-072320-1
BALANCE ID: M2 4 08/18/20

Beginning block #1 95 °C block #2 ____ °C block #3 ____ °C
End block #1 95 °C block #2 ____ °C block #3 ____ °C
HB155005 ID # ____ ID # ____ ID # ____

DATE 7/23/20
ANALYST [illegible]
REVIEWED BY [illegible]
REVIEW DATE 7/31/2020

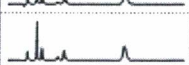
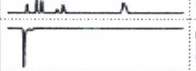
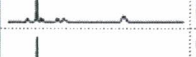
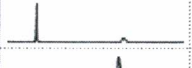
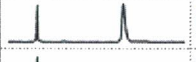
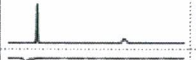
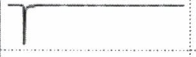
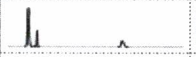
SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	%TOT. SOLIDS	DRY SAMPLE WT.	DILUTION FACTOR	FINAL VOLUME	REMARKS
LCS072320-1	------	25	--------	----------	1	25g	
LRB 072320-1	------	25	--------	----------	1	25g	
15807.01		12.5			2		tclp
15835.01		12.5			2		
15837.01		12.5			2		
15847.01		5.0			5		
15886.01		25			1		
15904.01							drinking water
15917.01							
02							
03							
04							
05							
06							
06MS							
06MSD							
07							field blank
15926.02							
15927.01							
15929.01							
01MS							
01MSD							
15931.01							

NOTES: 1) Spike values (unless otherwise stated):
2.0 ppb for LCS: 0.50 ml of HPS solution, 2.0 ppb for liquid samples: 0.50 ml of HPS solution & 0.002 ppm for solid samples: 0.50 ml of HPS solution (Date Prepared: 7/22/20 Exp 8/5/20
Centrifuge Tube Lot # 19120-060
HNO_3 Lot # 248841
H_2SO_4 Lot # 231834

Pipet Calibration:

Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Notes
1	0.500	0.497	
2		0.501	
3		0.501	

ICS-1100 A Dionex cc/Meth 300.0 **072320**

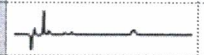
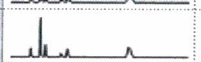
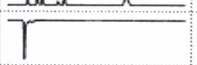
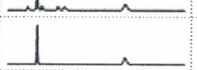
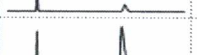
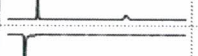
#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 9:56:15 AM -...	1.0000
2		1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:08:32 AM...	1.0000
3		1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 10:21:21 AM...	1.0000
4		1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 10:34:09 AM...	1.0000
5		1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 10:46:58 AM...	1.0000
6		1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 10:59:49 AM...	1.0000
7		Blank	Unknown		1	Norm Method	Anion	Finished	7/23/2020 10:23:17 A...	1.0000
8		BSpike 11729BS1	Check Standard		2	Norm Method	Anion	Finished	7/23/2020 10:35:33 A...	1.0000
9		LCS 11729LCS1	Check Standard		3	Norm Method	Anion	Finished	7/23/2020 10:48:22 A...	1.0000
10		15917.01	Unknown		4	Norm Method	Anion	Finished	7/23/2020 11:01:11 A...	1.0000
11		15917.02	Unknown		5	Norm Method	Anion	Finished	7/23/2020 11:14:00 A...	1.0000
12		15917.03	Unknown		6	Norm Method	Anion	Finished	7/23/2020 11:26:49 A...	1.0000
13		15917.04	Unknown		7	Norm Method	Anion	Finished	7/23/2020 11:39:38 A...	1.0000
14		15917.05	Unknown		8	Norm Method	Anion	Finished	7/23/2020 11:52:27 A...	1.0000
15		15917.06	Unknown		9	Norm Method	Anion	Finished	7/23/2020 12:05:15 P...	1.0000
16		15917.07	Unknown		10	Norm Method	Anion	Finished	7/23/2020 12:18:04 P...	1.0000
17		15682.01 30/2.99g	Unknown		11	Norm Method	Anion	Finished	7/23/2020 12:30:53 P...	1.0000
18		15917.01 dup	Unknown		12	Norm Method	Anion	Finished	7/23/2020 12:43:43 P...	1.0000
19	Loading...	15917.01 MS 13036...	Unknown		13	Norm Method	Anion	Finished	7/23/2020 12:56:32 P...	1.0000
20	Loading...	15917.01 MSD 1303...	Unknown		14	Norm Method	Anion	Finished	7/23/2020 1:09:20 PM...	1.0000
21	Loading...	BSpike 11729BS1	Check Standard		15	Norm Method	Anion	Finished	7/23/2020 1:22:09 PM...	1.0000
22	Loading...	Blank	Unknown		16	Norm Method	Anion	Finished	7/23/2020 1:34:58 PM...	1.0000

Click here to add a new injection

CAL ICV # ICSA070720CAL

FL200723-W1-A

072320

#	ECD_1	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
7		1.0000	1.0000		Jeff Phifer	
8		1.0000	1.0000		Jeff Phifer	
9		1.0000	1.0000		Jeff Phifer	
10		5.0000	1.0000		Jeff Phifer	
11		5.0000	1.0000		Jeff Phifer	
12		5.0000	1.0000		Jeff Phifer	
13		5.0000	1.0000		Jeff Phifer	
14		5.0000	1.0000		Jeff Phifer	
15		5.0000	1.0000		Jeff Phifer	
16		2.5000	1.0000		Jeff Phifer	
17		25.0000	1.0000		Jeff Phifer	
18		5.0000	1.0000		Jeff Phifer	
19	Loading...	1.0000	1.0000		Jeff Phifer	
20	Loading...	1.0000	1.0000		Jeff Phifer	
21	Loading...	1.0000	1.0000		Jeff Phifer	
22	Loading...	1.0000	1.0000		Jeff Phifer	
	Click here to add a new injection					

Norm Method	03/08/11 13:39	Jeff Phifer	**Method 300.0**	
Stage	Time	Command	Value	Comment
	min			
Instrument Setup				
	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject				
	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run				
	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run			Duration = 10.000 [min]	
	0.000			
	0.500			
		Sampler.BeginOverlap		
Stop Run				
	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

7.23.20

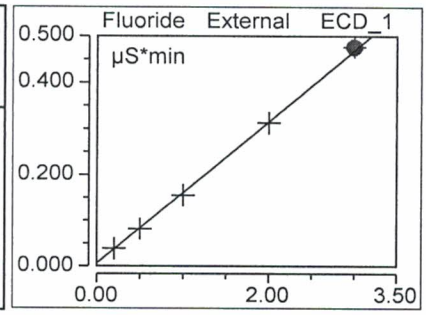
Calibration Batch Report
CAL ID# ICSA070720CAL

Sequence:	072320	*Injection Volu.*	2,500.00
Instrument Method:	Norm Method	*Operator:*	Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 10:59	*Column:*	AS4A-SC 038777

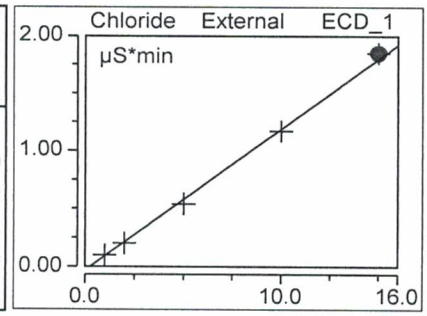
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.01	0.006	0.154	0.000	0.9996
Chloride	Area	Lin, WithOffset, 1/A	0.02	-0.031	0.122	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.03	-0.003	0.227	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.05	-0.001	0.044	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.07	-0.001	0.263	0.000	0.9996
Sulfate	Area	Lin, WithOffset, 1/A	0.33	-0.002	0.080	0.000	0.9996
		AVERAGE:		-0.0052	0.1482	0.0000	0.9995

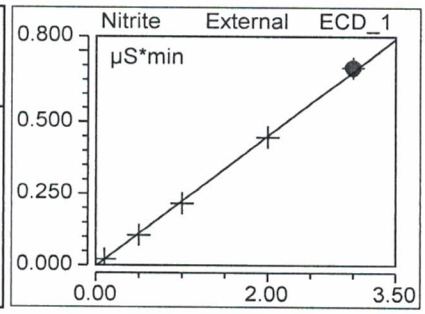
Injection Name / Fluoride	Ret.Time min Fluoride	Area µS*min Fluoride	Height µS Fluoride	Amount Fluoride
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.114	0.0387	0.521	0.210
1131Cal2	1.114	0.0816	1.223	0.488
1131Cal3	1.114	0.1551	2.427	0.966
1131Cal4	1.114	0.3125	5.047	1.987
1131Cal5	1.114	0.4761	7.811	3.049
Average	1.114			
Rel. Std. Dev.	0.013 %			



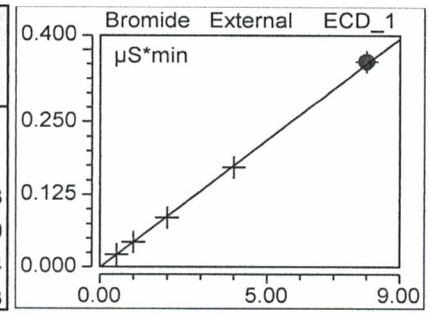
Injection Name / Chloride	Ret.Time min Chloride	Area µS*min Chloride	Height µS Chloride	Amount Chloride
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.637	0.1013	1.651	1.089
1131Cal2	1.638	0.2015	3.302	1.912
1131Cal3	1.641	0.5404	9.060	4.694
1131Cal4	1.644	1.1707	19.722	9.867
1131Cal5	1.647	1.8494	30.847	15.438
Average	1.641			
Rel. Std. Dev.	0.262 %			



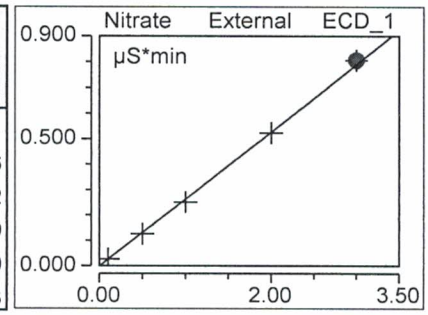
Injection Name / Nitrite	Ret.Time min Nitrite	Area µS*min Nitrite	Height µS Nitrite	Amount Nitrite
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.927	0.0213	0.296	0.106
1131Cal2	1.924	0.1057	1.494	0.479
1131Cal3	1.924	0.2162	3.083	0.966
1131Cal4	1.924	0.4469	6.494	1.984
1131Cal5	1.924	0.6920	10.161	3.065
Average	1.925			
Rel. Std. Dev.	0.075 %			



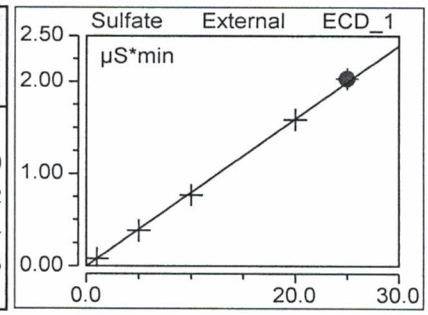
Injection Name **Bromide**	Ret.Time min Bromide	Area µS*min Bromide	Height µS Bromide	Amount Bromide
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	2.827	0.0217	0.250	0.511
1131Cal2	2.821	0.0433	0.489	1.003
1131Cal3	2.818	0.0852	0.977	1.960
1131Cal4	2.807	0.1717	1.992	3.934
1131Cal5	2.801	0.3540	4.145	8.093
Average	2.815			
Rel. Std. Dev.	0.380 %			



Injection Name **Nitrate**	Ret.Time min Nitrate	Area µS*min Nitrate	Height µS Nitrate	Amount Nitrate
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	3.191	0.0271	0.268	0.106
1131Cal2	3.181	0.1260	1.252	0.482
1131Cal3	3.168	0.2515	2.511	0.959
1131Cal4	3.151	0.5229	5.181	1.990
1131Cal5	3.134	0.8054	7.979	3.063
Average	3.165			
Rel. Std. Dev.	0.721 %			



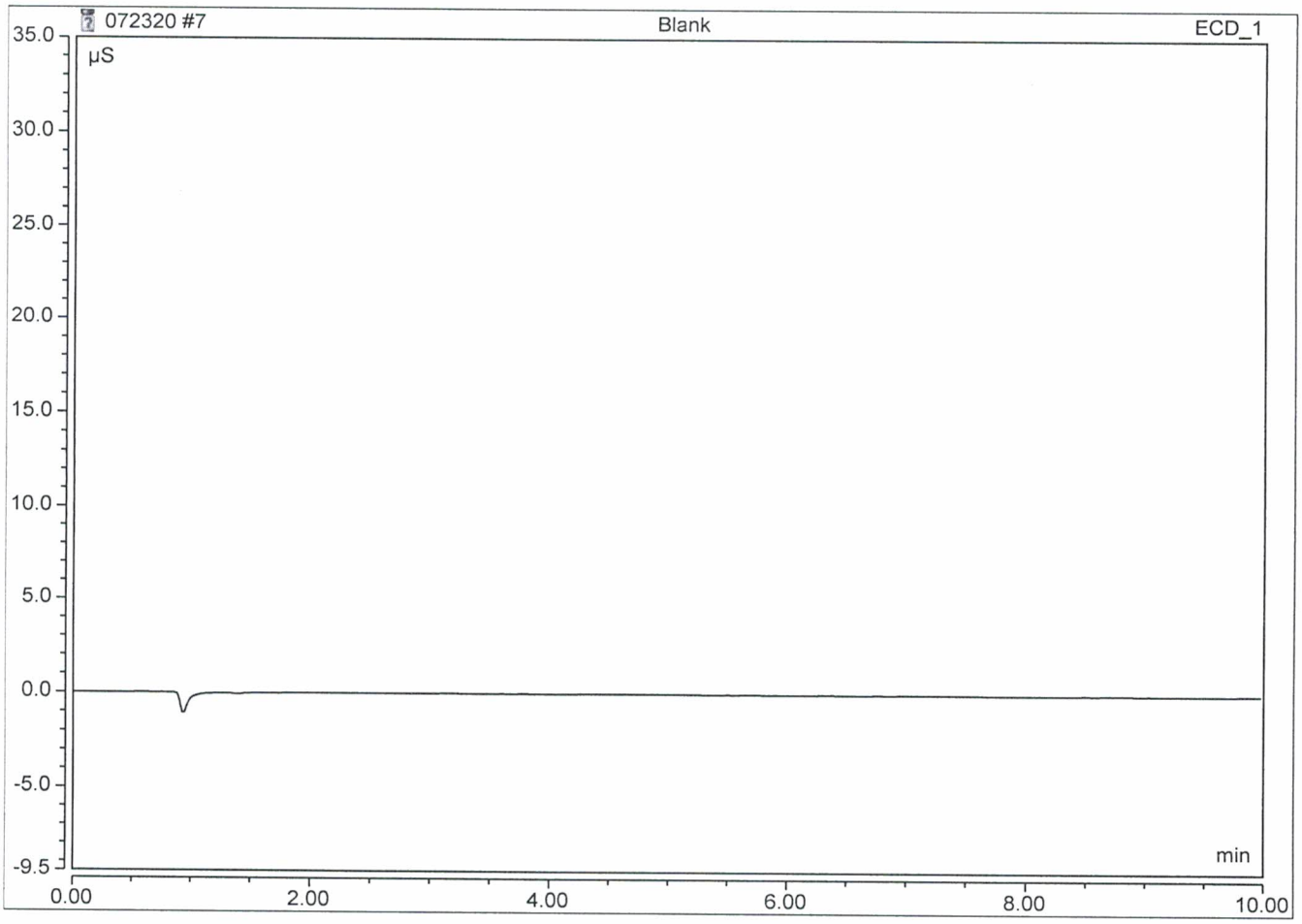
Injection Name **Sulfate**	Ret.Time min Sulfate	Area µS*min Sulfate	Height µS Sulfate	Amount Sulfate
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	6.617	0.0815	0.364	1.050
1131Cal2	6.608	0.3828	1.734	4.832
1131Cal3	6.594	0.7678	3.517	9.664
1131Cal4	6.571	1.5858	7.313	19.933
1131Cal5	6.557	2.0310	9.317	25.521
Average	6.589			
Rel. Std. Dev.	0.380 %			



Peak Integration Report

Sample Name:	**Blank**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 10:23**	*Operator:*	**Jeff Phifer**

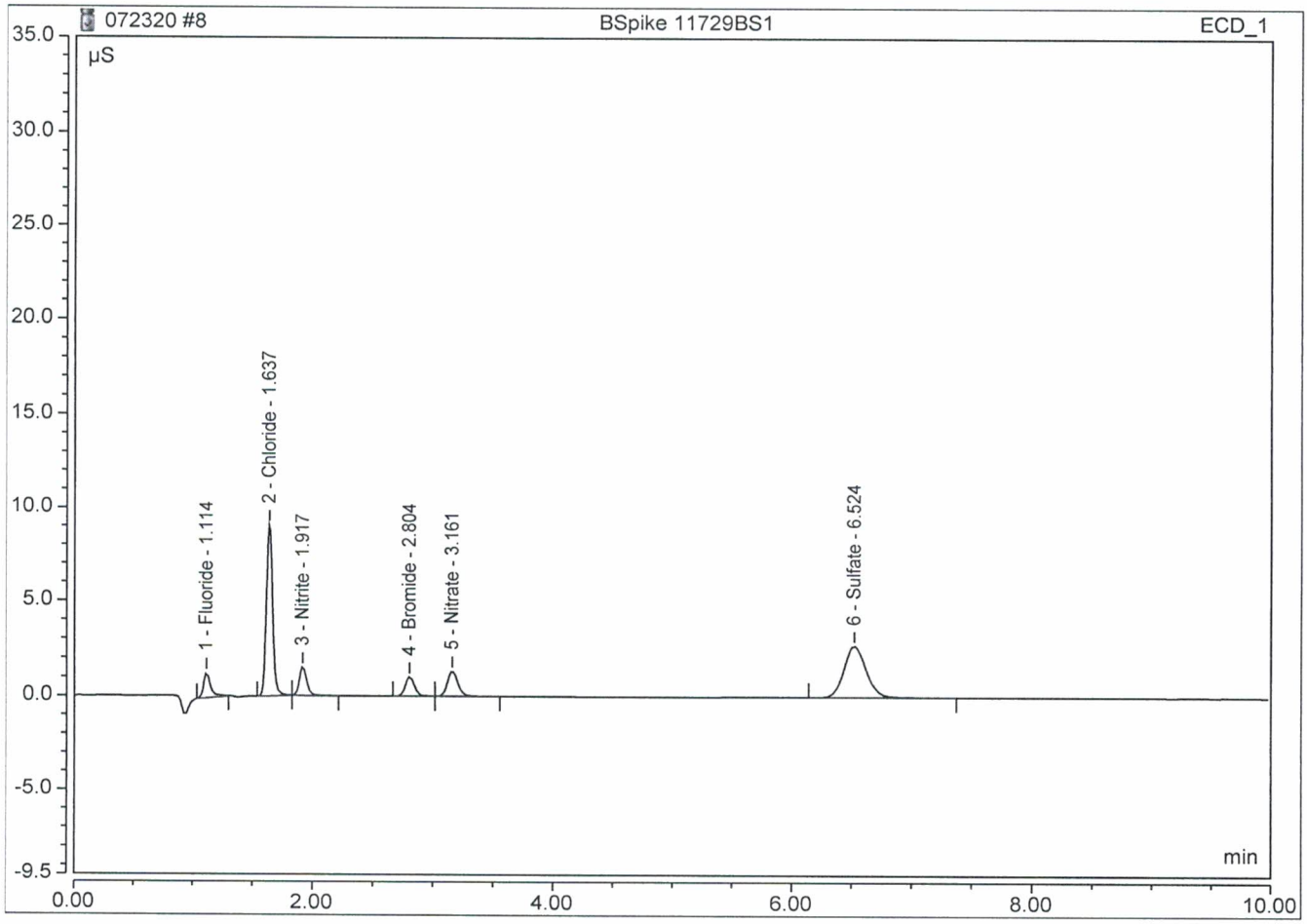
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	**BSpike 11729BS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 10:35**	*Operator:*	**Jeff Phifer**

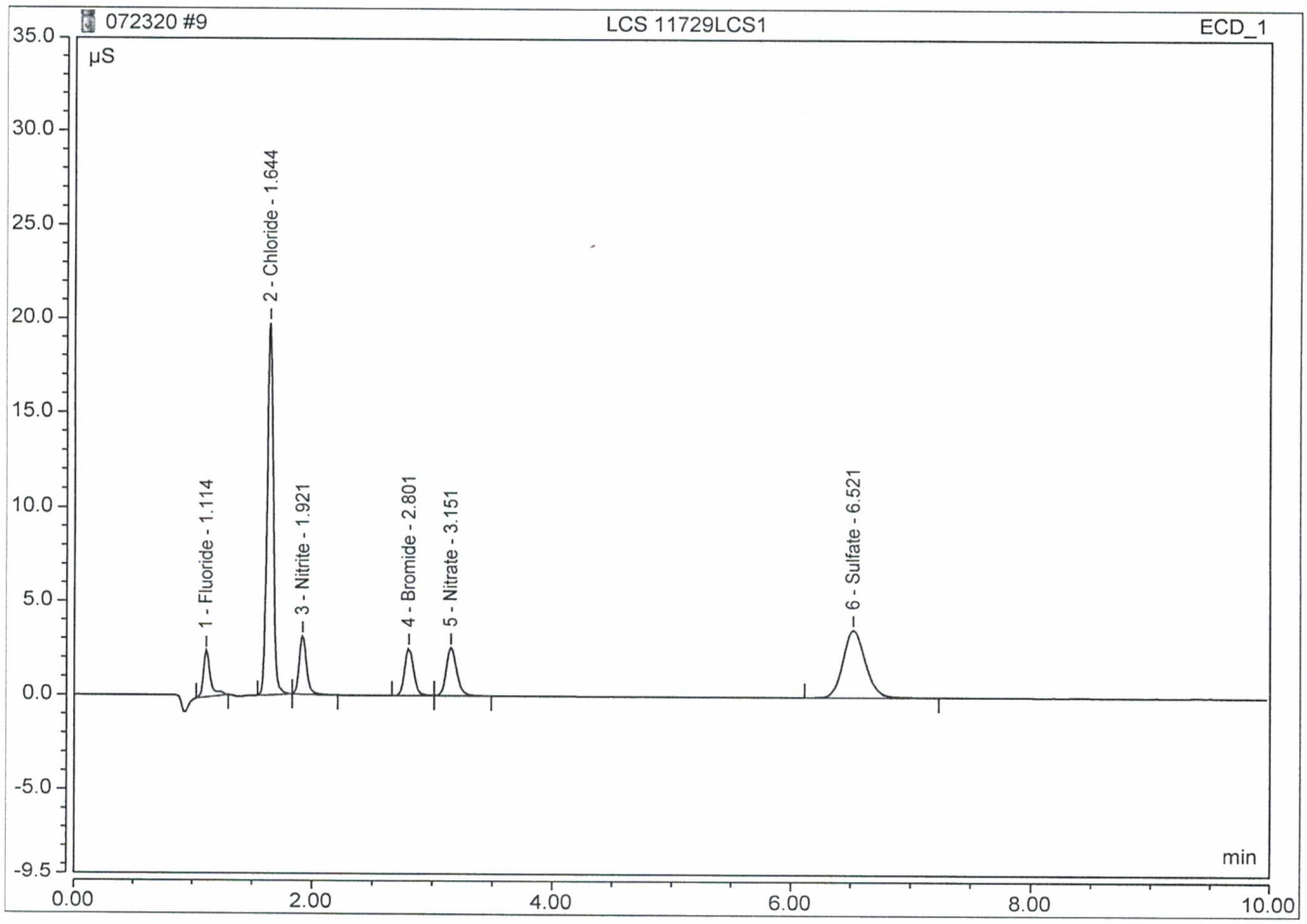
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.11	Fluoride	BMB	0.089	1.311	0.5343
2	1.64	Chloride	BMB	0.545	9.087	4.7295
3	1.92	Nitrite	BMB	0.105	1.483	0.4739
4	2.80	Bromide	BMB	0.088	0.998	2.0147
5	3.16	Nitrate	BMB	0.132	1.318	0.5048
6	6.52	Sulfate	BMB	0.586	2.698	7.3782
TOTAL:				1.54	16.89	15.64



Peak Integration Report

Sample Name:	**LCS 11729LCS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 10:48**	*Operator:*	**Jeff Phifer**

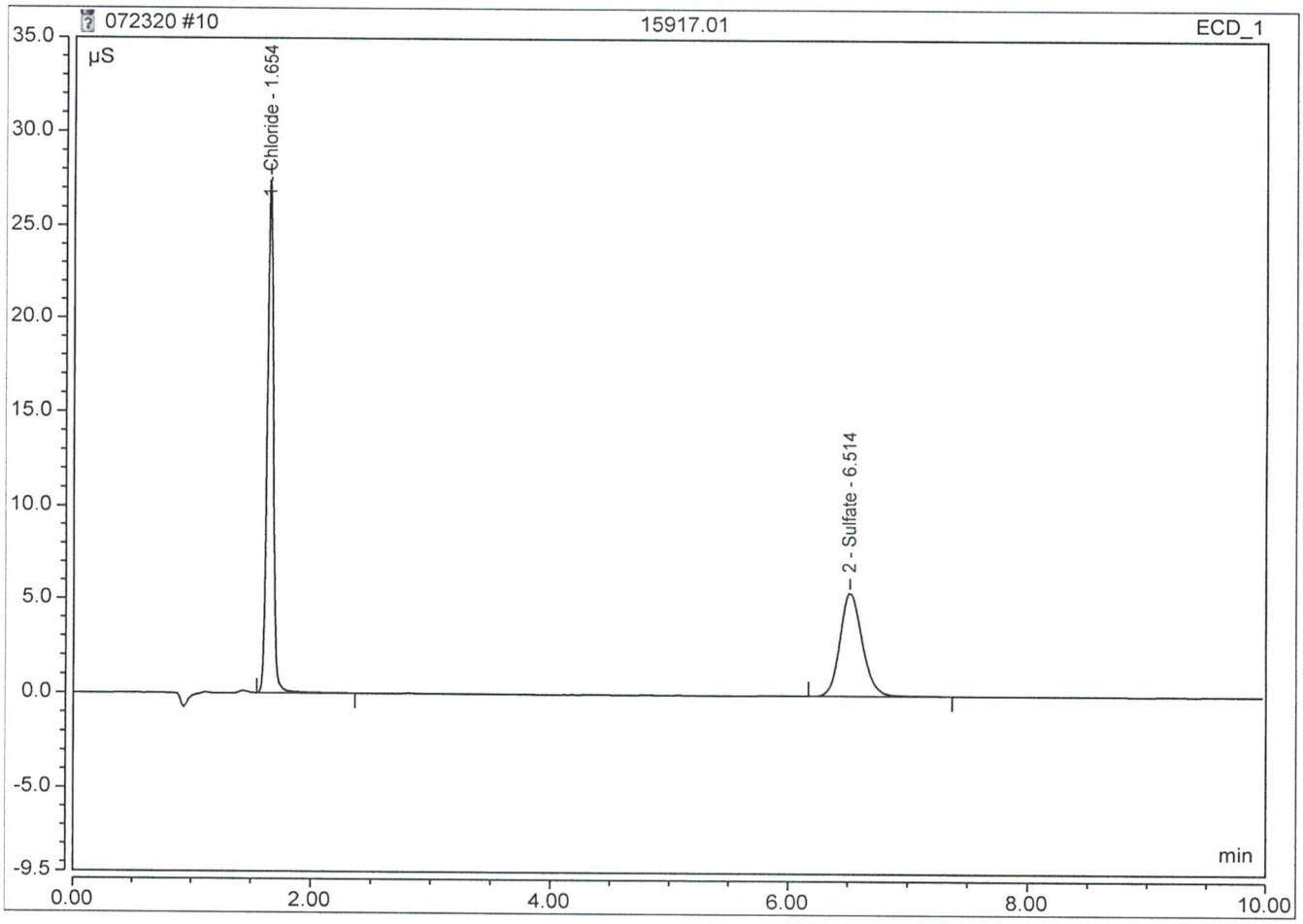
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.11	Fluoride	BMB	0.163	2.450	1.0162 1025
2	1.64	Chloride	BMB	1.178	19.766	9.9283
3	1.92	Nitrite	BMB	0.215	3.086	0.9596
4	2.80	Bromide	BMB	0.219	2.524	5.0225
5	3.15	Nitrate	BMB	0.253	2.537	0.9658
6	6.52	Sulfate	BMB	0.778	3.593	9.7902
TOTAL:				2.81	33.96	27.68



Peak Integration Report

Sample Name:	**15917.01**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 11:01**	*Operator:*	**Jeff Phifer**

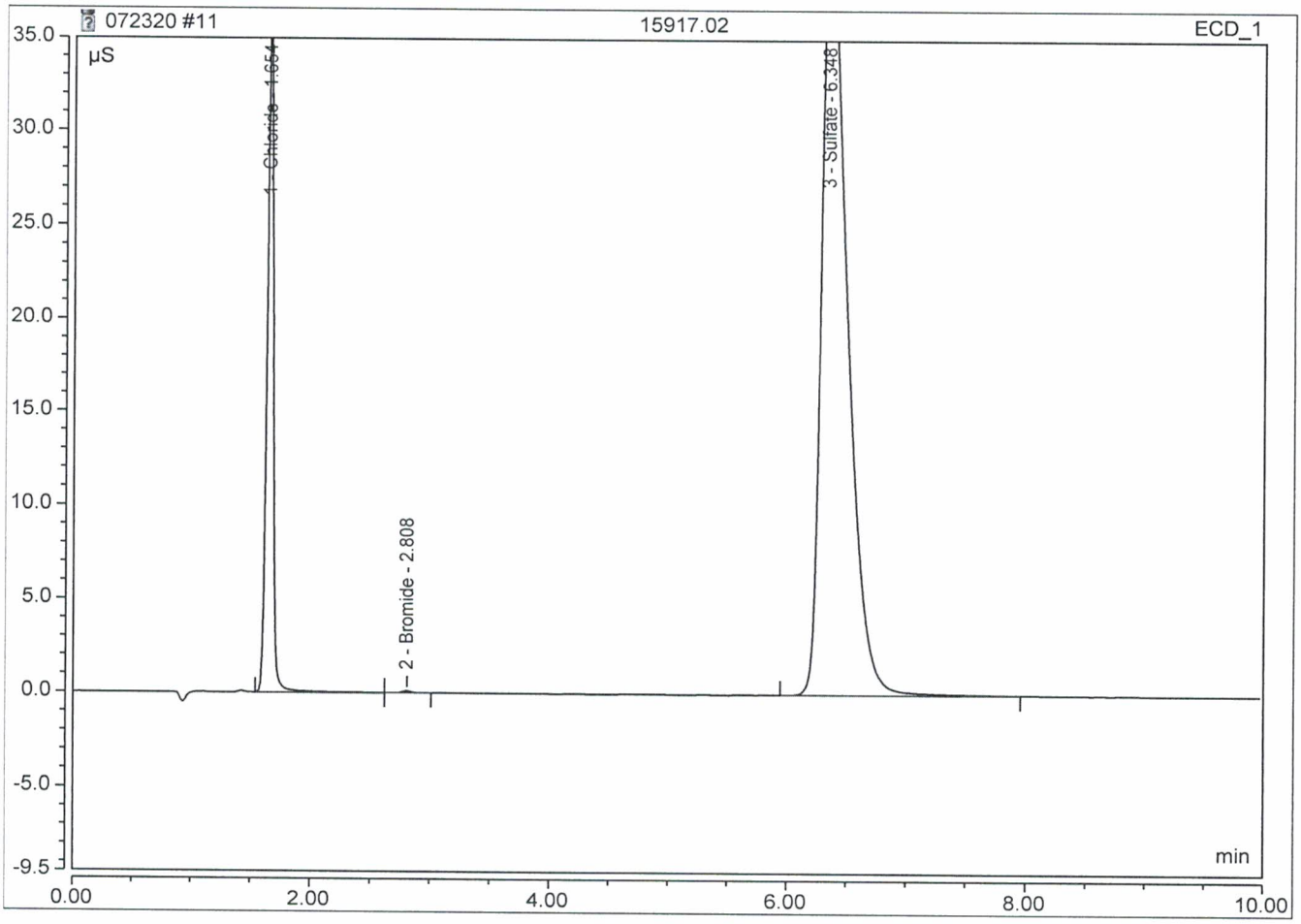
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.65	Chloride	BMB	1.648	27.522	68.9056
2	6.51	Sulfate	BMB	1.180	5.483	74.1971
TOTAL:				2.83	33.00	143.10



Peak Integration Report

Sample Name:	**15917.02**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 11:14**	*Operator:*	**Jeff Phifer**

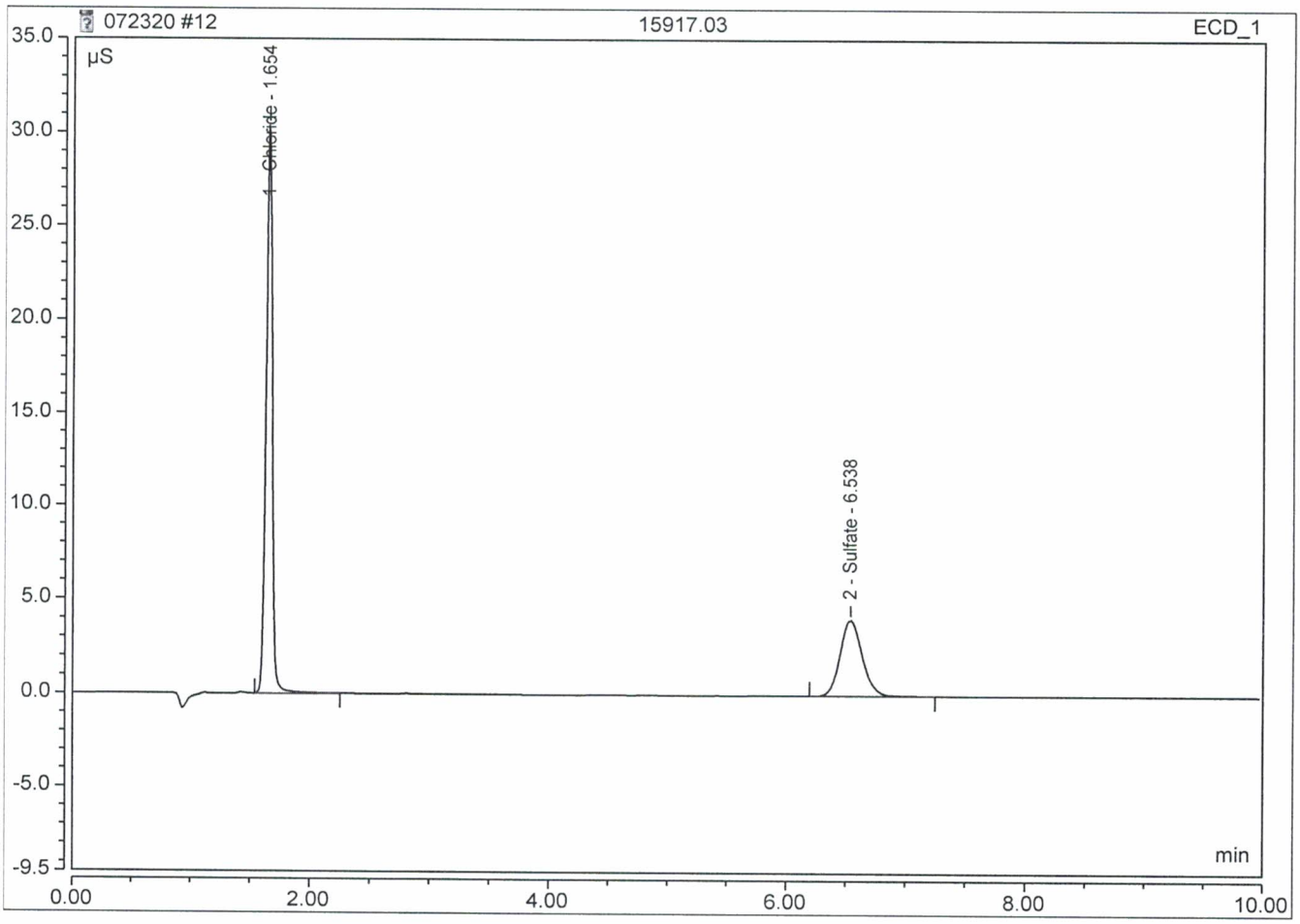
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.65	Chloride	BMB	2.227	36.318	92.6817
2	2.81	Bromide	BMB	0.011	0.115	1.2810
3	6.35	Sulfate	BMB	10.288	41.991	645.8652
TOTAL:				12.53	78.42	739.83



Peak Integration Report

Sample Name:	**15917.03**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 11:26**	*Operator:*	**Jeff Phifer**

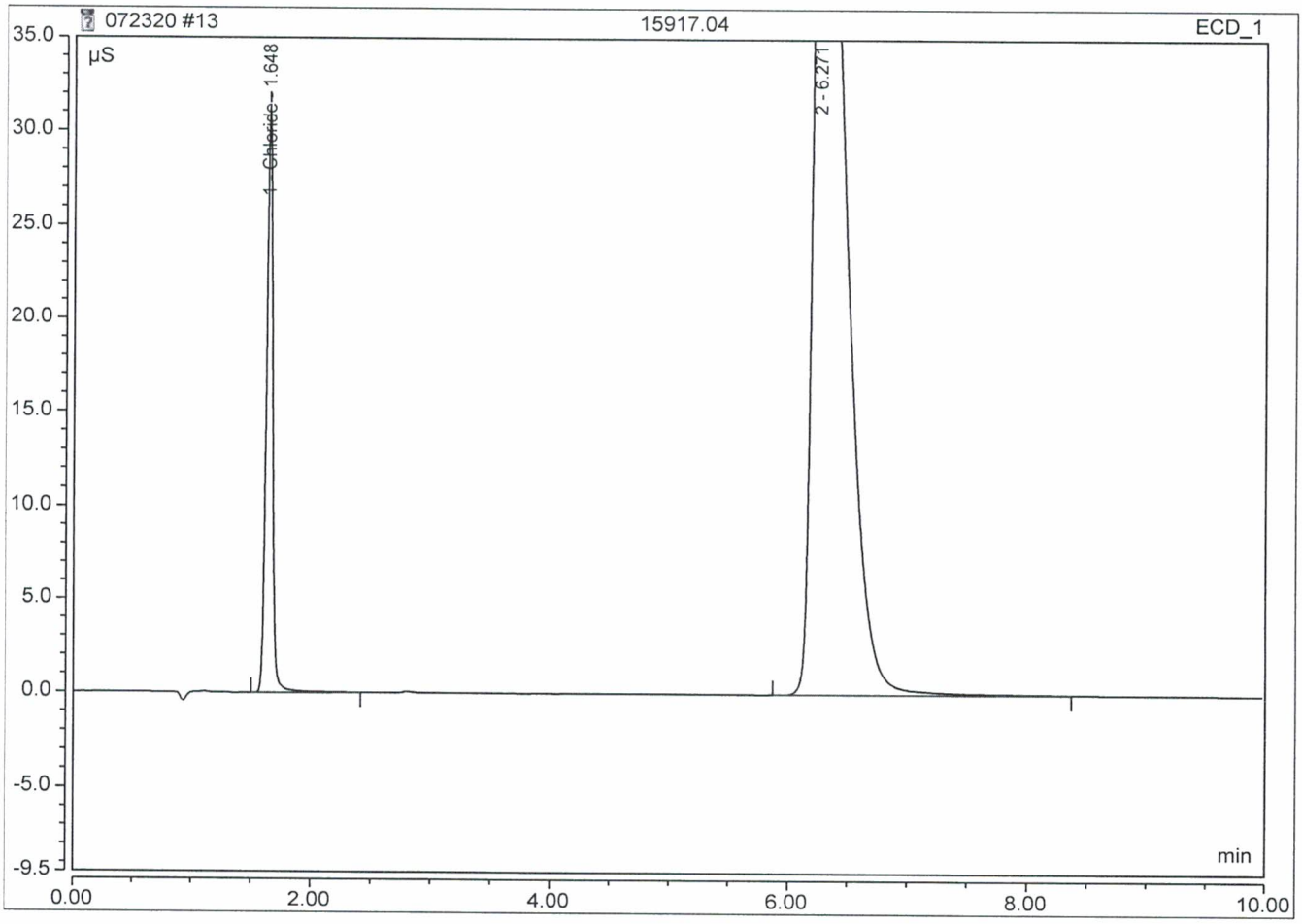
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.65	Chloride	BMB	1.840	30.426	76.7860
2	6.54	Sulfate	BMB	0.869	4.029	54.6463
TOTAL:				2.71	34.45	131.43



Peak Integration Report

Sample Name:	**15917.04**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 11:39**	*Operator:*	**Jeff Phifer**

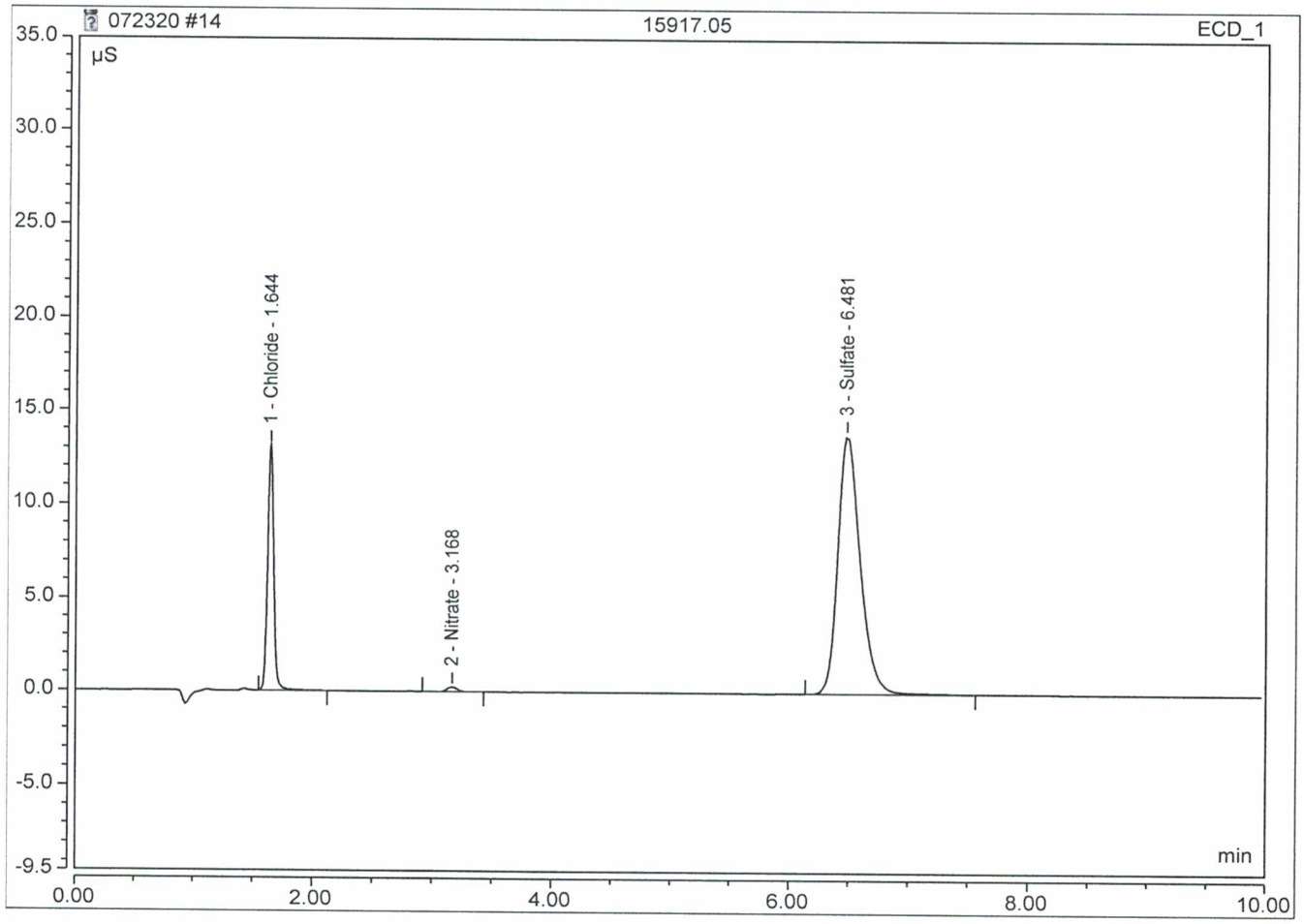
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.65	Chloride	BMB	1.930	31.318	80.4804
TOTAL:				1.93	31.32	80.48



Peak Integration Report

Sample Name:	**15917.05**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 11:52**	*Operator:*	**Jeff Phifer**

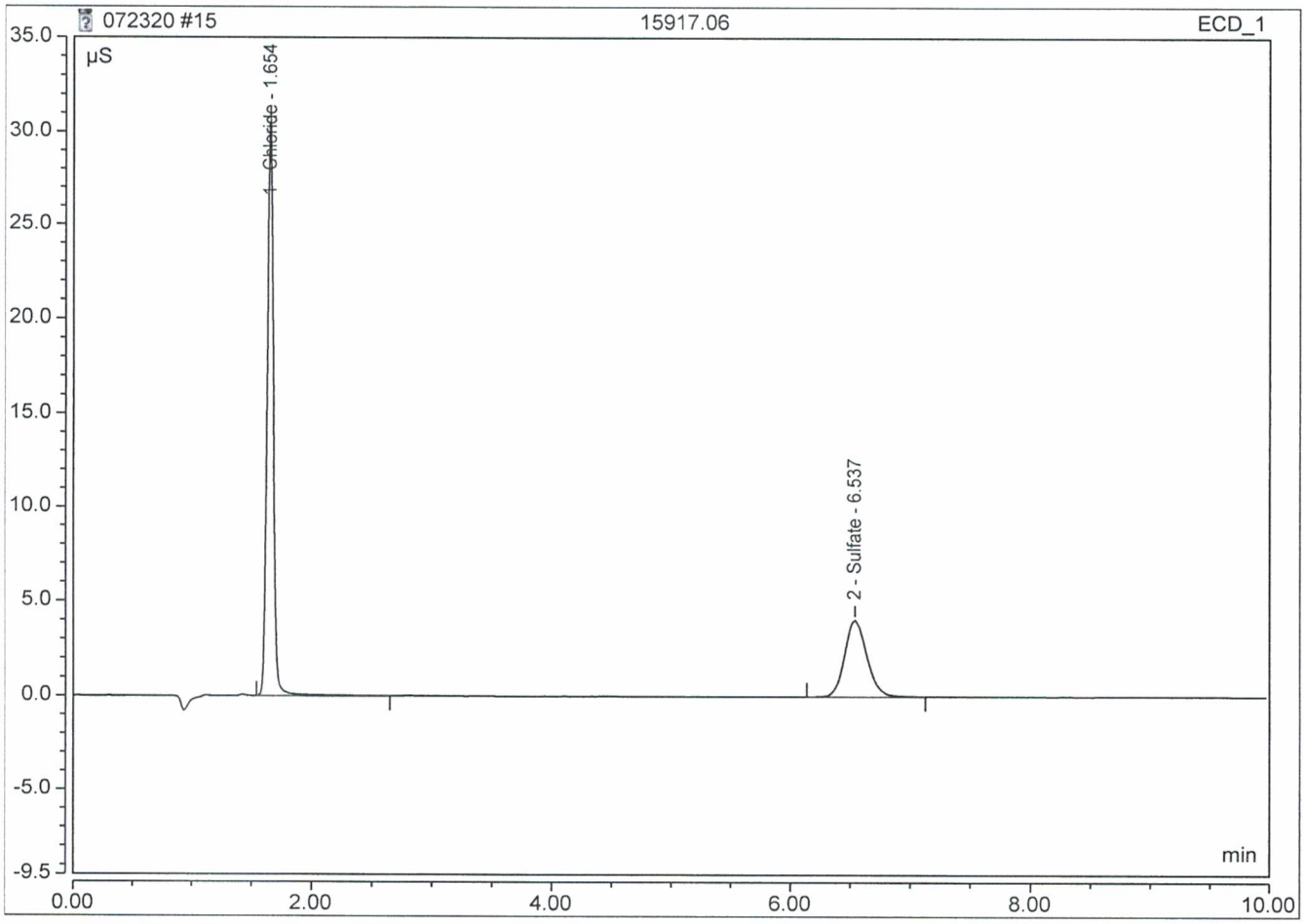
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.64	Chloride	BMB	0.784	13.119	33.4756
2	3.17	Nitrate	BMB	0.026	0.256	0.5052
3	6.48	Sulfate	BMB	3.010	13.808	189.0694
TOTAL:				3.82	27.18	223.05



Peak Integration Report

Sample Name:	**15917.06**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 12:05**	*Operator:*	**Jeff Phifer**

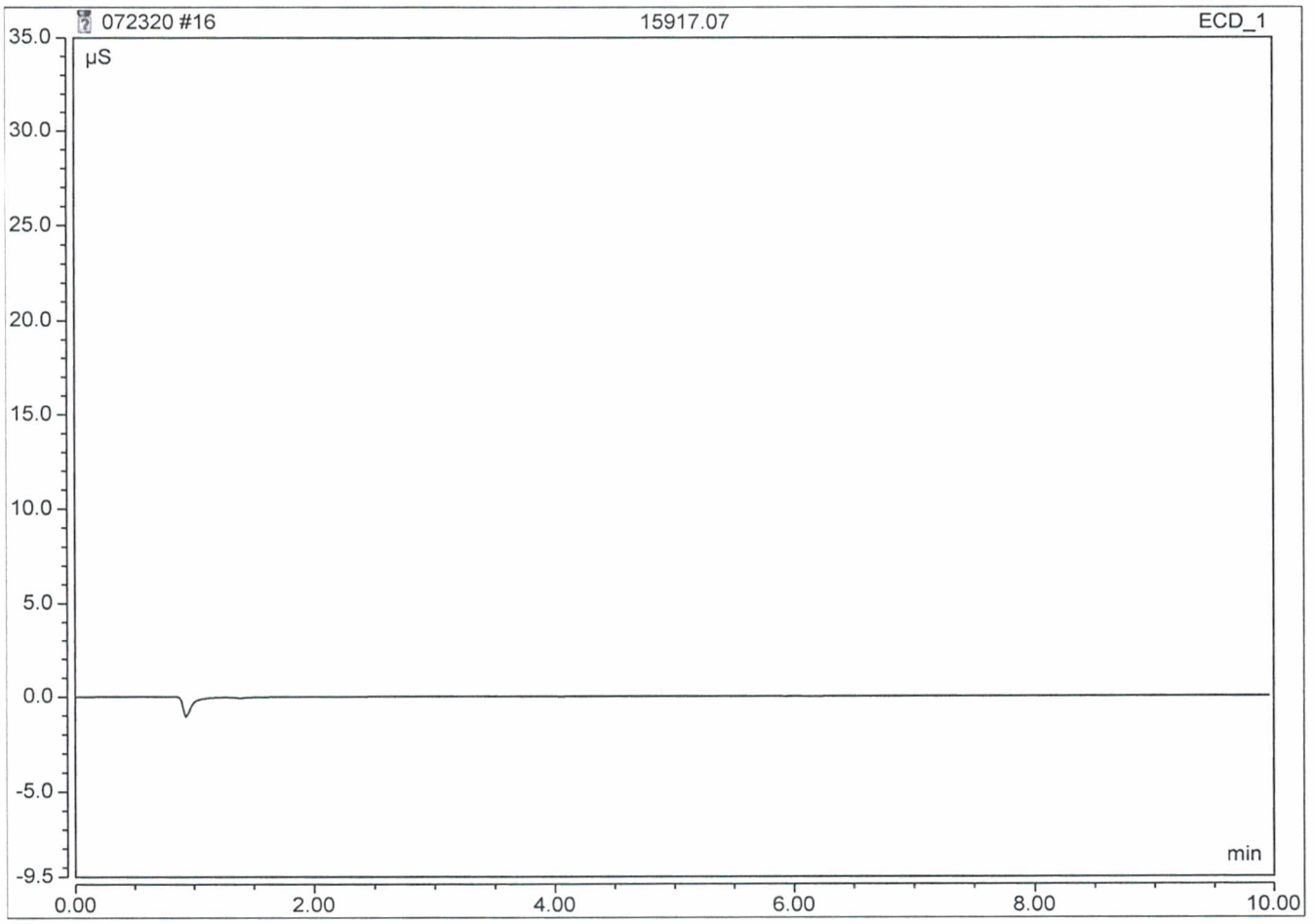
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.65	Chloride	BMB	1.854	30.516	77.3756
2	6.54	Sulfate	BMB	0.869	4.027	54.6663
TOTAL:				2.72	34.54	132.04



Peak Integration Report

Sample Name:	**15917.07**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**2.5000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 12:18**	*Operator:*	**Jeff Phifer**

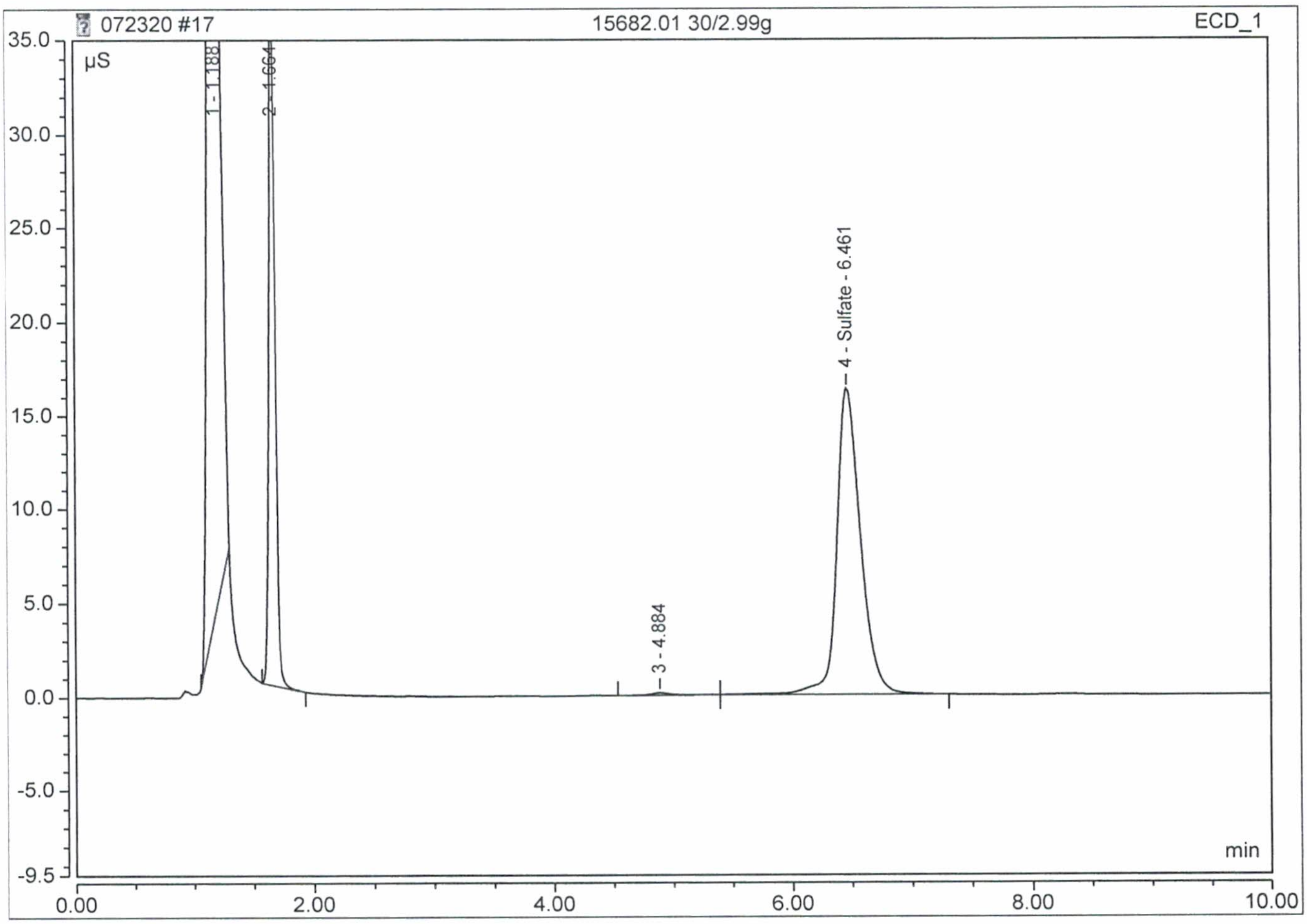
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	**15682.01 30/2.99g**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**25.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 12:30**	*Operator:*	**Jeff Phifer**

No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
4	6.46	Sulfate	BMB	3.749	16.335	1177.3109
		TOTAL:		3.75	16.34	1177.31

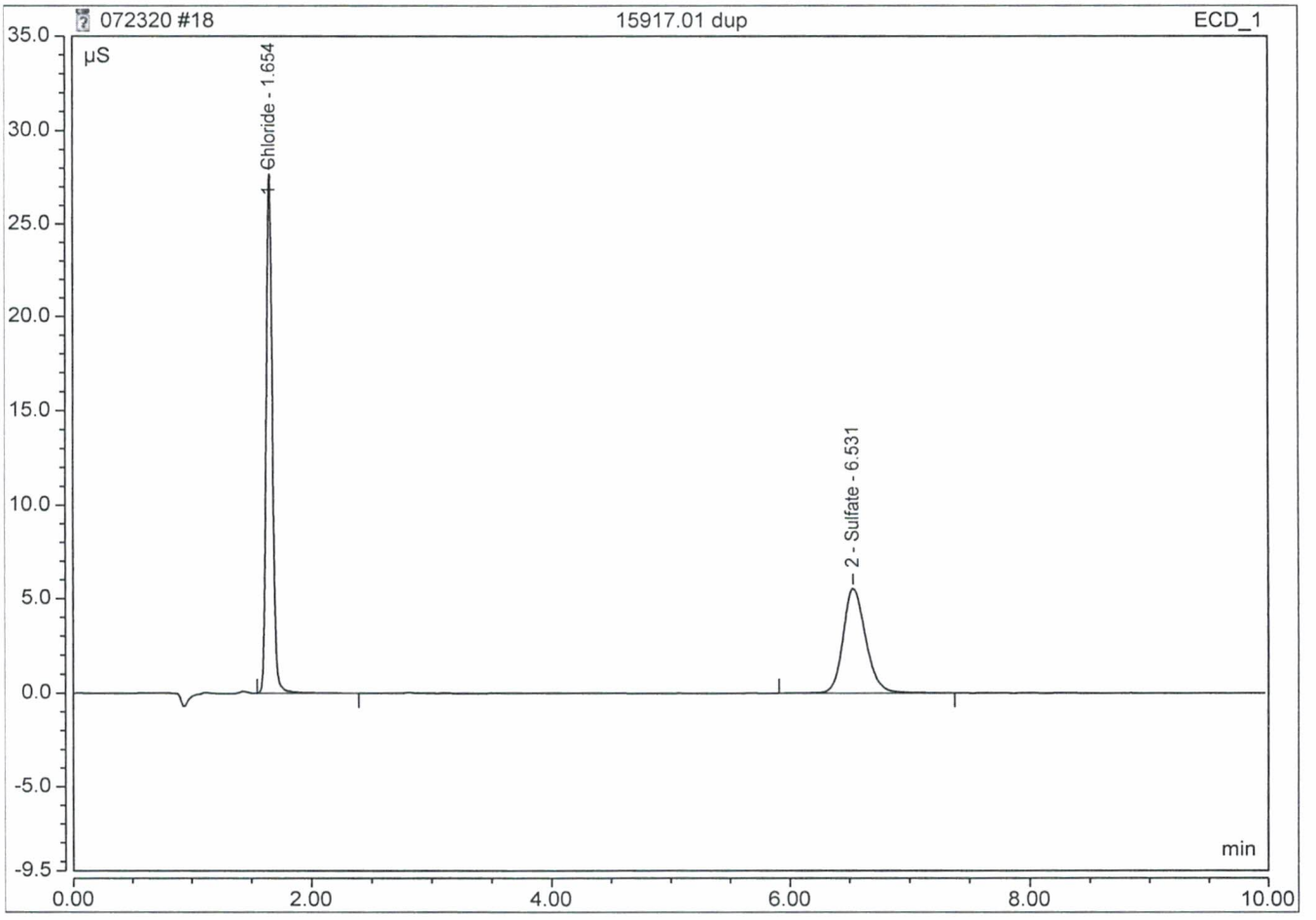


Chromeleon (c) Dionex 1996-2009
Version 7.1.0.898

Peak Integration Report

Sample Name:	**15917.01 dup**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 12:43**	*Operator:*	**Jeff Phifer**

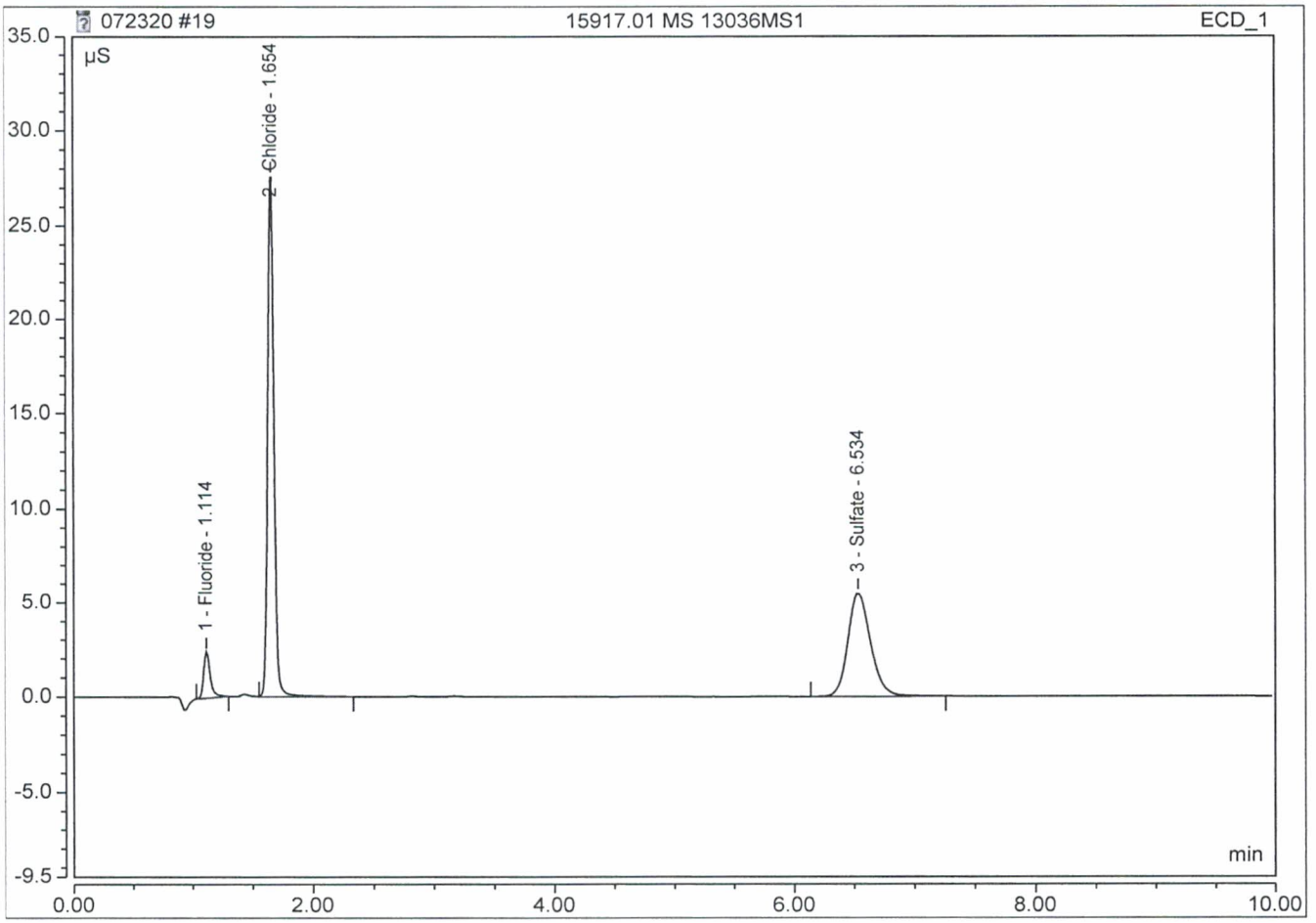
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.65	Chloride	BMB	1.664	27.741	69.5732
2	6.53	Sulfate	BMB	1.216	5.563	76.4825
TOTAL:				2.88	33.30	146.06



Peak Integration Report

Sample Name:	**15917.01 MS 13036MS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 12:56**	*Operator:*	**Jeff Phifer**

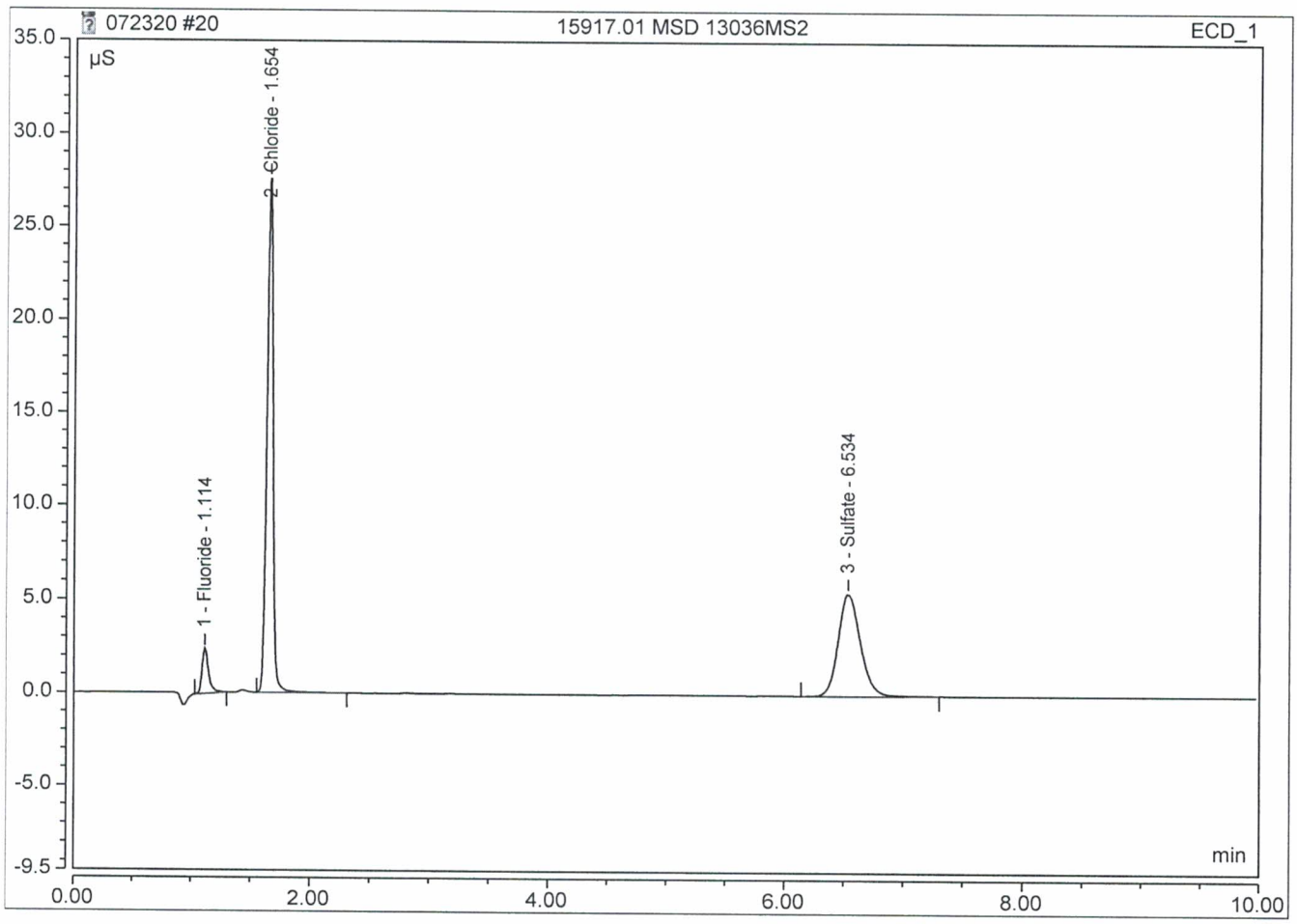
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.11	**Fluoride**	BMB	0.153	2.408	0.9539 — ND = 95%
2	1.65	**Chloride**	BMB	1.659	27.608	13.8758
3	6.53	**Sulfate**	BMB	1.186	5.494	14.9172
TOTAL:				3.00	35.51	29.75



Peak Integration Report

Sample Name:	**15917.01 MSD 13036MS2**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 13:09**	*Operator:*	**Jeff Phifer**

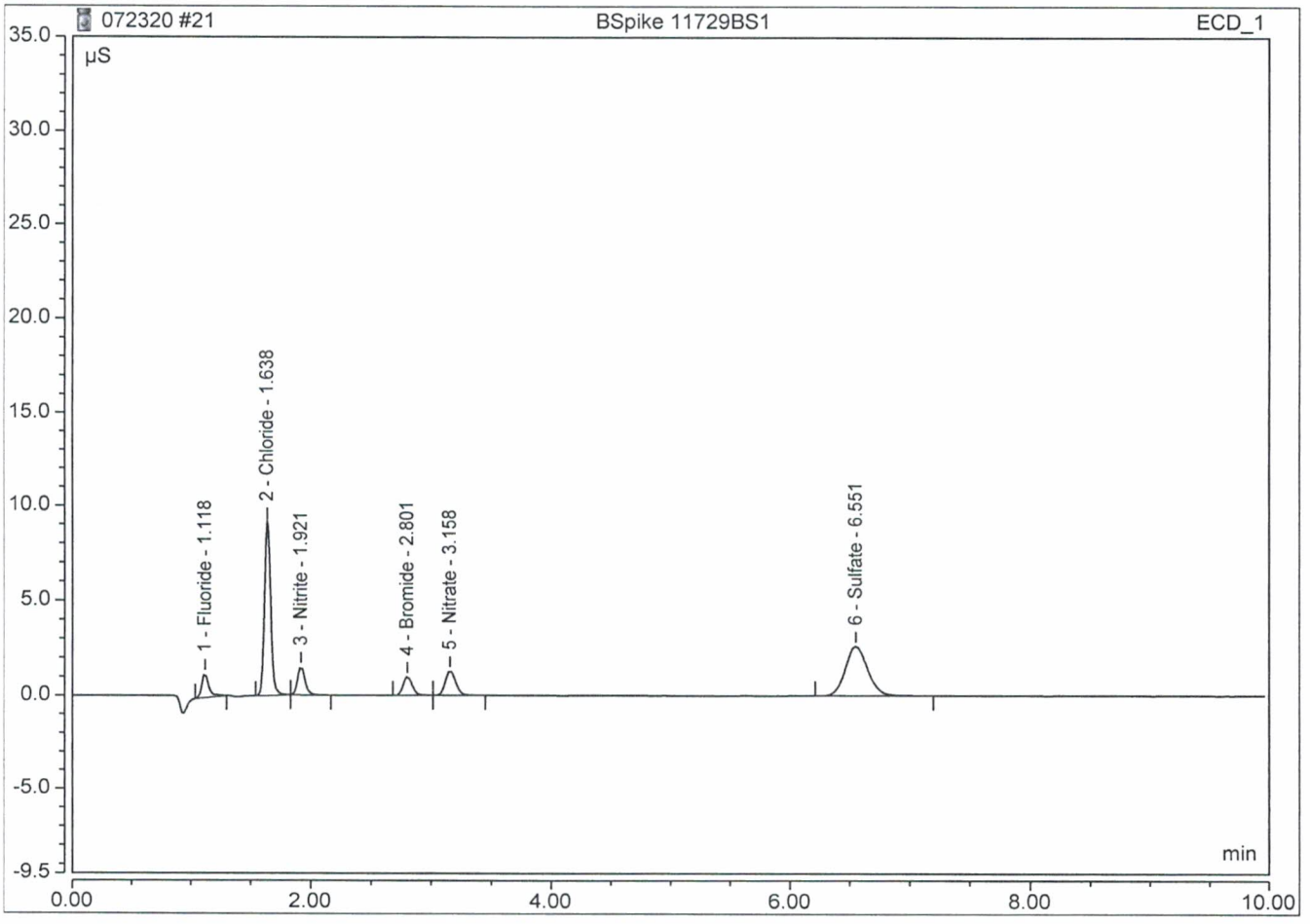
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.11	**Fluoride**	BMB	0.152	2.394	0.9484 — Mb = 95%
2	1.65	**Chloride**	BMB	1.653	27.602	13.8224
3	6.53	**Sulfate**	BMB	1.186	5.487	14.9125
TOTAL:				2.99	35.48	29.68



Peak Integration Report

Sample Name:	**BSpike 11729BS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 13:22**	*Operator:*	**Jeff Phifer**

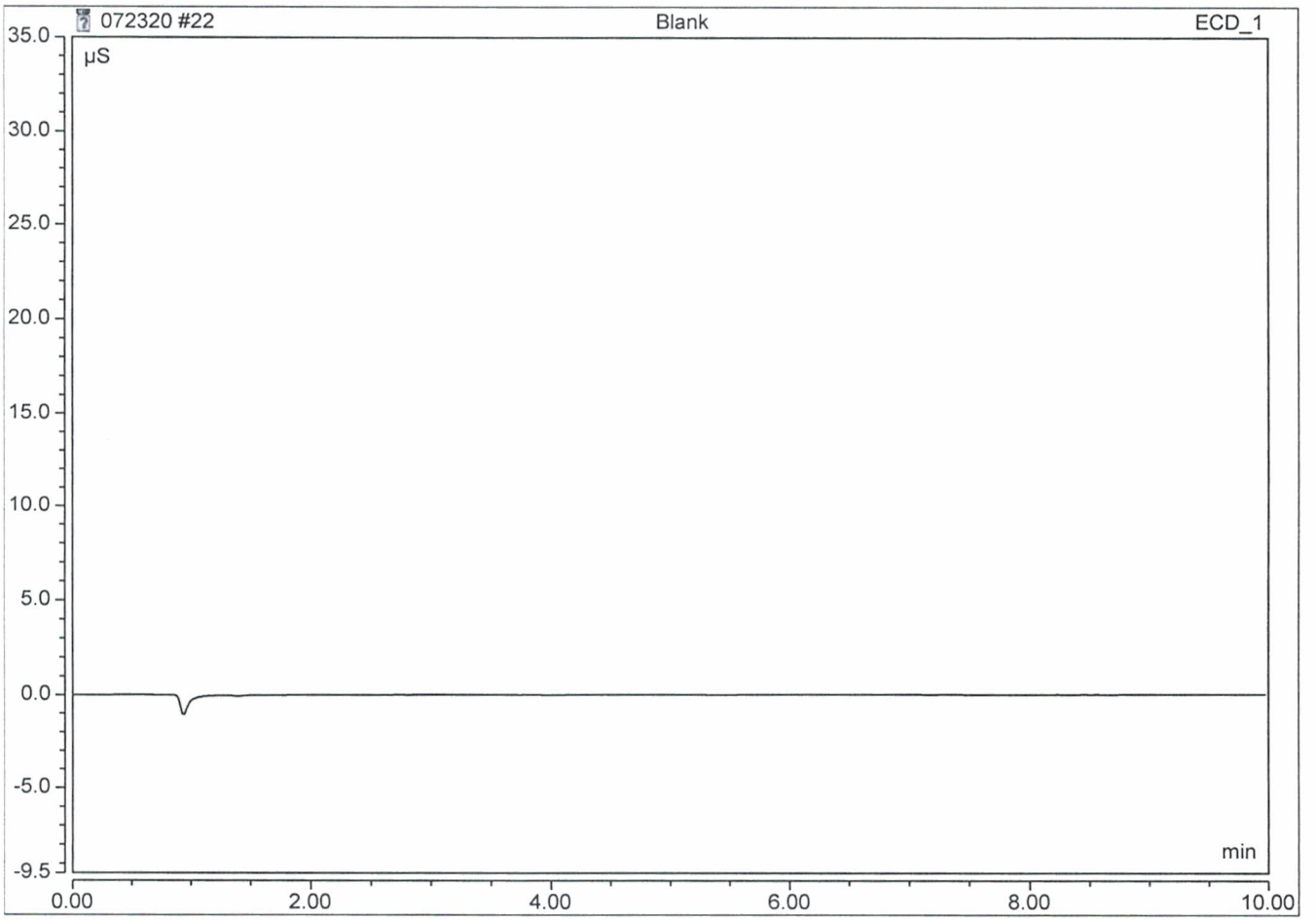
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.12	Fluoride	BMB	0.085	1.264	0.5128
2	1.64	Chloride	BMB	0.548	9.101	4.7569
3	1.92	Nitrite	BMB	0.105	1.491	0.4778
4	2.80	Bromide	BMB	0.087	0.995	2.0039
5	3.16	Nitrate	BMB	0.130	1.300	0.4971
6	6.55	Sulfate	BMB	0.568	2.628	7.1551
TOTAL:				1.52	16.78	15.40



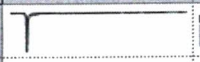
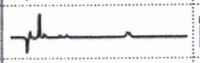
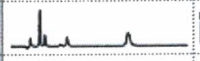
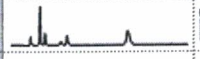
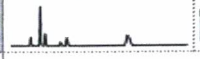
Peak Integration Report

Sample Name:	**Blank**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**23-Jul-2020 / 13:34**	*Operator:*	**Jeff Phifer**

No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
TOTAL:				0.00	0.00	0.00

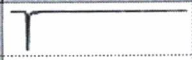
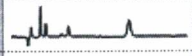


ICS-1100 A Dionex IC/Meth 300.0 **070720** new CAL

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 9:56:15 AM -...	1.0000
2		1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:08:32 AM...	1.0000
3		1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 10:21:21 AM...	1.0000
4		1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 10:34:09 AM...	1.0000
5		1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 10:46:58 AM...	1.0000
6		1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 10:59:49 AM...	1.0000
	Click here to add a new injection									

CAL Inst ICSA070720CAL

070720

#	ECD_1	Dilution	IntStd	Replicate ID	Comment	Spike Grou
1		1.0000	1.0000		Jeff Phifer	
2		1.0000	1.0000		Jeff Phifer	
3		1.0000	1.0000		Jeff Phifer	
4		1.0000	1.0000		Jeff Phifer	
5		1.0000	1.0000		Jeff Phifer	
6		1.0000	1.0000		Jeff Phifer	
	Click here to add a new injection					

Norm Method	03/08/11 13:39	Jeff Phifer	**Method 300.0**	
Stage	Time	Command	Value	Comment
	min			
Instrument Setup				
	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject				
	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run				
	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run			Duration = 10.000 [min]	
	0.000			
	0.500			
		Sampler.BeginOverlap		
Stop Run				
	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

7.7.20

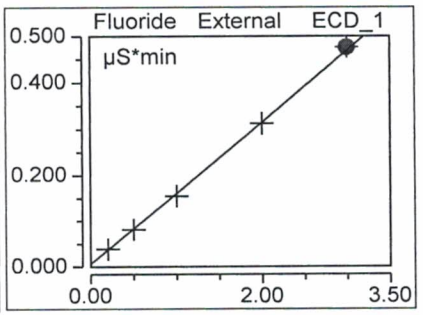
Calibration Batch Report
CAL ID# ICSA070720CAL

Sequence:	070720	*Injection Volu.*	2,500.00
Instrument Method:	Norm Method	*Operator:*	Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 10:59	*Column:*	AS4A-SC 038777

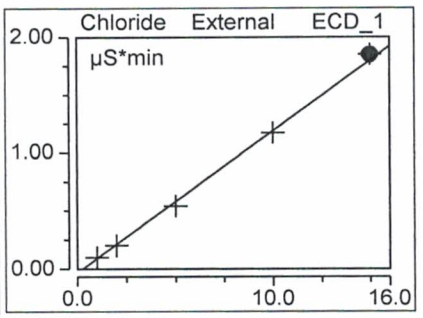
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.01	0.006	0.154	0.000	0.9996
Chloride	Area	Lin, WithOffset, 1/A	0.02	-0.031	0.122	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.03	-0.003	0.227	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.05	-0.001	0.044	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.07	-0.001	0.263	0.000	0.9996
Sulfate	Area	Lin, WithOffset, 1/A	0.33	-0.002	0.080	0.000	0.9996
		AVERAGE:		-0.0052	0.1482	0.0000	0.9995

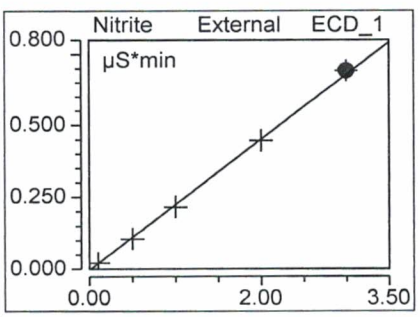
Injection Name **Fluoride**	Ret.Time min Fluoride	Area µS*min Fluoride	Height µS Fluoride	Amount Fluoride
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.114	0.0387	0.521	0.210
1131Cal2	1.114	0.0816	1.223	0.488
1131Cal3	1.114	0.1551	2.427	0.966
1131Cal4	1.114	0.3125	5.047	1.987
1131Cal5	1.114	0.4761	7.811	3.049
Average	1.114			
Rel. Std. Dev.	0.013 %			



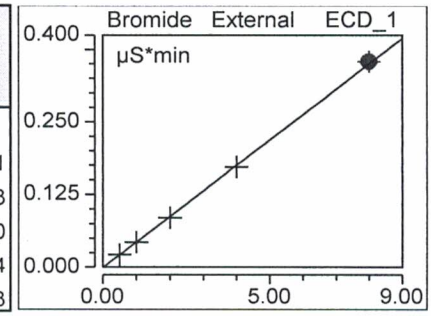
Injection Name **Chloride**	Ret.Time min Chloride	Area µS*min Chloride	Height µS Chloride	Amount Chloride
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.637	0.1013	1.651	1.089
1131Cal2	1.638	0.2015	3.302	1.912
1131Cal3	1.641	0.5404	9.060	4.694
1131Cal4	1.644	1.1707	19.722	9.867
1131Cal5	1.647	1.8494	30.847	15.438
Average	1.641			
Rel. Std. Dev.	0.262 %			



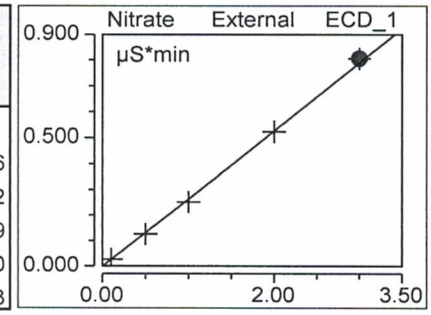
Injection Name **Nitrite**	Ret.Time min Nitrite	Area µS*min Nitrite	Height µS Nitrite	Amount Nitrite
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	1.927	0.0213	0.296	0.106
1131Cal2	1.924	0.1057	1.494	0.479
1131Cal3	1.924	0.2162	3.083	0.966
1131Cal4	1.924	0.4469	6.494	1.984
1131Cal5	1.924	0.6920	10.161	3.065
Average	1.925			
Rel. Std. Dev.	0.075 %			



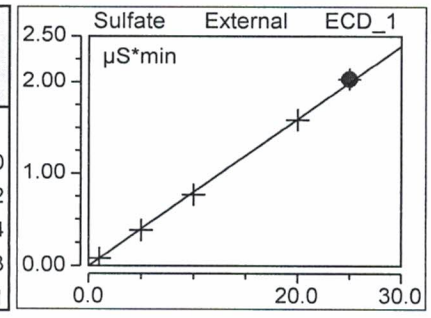
Injection Name **Bromide**	Ret.Time min Bromide	Area µS*min Bromide	Height µS Bromide	Amount Bromide
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	2.827	0.0217	0.250	0.511
1131Cal2	2.821	0.0433	0.489	1.003
1131Cal3	2.818	0.0852	0.977	1.960
1131Cal4	2.807	0.1717	1.992	3.934
1131Cal5	2.801	0.3540	4.145	8.093
Average	2.815			
Rel. Std. Dev.	0.380 %			



Injection Name **Nitrate**	Ret.Time min Nitrate	Area µS*min Nitrate	Height µS Nitrate	Amount Nitrate
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	3.191	0.0271	0.268	0.106
1131Cal2	3.181	0.1260	1.252	0.482
1131Cal3	3.168	0.2515	2.511	0.959
1131Cal4	3.151	0.5229	5.181	1.990
1131Cal5	3.134	0.8054	7.979	3.063
Average	3.165			
Rel. Std. Dev.	0.721 %			



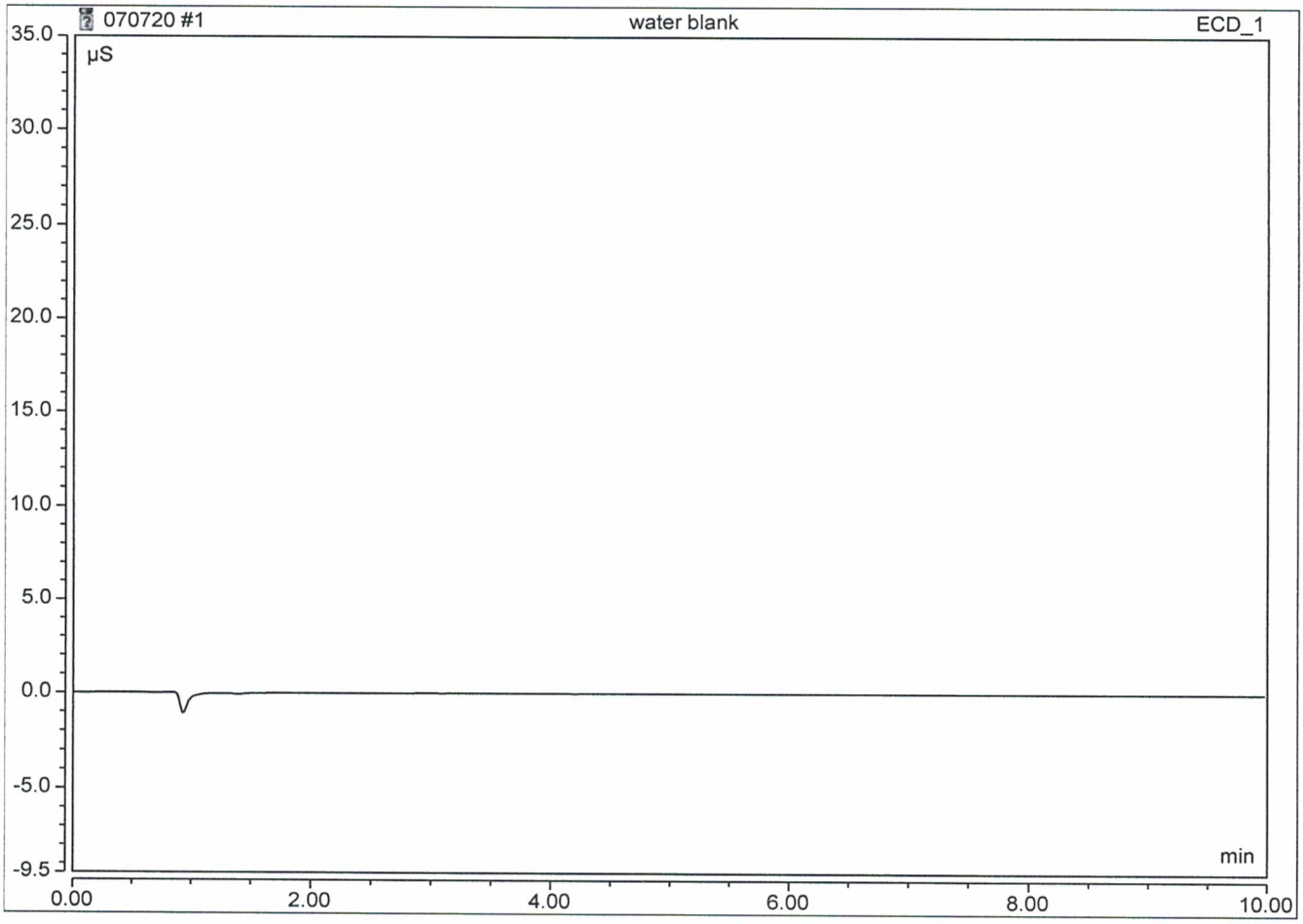
Injection Name **Sulfate**	Ret.Time min Sulfate	Area µS*min Sulfate	Height µS Sulfate	Amount Sulfate
	ECD_1	ECD_1	ECD_1	ECD_1
1131Cal1	6.617	0.0815	0.364	1.050
1131Cal2	6.608	0.3828	1.734	4.832
1131Cal3	6.594	0.7678	3.517	9.664
1131Cal4	6.571	1.5858	7.313	19.933
1131Cal5	6.557	2.0310	9.317	25.521
Average	6.589			
Rel. Std. Dev.	0.380 %			



Peak Integration Report

Sample Name:	**water blank**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**07-Jul-2020 / 09:56**	*Operator:*	**Jeff Phifer**

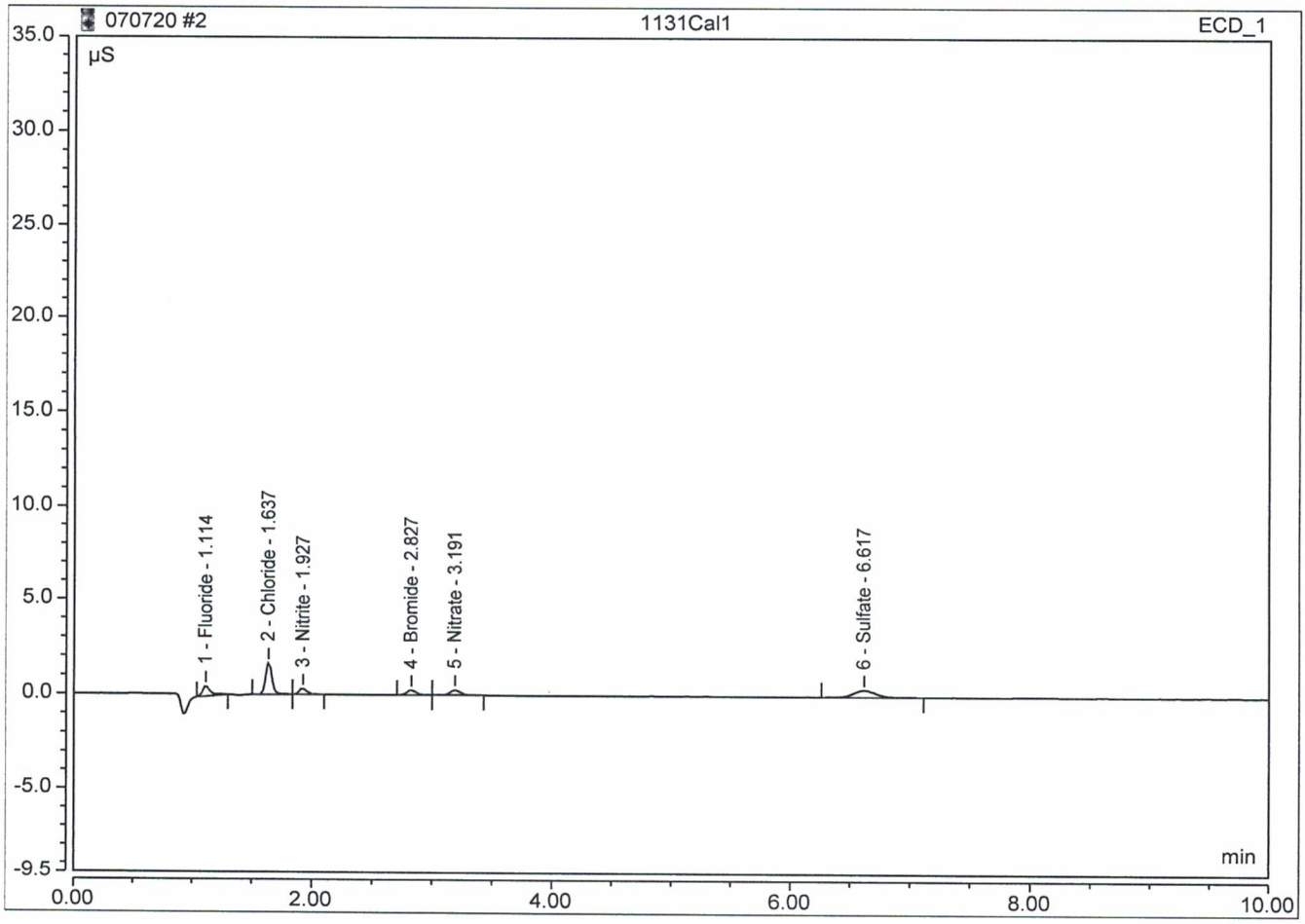
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	**1131Cal1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**07-Jul-2020 / 10:08**	*Operator:*	**Jeff Phifer**

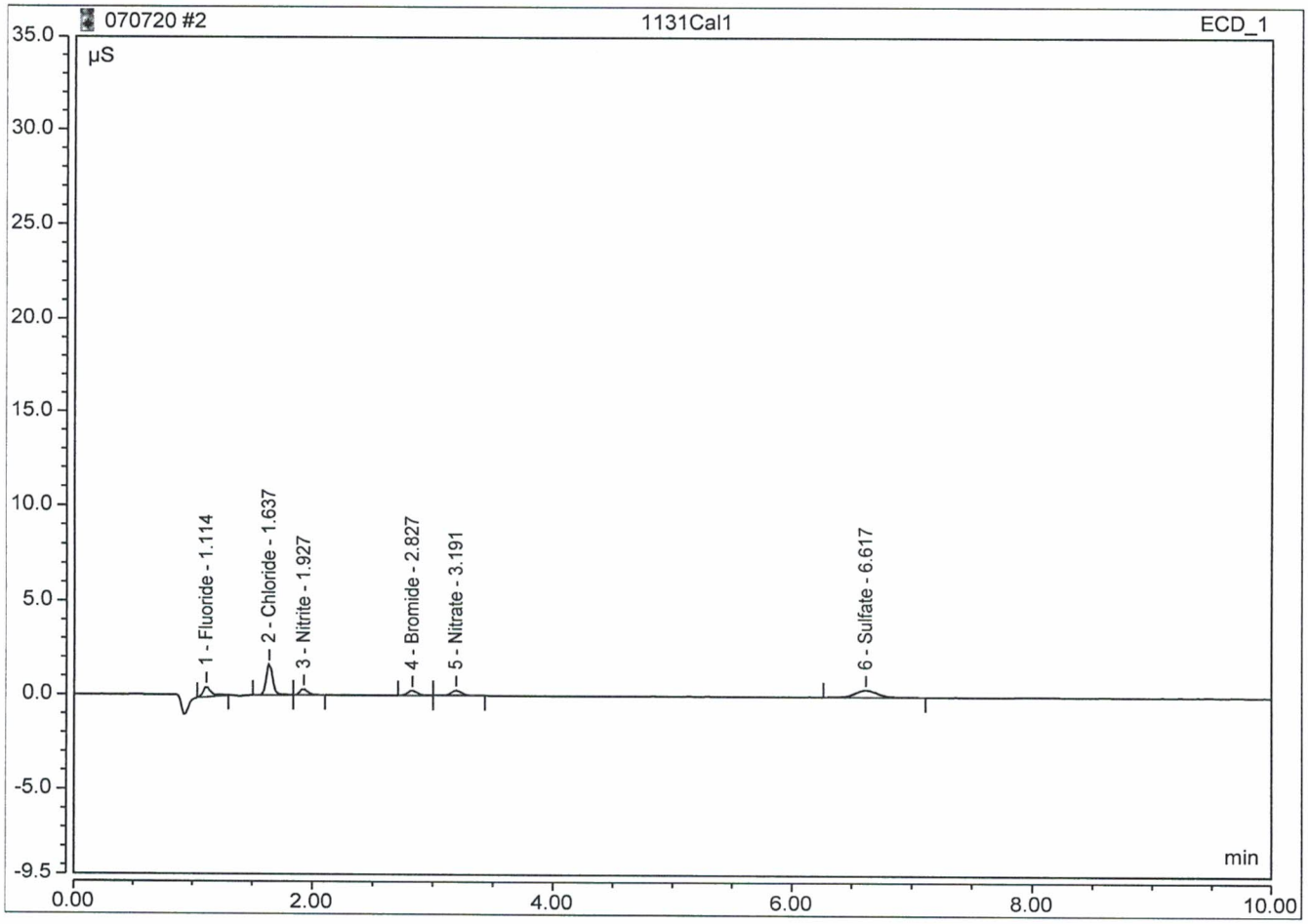
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.11	Fluoride	BMB	0.039	0.521	0.2 0.2096
2	1.64	Chloride	BMB	0.101	1.651	1 1.0894
3	1.93	Nitrite	BMB	0.021	0.296	0.1 0.1063
4	2.83	Bromide	BMB	0.022	0.250	0.5 0.5113
5	3.19	Nitrate	BMB	0.027	0.268	0.1 0.1061
6	6.62	Sulfate	BMB	0.082	0.364	1 1.0497
TOTAL:				0.29	3.35	3.07



Peak Integration Report

Sample Name:	**1131Cal1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**07-Jul-2020 / 10:08**	*Operator:*	**Jeff Phifer**

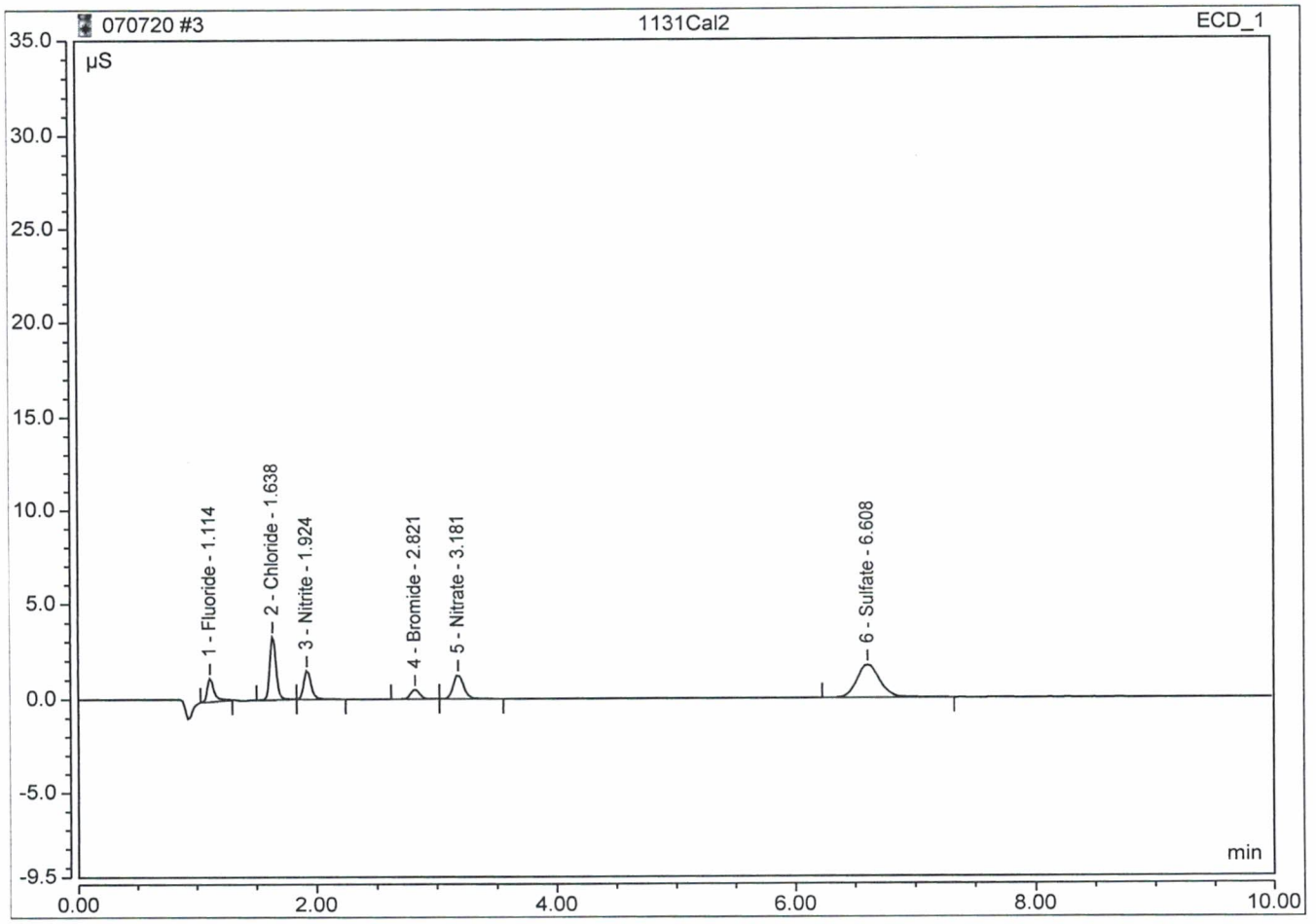
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.11	Fluoride	BMB	0.039	0.521	n.a.
2	1.64	Chloride	BMB	0.101	1.651	n.a.
3	1.93	Nitrite	BMB	0.021	0.296	n.a.
4	2.83	Bromide	BMB	0.022	0.250	n.a.
5	3.19	Nitrate	BMB	0.027	0.268	n.a.
6	6.62	Sulfate	BMB	0.082	0.364	n.a.
TOTAL:				0.29	3.35	0.00



Peak Integration Report

Sample Name:	**1131Cal2**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**07-Jul-2020 / 10:21**	*Operator:*	**Jeff Phifer**

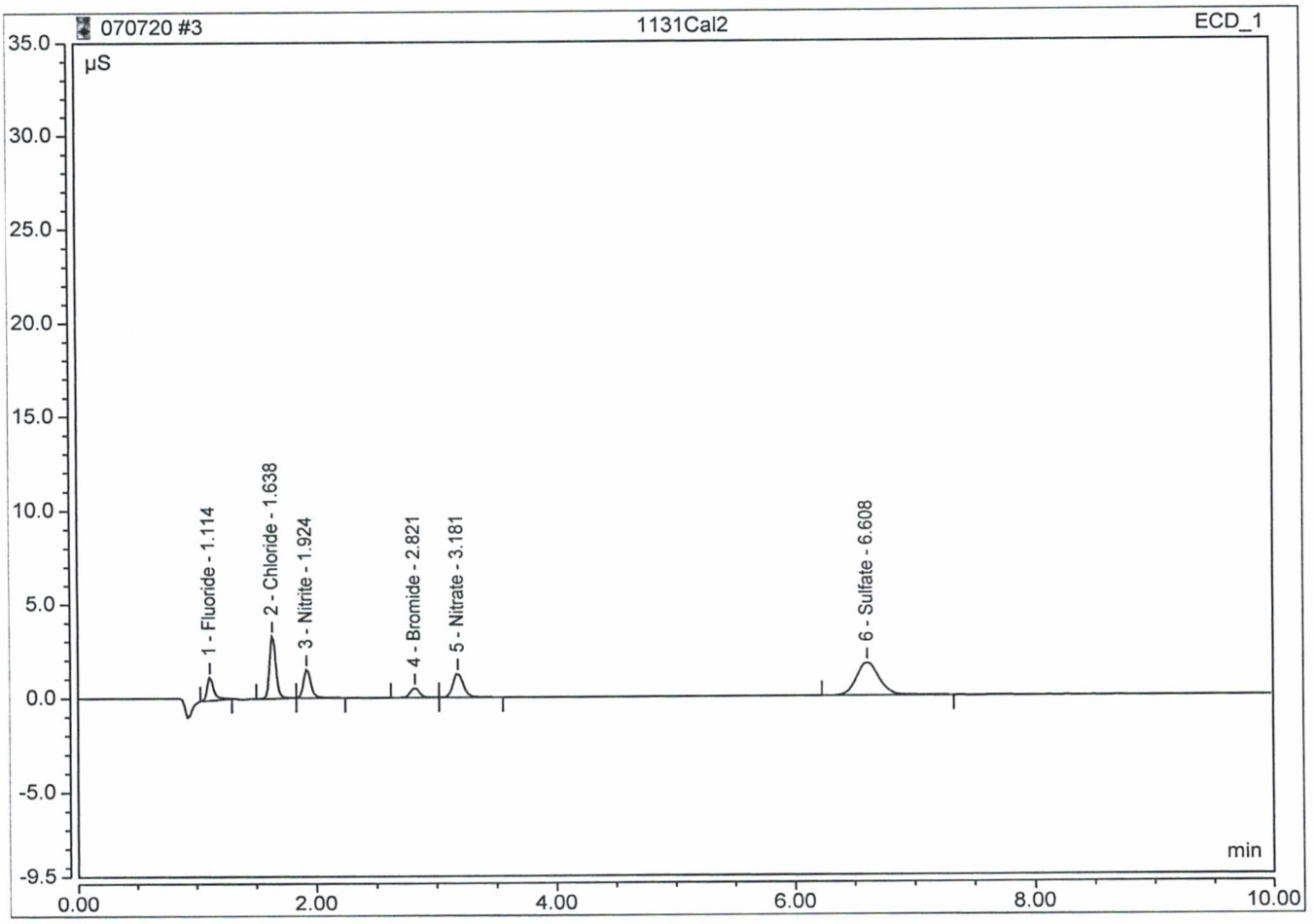
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.11	**Fluoride**	BMB	0.082	1.223	0.5 0.4881
2	1.64	**Chloride**	BMB	0.202	3.302	2 1.9118
3	1.92	**Nitrite**	BMB	0.106	1.494	0.5 0.4786
4	2.82	**Bromide**	BMB	0.043	0.489	1 1.0026
5	3.18	**Nitrate**	BMB	0.126	1.252	0.5 0.4819
6	6.61	**Sulfate**	BMB	0.383	1.734	5 4.8320
TOTAL:				0.94	9.49	9.19



Peak Integration Report

Sample Name:	**1131Cal2**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**07-Jul-2020 / 10:21**	*Operator:*	**Jeff Phifer**

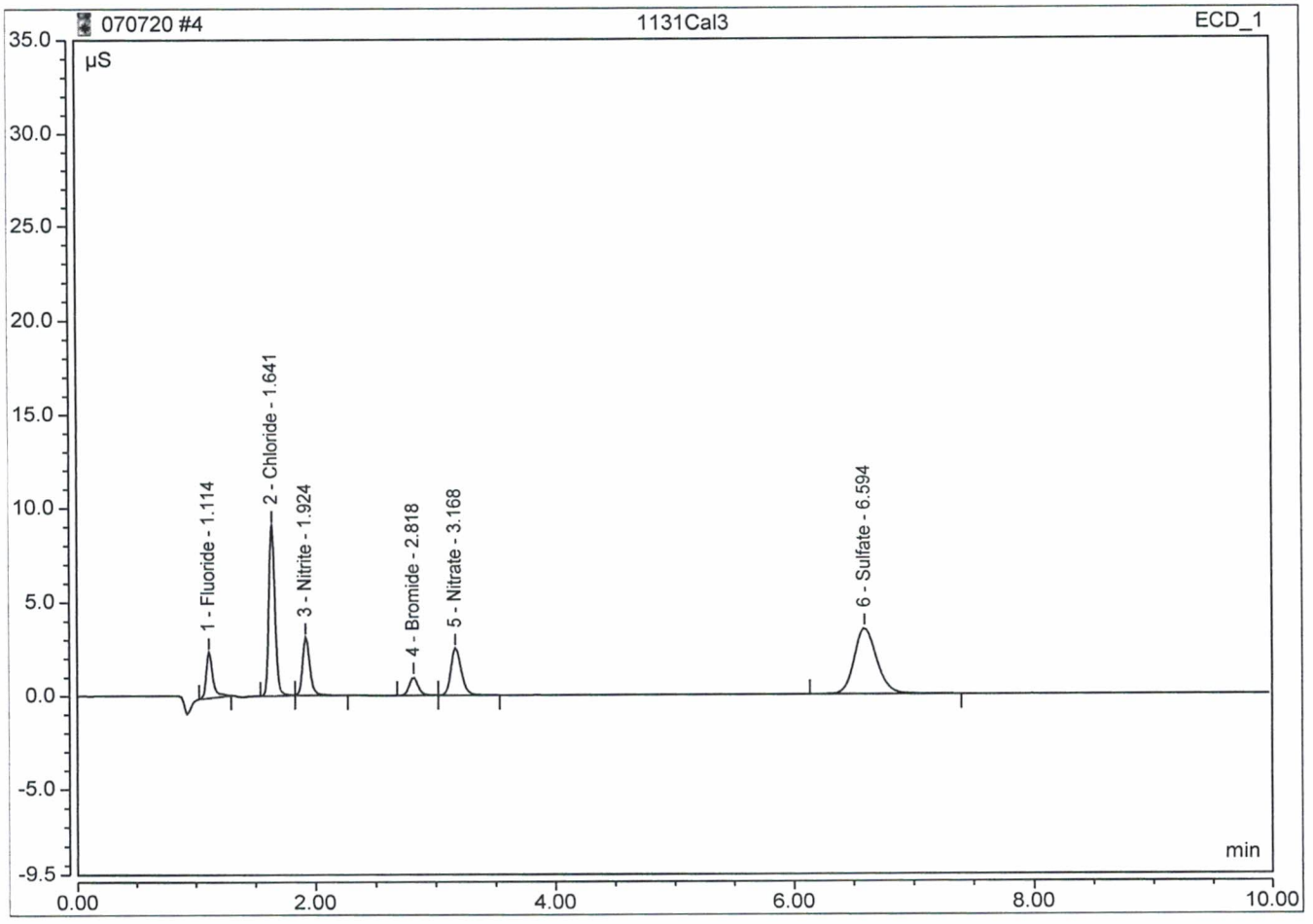
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.11	Fluoride	BMB	0.082	1.223	0.5000
2	1.64	Chloride	BMB	0.202	3.302	2.0000
3	1.92	Nitrite	BMB	0.106	1.494	0.5000
4	2.82	Bromide	BMB	0.043	0.489	1.0000
5	3.18	Nitrate	BMB	0.126	1.252	0.5000
6	6.61	Sulfate	BMB	0.383	1.734	5.0000
TOTAL:				0.94	9.49	9.50



Peak Integration Report

Sample Name:	**1131Cal3**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**07-Jul-2020 / 10:34**	*Operator:*	**Jeff Phifer**

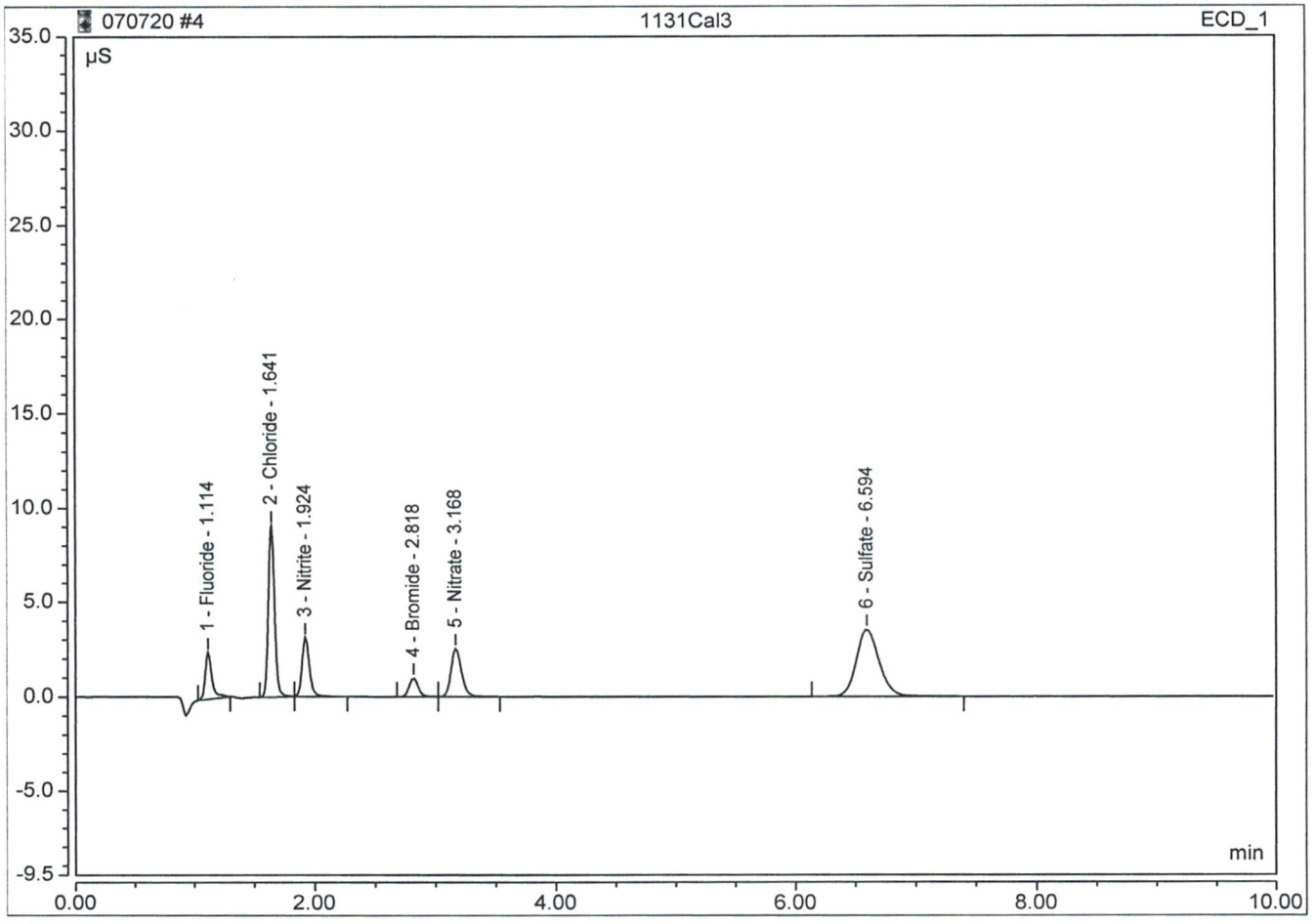
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.11	**Fluoride**	BMB	0.155	2.427	0.9656
2	1.64	**Chloride**	BMB	0.540	9.060	4.6937
3	1.92	**Nitrite**	BMB	0.216	3.083	0.9661
4	2.82	**Bromide**	BMB	0.085	0.977	1.9598
5	3.17	**Nitrate**	BMB	0.251	2.511	0.9588
6	6.59	**Sulfate**	BMB	0.768	3.517	9.6641
TOTAL:				2.02	21.57	19.21



Peak Integration Report

Sample Name:	**1131Cal3**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**07-Jul-2020 / 10:34**	*Operator:*	**Jeff Phifer**

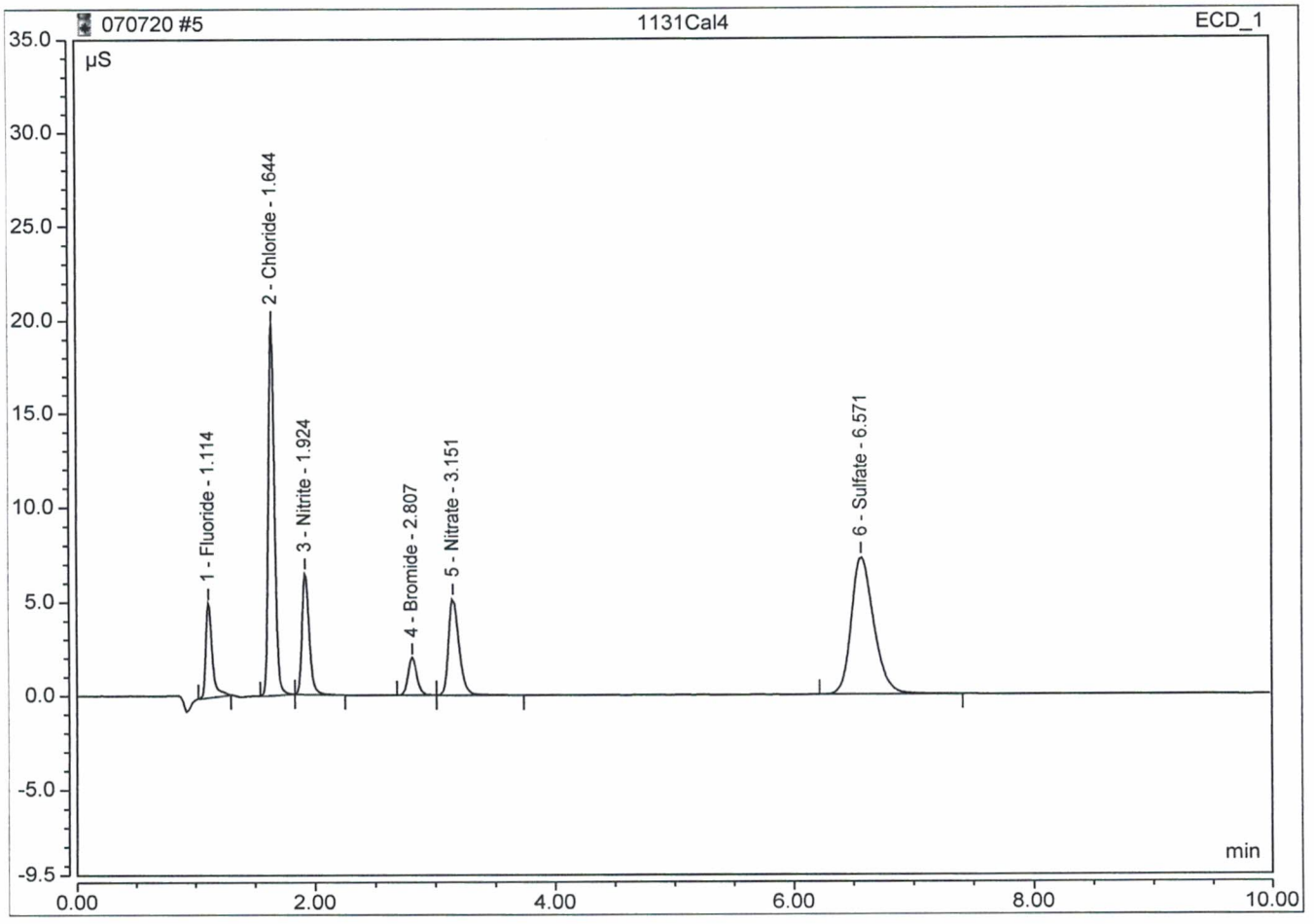
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.11	Fluoride	BMB	0.155	2.427	1.0028
2	1.64	Chloride	BMB	0.540	9.060	5.0381
3	1.92	Nitrite	BMB	0.216	3.083	1.0063
4	2.82	Bromide	BMB	0.085	0.977	1.9960
5	3.17	Nitrate	BMB	0.251	2.511	1.0021
6	6.59	Sulfate	BMB	0.768	3.517	10.0296
TOTAL:				2.02	21.57	20.07



Peak Integration Report

Sample Name:	**1131Cal4**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**07-Jul-2020 / 10:46**	*Operator:*	**Jeff Phifer**

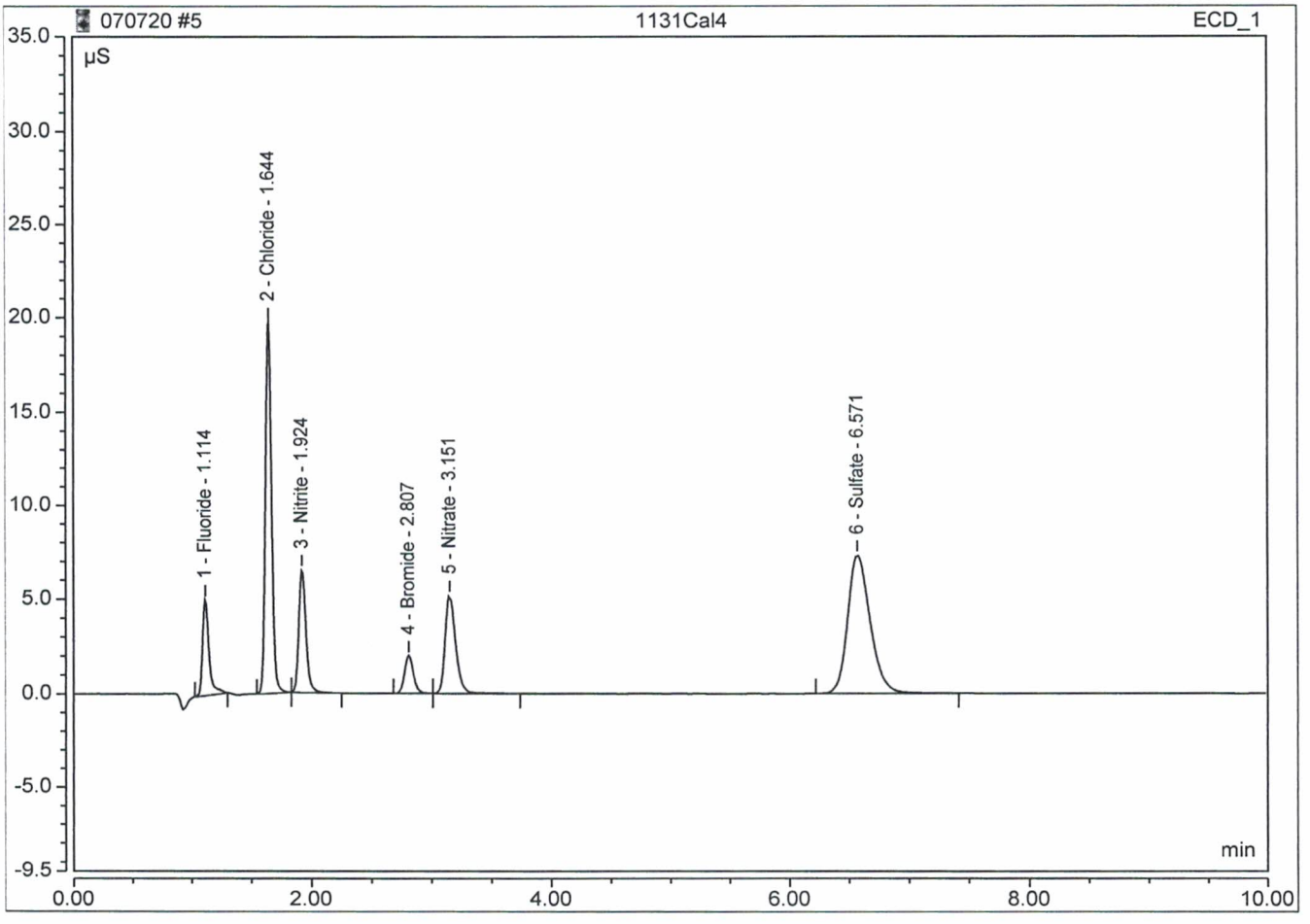
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.11	Fluoride	BMB	0.313	5.047	2 1.9874
2	1.64	Chloride	BMB	1.171	19.722	10 9.8670
3	1.92	Nitrite	BMB	0.447	6.494	2 1.9838
4	2.81	Bromide	BMB	0.172	1.992	4 3.9335
5	3.15	Nitrate	BMB	0.523	5.181	2 1.9899
6	6.57	Sulfate	BMB	1.586	7.313	20 19.9329
TOTAL:				4.21	45.75	39.69



Peak Integration Report

Sample Name:	**1131Cal4**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**07-Jul-2020 / 10:46**	*Operator:*	**Jeff Phifer**

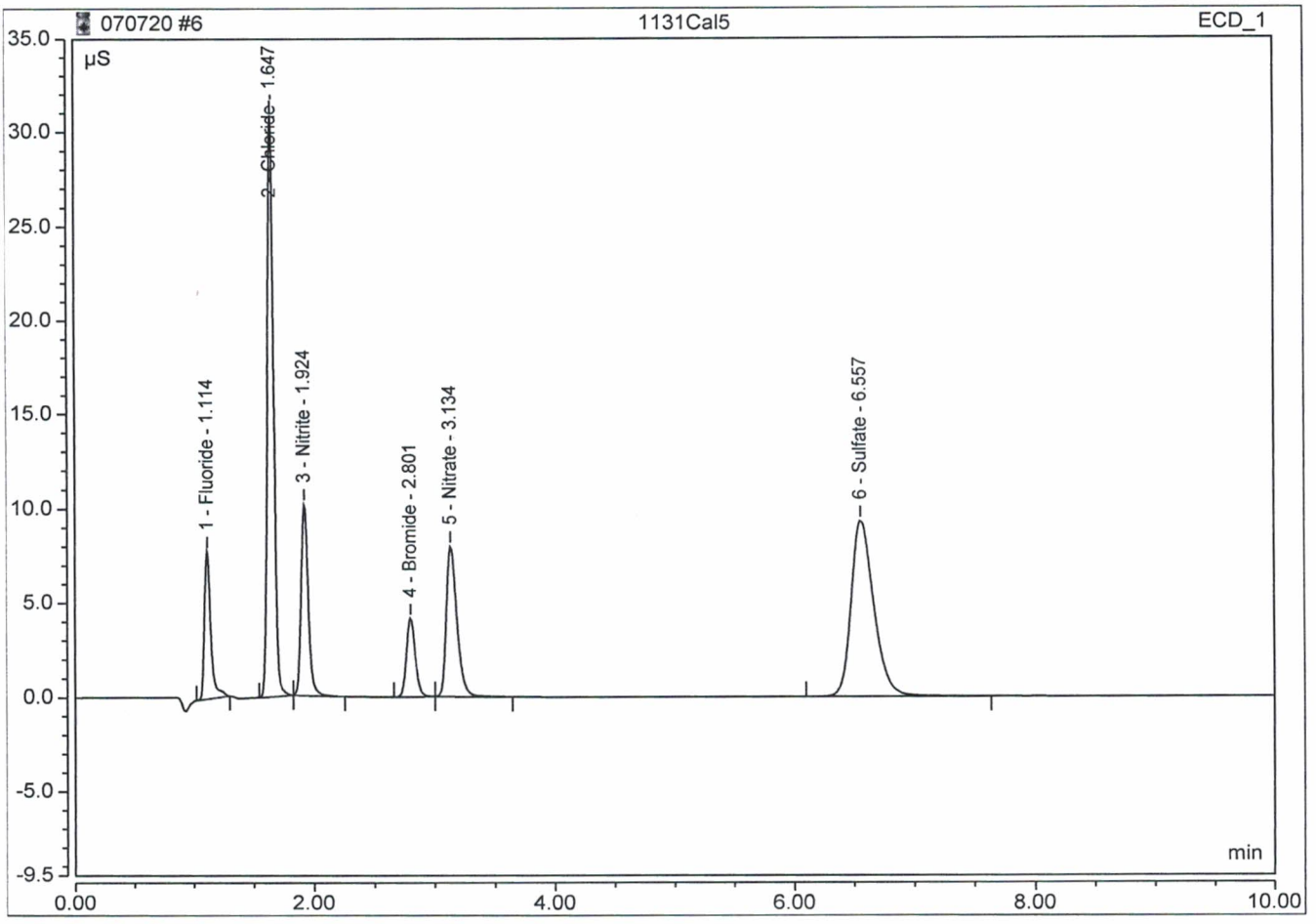
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.11	Fluoride	BMB	0.313	5.047	2.0249
2	1.64	Chloride	BMB	1.171	19.722	10.2103
3	1.92	Nitrite	BMB	0.447	6.494	2.0275
4	2.81	Bromide	BMB	0.172	1.992	4.0098
5	3.15	Nitrate	BMB	0.523	5.181	2.0325
6	6.57	Sulfate	BMB	1.586	7.313	20.2778
TOTAL:				4.21	45.75	40.58



Peak Integration Report

Sample Name:	**1131Cal5**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**07-Jul-2020 / 10:59**	*Operator:*	**Jeff Phifer**

No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L	
1	1.11	Fluoride	BMB	0.476	7.811	3	3.0493
2	1.65	Chloride	BMB	1.849	30.847	15	15.4380
3	1.92	Nitrite	BMB	0.692	10.161	3	3.0652
4	2.80	Bromide	BMB	0.354	4.145	8	8.0928
5	3.13	Nitrate	BMB	0.805	7.979	3	3.0633
6	6.56	Sulfate	BMB	2.031	9.317	25	25.5213
TOTAL:				6.21	70.26		58.23



Sequence: 072320
Last Update Operator: pcuser

ICS-1100 B Dionex/Meth 300.0

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 10:40:04 AM -C
	1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:52:24 AM -C
	1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 11:05:16 AM -C
	1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 11:18:08 AM -C
	1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 11:31:00 AM -C
	1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 11:43:51 AM -C
	Blank	Unknown		1	Norm Method	Anion	Finished	7/23/2020 9:55:09 AM -C
	BSpike 11729BS1	Check Standard		2	Norm Method	Anion	Finished	7/23/2020 10:07:28 AM ·
	LCS 11729LCS1	Check Standard		3	Norm Method	Anion	Finished	7/23/2020 10:20:20 AM ·
	15905.01	Unknown		4	Norm Method	Anion	Finished	7/23/2020 10:33:13 AM ·
	15906.01	Unknown		5	Norm Method	Anion	Finished	7/23/2020 10:46:05 AM ·
	15917.01	Unknown		6	Norm Method	Anion	Finished	7/23/2020 10:58:57 AM ·
	15917.02	Unknown		7	Norm Method	Anion	Finished	7/23/2020 11:11:48 AM ·
	15917.03	Unknown		8	Norm Method	Anion	Finished	7/23/2020 11:24:40 AM ·
	15917.04	Unknown		9	Norm Method	Anion	Finished	7/23/2020 11:37:32 AM ·
	15917.05	Unknown		10	Norm Method	Anion	Finished	7/23/2020 11:50:23 AM ·
	15917.06	Unknown		11	Norm Method	Anion	Finished	7/23/2020 12:03:15 PM ·
	15917.07	Unknown		12	Norm Method	Anion	Finished	7/23/2020 12:16:07 PM ·
	15925.01	Unknown		13	Norm Method	Anion	Finished	7/23/2020 12:28:59 PM ·
	15925.01	Unknown		14	Norm Method	Anion	Finished	7/23/2020 12:41:51 PM ·
	15917.01 dup	Unknown		15	Norm Method	Anion	Finished	7/23/2020 12:54:42 PM ·
	15917.01 MS 13037MS	Unknown		16	Norm Method	Anion	Finished	7/23/2020 1:07:35 PM -C
	15917.01 MSD 13037M	Unknown		17	Norm Method	Anion	Finished	7/23/2020 1:20:27 PM -C
	BSpike 11729BS1	Check Standard		18	Norm Method	Anion	Finished	7/23/2020 1:33:19 PM -C

CAL ID# ICSB070720CAL

CL200723-W1-B NTRI200723-W1-B
SFT200723-W1-B
NTRI200723-W1-B

Sequence: 072320
Last Update Operator: pcuser

	Blank	Unknown		19	Norm Method	Anion	Finished	7/23/2020 1:46:11 PM -0

Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	50.0000	1.0000		Jeff Phifer	
1.0000	25.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	25.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	50.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	2.5000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	25.0000	1.0000		Jeff Phifer	
1.0000	10.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	

1.0000	1.0000	1.0000		Jeff Phifer	

Norm Method	16/06/15 12:18	Jeff Phifer	**METHOD 300.0**	
Stage	Time	Command	Value	Comment
	min			
Instrument Setup				
	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject				
	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run				
	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run			Duration = 10.000 [min]	
	0.000			
	0.500			
		Sampler.BeginOverlap		
Stop Run				
	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

7.23.20

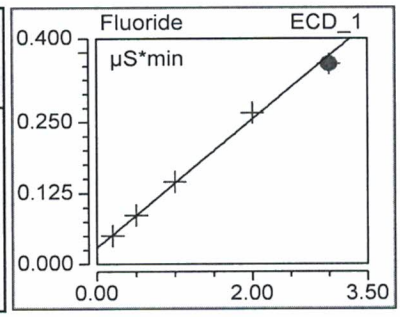
Calibration Batch Report
CAL ID# ICSB070720CAL

Sequence:	072320	*Injection Volu*	2,500.00
Instrument Method:	Norm Method	*Operator:*	Jeff Phifer
Inj. Date / Time:	07-Jul-2020 / 11:43	*Column:*	AS4A-SC 040144

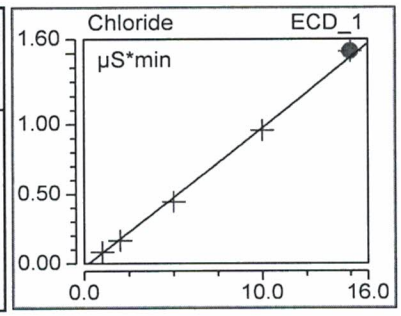
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.029	0.113	0.000	0.9985
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.023	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.191	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	0.000	0.036	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.003	0.064	0.000	0.9997
		AVERAGE:		-0.0002	0.1196	0.0000	0.9994

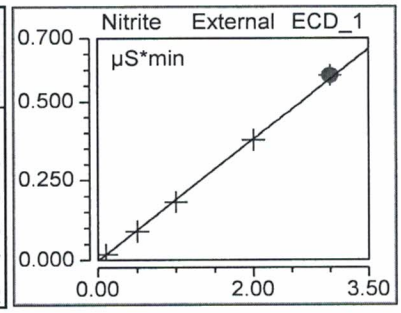
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Fluoride	Fluoride	Fluoride	Fluoride
1131Cal1	1.084	0.0508	0.484	0.189
1131Cal2	1.084	0.0870	0.999	0.510
1131Cal3	1.081	0.1450	1.848	1.024
1131Cal4	1.081	0.2666	3.636	2.101
1131Cal5	1.081	0.3541	5.285	2.876
Average	1.082			
Rel. Std. Dev.	0.164 %			



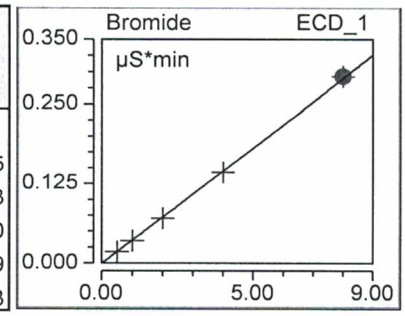
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Chloride	Chloride	Chloride	Chloride
1131Cal1	1.627	0.0849	1.387	1.089
1131Cal2	1.627	0.1668	2.765	1.912
1131Cal3	1.628	0.4444	7.521	4.701
1131Cal4	1.631	0.9564	16.335	9.846
1131Cal5	1.634	1.5142	25.720	15.452
Average	1.629			
Rel. Std. Dev.	0.180 %			



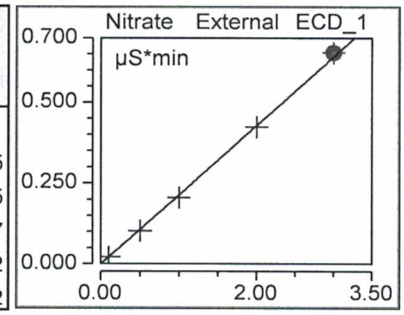
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Nitrite	Nitrite	Nitrite	Nitrite
1131Cal1	1.934	0.0181	0.252	0.106
1131Cal2	1.934	0.0900	1.251	0.483
1131Cal3	1.931	0.1818	2.556	0.963
1131Cal4	1.931	0.3773	5.333	1.987
1131Cal5	1.931	0.5827	8.298	3.062
Average	1.932			
Rel. Std. Dev.	0.092 %			



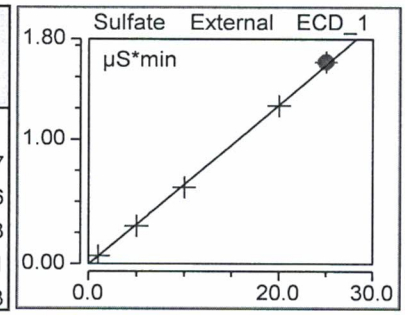
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Bromide	Bromide	Bromide	Bromide
1131Cal1	2.887	0.0182	0.193	0.515
1131Cal2	2.884	0.0355	0.378	0.993
1131Cal3	2.878	0.0705	0.760	1.960
1131Cal4	2.871	0.1427	1.549	3.949
1131Cal5	2.864	0.2925	3.206	8.083
Average	2.877			
Rel. Std. Dev.	0.332 %			



Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Nitrate	Nitrate	Nitrate	Nitrate
1131Cal1	3.271	0.0215	0.202	0.105
1131Cal2	3.257	0.1026	0.952	0.485
1131Cal3	3.248	0.2057	1.911	0.967
1131Cal4	3.234	0.4230	3.909	1.982
1131Cal5	3.217	0.6540	6.009	3.062
Average	3.245			
Rel. Std. Dev.	0.636 %			



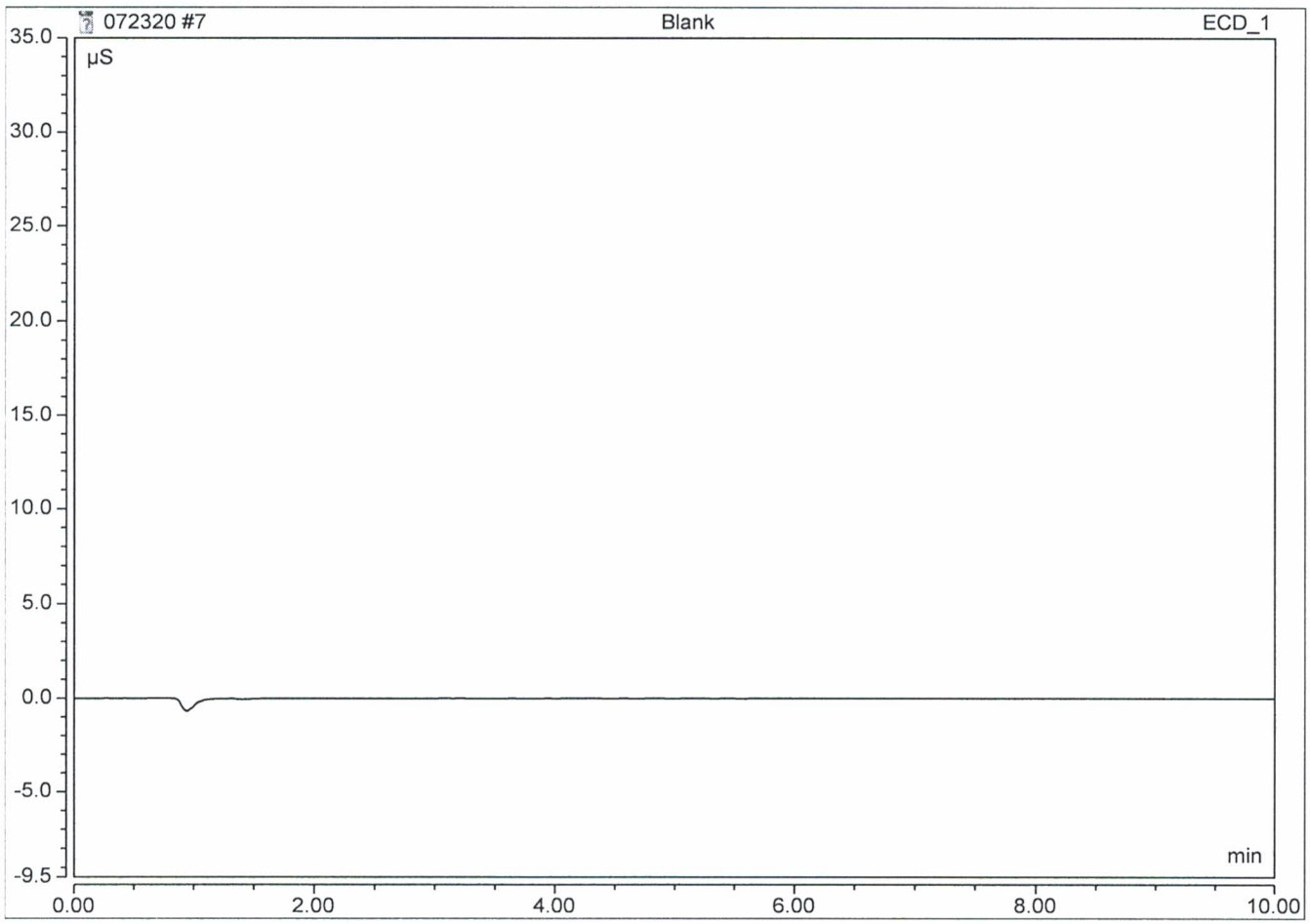
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Sulfate	Sulfate	Sulfate	Sulfate
1131Cal1	6.867	0.0635	0.271	1.047
1131Cal2	6.867	0.3050	1.300	4.836
1131Cal3	6.854	0.6147	2.631	9.693
1131Cal4	6.837	1.2706	5.439	19.981
1131Cal5	6.824	1.6188	6.926	25.443
Average	6.850			
Rel. Std. Dev.	0.279 %			



Peak Integration Report

Sample Name:	**Blank**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 09:55**	*Operator:*	**Jeff Phifer**

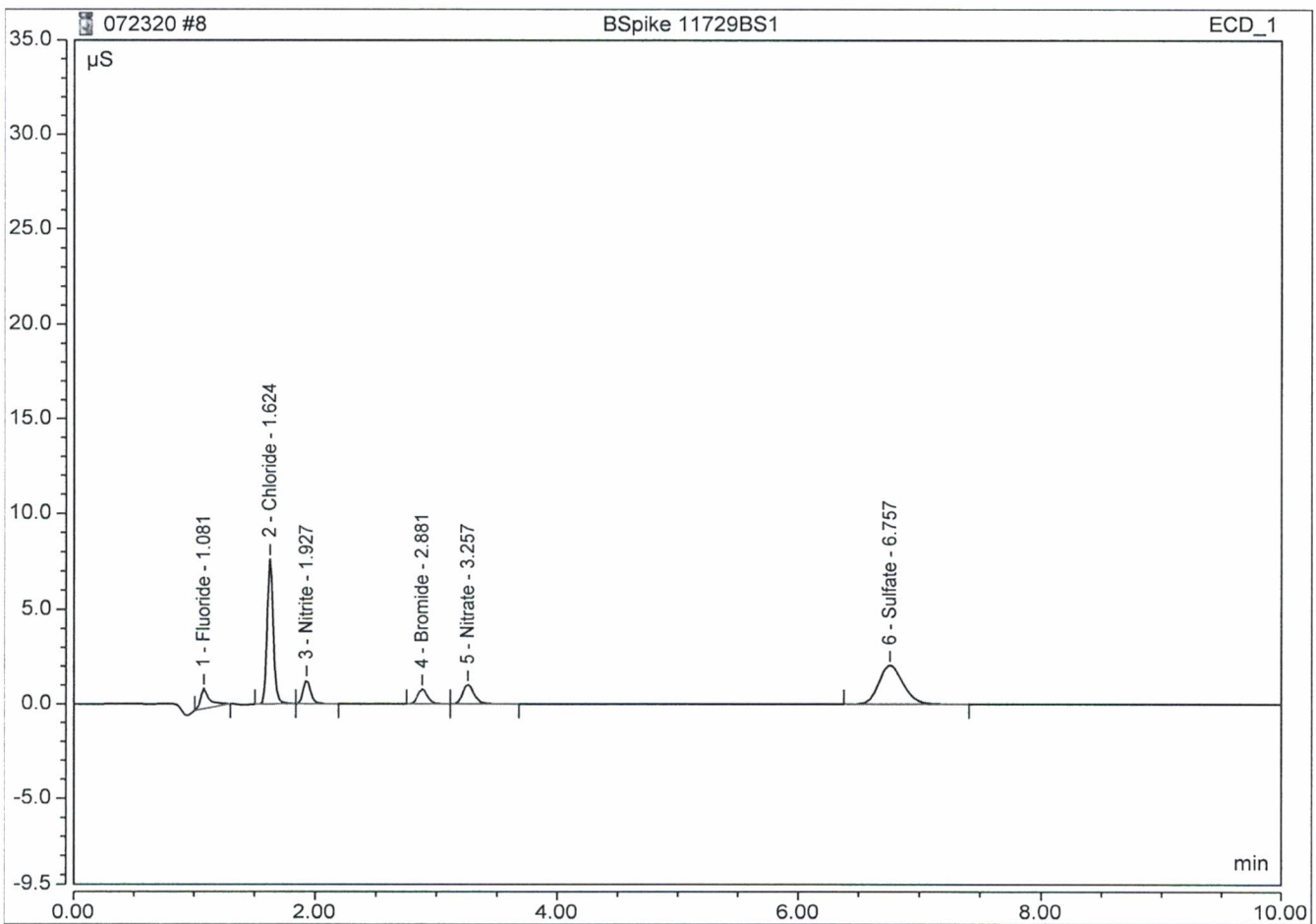
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount n.a.
		TOTAL:		0.00	0.00	0.00



Peak Integration Report

Sample Name:	**BSpike 11729BS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 10:07**	*Operator:*	**Jeff Phifer**

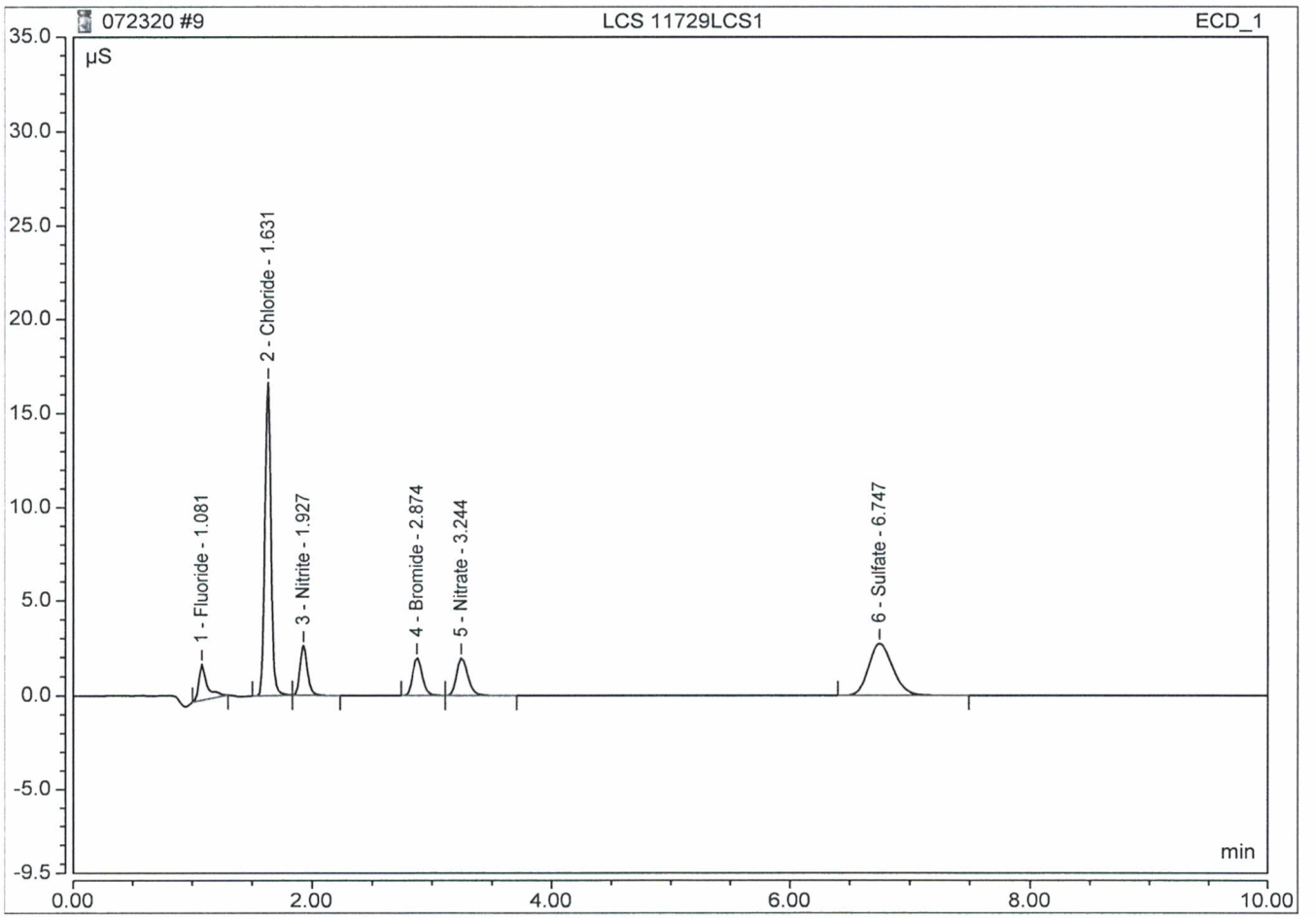
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount	
1	1.08	Fluoride	BMB	0.094	1.067	0.5707	
2	1.62	Chloride	BMB	0.454	7.636	4.8027	96 %
3	1.93	Nitrite	BMB	0.090	1.258	0.4832	96 %
4	2.88	Bromide	BMB	0.073	0.782	2.0338	
5	3.26	Nitrate	BMB	0.109	1.010	0.5149	102 %
6	6.76	Sulfate	BMB	0.475	2.058	7.5079	100 %
TOTAL:				1.30	13.81	15.91	



Peak Integration Report

Sample Name:	**LCS 11729LCS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 10:20**	*Operator:*	**Jeff Phifer**

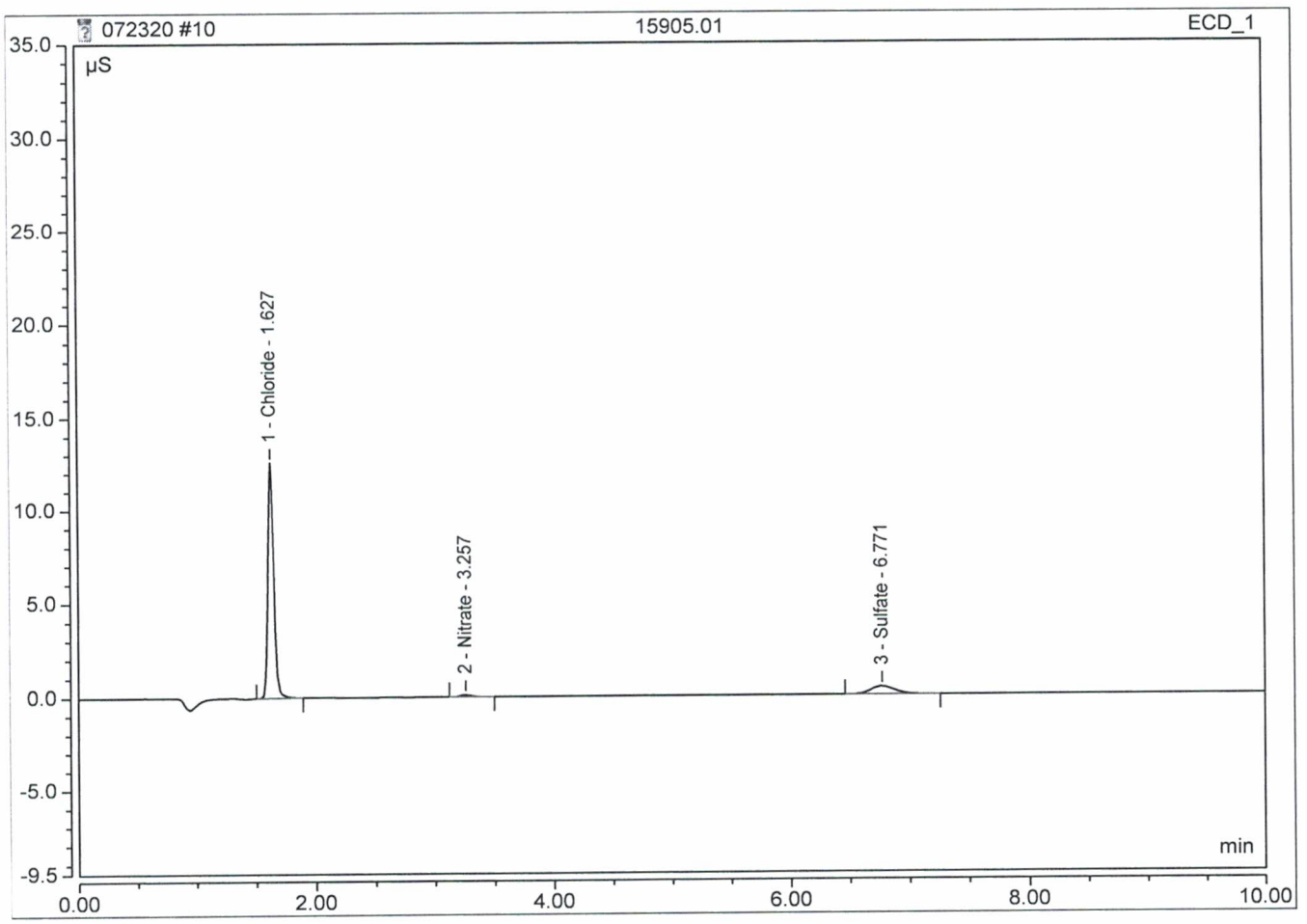
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount		
1	1.08	Fluoride	BMB	0.153	1.878	1.0960		
2	1.63	Chloride	BMB	0.976	16.633	10.0429	10	100.4
3	1.93	Nitrite	BMB	0.185	2.599	0.9777	1	98.0
4	2.87	Bromide	BMB	0.183	1.974	5.0703		
5	3.24	Nitrate	BMB	0.211	1.952	0.9902	1	99.4
6	6.75	Sulfate	BMB	0.631	2.736	9.9416	10	99.2
TOTAL:				2.34	27.77	28.12		



Peak Integration Report

Sample Name:	**15905.01**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**50.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 10:33**	*Operator:*	**Jeff Phifer**

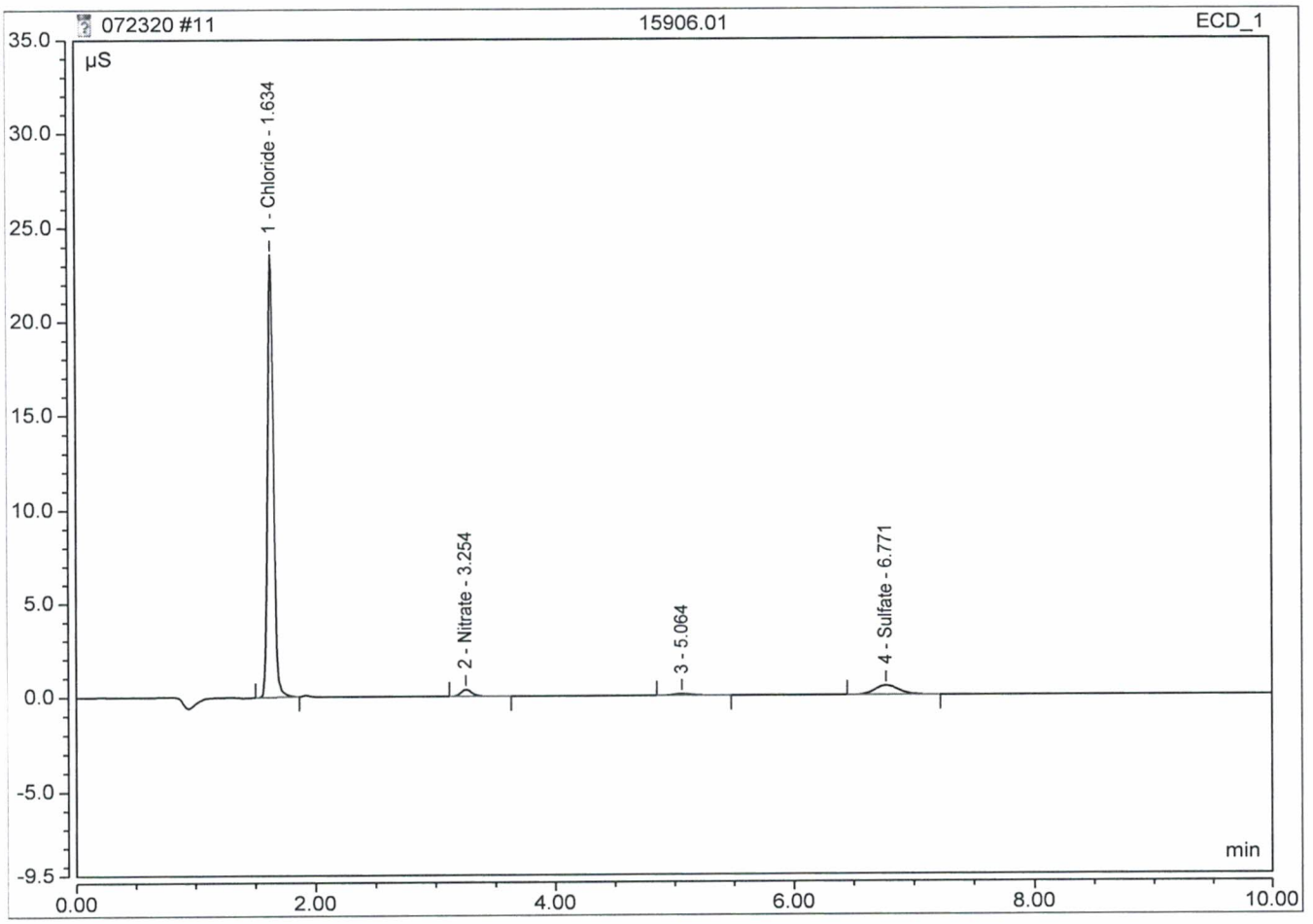
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.63	Chloride	BMB	0.738	12.599	382.8247
2	3.26	Nitrate	BMB	0.012	0.110	2.9972
3	6.77	Sulfate	BMB	0.099	0.426	79.9332
TOTAL:				0.85	13.13	465.76



Peak Integration Report

Sample Name:	**15906.01**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**25.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 10:46**	*Operator:*	**Jeff Phifer**

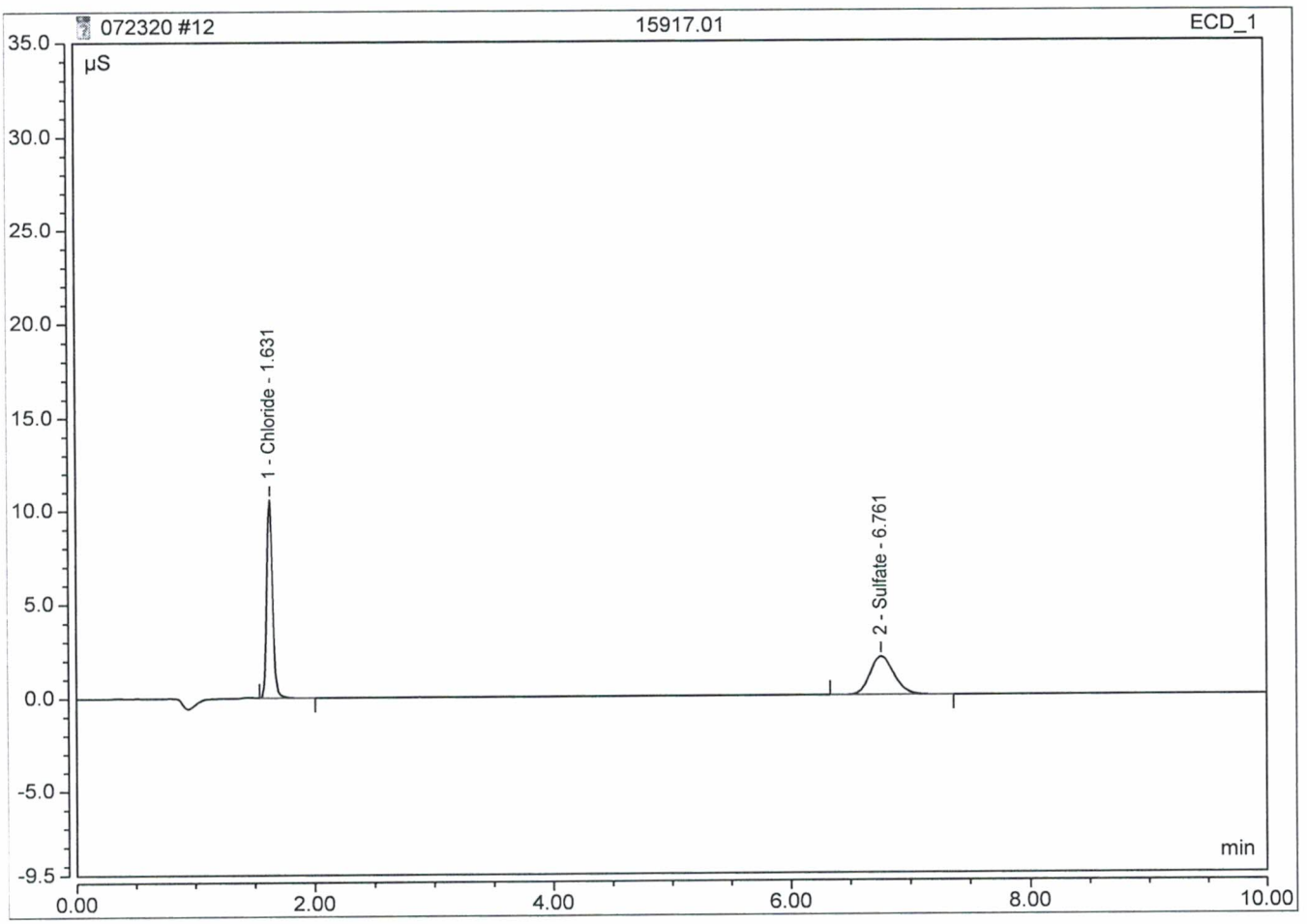
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.63	**Chloride**	BMB	1.375	23.582	351.4066
2	3.25	**Nitrate**	BMB	0.038	0.353	4.5886
4	6.77	**Sulfate**	BMB	0.112	0.486	45.2194
TOTAL:				1.53	24.42	401.21



Peak Integration Report

Sample Name:	**15917.01**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**10.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 10:58**	*Operator:*	**Jeff Phifer**

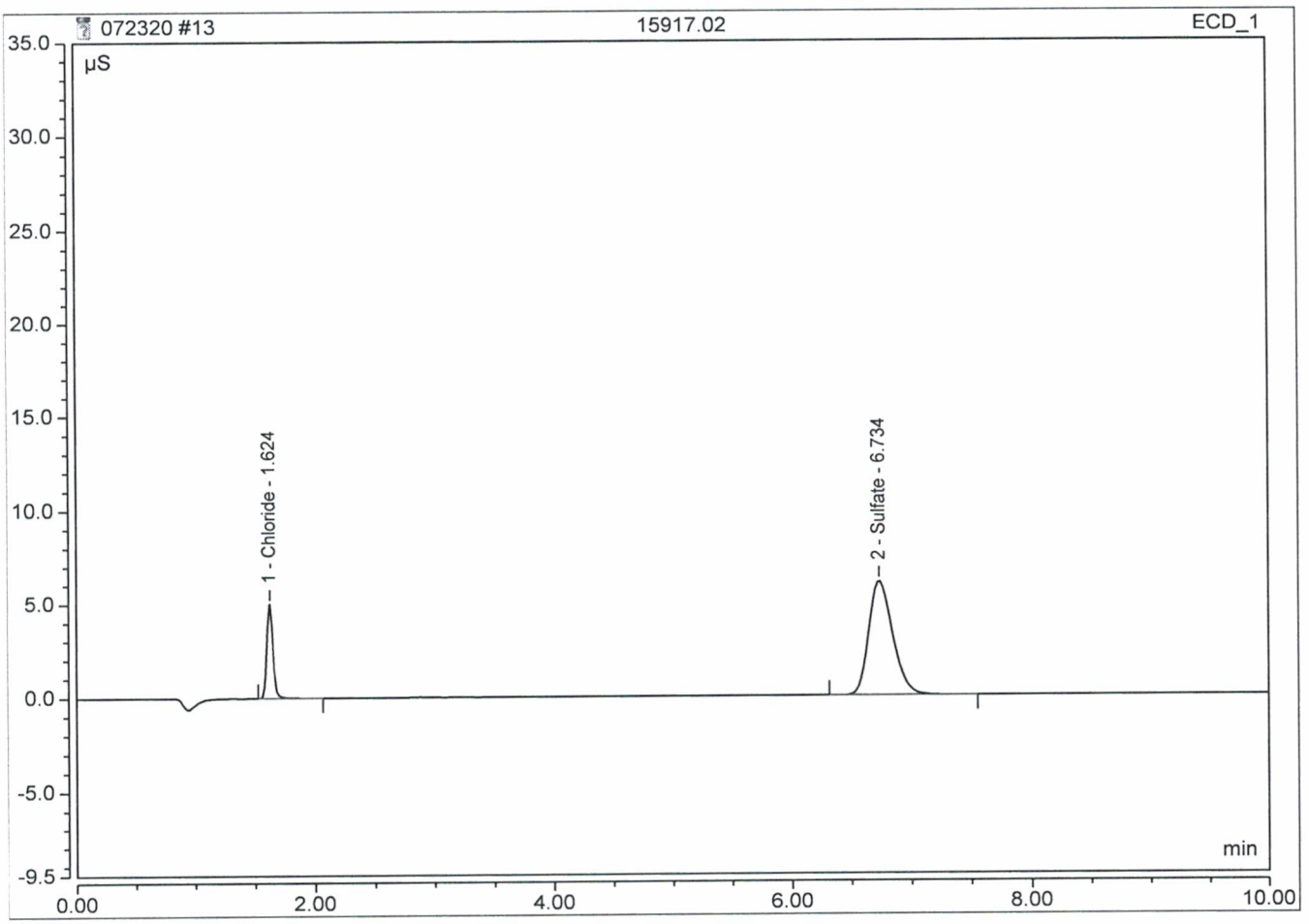
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.63	Chloride	BMB	0.614	10.565	64.1001
2	6.76	Sulfate	BMB	0.473	2.052	74.6873
TOTAL:				1.09	12.62	138.79



Peak Integration Report

Sample Name:	**15917.02**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**25.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 11:11**	*Operator:*	**Jeff Phifer**

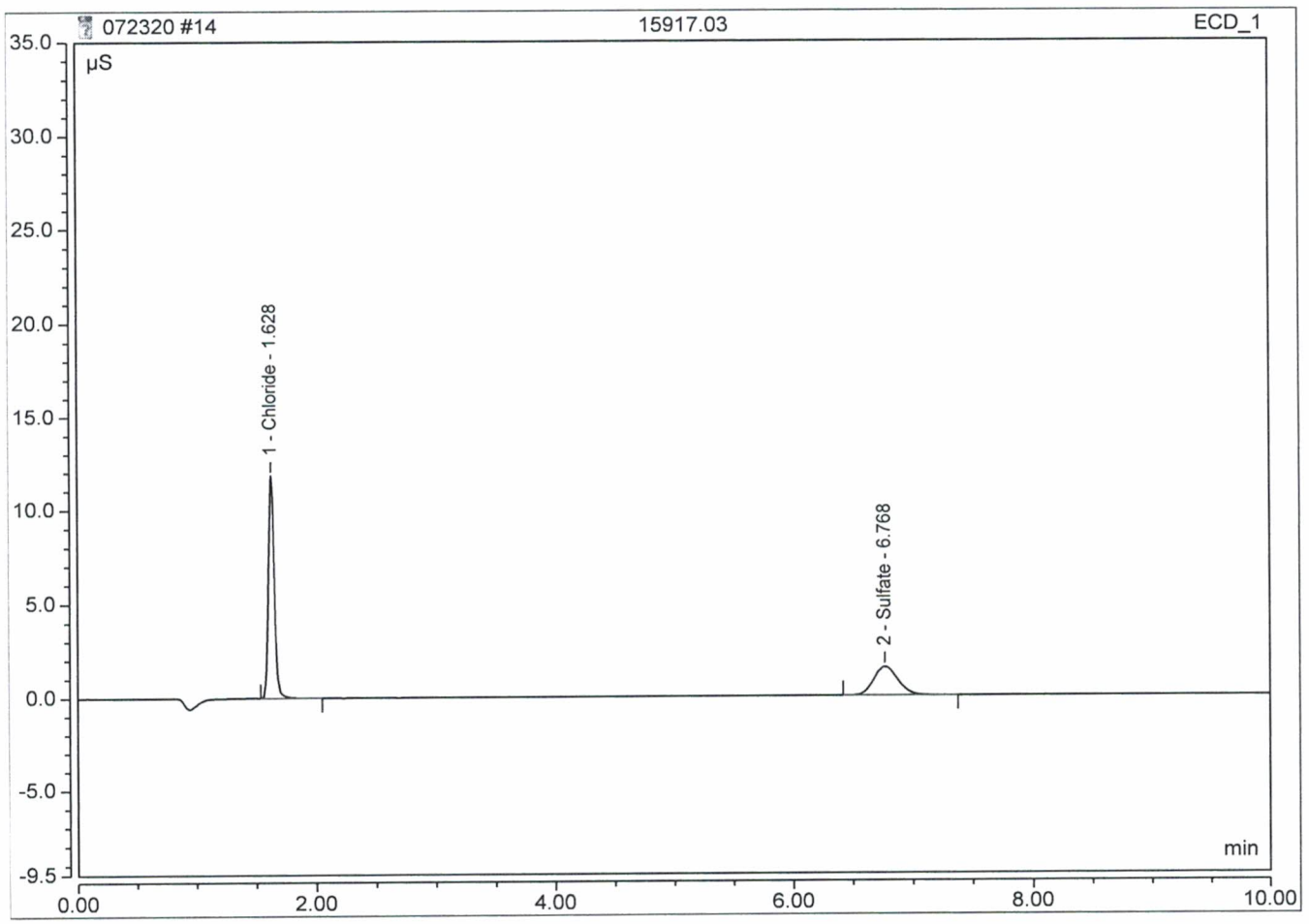
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.62	**Chloride**	BMB	0.300	5.019	81.3630
2	6.73	**Sulfate**	BMB	1.397	6.081	549.2221
TOTAL:				1.70	11.10	630.59



Peak Integration Report

Sample Name:	**15917.03**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**10.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 11:24**	*Operator:*	**Jeff Phifer**

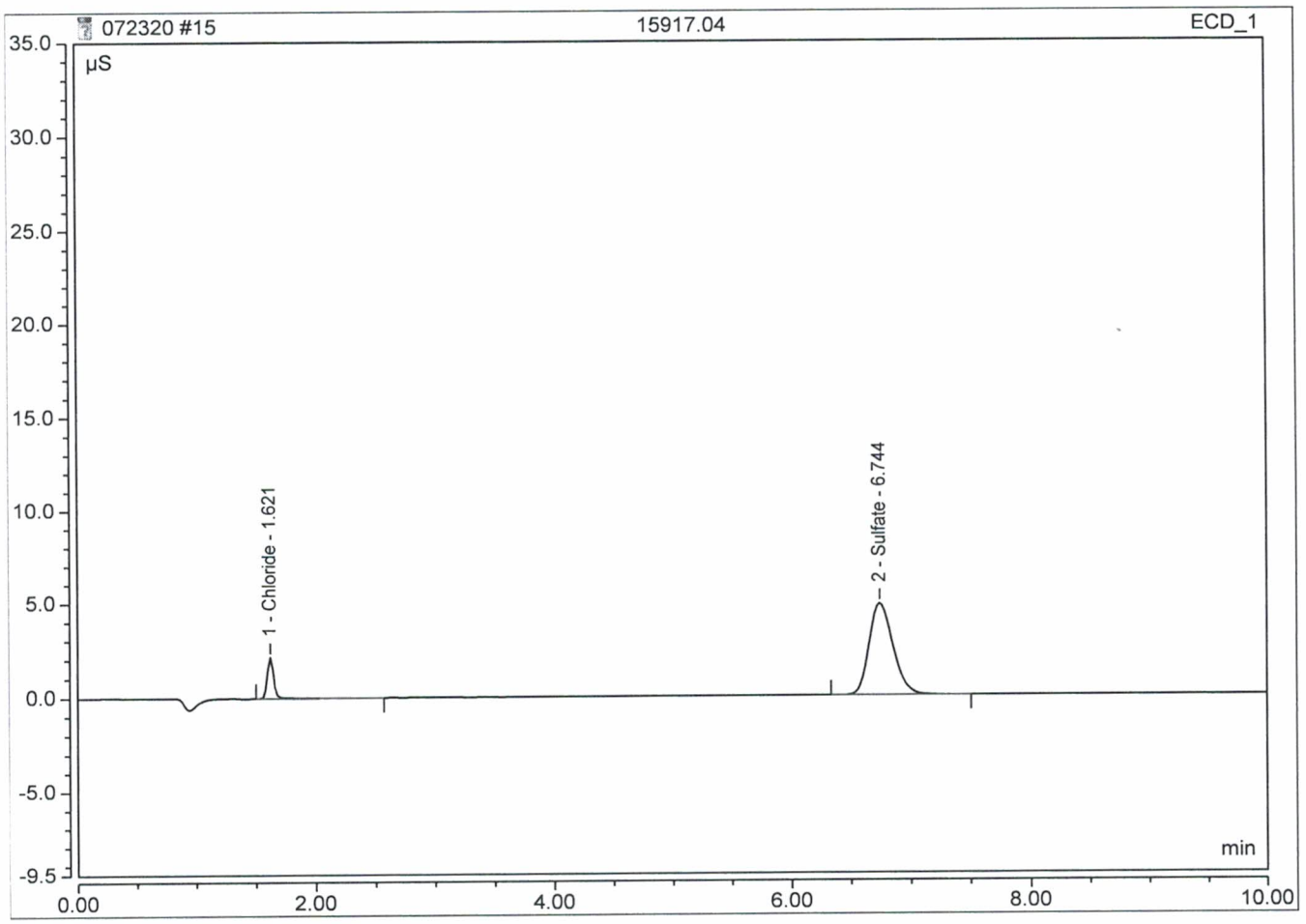
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.63	**Chloride**	BMB	0.689	11.823	71.6321
2	6.77	**Sulfate**	BMB	0.353	1.531	55.9521
TOTAL:				1.04	13.35	127.58



Peak Integration Report

Sample Name:	**15917.04**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**50.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 11:37**	*Operator:*	**Jeff Phifer**

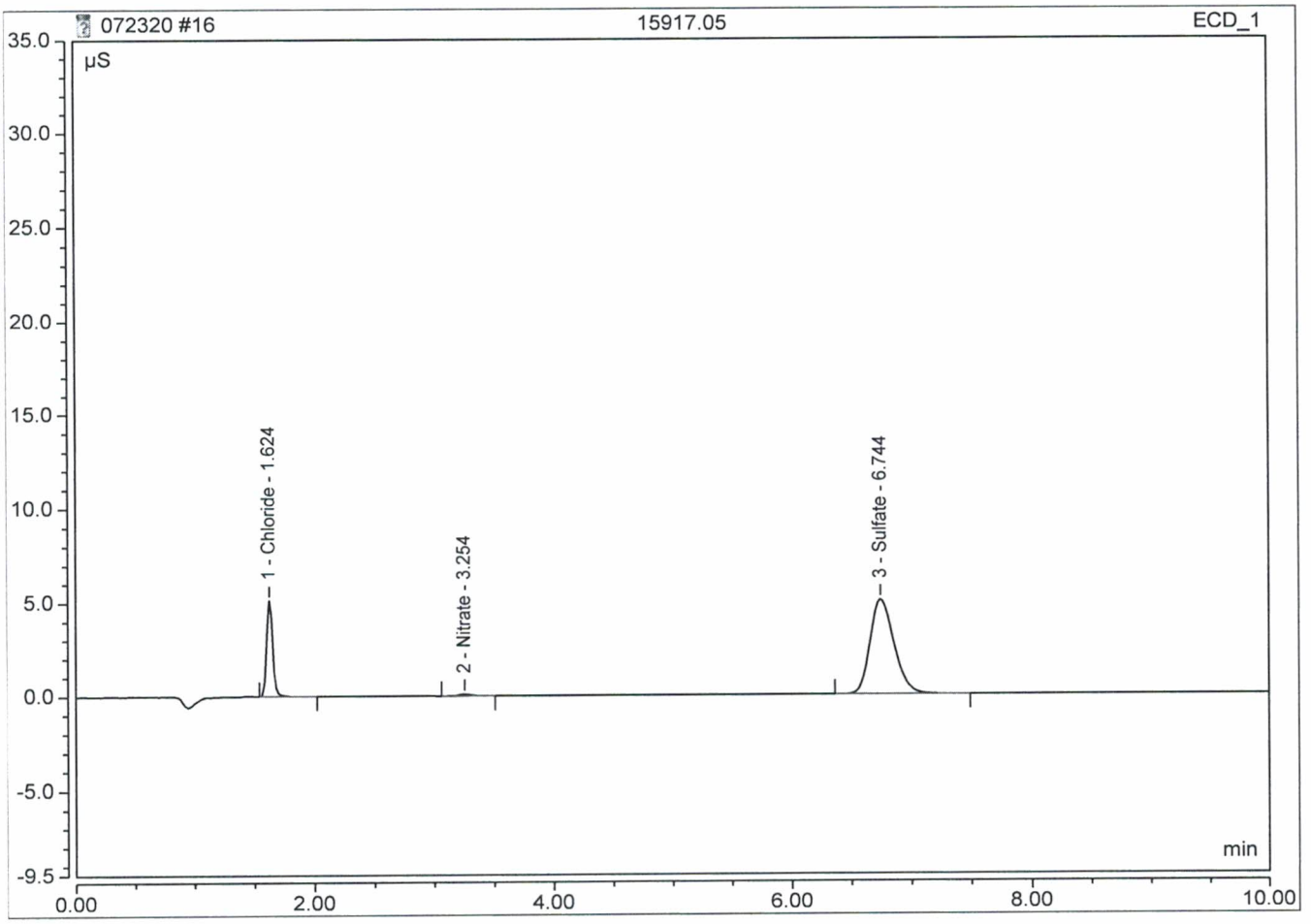
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.62	**Chloride**	BMB	0.136	2.146	80.2924
2	6.74	**Sulfate**	BMB	1.115	4.853	877.0527
TOTAL:				1.25	7.00	957.35



Peak Integration Report

Sample Name:	**15917.05**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**10.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 11:50**	*Operator:*	**Jeff Phifer**

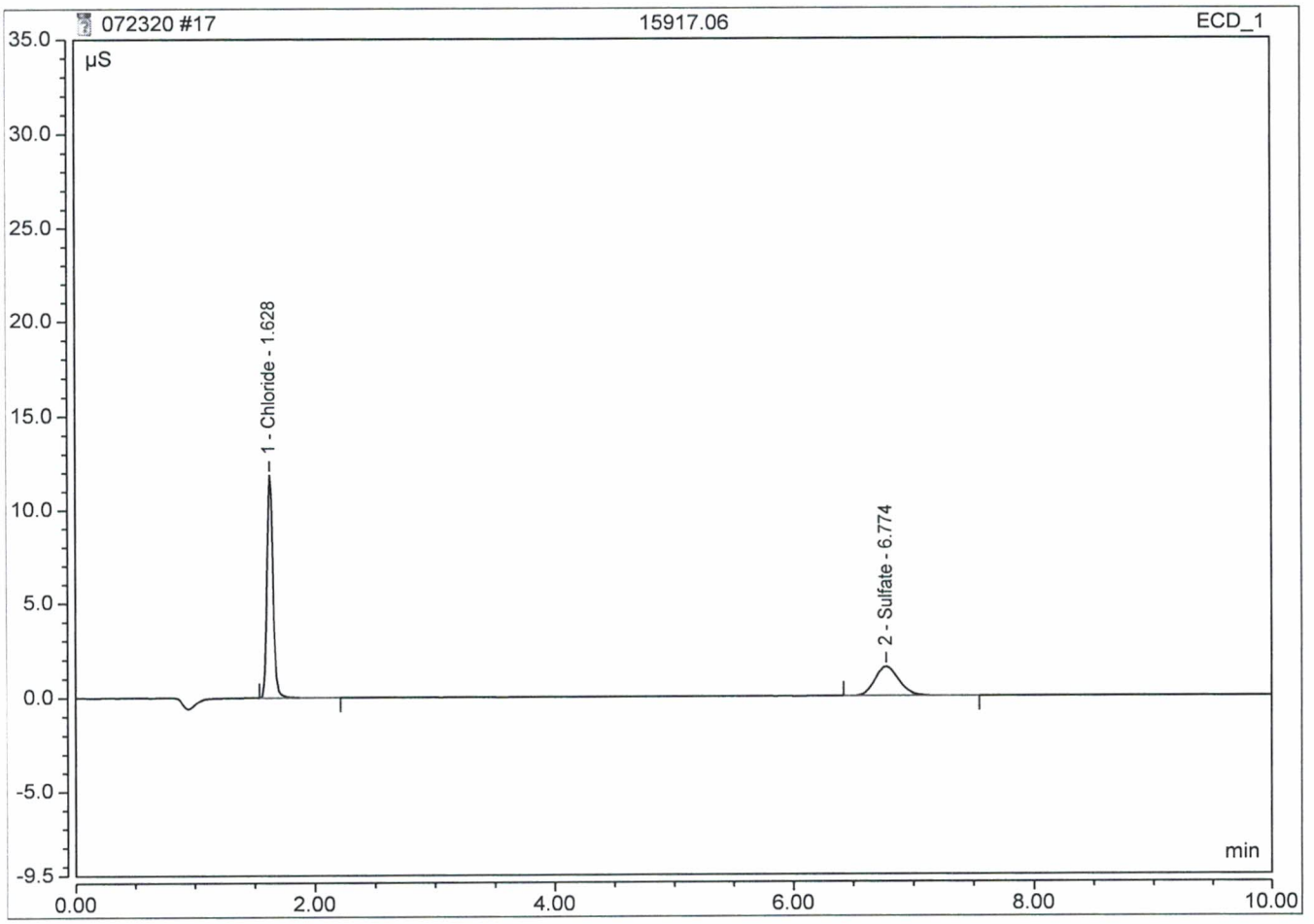
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.62	**Chloride**	BMB	0.303	5.135	32.8228
2	3.25	**Nitrate**	BMB	0.011	0.100	0.5529
3	6.74	**Sulfate**	BMB	1.164	5.073	183.0494
TOTAL:				1.48	10.31	216.43



Peak Integration Report

Sample Name:	**15917.06**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**10.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 12:03**	*Operator:*	**Jeff Phifer**

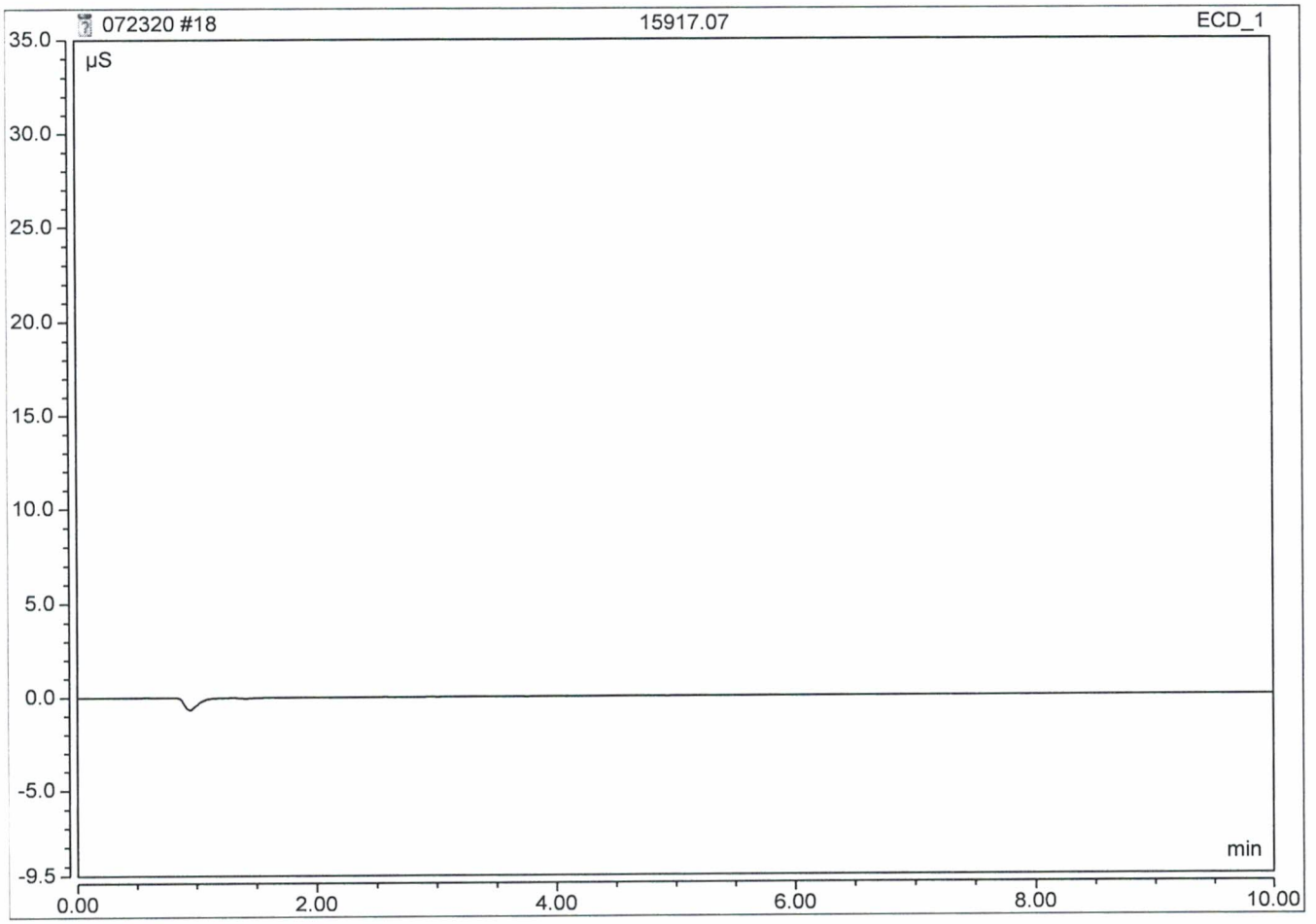
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.63	Chloride	BMB	0.694	11.870	72.0812
2	6.77	Sulfate	BMB	0.356	1.537	56.3162
TOTAL:				1.05	13.41	128.40



Peak Integration Report

Sample Name:	**15917.07**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**2.5000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 12:16**	*Operator:*	**Jeff Phifer**

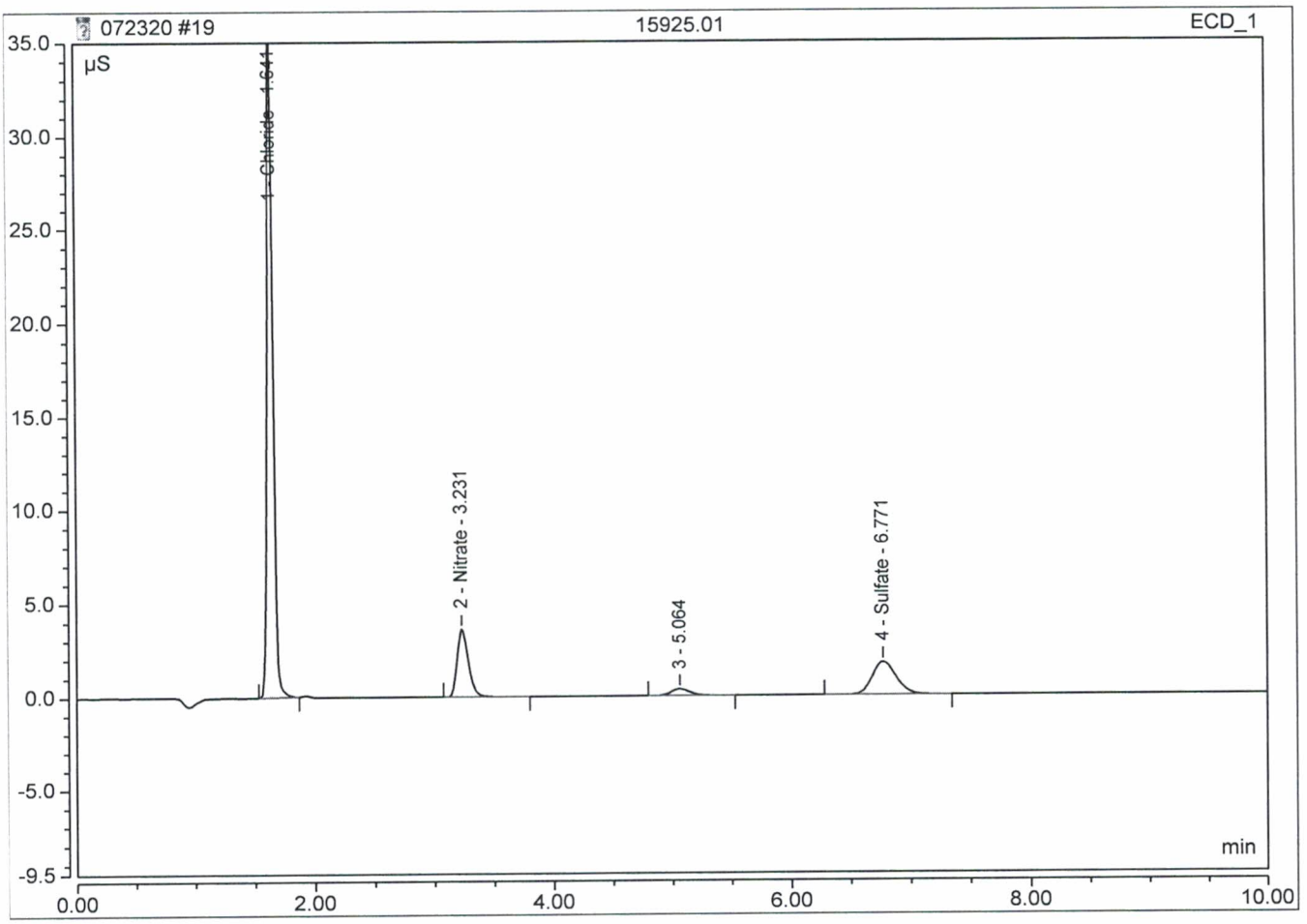
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	**15925.01**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**10.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 12:28**	*Operator:*	**Jeff Phifer**

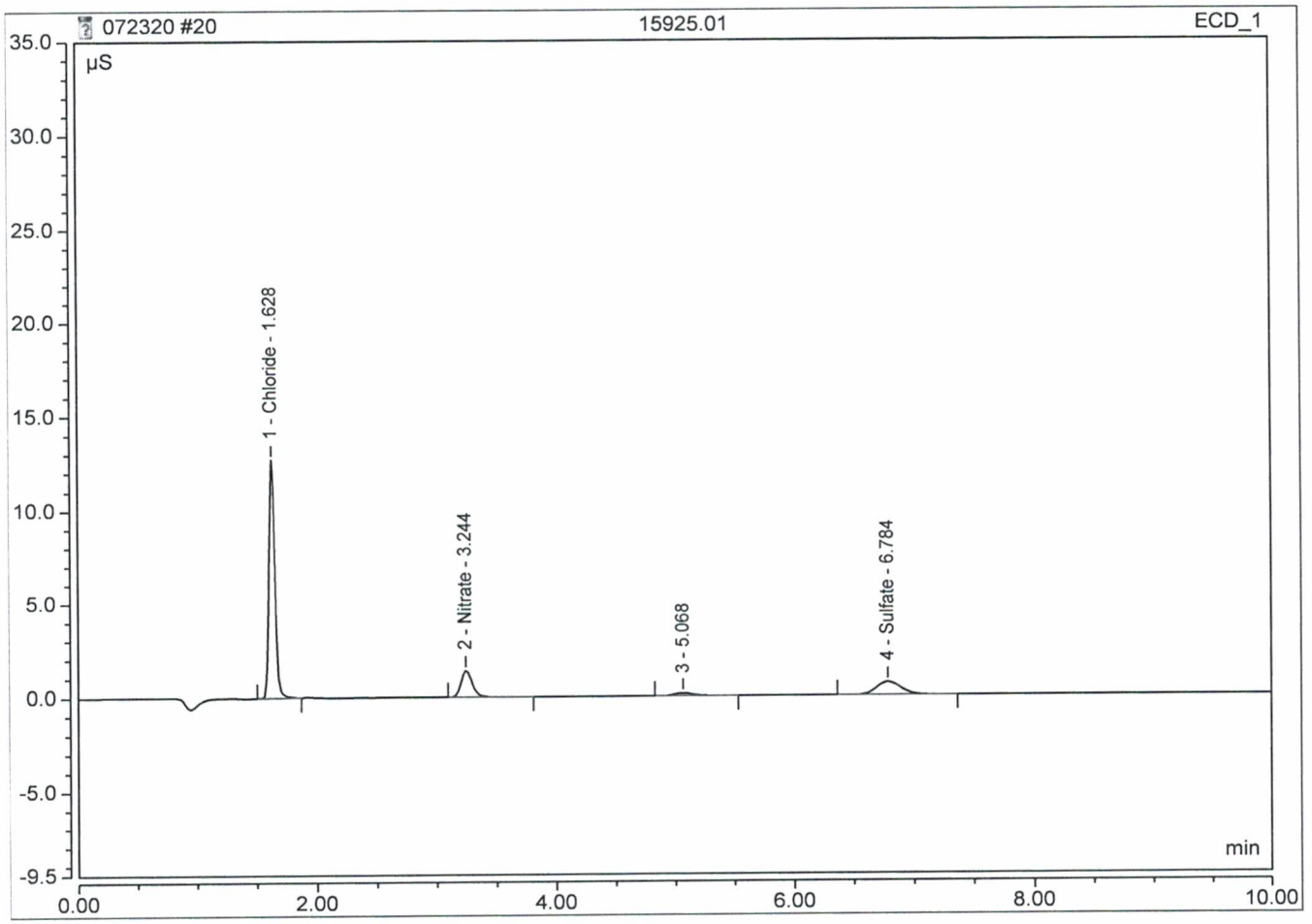
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.64	**Chloride**	BMB	2.131	35.977	216.4660
2	3.23	**Nitrate**	BMB	0.392	3.621	18.3838
4	6.77	**Sulfate**	BMB	0.406	1.759	64.2443
TOTAL:				2.93	41.36	299.09



Peak Integration Report

Sample Name:	**15925.01**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**25.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 12:41**	*Operator:*	**Jeff Phifer**

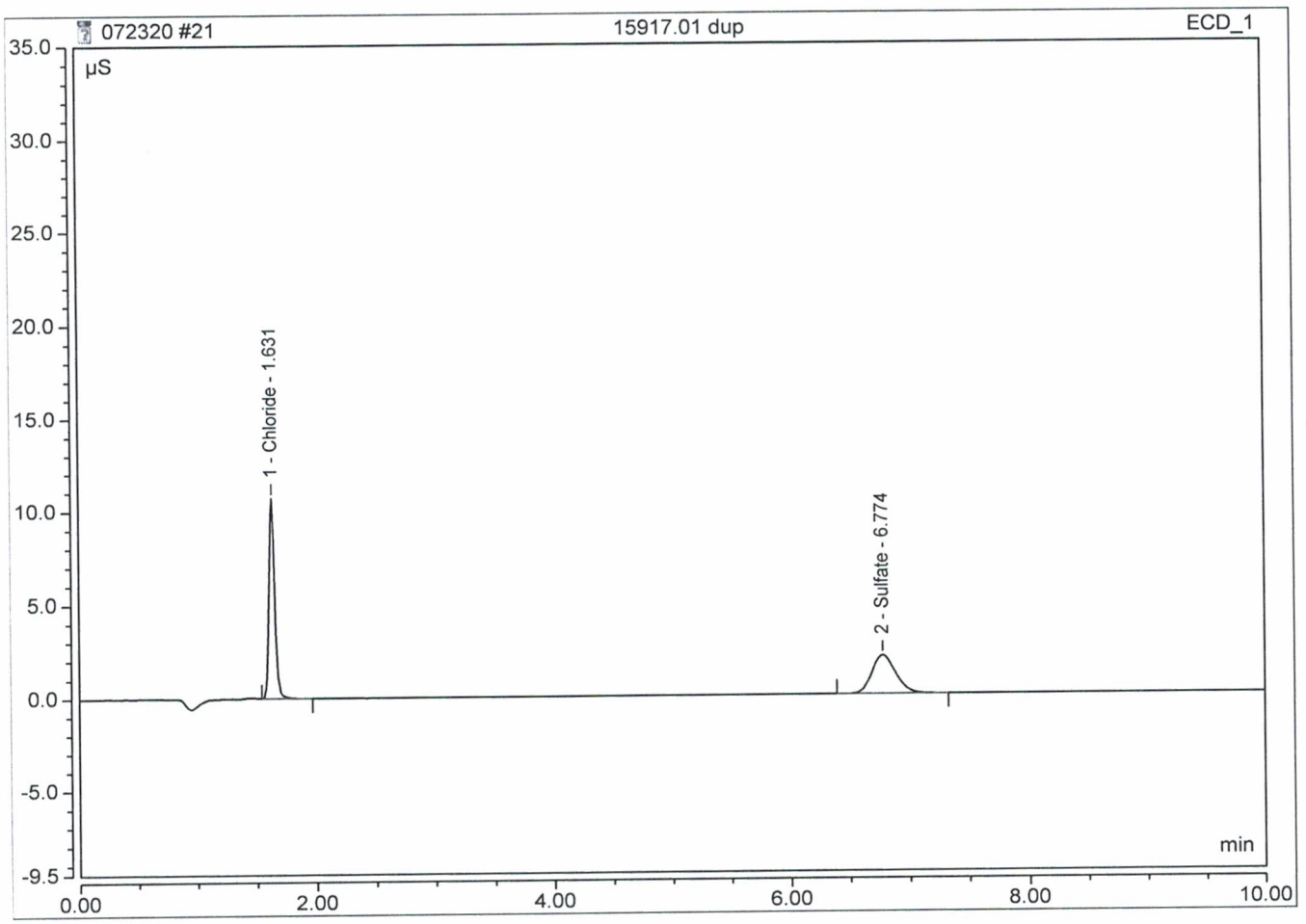
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.63	Chloride	BMB	0.745	12.728	193.0858
2	3.24	Nitrate	BMB	0.151	1.401	17.8189
4	6.78	Sulfate	BMB	0.160	0.689	64.0719
TOTAL:				1.06	14.82	274.98



Peak Integration Report

Sample Name:	**15917.01 dup**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**10.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 12:54**	*Operator:*	**Jeff Phifer**

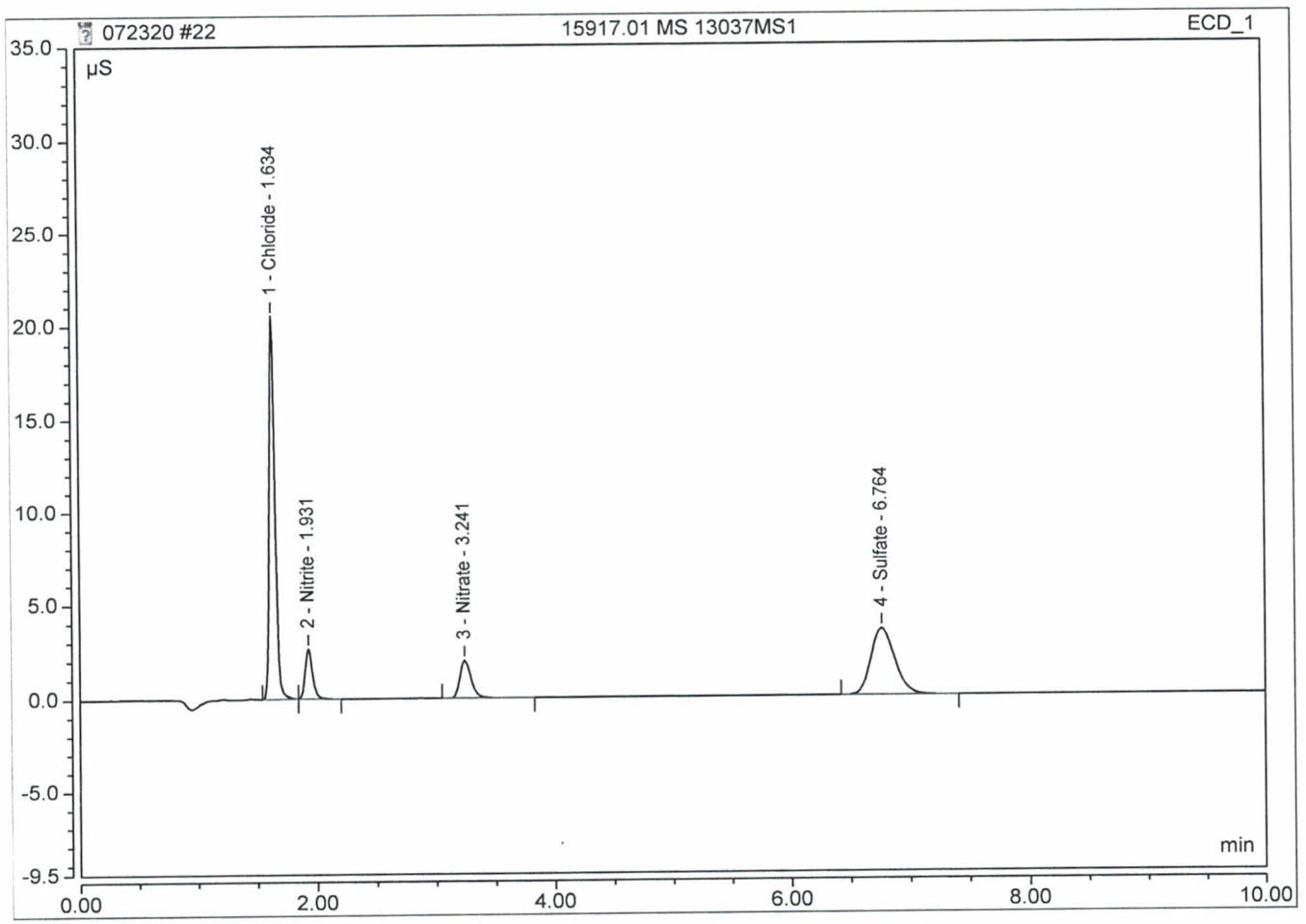
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.63	**Chloride**	BMB	0.621	10.686	64.7260
2	6.77	**Sulfate**	BMB	0.475	2.061	75.0747
TOTAL:				1.10	12.75	139.80



Peak Integration Report

Sample Name:	**15917.01 MS 13037MS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 13:07**	*Operator:*	**Jeff Phifer**

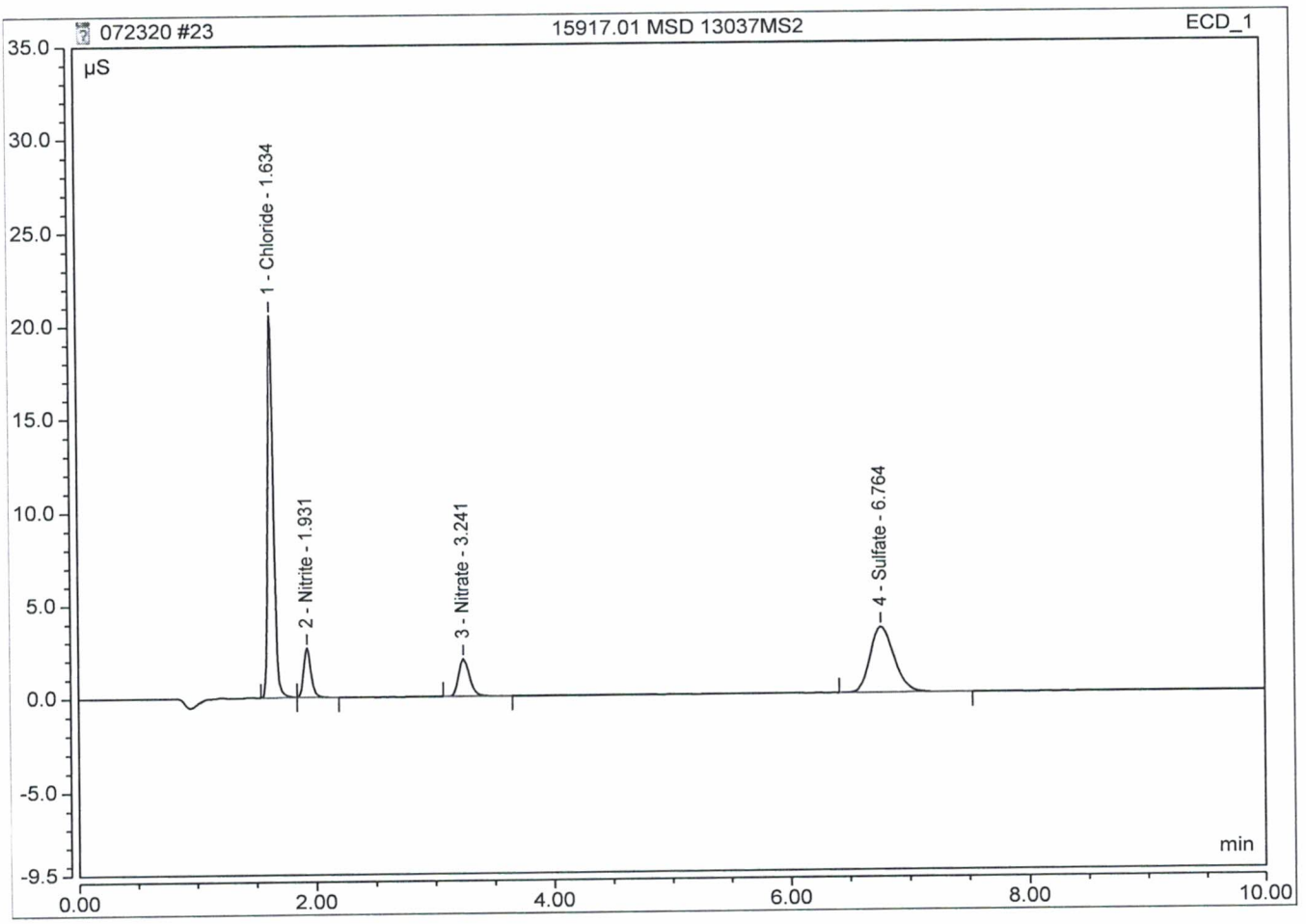
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.63	Chloride	BMB	1.188	20.519	5 12.1753 − 6.4 = 116 %
2	1.93	Nitrite	BMB	0.186	2.638	1 0.9848 − MD = 98 %
3	3.24	Nitrate	BMB	0.216	1.996	1 1.0145 − MD = 101 %
4	6.76	Sulfate	BMB	0.813	3.530	5 12.8081 − 7.5 = 106 %
TOTAL:				2.40	28.68	26.98



Peak Integration Report

Sample Name:	**15917.01 MSD 13037MS2**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 13:20**	*Operator:*	**Jeff Phifer**

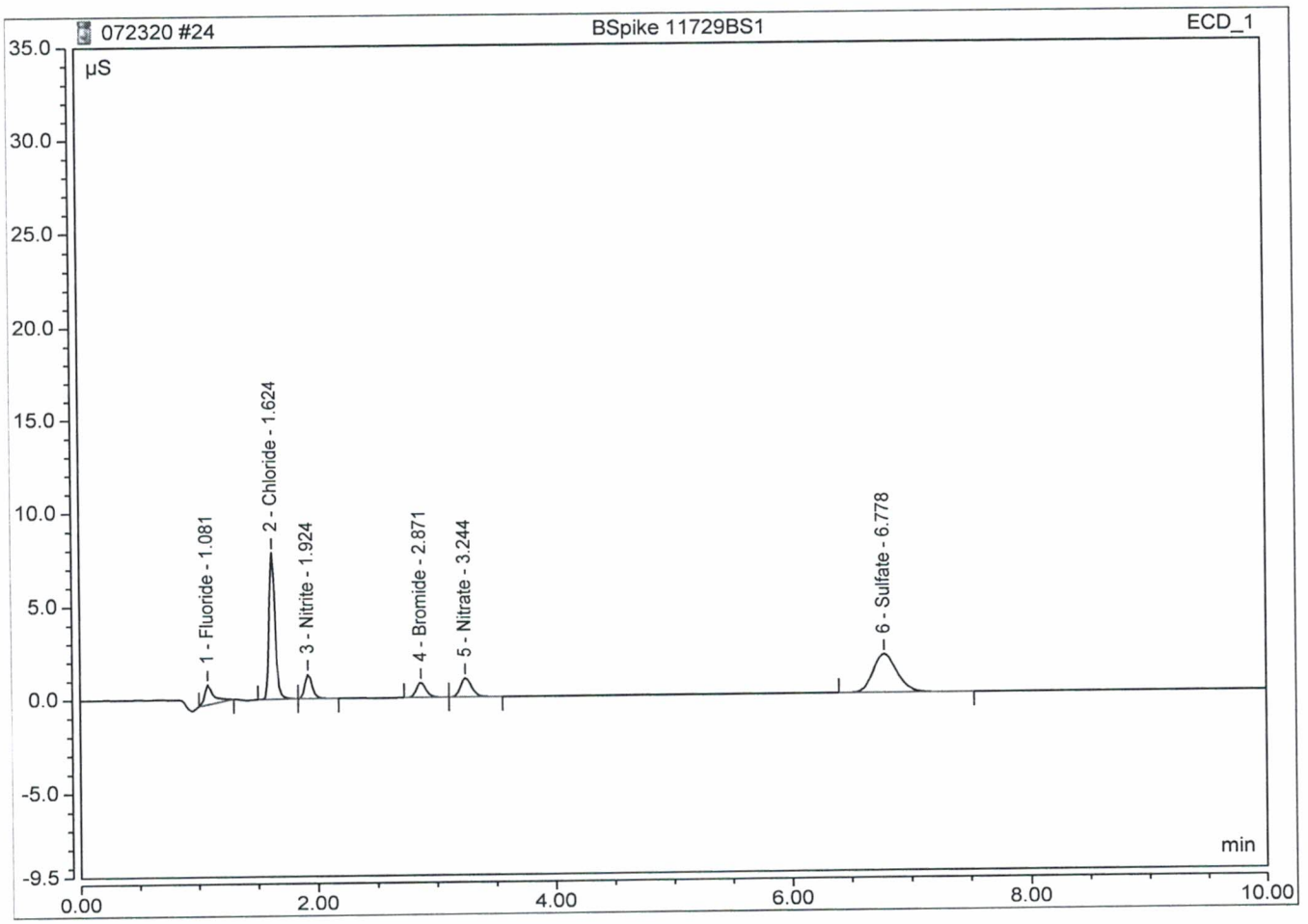
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.63	Chloride	BMB	1.188	20.536	5 12.1753 – 6.4 = 116
2	1.93	Nitrite	BMB	0.186	2.638	1 0.9853 – MD = 98
3	3.24	Nitrate	BMB	0.216	2.002	1 1.0141 – MD = 101
4	6.76	Sulfate	BMB	0.815	3.534	5 12.8291 – 7.5 = 106
TOTAL:				2.40	28.71	27.00



Peak Integration Report

Sample Name:	**BSpike 11729BS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 13:33**	*Operator:*	**Jeff Phifer**

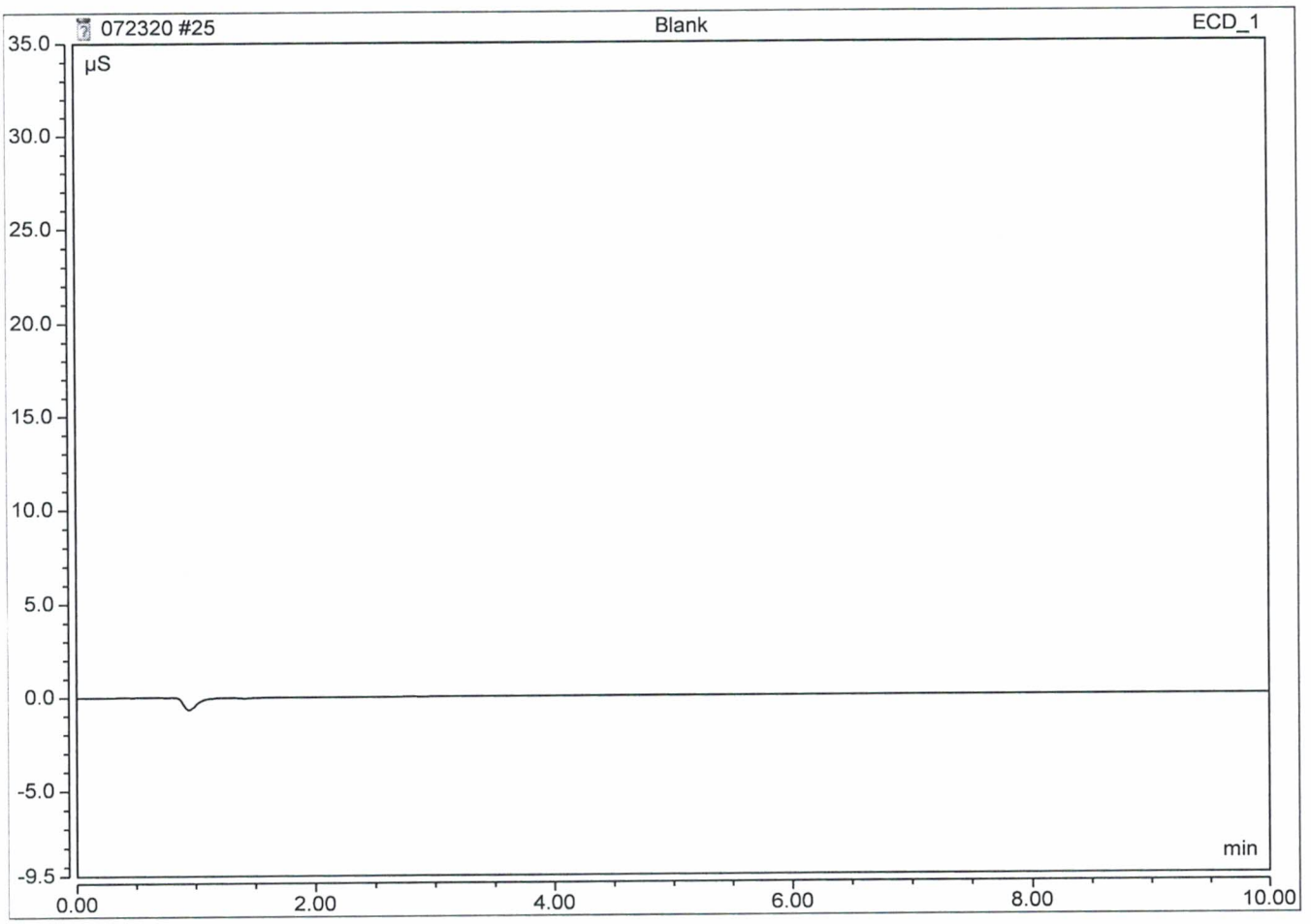
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount	
1	1.08	Fluoride	BMB	0.095	1.073	0.5799	
2	1.62	Chloride	BMB	0.465	7.857	4.9075	98%
3	1.92	Nitrite	BMB	0.093	1.299	0.4967	100%
4	2.87	Bromide	BMB	0.075	0.800	2.0759	
5	3.24	Nitrate	BMB	0.110	1.022	0.5176	104%
6	6.78	Sulfate	BMB	0.477	2.060	7.5309	100%
TOTAL:				1.31	14.11	16.11	



Peak Integration Report

Sample Name:	**Blank**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**23-Jul-2020 / 13:46**	*Operator:*	**Jeff Phifer**

No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Sequence: 070720
Last Update Operator: pcuser

ICS-1100 B Dionex IC/Meth 3020 New Cal

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	7/7/2020 10:40:04 AM -0
	1131Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	7/7/2020 10:52:24 AM -0
	1131Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	7/7/2020 11:05:16 AM -0
	1131Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	7/7/2020 11:18:08 AM -0
	1131Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	7/7/2020 11:31:00 AM -0
	1131Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	7/7/2020 11:43:51 AM -0

CAL ID# ICSB070720CAL

Weight	Dilution	IntStd	Replicate ID	Comment	Spike Group
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	1.0000	1.0000		Jeff Phifer	

Norm Method	16/06/15 12:18	Jeff Phifer	**METHOD 300.0**	
Stage	Time	Command	Value	Comment
	min			
Instrument Setup				
	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	100 [psi]	
		Pump_ECD.CellTemperature.Nominal	35.0 [°C]	
		Pump_ECD.Data_Collection_Rate	5.0 [Hz]	
		Pump_ECD.Suppressor_Type	ASRS_4mm	
		Pump_ECD.Suppressor_Carbonate	1.8 [mM]	
		Pump_ECD.Suppressor_Bicarbonate	1.7 [mM]	
		Pump_ECD.Suppressor_Hydroxide	0.0 [mM]	
		Pump_ECD.Suppressor_Tetraborate	0.0 [mM]	
		Pump_ECD.Suppressor_OtherEluent	0.0 [mN]	
		Pump_ECD.Suppressor_RecommendedCurrent	27 [mA]	
		Pump_ECD.Suppressor_Current	27 [mA]	
		Sampler.FlushFactor	10	
		Sampler.DeliverSpeed	4.0 [ml/min]	
		Pump_ECD.Flow	2.00	
		Sampler.LoadPosition		
		Sampler.DeliverSample	Full	
		Sampler.EndSamplePrep		
Inject				
	0.000			
		Wait	Sampler.CycleTimeState, Hold,	
		Sampler.Inject		
Start Run				
	0.000			
		Pump_ECD.Channel_Pressure.AcqOn		
		Pump_ECD.Autozero		
		Pump_ECD.ECD_1.AcqOn		
		Pump_ECD.ECD_Total.AcqOn		
Run			Duration = 10.000 [min]	
	0.000			
	0.500			
		Sampler.BeginOverlap		
Stop Run				
	10.000			
		Pump_ECD.Channel_Pressure.AcqOff		
		Pump_ECD.ECD_1.AcqOff		
		Pump_ECD.ECD_Total.AcqOff		
End				

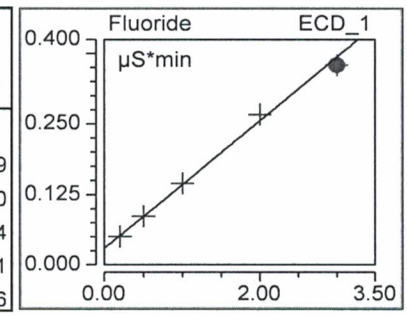
Calibration Batch Report
CAL ID# ICSB070720CAL

Sequence:	**070720**	*Injection Volu*	**2,500.00**
Instrument Method:	**Norm Method**	*Operator:*	**Jeff Phifer**
Inj. Date / Time:	**07-Jul-2020 / 11:43**	*Column:*	**AS4A-SC 040144**

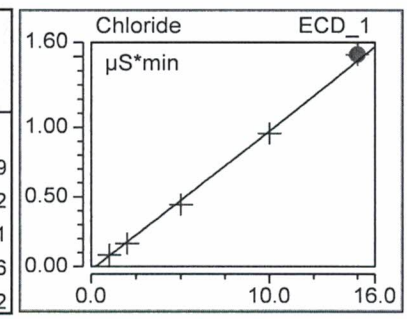
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.029	0.113	0.000	0.9985
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.023	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.191	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	0.000	0.036	0.000	0.9998
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.003	0.064	0.000	0.9997
		AVERAGE:		-0.0002	0.1196	0.0000	0.9994

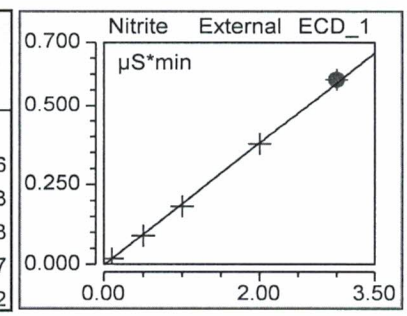
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Fluoride	Fluoride	Fluoride	Fluoride
1131Cal1	1.084	0.0508	0.484	0.189
1131Cal2	1.084	0.0870	0.999	0.510
1131Cal3	1.081	0.1450	1.848	1.024
1131Cal4	1.081	0.2666	3.636	2.101
1131Cal5	1.081	0.3541	5.285	2.876
Average	1.082			
Rel. Std. Dev.	0.164 %			



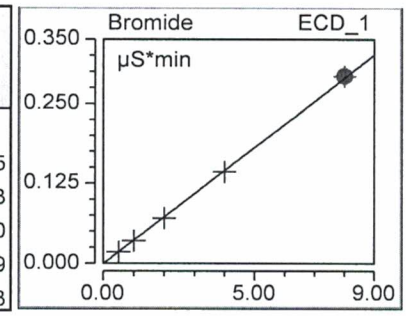
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Chloride	Chloride	Chloride	Chloride
1131Cal1	1.627	0.0849	1.387	1.089
1131Cal2	1.627	0.1668	2.765	1.912
1131Cal3	1.628	0.4444	7.521	4.701
1131Cal4	1.631	0.9564	16.335	9.846
1131Cal5	1.634	1.5142	25.720	15.452
Average	1.629			
Rel. Std. Dev.	0.180 %			



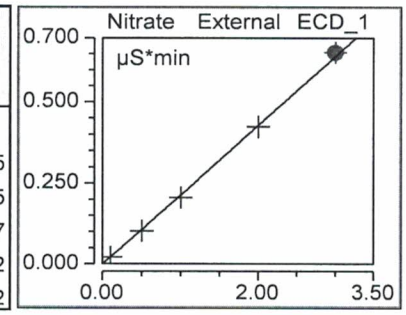
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Nitrite	Nitrite	Nitrite	Nitrite
1131Cal1	1.934	0.0181	0.252	0.106
1131Cal2	1.934	0.0900	1.251	0.483
1131Cal3	1.931	0.1818	2.556	0.963
1131Cal4	1.931	0.3773	5.333	1.987
1131Cal5	1.931	0.5827	8.298	3.062
Average	1.932			
Rel. Std. Dev.	0.092 %			



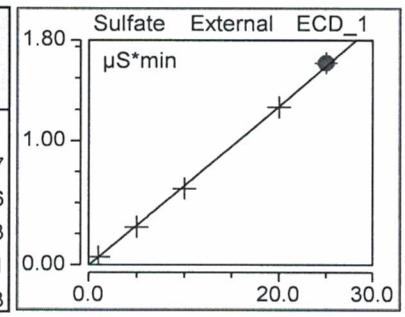
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Bromide	Bromide	Bromide	Bromide
1131Cal1	2.887	0.0182	0.193	0.515
1131Cal2	2.884	0.0355	0.378	0.993
1131Cal3	2.878	0.0705	0.760	1.960
1131Cal4	2.871	0.1427	1.549	3.949
1131Cal5	2.864	0.2925	3.206	8.083
Average	2.877			
Rel. Std. Dev.	0.332 %			



Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Nitrate	Nitrate	Nitrate	Nitrate
1131Cal1	3.271	0.0215	0.202	0.105
1131Cal2	3.257	0.1026	0.952	0.485
1131Cal3	3.248	0.2057	1.911	0.967
1131Cal4	3.234	0.4230	3.909	1.982
1131Cal5	3.217	0.6540	6.009	3.062
Average	3.245			
Rel. Std. Dev.	0.636 %			



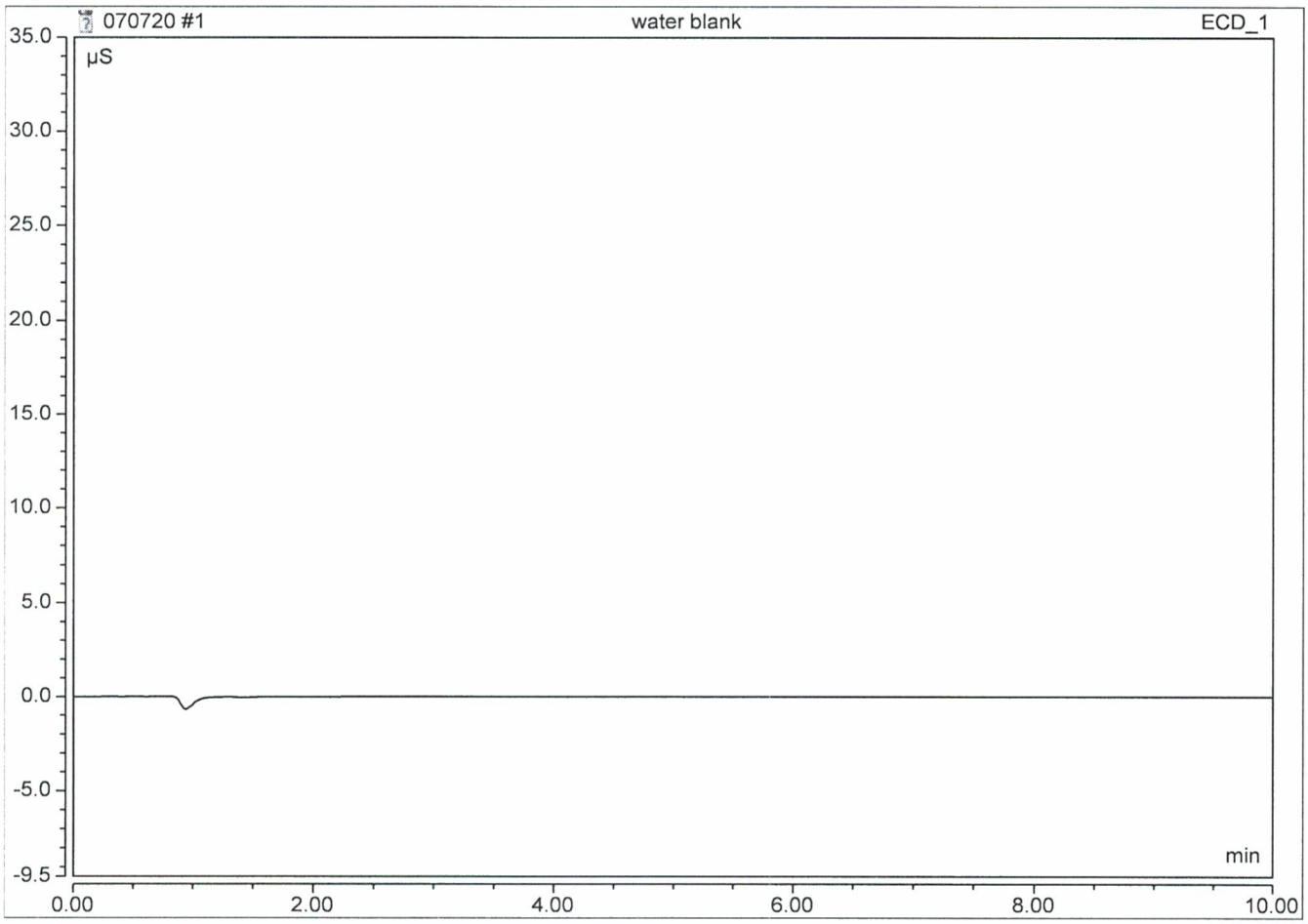
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Sulfate	Sulfate	Sulfate	Sulfate
1131Cal1	6.867	0.0635	0.271	1.047
1131Cal2	6.867	0.3050	1.300	4.836
1131Cal3	6.854	0.6147	2.631	9.693
1131Cal4	6.837	1.2706	5.439	19.981
1131Cal5	6.824	1.6188	6.926	25.443
Average	6.850			
Rel. Std. Dev.	0.279 %			



Peak Integration Report

Sample Name:	**water blank**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**07-Jul-2020 / 10:40**	*Operator:*	**Jeff Phifer**

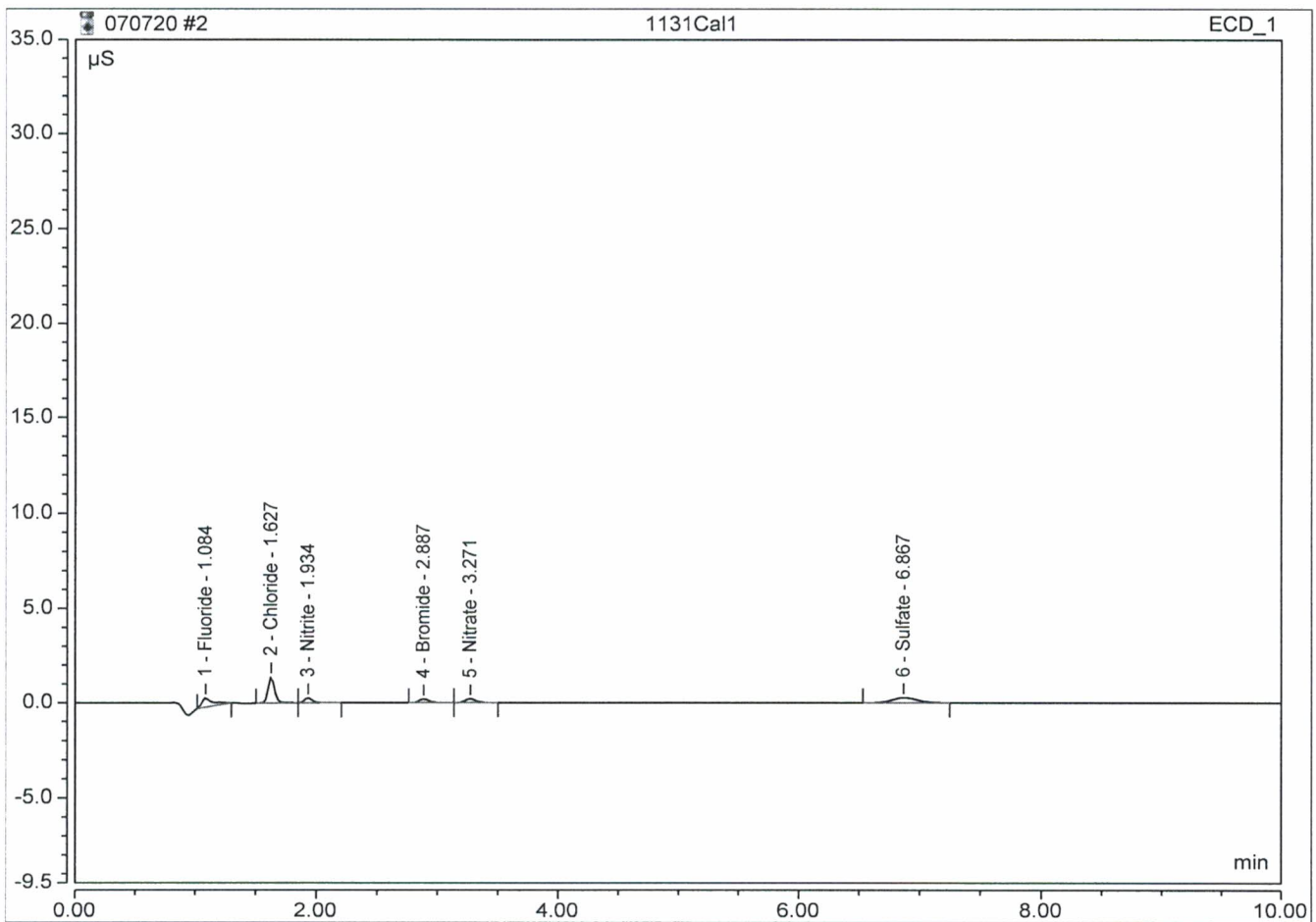
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount n.a.
		TOTAL:		0.00	0.00	0.00



Peak Integration Report

Sample Name:	**1131Cal1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**07-Jul-2020 / 10:52**	*Operator:*	**Jeff Phifer**

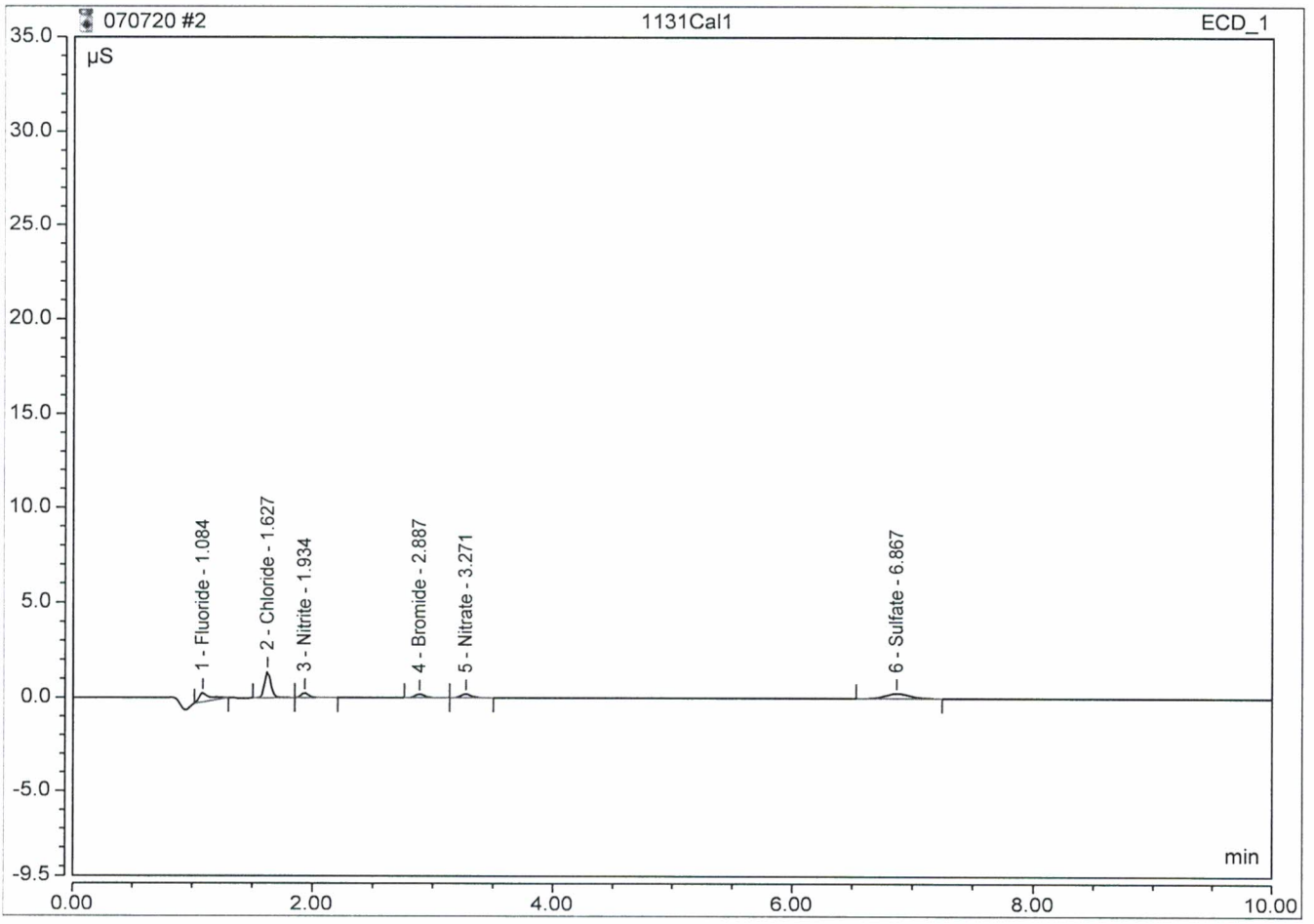
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount	
1	1.08	Fluoride	BMB	0.051	0.484	0.2	0.1893
2	1.63	Chloride	BMB	0.085	1.387	1	1.0891
3	1.93	Nitrite	BMB	0.018	0.252	0.1	0.1058
4	2.89	Bromide	BMB	0.018	0.193	0.5	0.5148
5	3.27	Nitrate	BMB	0.021	0.202	0.1	0.1053
6	6.87	Sulfate	BMB	0.063	0.271	1	1.0467
TOTAL:				0.26	2.79		3.05



Peak Integration Report

Sample Name:	**1131Cal1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**07-Jul-2020 / 10:52**	*Operator:*	**Jeff Phifer**

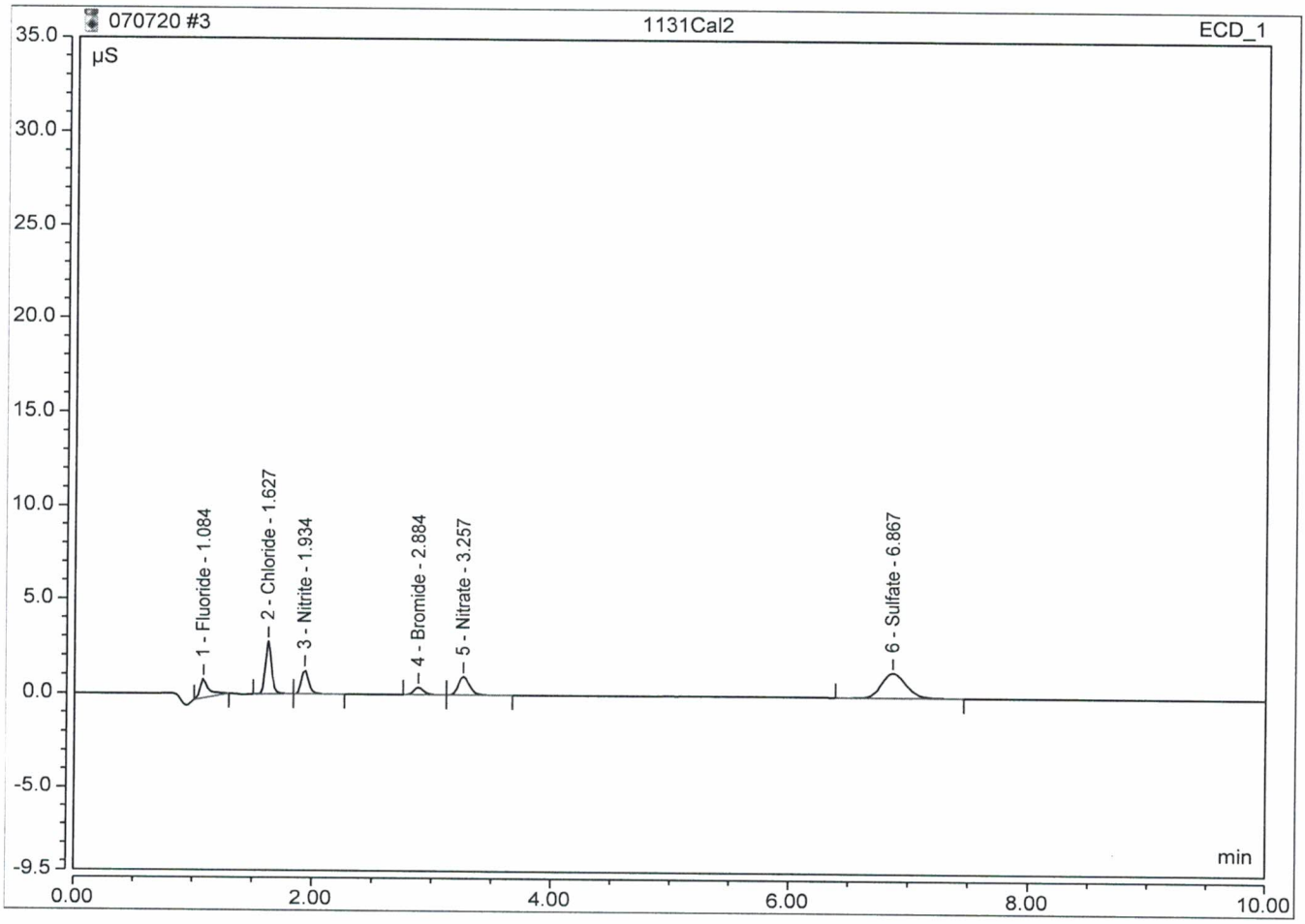
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.08	Fluoride	BMB	0.051	0.484	n.a.
2	1.63	Chloride	BMB	0.085	1.387	n.a.
3	1.93	Nitrite	BMB	0.018	0.252	n.a.
4	2.89	Bromide	BMB	0.018	0.193	n.a.
5	3.27	Nitrate	BMB	0.021	0.202	n.a.
6	6.87	Sulfate	BMB	0.063	0.271	n.a.
TOTAL:				0.26	2.79	0.00



Peak Integration Report

Sample Name:	**1131Cal2**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**07-Jul-2020 / 11:05**	*Operator:*	**Jeff Phifer**

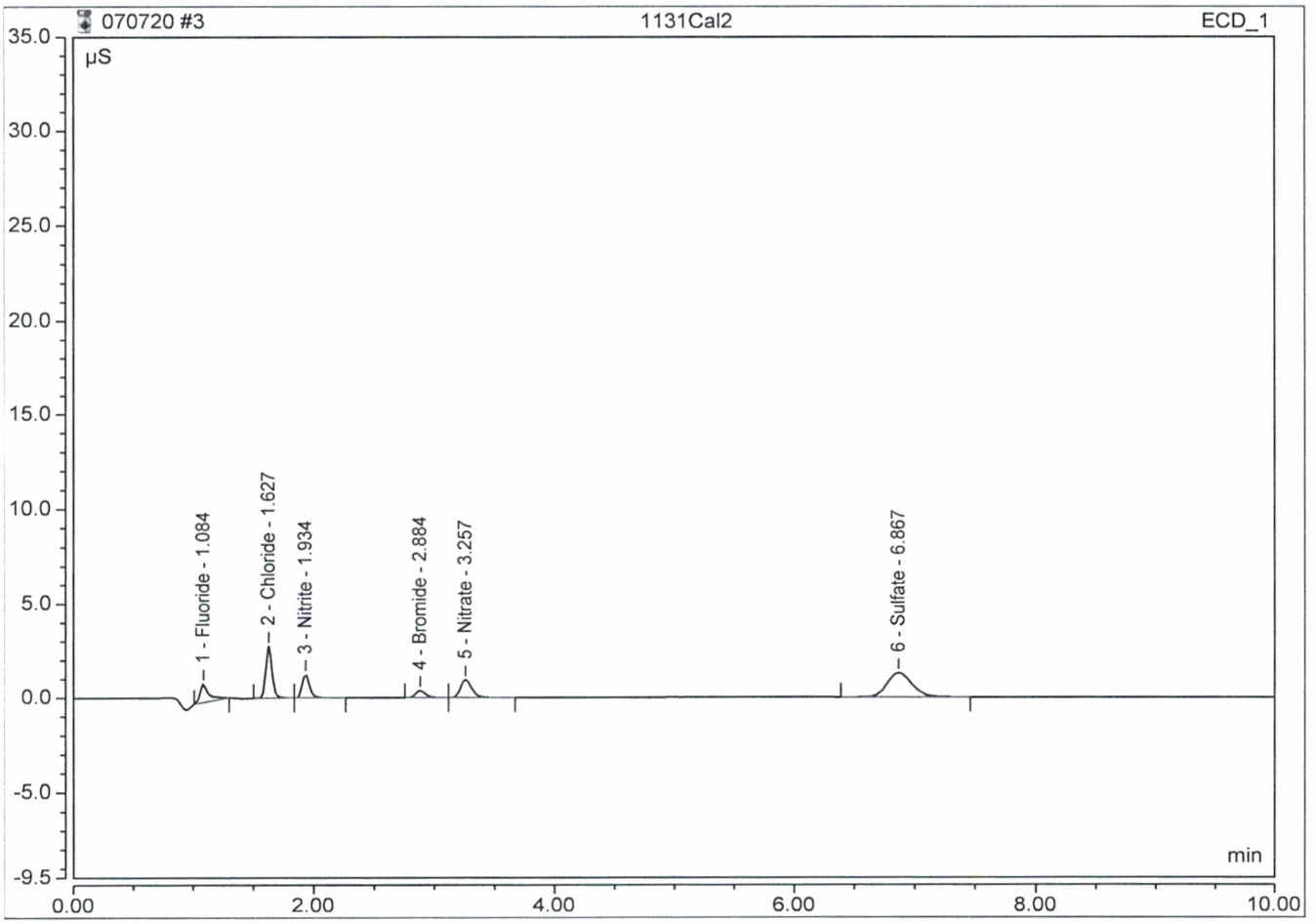
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount	
1	1.08	Fluoride	BMB	0.087	0.999	0.5	0.5103
2	1.63	Chloride	BMB	0.167	2.765	2	1.9118
3	1.93	Nitrite	BMB	0.090	1.251	0.5	0.4826
4	2.88	Bromide	BMB	0.035	0.378	1	0.9928
5	3.26	Nitrate	BMB	0.103	0.952	0.5	0.4846
6	6.87	Sulfate	BMB	0.305	1.300	5	4.8360
TOTAL:				0.79	7.65		9.22



Peak Integration Report

Sample Name:	**1131Cal2**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**07-Jul-2020 / 11:05**	*Operator:*	**Jeff Phifer**

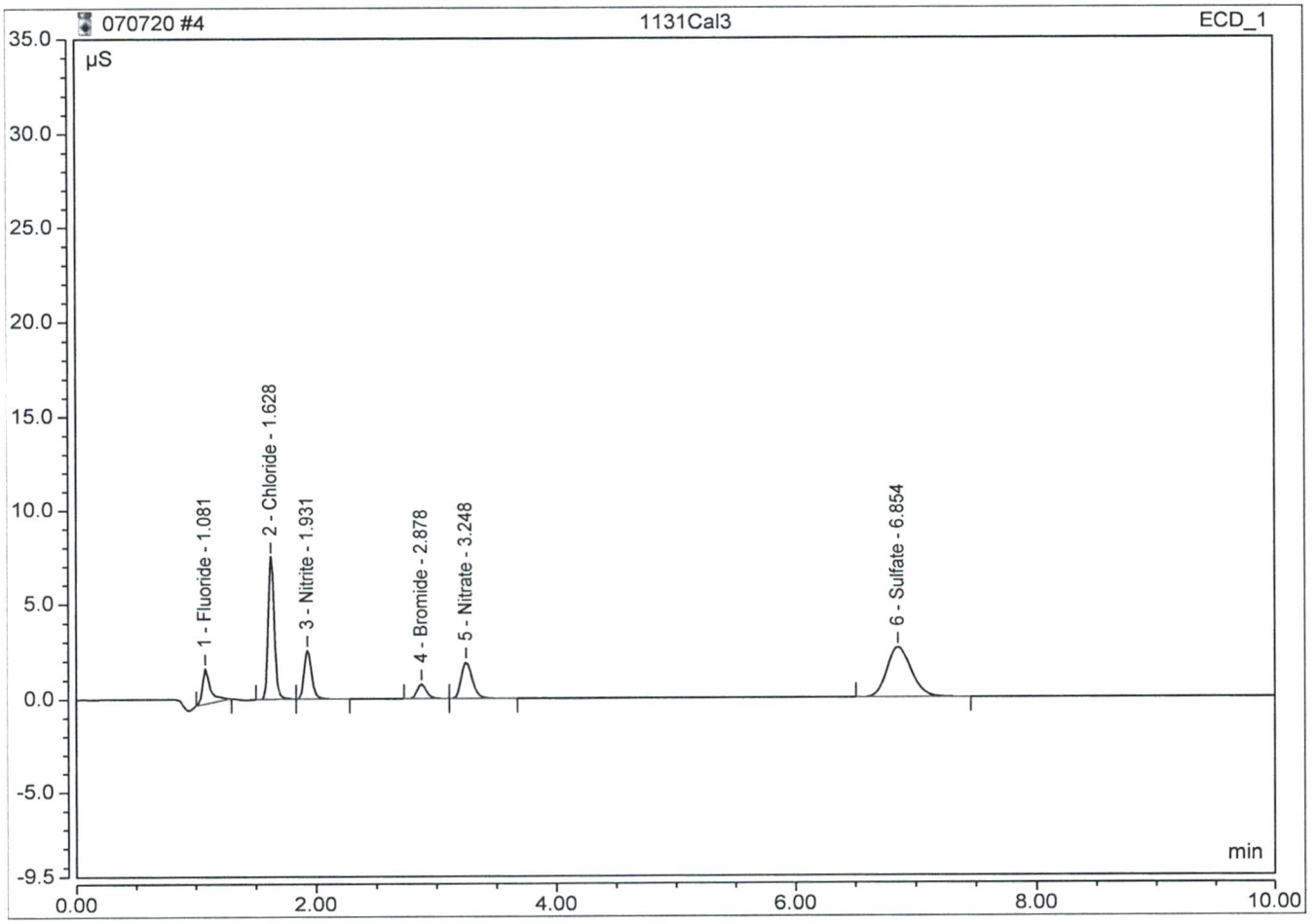
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.08	Fluoride	BMB	0.087	0.999	0.5000
2	1.63	Chloride	BMB	0.167	2.765	2.0000
3	1.93	Nitrite	BMB	0.090	1.251	0.5000
4	2.88	Bromide	BMB	0.035	0.378	1.0000
5	3.26	Nitrate	BMB	0.103	0.952	0.5000
6	6.87	Sulfate	BMB	0.305	1.300	5.0000
TOTAL:				0.79	7.65	9.50



Peak Integration Report

Sample Name:	**1131Cal3**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**07-Jul-2020 / 11:18**	*Operator:*	**Jeff Phifer**

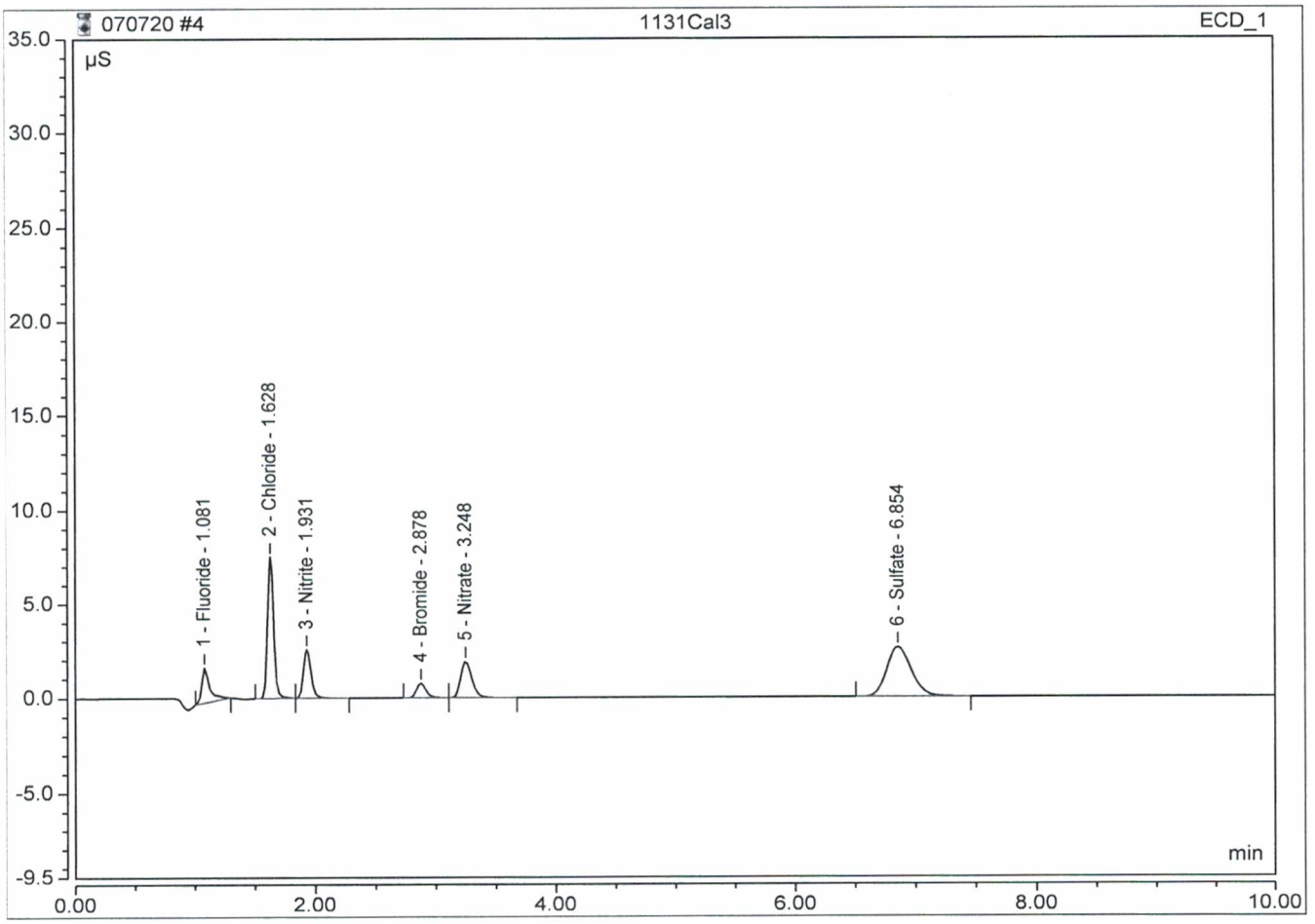
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount	
1	1.08	Fluoride	BMB	0.145	1.848	1	1.0239
2	1.63	Chloride	BMB	0.444	7.521	5	4.7010
3	1.93	Nitrite	BMB	0.182	2.556	1	0.9630
4	2.88	Bromide	BMB	0.071	0.760	2	1.9599
5	3.25	Nitrate	BMB	0.206	1.911	1	0.9666
6	6.85	Sulfate	BMB	0.615	2.631	10	9.6928
TOTAL:				1.66	17.23		19.31



Peak Integration Report

Sample Name:	**1131Cal3**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**07-Jul-2020 / 11:18**	*Operator:*	**Jeff Phifer**

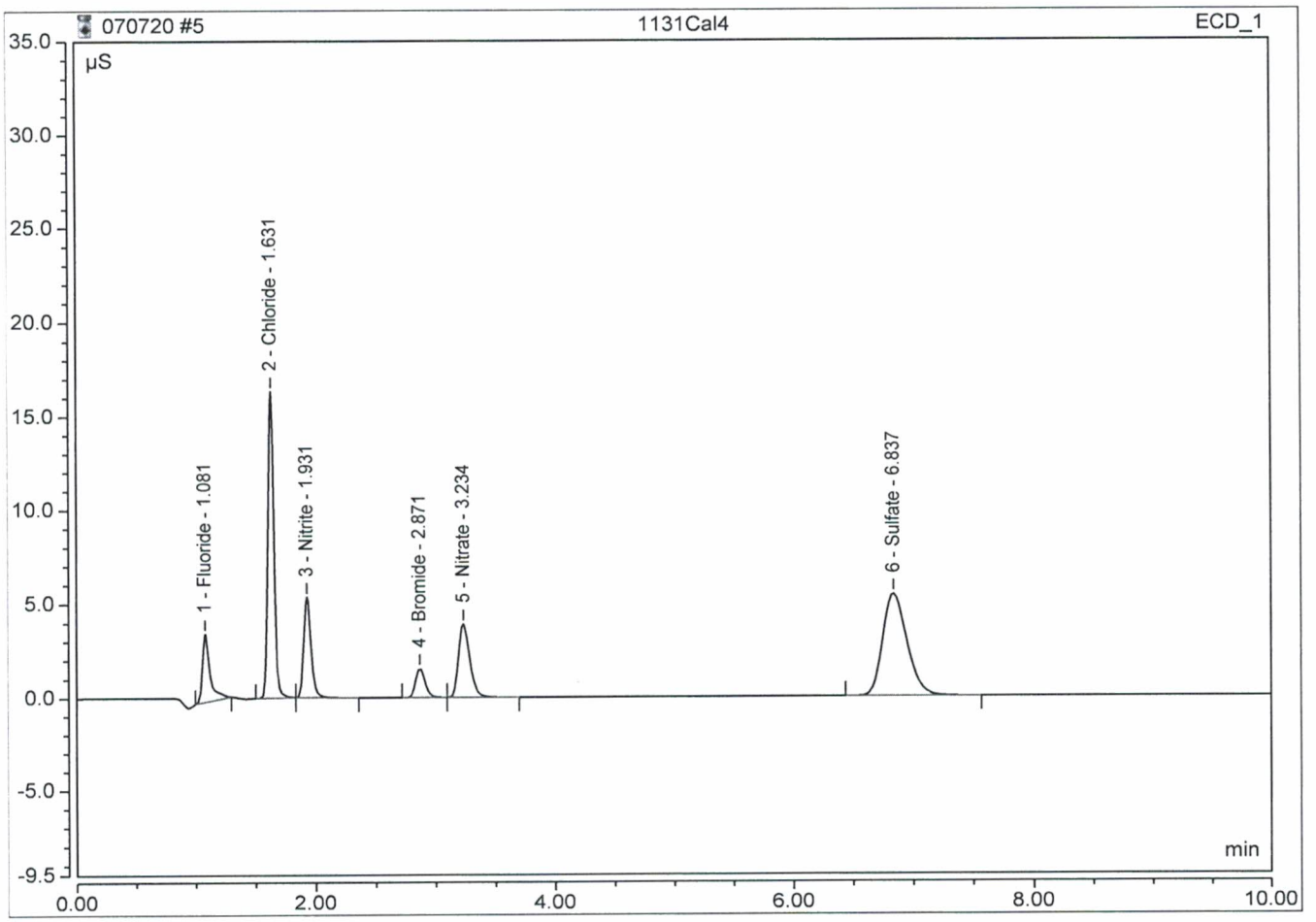
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.08	Fluoride	BMB	0.145	1.848	0.9960
2	1.63	Chloride	BMB	0.444	7.521	5.0388
3	1.93	Nitrite	BMB	0.182	2.556	1.0027
4	2.88	Bromide	BMB	0.071	0.760	2.0018
5	3.25	Nitrate	BMB	0.206	1.911	1.0022
6	6.85	Sulfate	BMB	0.615	2.631	10.0340
TOTAL:				1.66	17.23	20.08



Peak Integration Report

Sample Name:	**1131Cal4**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**07-Jul-2020 / 11:31**	*Operator:*	**Jeff Phifer**

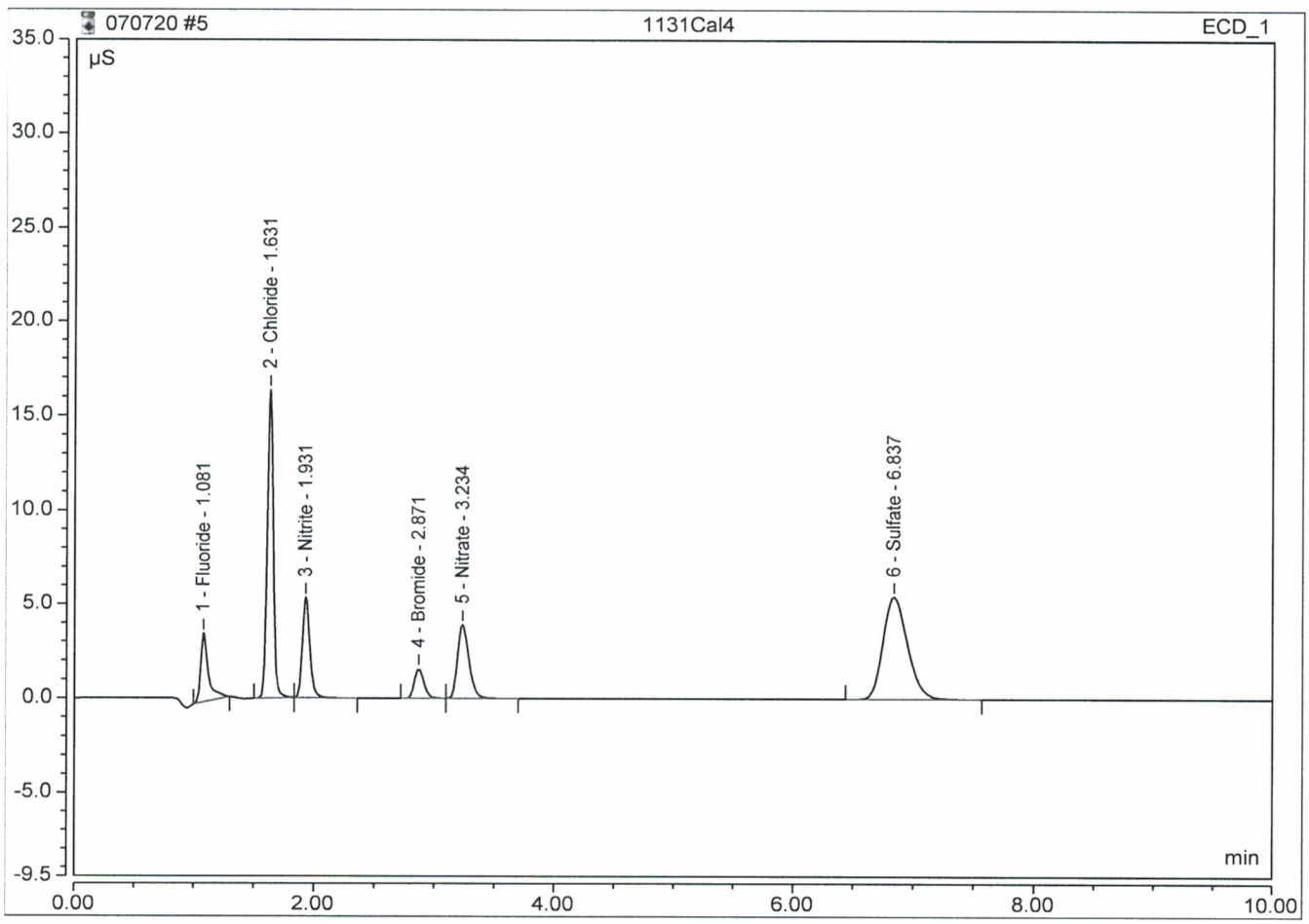
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount	
1	1.08	**Fluoride**	BMB	0.267	3.636	2	2.1005
2	1.63	**Chloride**	BMB	0.956	16.335	10	9.8464
3	1.93	**Nitrite**	BMB	0.377	5.333	2	1.9867
4	2.87	**Bromide**	BMB	0.143	1.549	4	3.9493
5	3.23	**Nitrate**	BMB	0.423	3.909	2	1.9820
6	6.84	**Sulfate**	BMB	1.271	5.439	20	19.9814
TOTAL:				3.44	36.20		39.85



Peak Integration Report

Sample Name:	**1131Cal4**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**07-Jul-2020 / 11:31**	*Operator:*	**Jeff Phifer**

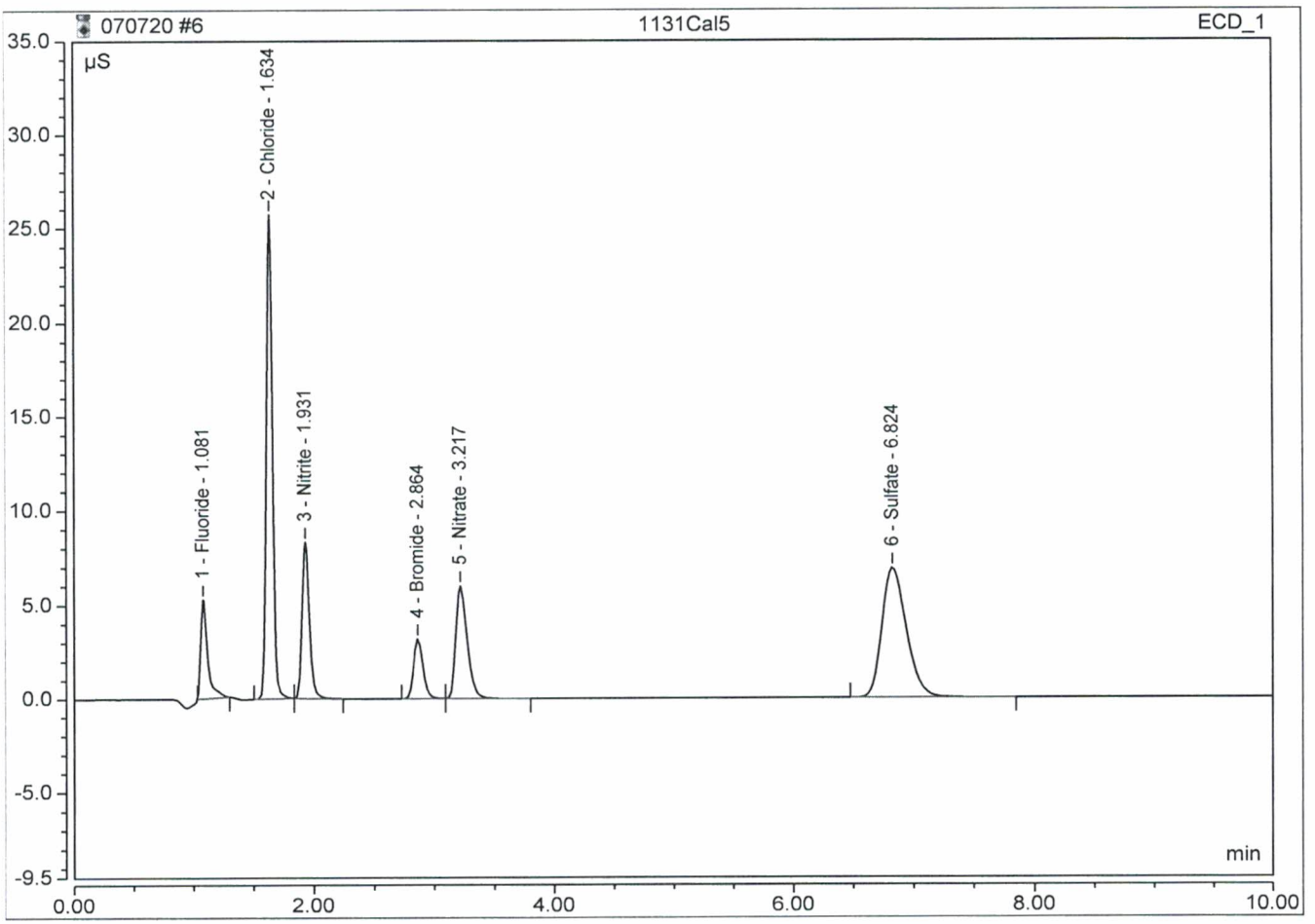
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.08	Fluoride	BMB	0.267	3.636	2.0072
2	1.63	Chloride	BMB	0.956	16.335	10.2000
3	1.93	Nitrite	BMB	0.377	5.333	2.0283
4	2.87	Bromide	BMB	0.143	1.549	4.0180
5	3.23	Nitrate	BMB	0.423	3.909	2.0231
6	6.84	Sulfate	BMB	1.271	5.439	20.2745
TOTAL:				3.44	36.20	40.55



Peak Integration Report

Sample Name:	**1131Cal5**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**07-Jul-2020 / 11:43**	*Operator:*	**Jeff Phifer**

No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount	
1	1.08	Fluoride	BMB	0.354	5.285	3	2.8759
2	1.63	Chloride	BMB	1.514	25.720	15	15.4517
3	1.93	Nitrite	BMB	0.583	8.298	3	3.0619
4	2.86	Bromide	BMB	0.293	3.206	8	8.0833
5	3.22	Nitrate	BMB	0.654	6.009	3	3.0615
6	6.82	Sulfate	BMB	1.619	6.926	25	25.4431
TOTAL:				5.02	55.44		57.98



Total Suspended Solids

TSS: VLIMS Code: 4630; EPA Method: 2540D

Date Started: 28 JUL 20
Time Started: 2100
Analyst: AB
Batch ID: TSS200728A
Temperature: 102°C
Time in Oven: 42:00

Date Finished: 30 JUL 20
Time Finished: 1500
Reviewed by: BB
Review Date: 7/31/2020
Balance ID: I1
Oven ID/Thermometer ID: OVS/AC108C48

Merit #	Tin #	MLs sample	g. Filter	g. dry solids + filter 103°C	g. reweigh 15 min. 103°C	TSS mg/L	DF	TVSS Y/N	TVSS Tin #
Blank	F7A9J	1000	0.1147	0.1145		-0.20 / ND	1.00	N	
LCS Lot 8208-098	9K	100	0.1159	0.1245		86	10.0		
15917.01	9L	200	0.1164	0.1238		37	5.00		
Dup .01	9M	200	0.1151	0.1226		37.5	5.00		
.02	9N	1000	0.1155	0.1170		1.50 / ND	1.00		
.03	F7AAE	1000	0.1154	0.1175		2.10 / ND	1.00		
.04	AF	500	0.1169	0.1352		36.60 / 37	2.00		
.05	AG	1000	0.1155	0.1162		0.70 / ND	1.00		
.06	AH	1000	0.1150	0.1166		1.60 / ND	1.00		
.07	AI	1000	0.1170	0.1169		-0.10 / ND	1.00		
159250.01	AJ	300	0.1165	0.1197		10.67 / 11	3.33		
15926.02	AK	200	0.1163	0.1264		50.50 / 50	5.00		
15927.01	AL	50	0.1178	0.1245		134	20.0		RL=6

LCS value = 84.7 mg/L
% Rec = 101.5%
% RPD = 1.3%

Acceptance Criteria (mg/L): 69.4 - 94.1 mg/L
Acceptance Criteria (%): 81.9 - 111%
Acceptance Criteria: ± 5% of average

Total Dissolved Solids

TDS: VLIMS Code: 4615; EPA Method: 2540C

Date Started: 24 JUL 20 | Date Finished: 28 JUL 20

Time Started: 1505 | Time Finished: 1225

Analyst: AKB | Reviewed by: BB

Batch ID: TDS200724A | Review Date: 7/31/2020

Temperature: 180°C | Balance ID: I1

Time in Oven: 93:20 | Oven ID/Thermometer ID: OV2/AC10365

Merit #	Tin #	sample (mls)	Tin (grams)	dry solids + tin 180°C (grams)	reweigh 15 min. 180°C (grams)	Cond.	TDS (mg/L)
Blank	A057066	50	3.4930	3.4930			0/ND
LCS Lot 8208-09B	065	25 ~~50~~	3.5291	3.5441			600
15917.01	064	50	3.4834	3.5225			782
Dup .01	063	50	3.4837	3.5225			776
.02	062	50	3.4738	3.5433			1390
.03	061	50	3.4993	3.5263			540
.04	060	50	3.5335	3.6153			1640* 1636
.05	059	50	3.4956	3.5325			738
.06	058	50	3.5362	3.5630			534
.07	057	50	3.5169	3.5168			0/ND
15907.01	056	50	3.5679	3.5902			446
15978.01	055	50	3.5535	3.5588			106
.02	054	50	3.5789	3.5853			128

LCS value = 567 mg/L | Acceptance Criteria (mg/L): 510-624 mg/L

% Rec = 105.8% | Acceptance Criteria (%): 89.9-110%

% RPD = 0.8% | Acceptance Criteria: ± 5% of average

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Jennifer Caporale
COMPANY: Lansing Board of Water and Light
ADDRESS: PO Box 13007 48901-3007
CITY: Lansing STATE: Mi ZIP CODE: 48901
PHONE NO.: 517-702-6372 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: Environmental_Laboratory@lbwl.com QUOTE NO.:

INVOICE TO

CONTACT NAME: Kelly Gleason ☒ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS: Kelly.Gleason@lbwl.com

PROJECT NO./NAME: Erickson GMP
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Marc Wahrer

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☒ STD ☐ LEVEL II ☒ LEVEL III ☐ LEVEL IV ☒ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☒ NPDES

Project Locations: ☐ Detroit ☐ New York ☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	Total Metals	TSS	TDS, Cl-, SO4-, F	Radium 226	Radium 228
15917.01	07/21/20	1335	MW-1 L00T009-01	GW	5	2		3					✓	✓	✓	✓	✓
.02		1706	MW-2 -02	GW	5	2		3					✓	✓	✓	✓	✓
.03		1105	MW-4 -03	GW	5	2		3					✓	✓	✓	✓	✓
.04		~~0735~~ 1750	MW-5 -04	GW	5	2		3					✓	✓	✓	✓	✓
.05		1523	MW-6 -05	GW	5	2		3					✓	✓	✓	✓	✓
.06		1105	MW-4 Duplicate -06	GW	5	2		3					✓	✓	✓	✓	✓
.07		0735	Field Blank -07	DI	5	2		3					✓	✓	✓	✓	✓

Special Instructions: Metals to analyse: Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Pb, Li, Hg, Mo, Se, Tl

Please send a preliminary report

RELINQUISHED BY: SIGNATURE/ORGANIZATION (Sampler)	DATE 7-22-20	TIME 1353	
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE 7/22/20	TIME 1353	
RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME	
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME	

RELINQUISHED BY: SIGNATURE/ORGANIZATION — DATE — TIME
RECEIVED BY: SIGNATURE/ORGANIZATION — DATE — TIME

SEAL NO. — SEAL INTACT YES ☐ NO ☐ — INITIALS
SEAL NO. — SEAL INTACT YES ☐ NO ☐ — INITIALS

NOTES: TEMP. ON ARRIVAL 4.1

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Merit Laboratories Login Checklist

Lab Set ID: S15917
Client: BWL01 (Board of Water & Light)
Project: Erickson GMP
Submitted: 07/22/2020 13:53 Login User: REJ

Attention: Jennifer Caporale
Address: Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.1
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[X] Yes	[ ] No	[ ] N/A	Subcontracting needed? Subcontacted to:	GEL
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[X] Yes	[ ] No	[ ] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Prepared by Merit Laboratories

Merit Laboratories Bottle Preservation Check

Lab Set ID: S15917 Submitted: 07/22/2020 13:53

Client: BWL01 (Board of Water & Light)

Project: Erickson GMP

Initial Preservation Check: 07/22/2020 14:45 REJ

Preservation Recheck (E200.8): N/A

Attention: Jennifer Caporale
Address: Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Lab ID	125 ml Plastic HNO_3	250 ml Plastic HNO_3	1 L Plastic HNO_3	250 ml Plastic H_2SO_4	125 ml Amber H_2SO_4	32 oz Glass HCl	125 ml Plastic NaOH	125 ml Amber $PbCO_3$ NaOH	pH					Notes
									<2	>12	other	ml add	new pH	
S15917.01	X								X					
S15917.01			X						X					
S15917.01			X						X					
S15917.02	X								X					
S15917.02			X						X					
S15917.02			X						X					
S15917.03	X								X					
S15917.03			X						X					
S15917.03			X						X					
S15917.04	X								X					
S15917.04			X						X					
S15917.04			X						X					
S15917.05	X								X					
S15917.05			X						X					
S15917.05			X						X					
S15917.06	X								X					
S15917.06			X						X					
S15917.06			X						X					
S15917.07	X								X					
S15917.07			X						X					
S15917.07			X						X					

Sample Set Receipt

Report to

Attention: Jennifer Caporale

Address: Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX:

Email: Environmental_Laboratory@LBWL.com

Contacts:

Invoice to

Attention: Kelly Gleason

Address: Board of Water & Light
PO Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX: 517-702-6373

Email: kelly.gleason@lbwl.com

Set ID: S15917 Location: BWL01 (Board of Water & Light) PO #: Login by: REJ

Project: Erickson GMP Backlog Note:

Submitted: 07/22/2020 13:53 Due Date: 08/05/2020 Rush: No Collected by: Marc Wahrer QC Level: 3 Custom Limits Present: No

Approved by: Site: Work Order#: Bill to Acct: Bill to Dept:

Sample ID	Sample Tag	Matrix	Date/Time Collected	COC Ref
S15917.01	MW-1 L007009-01	Groundwater	07/21/2020 13:35	
S15917.02	MW-2 L007009-02	Groundwater	07/21/2020 17:06	
S15917.03	MW-4 L007009-03	Groundwater	07/21/2020 11:05	
S15917.04	MW-5 L007009-04	Groundwater	07/21/2020 17:50	
S15917.05	MW-6 L007009-05	Groundwater	07/21/2020 15:23	
S15917.06	MW-4 Duplicate L007009-06	Groundwater	07/21/2020 11:05	
S15917.07	Field Blank L007009-07	Water	07/21/2020 07:35	

Samples: S15917.01-07

Analysis Code	Analysis Title	Method	Units	Holding Date
2140WMS	Calcium	E200.8	mg/L	01/17/2021
2145WMS	Chromium	E200.8	mg/L	01/17/2021
2130WMS	Boron	E200.8	mg/L	01/17/2021
2115WMS	Arsenic	E200.8	mg/L	01/17/2021
2205WMS	Selenium	E200.8	mg/L	01/17/2021
2190WMS	Molybdenum	E200.8	mg/L	01/17/2021
2135WMS	Cadmium	E200.8	mg/L	01/17/2021
2110WMS	Antimony	E200.8	mg/L	01/17/2021
2120WMS	Barium	E200.8	mg/L	01/17/2021
2225WMS	Thallium	E200.8	mg/L	01/17/2021
2165WMS	Lead	E200.8	mg/L	01/17/2021
2125WMS	Beryllium	E200.8	mg/L	01/17/2021
2150WMS	Cobalt	E200.8	mg/L	01/17/2021
2170WMS	Lithium	E200.8	mg/L	01/17/2021
2185W	Mercury	E245.1	mg/L	08/18/2020
4630	Total Suspended Solids	SM2540D	mg/L	07/28/2020
4615	Total Dissolved Solids	SM2540C	mg/L	07/28/2020
4425W	Chloride	E300.0	mg/L	08/18/2020
4530W	Sulfate	E300.0	mg/L	08/18/2020
4455W	Fluoride (Undistilled)	E300.0	mg/L	08/18/2020
MISCSUB	Misc. Special Project			04/16/2023
1605W	Metal Digestion	SW3015A		01/17/2021
1605HGW	Mercury Digestion	E245.1		08/18/2020
SUBCONT	Subcontracting			04/16/2023

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

August 21, 2020

John Laverty
Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan 48823

Re: Routine Analysis
Work Order: 516742
SDG: S15917

Dear John Laverty:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 24, 2020. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. Rev01: This data package is revised to include the correct SDG S15917.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4443.

Sincerely,

Lindsay Fabra

Lindsay Fabra
Project Manager

Purchase Order: GELP20-0018
Enclosures

Table of Contents

Case Narrative

Rev01: This data package is revised to include the correct SDG S15917.

Receipt Narrative
for
Merit Laboratories, Inc.
SDG: S15917
Work Order: 516742

August 21, 2020

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on July 24, 2020 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Sample Identification: The laboratory received the following samples:

Laboratory ID	Client ID
516742001	S15917.01
516742002	S15917.02
516742003	S15917.03
516742004	S15917.04
516742005	S15917.05
516742006	S15917.06
516742007	S15917.07 (Field Blank)

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Radiochemistry.

Lindsay Fabra
Project Manager

Chain of Custody and Supporting Documentation

S1e742

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: John Laverty
COMPANY: Merit Laboratories
ADDRESS: 2680 East Lansing Drive
CITY: East Lansing STATE: MI ZIP CODE: 48823
PHONE NO.: 517-332-0167 FAX NO.: 517-332-4034 P.O. NO.:
E-MAIL ADDRESS: johnlaverty@meritlabs.com QUOTE NO.:

INVOICE TO

☒ SAME

CONTACT NAME: Julie Teague
COMPANY: Merit Laboratories
ADDRESS: 2680 East Lansing Drive
CITY: East Lansing STATE: MI ZIP CODE: 48823
PHONE NO.: 517-332-0167 E-MAIL ADDRESS: juliet@meritlabs.com

PROJECT NO./NAME: S15917 SAMPLER(S) - PLEASE PRINT/SIGN NAME:

TURNAROUND TIME REQUIRED ☐1 DAY ☐2 DAYS ☐3 DAYS ☒STANDARD ☐OTHER

DELIVERABLES REQUIRED ☐STD ☐LEVEL II ☐LEVEL III ☒LEVEL IV ☐EDD ☐OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐OHIO VAP ☐Drinking Water ☐DoD ☐NPDES
Project Locations: ☐Detroit ☐New York ☐Other

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	Radium 226*	Radium 228**	Special Instructions
	7/21/20	1335	S15917.01	GW	2			2					✓	✓	* E903.1 Mod.
	7/21/20	1706	S15917.02	GW	2			2					✓	✓	** E904.0/SW 9320 Mod.
	7/21/20	1105	S15917.03	GW	2			2					✓	✓	
	7/21/20	1750	S15917.04	GW	2			2					✓	✓	Please use calculation product &
	7/21/20	1523	S15917.05	GW	2			2					✓	✓	provide Radium 226/228 combined
	7/21/20	1105	S15917.06	GW	2			2					✓	✓	results on the report
	7/21/20	0735	S15917.07 (Field Blank)	L	2			2					✓	✓	
															** Subcontracted to
															GEL Laboratories, Inc.
															2040 Savage Road
			Revised COC												Charleston, SC 29407

RELINQUISHED BY: SIGNATURE/ORGANIZATION ☐Sampler DATE TIME
RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME
RECEIVED BY SIGNATURE/ORGANIZATION DATE TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME
RECEIVED BY: SIGNATURE/ORGANIZATION 7/24/20 0945 DATE TIME
SEAL NO. SEAL INTACT YES☐ NO☐ INITIALS NOTES TEMP. ON ARRIVAL
SEAL NO. SEAL INTACT YES☐ NO☐ INITIALS

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

516742

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: John Laverty
COMPANY: Merit Laboratories
ADDRESS: 2680 East Lansing Drive
CITY: East Lansing | STATE: MI | ZIP CODE: 48823
PHONE NO.: 517-332-0167 | FAX NO.: 517-332-4034 | P.O. NO.:
E-MAIL ADDRESS: johnlaverty@meritlabs.com | QUOTE NO.:

INVOICE TO

CONTACT NAME: Julie Teague | ☒ SAME
COMPANY: Merit Laboratories
ADDRESS: 2680 East Lansing Drive
CITY: East Lansing | STATE: MI | ZIP CODE: 48823
PHONE NO.: 517-332-0167 | E-MAIL ADDRESS: juliet@meritlabs.com

PROJECT NO./NAME: S15197 | SAMPLER(S) - PLEASE PRINT/SIGN NAME:

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☒ LEVEL IV ☐ EDD ☐ OTHER _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☐ Other _____

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	Radium 226*	Radium 228**	Special Instructions
	7/21/20	1335	S15197.01	GW	2			2					✓	✓	* E903.1 Mod.
	7/21/20	1706	S15197.02	GW	2			2					✓	✓	** E904.0/SW 9320 Mod.
	7/21/20	1105	S15197.03	GW	2			2					✓	✓	
	7/21/20	1750	S15197.04	GW	2			2					✓	✓	Please use calculation product &
	7/21/20	1523	S15197.05	GW	2			2					✓	✓	provide Radium 226/228 combined
	7/21/20	1105	S15197.06	GW	2			2					✓	✓	results on the report
	7/21/20	0735	S15197.07 (Field Blank)	L	2			2					✓	✓	
															** Subcontracted to
															GEL Laboratories, Inc.
															2040 Savage Road
															Charleston, SC 29407

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Gary Smith ☐ Sampler DATE: 7/22/20 TIME: 1646
RECEIVED BY: SIGNATURE/ORGANIZATION: UPS DATE: 7/22/20 TIME: 1646
RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:

RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: A. Olsen DATE: 7/24/20 TIME: 9:45

SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS
SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS

NOTES: TEMP. ON ARRIVAL _____

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

GEL Laboratories LLC

LF

SAMPLE RECEIPT & REVIEW FORM

Client: MERI	**SDG/AR/COC/Work Order:** S16742
Received By: AJA	**Date Received:** 7/24/20
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 1Z 466 477 03 6278 7978 – 21° 1Z 466 477 01 6308 0205 – 1° (solids)

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A)Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#: If UN2910, Is the Radioactive Shipment Survey Compliant? Yes___ No___
B) Did the client designate the samples are to be received as radioactive?		✓	COC notation or radioactive stickers on containers equal client designation.
C) Did the RSO classify the samples as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 CPM / mR/Hr **Classified as: Rad 1 Rad 2 Rad 3**
D) Did the client designate samples are hazardous?		✓	COC notation or hazard labels on containers equal client designation.
E) Did the RSO identify possible hazards?		✓	If D or E is yes, select Hazards below. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			Circle Applicable: Client contacted and provided COC COC created upon receipt
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Wet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: See above
4	Daily check performed and passed on IR temperature gun?	✓			**Temperature Device Serial #:** IR4-16 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	✓			Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?			✓	If Yes, are Encores or Soil Kits present for solids? Yes___ No___ NA___(If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes___ No___ NA___(If unknown, select No) Are liquid VOA vials free of headspace? Yes___ No___ NA___ Sample ID's and containers affected:
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles? AA 7/24	X		✓	ID's and containers affected: Rchem bottle IDs start with S15917 instead of S15917
10	Date & time on COC match date & time on bottles? AA 7/24	X		✓	Circle Applicable: ~~No~~ 7/24 dates on containers No times on containers COC missing info Other (describe) ~~Dates~~ times on all bottles except Field Blank do not match CoC
11	Number of containers received match number indicated on COC?	✓			Circle Applicable: No container count on COC Other (describe)
12	Are sample containers identifiable as GEL provided by use of GEL labels?			✓	
13	COC form is properly signed in relinquished/received sections?	✓			Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials NRG Date 7/27/20 Page 1 of 1

GL-CHL-SR-001 Rev 7

Laboratory Certifications

List of current GEL Certifications as of 21 August 2020

State	Certification
Alabama	42200
Alaska	17−018
Alaska Drinking Water	SC00012
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M−SC012
Massachusetts PFAS Approv	Letter
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122020−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	2019−165
Pennsylvania NELAP	68−00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−20−17
Utah NELAP	SC000122020−32
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

Radiological Analysis

Case Narrative

Radiochemistry
Technical Case Narrative
Merit Laboratories, Inc.
SDG #: S15917
Work Order #: 516742

Product: **GFPC Ra228, Liquid**
Analytical Method: EPA 904.0/SW846 9320 Modified
Analytical Procedure: GL-RAD-A-009 REV# 17
Analytical Batch: 2023656

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
516742001	S15917.01
516742002	S15917.02
516742003	S15917.03
516742004	S15917.04
516742005	S15917.05
516742006	S15917.06
516742007	S15917.07 (Field Blank)
1204605797	Method Blank (MB)
1204605798	516638001(NonSDG) Sample Duplicate (DUP)
1204605799	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: **Lucas Cell, Ra226, Liquid**
Analytical Method: EPA 903.1 Modified
Analytical Procedure: GL-RAD-A-008 REV# 15
Analytical Batch: 2023441

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
516742001	S15917.01
516742002	S15917.02
516742003	S15917.03
516742004	S15917.04
516742005	S15917.05
516742006	S15917.06
516742007	S15917.07 (Field Blank)
1204605247	Method Blank (MB)

1204605248	516742001(S15917.01) Sample Duplicate (DUP)
1204605249	516742001(S15917.01) Matrix Spike (MS)
1204605250	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts
Sample 1204605249 (S15917.01MS) was recounted due to high recovery. The recount is reported.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

MERI001 Merit Laboratories, Inc.

Client SDG: S15917 GEL Work Order: 516742

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria
** Analyte is a Tracer compound
U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:  **Name: Theresa Austin**

Date: 21 AUG 2020 **Title: Group Leader**

Sample Data Summary

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 21, 2020

Company :	Merit Laboratories Inc.
Address :	2680 East Lansing Drive
	East Lansing, Michigan 48823
Contact:	John Laverty
Project:	Routine Analysis

Client Sample ID:	S15917.01	Project:	MERI00120
Sample ID:	516742001	Client ID:	MERI001
Matrix:	Ground Water		
Collect Date:	21-JUL-20 13:35		
Receive Date:	24-JUL-20		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.254	+/-0.959	1.74	3.00	pCi/L			JXC9	07/31/20	1114	2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.553	+/-1.03			pCi/L		1	AEA	08/17/20	0425	2025824	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.299	+/-0.365	0.614	1.00	pCi/L			MXH8	08/14/20	0907	2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			83.4	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 21, 2020

Company :	Merit Laboratories Inc.
Address :	2680 East Lansing Drive
	East Lansing, Michigan 48823
Contact:	John Laverty
Project:	Routine Analysis

Client Sample ID:	S15917.02	Project:	MERI00120
Sample ID:	516742002	Client ID:	MERI001
Matrix:	Ground Water		
Collect Date:	21-JUL-20 17:06		
Receive Date:	24-JUL-20		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.0326	+/-0.690	1.32	3.00	pCi/L			JXC9	07/31/20	1124	2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.362	+/-0.798			pCi/L		1	AEA	08/17/20	0425	2025824	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.329	+/-0.402	0.677	1.00	pCi/L			MXH8	08/14/20	0907	2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			91.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 21, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S15917.03
Sample ID: 516742003
Matrix: Ground Water
Collect Date: 21-JUL-20 11:05
Receive Date: 24-JUL-20
Collector: Client

Project: MERI00120
Client ID: MERI001

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.863	+/-0.677	1.05	3.00	pCi/L			JXC9	07/31/20	1124	2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.20	+/-0.720			pCi/L		1	AEA	08/17/20	0425	2025824	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.339	+/-0.245	0.289	1.00	pCi/L			MXH8	08/14/20	0945	2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			91.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 21, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S15917.04
Sample ID: 516742004
Matrix: Ground Water
Collect Date: 21-JUL-20 17:50
Receive Date: 24-JUL-20
Collector: Client

Project: MERI00120
Client ID: MERI001

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.721	+/-1.06	1.82	3.00	pCi/L			JXC9	07/31/20	1116	2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.53	+/-1.14			pCi/L		1	AEA	08/17/20	0425	2025824	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.811	+/-0.418	0.472	1.00	pCi/L			MXH8	08/14/20	0945	2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			96	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 21, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID:	S15917.05	Project:	MERI00120
Sample ID:	516742005	Client ID:	MERI001
Matrix:	Ground Water		
Collect Date:	21-JUL-20 15:23		
Receive Date:	24-JUL-20		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.460	+/-1.23	2.18	3.00	pCi/L			JXC9	07/31/20	1116	2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.460	+/-1.24			pCi/L		1	AEA	08/17/20	0425	2025824	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	-0.0445	+/-0.151	0.426	1.00	pCi/L			MXH8	08/14/20	0945	2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			83.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 21, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S15917.06
Sample ID: 516742006
Matrix: Ground Water
Collect Date: 21-JUL-20 11:05
Receive Date: 24-JUL-20
Collector: Client

Project: MERI00120
Client ID: MERI001

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	-0.0421	+/-0.647	1.27	3.00	pCi/L			JXC9	07/31/20	1142	2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.06	+/-0.789			pCi/L		1	AEA	08/17/20	0425	2025824	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		1.06	+/-0.452	0.353	1.00	pCi/L			MXH8	08/14/20	0945	2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			91.5	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 21, 2020

Company : Merit Laboratories Inc.
Address : 2680 East Lansing Drive

East Lansing, Michigan 48823
Contact: John Laverty
Project: Routine Analysis

Client Sample ID: S15917.07 (Field Blank)
Sample ID: 516742007
Matrix: Water
Collect Date: 21-JUL-20 07:35
Receive Date: 24-JUL-20
Collector: Client

Project: MERI00120
Client ID: MERI001

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228		2.13	+/-0.999	1.37	3.00	pCi/L			JXC9	07/31/20	1142	2023656	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		2.66	+/-1.05			pCi/L		1	AEA	08/17/20	0425	2025824	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.526	+/-0.322	0.336	1.00	pCi/L			MXH8	08/14/20	0944	2023441	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	Calculation	
3	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			90	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

Quality Control Summary

QC Summary

Report Date: August 21, 2020

Merit Laboratories Inc.
2680 East Lansing Drive
East Lansing, Michigan

Contact: **John Laverty**

Workorder: **516742**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 2023656										
QC1204605798 516638001 DUP										
Radium-228	U	-1.22	U	0.693	pCi/L	N/A		N/A	JXC9	07/31/20 11:42
	Uncertainty	+/-0.643		+/-0.806						
QC1204605799 LCS										
Radium-228	55.3			45.4	pCi/L		82.2	(75%-125%)		07/31/20 11:42
	Uncertainty			+/-3.33						
QC1204605797 MB										
Radium-228			U	0.467	pCi/L					07/31/20 11:42
	Uncertainty			+/-1.26						
Rad Ra-226										
Batch 2023441										
QC1204605248 516742001 DUP										
Radium-226	U	0.299		0.722	pCi/L	83		(0% - 100%)	MXH8	08/14/20 09:44
	Uncertainty	+/-0.365		+/-0.416						
QC1204605250 LCS										
Radium-226	27.1			28.2	pCi/L		104	(75%-125%)		08/14/20 10:19
	Uncertainty			+/-2.03						
QC1204605247 MB										
Radium-226			U	-0.0394	pCi/L					08/14/20 09:44
	Uncertainty			+/-0.256						
QC1204605249 516742001 MS										
Radium-226	27.1 U	0.299		33.7	pCi/L		125	(75%-125%)		08/14/20 12:05
	Uncertainty	+/-0.365		+/-2.65						

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded

QC Summary

Workorder: **516742**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

J	See case narrative for an explanation
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.
N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
UI	Gamma Spectroscopy--Uncertain identification
UJ	Gamma Spectroscopy--Uncertain identification
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h	Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Gas Flow Raw Data

Batch 2023656 Check-list

This check-list was completed on 03-AUG-20 by Nat Long

This batch was reviewed by Kenshalla Oston on 03-AUG-20 and Nat Long on 03-AUG-20.

Batch ID:	**Product:**	**Description:** Gas Flow Radium 228
2023656	GFC28RAL	GL-RAD-A-009

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?	Yes		
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
11	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
12	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium−228 in Liquid

Batch ID: **2023656**
Analyst: Jasmine Conley (JXC9)
Method: EPA 904.0/SW846 9320 Modified
Lab SOP: GL−RAD−A−009 REV# 17
Instrument: GFC−8949708441

Due Dates for Lab: 05−AUG−2020 **Package: 19−AUG−2020** **SDG: 07−AUG−2020**

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1204605799	Radium−228 SPIKE	1919−A	.2	mL

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	Ac−228 Ingrow (date)	Ac−228 Separation (date)
1	516638001	28−JUL−2020	3	300	07/29/20 13:40	07/31/20 09:40
2	516641001	28−JUL−2020	3	300	07/29/20 13:40	07/31/20 09:40
3	516742001	28−JUL−2020	3	300	07/29/20 13:40	07/31/20 09:40
4	516742002	28−JUL−2020	3	300	07/29/20 13:40	07/31/20 09:40
5	516742003	28−JUL−2020	3	300	07/29/20 13:40	07/31/20 09:40
6	516742004	28−JUL−2020	3	300	07/29/20 13:40	07/31/20 09:40
7	516742005	28−JUL−2020	3	300	07/29/20 13:40	07/31/20 09:40
8	516742006	28−JUL−2020	3	300	07/29/20 13:40	07/31/20 09:40
9	516742007	28−JUL−2020	3	300	07/29/20 13:40	07/31/20 09:40
10	1204605797 MB	28−JUL−2020	3	300	07/29/20 13:40	07/31/20 09:40
11	1204605798 DUP (516638001)	28−JUL−2020	3	300	07/29/20 13:40	07/31/20 09:40
12	1204605799 LCS	28−JUL−2020	3	300	07/29/20 13:40	07/31/20 09:40

Reagent/Solvent Lot ID	Description	Amount
WORK 0487−G	Barium−133 TRACER	.1 mL
REGNT 2947553	RGF−Neodymium 500mg/L	.2 mL
REGNT 3064966	RGF−50% Potassium Carbonate	2 mL
REGNT 3069850	Barium Carrier Ra228 REG	1 mL
REGNT 3075535.6	Acetic Acid Glacial ACS Poly Coated Bottle	10 mL
REGNT 3086856	Lot #DGA0014	2 g
REGNT 3095920.3	RGF−Hydrofluoric Acid	4 mL
REGNT 3098465	RGF−1M Citric Acid	5 mL
REGNT 3098468	RGF−1.5M Ammonium Sulfate	10 mL
REGNT 3098939.26	HNO3	5 mL
REGNT 3099413	2M HCl	20 mL
REGNT 3099514	RGF−Neodymium Subtrate	5 mL
REGNT 3100855	7M HNO3	25 mL

Comments:

Pipet Id: RAD−GFC−1795419
Data Entry Date2: 28−JUL−2020 00:00

Radium-228 Liquid

Filename : RA228.XLS
File type : Excel
Version # : 1.4.2

Tracer S/N : 0487-G
Tracer Exp Date : 2/27/2021
Tracer Volume Added: 0.10

Batch : 2023656
Analyst : JAS02031
Prep Date : 7/28/2020
Ra-228 Method Uncertainty : 0.1268

Geometry: 25mm Filter

Procedure Code : GFC28RAL
Parmname : Radium-228
Required MDA : 3 pCi/L
Ra-228 Abundance : 1.00
Halflife of Ra-228 : 5.75 years
Halflife of Ac-228 : 6.15 hours

Sample Characteristics					Tracer Calculations					
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Tracer Ref. Activity (CPM)	Tracer Ref. Count Uncertainty (%)	Tracer Samp. Activity (CPM)	Tracer Samp. Count Uncertainty (%)	Tracer Aliquot (mL)	Tracer Aliquot StDev. (mL)
1	516638001.1	0.3000	1.8459E-05	7/23/2020 10:00	279.5	3.45%	222.8	3.87%	0.1	0.000200
2	516641001.1	0.3000	1.8459E-05	7/23/2020 11:00	279.5	3.45%	216.5	3.92%	0.1	0.000200
3	516742001.1	0.3000	1.8459E-05	7/21/2020 13:35	279.5	3.45%	233.1	3.78%	0.1	0.000200
4	516742002.1	0.3000	1.8459E-05	7/21/2020 17:06	279.5	3.45%	254.8	3.62%	0.1	0.000200
5	516742003.1	0.3000	1.8459E-05	7/21/2020 11:05	279.5	3.45%	255.9	3.61%	0.1	0.000200
6	516742004.1	0.3000	1.8459E-05	7/21/2020 17:50	279.5	3.45%	268.3	3.52%	0.1	0.000200
7	516742005.1	0.3000	1.8459E-05	7/21/2020 15:23	279.5	3.45%	232.5	3.79%	0.1	0.000200
8	516742006.1	0.3000	1.8459E-05	7/21/2020 11:05	279.5	3.45%	255.6	3.61%	0.1	0.000200
9	516742007.1	0.3000	1.8459E-05	7/21/2020 7:35	279.5	3.45%	251.5	3.64%	0.1	0.000200
10	1204605797.1	0.3000	1.8459E-05	7/28/2020 0:00	279.5	3.45%	238.6	3.74%	0.1	0.000200
11	1204605798.1	0.3000	1.8459E-05	7/23/2020 10:00	279.5	3.45%	247.8	3.67%	0.1	0.000200
12	1204605799.1	0.3000	1.8459E-05	7/28/2020 0:00	279.5	3.45%	247.5	3.67%	0.1	0.000200

Pipet, 0.1 ml Stdev : +/-	0.000200	ml
Pipet, 0.5 ml Stdev : +/-	0.001000	ml
Pipet, 1 ml Stdev : +/-	0.002000	ml

Analytical SOP: GL-RAD-A-009
Instrument SOP: GL-RAD-I-016

Count raw Data

Pos.	Detector ID	Counting Time (min.)	Gross Counts Alpha	Gross Counts Beta	Beta cpm	Count Start Date/Time	Ac-228 Ingrowth Date/Time	Ac-228 Decay Date/Time	Ra-228 Decay	Ac-228 Decay	Ac-228 Ingrowth	Ac-228 Count Correction	Calculated Sample Recovery %	Sample Recovery Error %
1	2A	60	7	23	0.383	7/31/2020 11:14	7/29/2020 13:40	7/31/2020 9:40	0.997	0.838	0.993	1.057	79.7%	2.61%
2	2B	60	11	22	0.367	7/31/2020 11:14	7/29/2020 13:40	7/31/2020 9:40	0.997	0.838	0.993	1.057	77.5%	2.63%
3	2C	60	15	58	0.967	7/31/2020 11:14	7/29/2020 13:40	7/31/2020 9:40	0.997	0.837	0.993	1.057	83.4%	2.57%
4	7A	60	3	37	0.617	7/31/2020 11:24	7/29/2020 13:40	7/31/2020 9:40	0.997	0.823	0.993	1.057	91.2%	2.52%
5	7B	60	2	37	0.617	7/31/2020 11:24	7/29/2020 13:40	7/31/2020 9:40	0.997	0.822	0.993	1.057	91.6%	2.51%
6	2D	60	8	89	1.483	7/31/2020 11:16	7/29/2020 13:40	7/31/2020 9:40	0.997	0.834	0.993	1.057	96.0%	2.48%
7	3B	60	7	90	1.500	7/31/2020 11:16	7/29/2020 13:40	7/31/2020 9:40	0.997	0.834	0.993	1.057	83.2%	2.58%
8	3C	60	2	30	0.500	7/31/2020 11:42	7/29/2020 13:40	7/31/2020 9:40	0.997	0.794	0.993	1.057	91.5%	2.51%
9	3D	60	11	70	1.167	7/31/2020 11:42	7/29/2020 13:40	7/31/2020 9:40	0.997	0.794	0.993	1.057	90.0%	2.52%
10	4A	60	4	100	1.667	7/31/2020 11:42	7/29/2020 13:40	7/31/2020 9:40	0.999	0.794	0.993	1.057	85.4%	2.56%
11	4B	60	21	44	0.733	7/31/2020 11:42	7/29/2020 13:40	7/31/2020 9:40	0.997	0.794	0.993	1.057	88.7%	2.53%
12	4C	60	31	781	13.017	7/31/2020 11:42	7/29/2020 13:40	7/31/2020 9:40	0.999	0.794	0.993	1.057	88.5%	2.53%

Calibration Data								
Pos.	Counted on	Calibration Date	Calibration Due Date	Detector Efficiency (cpm/dpm)	Detector Efficiency Error (cpm/dpm)	Bkg cpm	Weekly Bkg Count Start Date/Time	Bkg Count Time (min.)
1	PIC	6/1/2020	5/31/2021	0.6160	0.01914	0.696	7/24/2020 19:07	1000
2	PIC	6/1/2020	5/31/2021	0.6250	0.02111	0.421	7/24/2020 19:07	1000
3	PIC	6/1/2020	5/31/2021	0.6118	0.01274	0.899	7/24/2020 19:07	1000
4	PIC	6/1/2020	5/31/2021	0.6340	0.00594	0.607	7/24/2020 12:23	1000
5	PIC	6/1/2020	5/31/2021	0.6359	0.00627	0.359	7/24/2020 12:23	1000
6	PIC	6/1/2020	5/31/2021	0.5978	0.00745	1.268	7/24/2020 19:07	1000
7	PIC	6/1/2020	5/31/2021	0.5984	0.01614	1.381	7/24/2020 12:16	1000
8	PIC	6/1/2020	5/31/2021	0.6296	0.00988	0.512	7/24/2020 19:08	1000
9	PIC	6/1/2020	5/31/2021	0.6234	0.02297	0.574	7/24/2020 19:08	1000
10	PIC	6/1/2020	5/31/2021	0.6297	0.01123	1.542	7/24/2020 12:16	1000
11	PIC	6/1/2020	5/31/2021	0.6255	0.01519	0.543	7/25/2020 16:51	1000
12	PIC	6/1/2020	5/31/2021	0.6256	0.00889	0.531	7/25/2020 16:51	1000

Notes:
1 - Results are decay corrected to Sample Date/Time
2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
3 - Spike Nominals are decay corrected to Sample Date/Time

* - RPD changed to 0% due to sample & dup activity below MDA

Spike S/N : N/A
Spike Exp Date : N/A
Spike Activity (dpm/ml): N/A
Spike Volume Added: N/A

LCS S/N : 1919-A
LCS Exp Date : 4/7/2021
LCS Activity (dpm/ml): 184.13
LCS Volume Added: 0.20

Results

Pos.	Decision Level pCi/L	Critical Level pCi/L	Required MDA pCi/L	MDA pCi/L	Sample Act. Conc. pCi/L	Sample Act. Error %	Net Count Rate CPM	Net Count Rate Error CPM	2 SIGMA Counting Uncertainty pCi/L	2 SIGMA Total Prop. Uncertainty pCi/L	Sample QC	Sample Type	RPD	RER	Nominal pCi/L	Recovery
1	1.0069	0.7109	3	1.6167	**-1.2186**	27.11%	-0.3127	0.0842	0.6430	0.6432		SAMPLE				
2	0.7945	0.5609	3	1.3195	**-0.2148**	148.79%	-0.0543	0.0808	0.6263	0.6265		SAMPLE				
3	1.1020	0.7780	3	1.7437	**0.2539**	192.76%	0.0677	0.1304	0.9594	0.9615		SAMPLE				
4	0.8141	0.5747	3	1.3182	**0.0326**	1079.28%	0.0097	0.1043	0.6899	0.6901		SAMPLE				
5	0.6215	0.4388	3	1.0450	**0.8630**	40.11%	0.2577	0.1031	0.6770	0.7116		SAMPLE				
6	1.1683	0.8248	3	1.8171	**0.7214**	74.91%	0.2153	0.1612	1.0585	1.0742		SAMPLE				
7	1.4061	0.9927	3	2.1787	**0.4598**	136.52%	0.1190	0.1624	1.2300	1.2356		SAMPLE				
8	0.7774	0.5488	3	1.2730	**-0.0421**	783.75%	-0.0120	0.0940	0.6466	0.6468		SAMPLE				
9	0.8451	0.5967	3	1.3734	**2.1348**	24.12%	0.5927	0.1415	0.9989	1.1400		SAMPLE				
10	1.4413	1.0176	3	2.2226	**0.4672**	137.38%	0.1247	0.1712	1.2578	1.2635		MB				
11	0.8305	0.5863	3	1.3546	**0.6926**	59.43%	0.1903	0.1130	0.8059	0.8250	516638001.1	DUP	* 0.0%			
12	0.8213	0.5798	3	1.3416	**45.4371**	4.60%	12.4857	0.4663	3.3263	12.0126		LCS			55.2941	82.2%

SampleID	Instr	Time (min.)	Alpha Counts	Beta Counts	Count Start Time	Count End Time	Machine	Batch ID
516638001	2A	60	7	23	7/31/2020 11:14	7/31/2020 12:14	PIC	2023656
516641001	2B	60	11	22	7/31/2020 11:14	7/31/2020 12:14	PIC	2023656
516742001	2C	60	15	58	7/31/2020 11:14	7/31/2020 12:14	PIC	2023656
516742002	7A	60	3	37	7/31/2020 11:24	7/31/2020 12:24	PIC	2023656
516742003	7B	60	2	37	7/31/2020 11:24	7/31/2020 12:24	PIC	2023656
516742004	2D	60	8	89	7/31/2020 11:16	7/31/2020 12:16	PIC	2023656
516742005	3B	60	7	90	7/31/2020 11:16	7/31/2020 12:16	PIC	2023656
516742006	3C	60	2	30	7/31/2020 11:42	7/31/2020 12:42	PIC	2023656
516742007	3D	60	11	70	7/31/2020 11:42	7/31/2020 12:42	PIC	2023656
1204605797	4A	60	4	100	7/31/2020 11:42	7/31/2020 12:42	PIC	2023656
1204605798	4B	60	21	44	7/31/2020 11:42	7/31/2020 12:42	PIC	2023656
1204605799	4C	60	31	781	7/31/2020 11:42	7/31/2020 12:42	PIC	2023656

ASSAY 31-Jul-20 10:18:51

Protocol	id	8	Ba-133
Time	limit		
Count	limit		
Isotope	Ba-133		
Protocol	date	7/31/2020	
Run	id.	1615	

Samp_ID	POS	RACK	BATCH	TIME	COUNTS	CPM	ERROR	% RECOVERY	COUNT TIME
REF	1	93	1	180	838.5	279.46	3.45		10:18:51
516638001	2	93	2	180	668.5	222.78	3.87	79.72	10:22:05
516641001	3	93	3	180	649.5	216.45	3.92	77.45	10:25:20
516742001	4	93	4	180	699.5	233.12	3.78	83.42	10:28:33
516742002	5	93	5	180	764.5	254.78	3.62	91.17	10:31:47
516742003	1	10	1	180	768	255.93	3.61	91.58	10:35:35
516742004	2	10	2	180	805	268.28	3.52	96.00	10:38:49
516742005	3	10	3	180	697.5	232.45	3.79	83.18	10:42:04
516742006	4	10	4	180	767	255.61	3.61	91.47	10:45:18
516742007	5	10	5	180	754.5	251.45	3.64	89.98	10:48:31
1204605797	1	19	1	180	716	238.61	3.74	85.38	10:52:07
1204605798	2	19	2	180	743.5	247.8	3.67	88.67	10:55:21
1204605799	3	19	3	180	742.5	247.45	3.67	88.55	10:58:35

END OF ASSAY

Continuing Calibration Data

Gas Flow Proportional Counter Checks for 31-Jul-2020

Detectors LB4100 A1 through J4 and PIC 1A through 14D and G5400W 1W through 1Z

Short Name	Status	Parmname	Run Time	Count Time	CPM or dec	Low Limit	High Limit	Stdev
LB4100C1	Above	Beta bkg	31-Jul 04:02	60	2.017	0.534	3.326	+0.19
LB4100E1	Above	Alpha bkg	31-Jul 04:00	60	0.400	-5.45E-2	0.290	+4.92
LB4100E2	Above	Beta bkg	31-Jul 04:00	60	2.433	0.950	2.756	+1.93
LB4100E3	Above	Alpha bkg	31-Jul 04:00	60	2.417	-4.47E-2	0.174	+64.44
LB4100E3	Above	Beta bkg	31-Jul 04:00	60	3.500	-1.31E+0	6.766	+0.57
LB4100E3	need 2nd	Beta XTalk	31-Jul 05:05	5	2.87E-4	8.54E-5	4.65E-4	+0.19
LB4100E4	Above	Beta bkg	31-Jul 04:00	60	2.167	0.326	2.646	+1.76
LB4100F1	Above	Beta bkg	31-Jul 04:00	60	2.083	0.531	1.960	+3.52
LB4100F3	Above	Alpha bkg	31-Jul 04:00	60	0.367	-7.68E-2	0.332	+3.51
LB4100G1	need 2nd	Beta eff	31-Jul 05:12	5	15264	14840	16920	-1.78
LB4100G2	Above	Beta bkg	31-Jul 04:01	60	563	0.721	1.648	+3,639.36
LB4100G3	Above	Beta bkg	31-Jul 04:01	60	10.450	0.810	1.674	+63.94
LB4100I2	Above	Beta bkg	31-Jul 04:00	60	21.067	0.425	2.438	+58.51
LB4100I4	Above	Beta bkg	31-Jul 04:00	60	2.550	-1.74E-2	2.470	+3.19
PIC4D	Above	Alpha bkg	31-Jul 07:29	60	0.350	0.023	0.377	+2.55
PIC5A	Above	Alpha bkg	31-Jul 05:19	60	0.467	0.021	0.432	+3.50
PIC5A	Above	Beta bkg	31-Jul 05:19	60	2.183	-2.35E-2	1.250	+7.40
PIC8C	Above	Alpha bkg	31-Jul 07:40	60	0.417	0.049	0.405	+3.19
PIC10C	Above	Beta bkg	31-Jul 07:11	60	1.700	-1.20E-1	1.672	+3.09
PIC11D	Above	Alpha bkg	31-Jul 05:52	60	0.433	0.007	0.361	+4.23
PIC11D	Above	Beta bkg	31-Jul 05:52	60	3.933	0.609	2.096	+10.41
PIC12A	Above	Beta bkg	31-Jul 05:53	60	2.317	0.074	1.397	+7.17
PIC12D	Below	Alpha eff	31-Jul 05:44	5	13585	14580	17560	-5.00
PIC14D	Above	Alpha bkg	31-Jul 05:53	60	0.333	-1.35E-1	0.344	+2.87
PIC14D	Above	Beta bkg	31-Jul 05:53	60	1.883	-3.77E-1	1.863	+3.05

INSTRUMENTS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

The following detectors may not have properly transferred to the LIMS system

LB4100B1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100B4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100J4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC3A	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC6D	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC13C	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk

Reviewed by R. Seal-Harmon

Date 7-31-2020

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: GFPC **Batch ID: 2023656**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
516638001	SAMPLE	JXC9	PIC2A	JUL-31-20 11:14:19	DONE	25mm Filter	01-JUN-20 00:00
516641001	SAMPLE	JXC9	PIC2B	JUL-31-20 11:14:21	DONE	25mm Filter	01-JUN-20 00:00
516742001	SAMPLE	JXC9	PIC2C	JUL-31-20 11:14:25	DONE	25mm Filter	01-JUN-20 00:00
516742004	SAMPLE	JXC9	PIC2D	JUL-31-20 11:16:27	DONE	25mm Filter	01-JUN-20 00:00
516742005	SAMPLE	JXC9	PIC3B	JUL-31-20 11:16:34	DONE	25mm Filter	01-JUN-20 00:00
516742002	SAMPLE	JXC9	PIC7A	JUL-31-20 11:24:01	DONE	25mm Filter	01-JUN-20 00:00
516742003	SAMPLE	JXC9	PIC7B	JUL-31-20 11:24:03	DONE	25mm Filter	01-JUN-20 00:00
1204605797	MB	JXC9	PIC4A	JUL-31-20 11:42:34	DONE	25mm Filter	01-JUN-20 00:00
1204605798	DUP	JXC9	PIC4B	JUL-31-20 11:42:37	DONE	25mm Filter	01-JUN-20 00:00
1204605799	LCS	JXC9	PIC4C	JUL-31-20 11:42:42	DONE	25mm Filter	01-JUN-20 00:00
516742006	SAMPLE	JXC9	PIC3C	JUL-31-20 11:42:44	DONE	25mm Filter	01-JUN-20 00:00
516742007	SAMPLE	JXC9	PIC3D	JUL-31-20 11:42:47	DONE	25mm Filter	01-JUN-20 00:00

Lucas Cell Raw Data

Batch 2023441 Check-list

This check-list was completed on 15-AUG-20 by Elizabeth Krouse

This batch was reviewed by Elizabeth Krouse on 15-AUG-20 and Lyndsey Pace on 16-AUG-20.

Batch ID: 2023441 **Product:** LUC26RAL **Description:** Lucas Cell Radium 226 GL-RAD-A-008

#	Criteria	Yes	No	Comments
Preparation Information				
1	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
2	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
3	Are instrument source checks within limits?	Yes		
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the matrix spike (MS/MSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Radium−226 in Liquid

Batch ID: **2023441**
Analyst: Michael Hance (MXH8)
Method: EPA 903.1 Modified
Lab SOP: GL−RAD−A−008 REV# 15
Instrument: GFC−18150253

Due Dates for Lab: 17−AUG−2020 **Package: 19−AUG−2020** **SDG: 21−AUG−2020**

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1204605250	Radium−226 SPIKE	1715−E	.1	mL
MS	1204605249	Radium−226 SPIKE	1715−E	.1	mL

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	End Degas (date)	CELL #	End Transfer (date)	Start Count Time (date)	Background Counts	Total Counts
1	516742001	11−AUG−2020	1	500	08/11/20 11:15	705	08/14/20 06:07	08/14/20 09:07	6	13
2	516742002	11−AUG−2020	1	500	08/11/20 11:15	802	08/14/20 06:07	08/14/20 09:07	6	13
3	516742003	11−AUG−2020	1	500	08/11/20 11:15	106	08/14/20 06:45	08/14/20 09:45	1	10
4	516742004	11−AUG−2020	1	500	08/11/20 11:15	202	08/14/20 06:45	08/14/20 09:45	3	22
5	516742005	11−AUG−2020	1	500	08/11/20 11:15	301	08/14/20 06:45	08/14/20 09:45	2	1
6	516742006	11−AUG−2020	1	500	08/11/20 11:15	402	08/14/20 06:45	08/14/20 09:45	1	24
7	516742007	11−AUG−2020	1	500	08/11/20 11:15	505	08/14/20 06:45	08/14/20 09:44	1	13
8	1204605247 MB	11−AUG−2020	1	500	08/11/20 11:15	601	08/14/20 06:45	08/14/20 09:44	6	5
9	1204605248 DUP (516742001)	11−AUG−2020	1	500	08/11/20 11:15	704	08/14/20 06:45	08/14/20 09:44	4	21
10	1204605249 MS (516742001)	11−AUG−2020	1	500	08/11/20 11:15	805	08/14/20 06:45	08/14/20 12:05	4	635
11	1204605250 LCS	11−AUG−2020	1	500	08/11/20 11:15	108	08/14/20 07:20	08/14/20 10:19	2	745

Reagent/Solvent Lot ID	Description	Amount

Comments:
Spike Pipet ID: RAD−RA226−2766953
Bkg Count Time: 30 Minutes
Sample Count Time: 30 Minutes
Data Entry Date2: 11−AUG−2020 00:00

Radium-226 Liquid

Filename : RA226.XLS
File type : Excel
Version # : 1.3.2

Batch : 2023441
Analyst : MIC02086
Prep Date : 8/11/2020
Ra-226 Method Uncertainty : 0.073648

Procedure Code : LUC26RAL
Parmname : Radium-226
Required MDA : 1 pCi/L
Halflife of Ra-226 : 1600 years
Ra-226 Abundance : 1.00
Halflife of Rn-222: 3.8235 days

Batch counted on : LUCAS CELL DETECTOR
BKG Count time : 30 min

Sample Characteristics					Count Raw Data							
Pos.	Sample ID	Sample Aliquot L	Sample Aliquot StDev. L	Sample Date/Time	Cell Number	Counting Time (min.)	Gross Counts	Gross CPM	Background Counts	Background CPM	Background Count Time (min.)	Cell Efficiency (cpm/dpm)
1	516742001.1	0.5000	2.0256E-05	7/21/2020 13:35	705	30	13	0.433	6	0.200	30	1.8190
2	516742002.1	0.5000	2.0256E-05	7/21/2020 17:06	802	30	13	0.433	6	0.200	30	1.6510
3	516742003.1	0.5000	2.0256E-05	7/21/2020 11:05	106	30	10	0.333	1	0.033	30	2.0437
4	516742004.1	0.5000	2.0256E-05	7/21/2020 17:50	202	30	22	0.733	3	0.100	30	1.8050
5	516742005.1	0.5000	2.0256E-05	7/21/2020 15:23	301	30	1	0.033	2	0.067	30	1.7333
6	516742006.1	0.5000	2.0256E-05	7/21/2020 11:05	402	30	24	0.800	1	0.033	30	1.6720
7	516742007.1	0.5000	2.0256E-05	7/21/2020 7:35	505	30	13	0.433	1	0.033	30	1.7560
8	1204605247.1	0.5000	2.0256E-05	8/11/2020 0:00	601	30	5	0.167	6	0.200	30	1.9550
9	1204605248.1	0.5000	2.0256E-05	7/21/2020 13:35	704	30	21	0.700	4	0.133	30	1.8140
10	1204605249.1	0.5000	2.0256E-05	7/21/2020 13:35	805	30	635	21.167	4	0.133	30	1.4670
11	1204605250.1	0.5000	2.0256E-05	8/11/2020 0:00	108	30	745	24.833	2	0.067	30	2.0199

Pipet, 0.1 ml Stdev : +/-	0.000200	ml
Pipet, 0.5 ml Stdev : +/-	0.001000	ml
Pipet, 1 ml Stdev : +/-	0.002000	ml

Analytical SOP: GL-RAD-A-008
Instrument SOP: GL-RAD-I-007

Cell Efficiency Error (%)	Cell Calibration Date	Cell Calibration Due Date	De-Gas Date/Time	Rn-222 Ingrow End Date/Time	Count Start Date/Time	Rn-222 Corrections			
						De-Gas to Ingrowth	Ingrowth to Count	During Count	Ra-226 Decay
4.200%	11/1/2019	10/31/2020	8/11/2020 11:15	8/14/2020 6:07	8/14/2020 9:07	0.397	0.978	1.002	1.000
8.500%	3/31/2020	3/31/2021	8/11/2020 11:15	8/14/2020 6:07	8/14/2020 9:07	0.397	0.978	1.002	1.000
5.285%	5/1/2020	4/30/2021	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:45	0.399	0.978	1.002	1.000
4.200%	8/1/2020	7/31/2021	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:45	0.399	0.978	1.002	1.000
4.681%	1/20/2020	12/31/2020	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:45	0.399	0.978	1.002	1.000
4.400%	3/1/2020	1/31/2021	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:45	0.399	0.978	1.002	1.000
1.900%	6/2/2020	5/31/2021	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:44	0.399	0.978	1.002	1.000
3.800%	7/2/2020	6/30/2021	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:44	0.399	0.978	1.002	1.000
2.000%	11/1/2019	10/31/2020	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 9:44	0.399	0.978	1.002	1.000
6.300%	3/31/2020	3/31/2021	8/11/2020 11:15	8/14/2020 6:45	8/14/2020 12:05	0.399	0.961	1.002	1.000
6.875%	5/1/2020	4/30/2021	8/11/2020 11:15	8/14/2020 7:20	8/14/2020 10:19	0.402	0.978	1.002	1.000

Notes:
1 - Results are decay corrected to Sample Date/Time
2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
3 - Spike Nominals are decay corrected to Sample Date/Time

Spike S/N : 1715-E
Spike Exp Date : 5/21/2021
Spike Activity (dpm/ml): 300.27
Spike Volume Added: 0.10

LCS S/N : 1715-E
LCS Exp Date : 5/21/2021
LCS Activity (dpm/ml): 300.27
LCS Volume Added: 0.10

Results

Pos.	Decision Level pCi/L	Critical Level pCi/L	Required MDA pCi/L	MDA pCi/L	Sample Act. Conc. pCi/L	Sample Act. Error %	Net Count Rate CPM	Net Count Rate Error CPM	2 SIGMA Counting Uncertainty pCi/L	2 SIGMA Total Prop. Uncertainty pCi/L	Sample QC	Sample Type	RPD	RER	Nominal pCi/L	Recovery
1	0.3444	0.2431	1	0.6143	**0.2987**	62.41%	0.2333	0.1453	0.3645	0.3679		SAMPLE				
2	0.3794	0.2679	1	0.6768	**0.3291**	62.85%	0.2333	0.1453	0.4016	0.4081		SAMPLE				
3	0.1242	0.0877	1	0.2885	**0.3393**	37.23%	0.3000	0.1106	0.2451	0.2524		SAMPLE				
4	0.2436	0.1720	1	0.4721	**0.8111**	26.65%	0.6333	0.1667	0.4184	0.4395		SAMPLE				
5	0.2072	0.1463	1	0.4259	**-0.0445**	173.27%	-0.0333	0.0577	0.1509	0.1511		SAMPLE				
6	0.1519	0.1072	1	0.3527	**1.0599**	22.18%	0.7667	0.1667	0.4516	0.4855		SAMPLE				
7	0.1446	0.1021	1	0.3358	**0.5265**	31.24%	0.4000	0.1247	0.3218	0.3312		SAMPLE				
8	0.3181	0.2246	1	0.5673	**-0.0394**	331.68%	-0.0333	0.1106	0.2562	0.2563		MB				
9	0.2799	0.1976	1	0.5226	**0.7220**	29.48%	0.5667	0.1667	0.4162	0.4300	516742001.1	DUP	83.0%			
10	0.3523	0.2487	1	0.6578	**33.7324**	7.47%	21.0333	0.8426	2.6486	6.9336	516742001.1	MS			27.0523	124.7%
11	0.1766	0.1247	1	0.3630	**28.1535**	7.80%	24.7667	0.9110	2.0298	5.9186		LCS			27.0517	104.1%

Continuing Calibration Data

[IMAGE]

Ludlum Alpha Scintillation Counter Checks for 14-AUG-2020

Short Name	Parmname	Run Time	Count Time	Counts	CPM	Stdev	Status	Comments
LUCAS1	EFF	06:43	1	1.26E+05	125972	-0.61		
LUCAS2	EFF	06:47	1	1.37E+05	136646	2.48		
LUCAS3	EFF	06:49	1	1.39E+05	138912	2.24		
LUCAS4	EFF	06:51	1	1.31E+05	130530	1.11		
LUCAS5	EFF	06:55	1	1.33E+05	133180	1.54		
LUCAS6	EFF	06:57	1	1.34E+05	133955	-0.6		
LUCAS7	EFF	06:58	1	1.37E+05	137272	1.42		
LUCAS8	EFF	07:01	1	1.41E+05	141447	2.6		

Reviewed by: Elizabeth Krouse **Date:** 14-AUG-20

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: LUCAS CELL DETECTOR **Batch ID: 2023441**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
516742001	SAMPLE	MXH8	LUCAS7	AUG-14-20 09:07:00	DONE	Lucas Cell	01-NOV-19 00:00
516742002	SAMPLE	MXH8	LUCAS8	AUG-14-20 09:07:00	DONE	Lucas Cell	31-MAR-20 00:00
516742007	SAMPLE	MXH8	LUCAS5	AUG-14-20 09:44:00	DONE	Lucas Cell	02-JUN-20 00:00
1204605247	MB	MXH8	LUCAS6	AUG-14-20 09:44:00	DONE	Lucas Cell	02-JUL-20 00:00
1204605248	DUP	MXH8	LUCAS7	AUG-14-20 09:44:00	DONE	Lucas Cell	01-NOV-19 00:00
516742003	SAMPLE	MXH8	LUCAS1	AUG-14-20 09:45:00	DONE	Lucas Cell	01-MAY-20 00:00
516742004	SAMPLE	MXH8	LUCAS2	AUG-14-20 09:45:00	DONE	Lucas Cell	01-AUG-20 00:00
516742005	SAMPLE	MXH8	LUCAS3	AUG-14-20 09:45:00	DONE	Lucas Cell	20-JAN-20 00:00
516742006	SAMPLE	MXH8	LUCAS4	AUG-14-20 09:45:00	DONE	Lucas Cell	01-MAR-20 00:00
1204605250	LCS	MXH8	LUCAS1	AUG-14-20 10:19:00	DONE	Lucas Cell	01-MAY-20 00:00
1204605249	MS	MXH8	LUCAS8	AUG-14-20 12:05:00	DONE	Lucas Cell	31-MAR-20 00:00

Lansing Board of Water and Light
Environmental Services Laboratory
1232 Haco Dr.
Lansing, Michigan 48901

12 October 2020

BWL - Erickson Station

Attn: Cheryl Louden

3725 S. Canal

Lansing, MI 48917

Project: Erickson GMP

Dear Cheryl Louden,

Enclosed is a copy of the laboratory report for the following work order(s) received by Lansing Board of Water and Light Environmental Services Laboratory:

Work Order	Received	Account Number
L008009	8/19/2020 7:00:00AM	30926 10021

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Caporale

Jennifer Caporale, Supervisor

Lansing Board of Water and Light
Environmental Services Laboratory
1232 Haco Dr.
Lansing, Michigan 48901

Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 10/12/2020

Sample Name: MW-1

Lab #: L008009-01 Ground Water **Collected: 18-Aug-20 13:24** **By: Marc Wahrer**

Analyte	Result	Reporting Limit	Units	Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
Conductivity	1200	1.0	uS/cm	1		18-Aug-20 13:24	maw	SM 2510B	
Dissolved oxygen	0.520	0.100	mg/L	1		18-Aug-20 13:24	maw	FIELD	
Gallons Purged	5.00		Gallons	1		18-Aug-20 13:24	maw	FIELD	
Oxidation Reduction Potential	-34.70	-999.0	mV	1		18-Aug-20 13:24	maw	FIELD	
pH	6.9	7.0	pH Units	1		18-Aug-20 13:24	maw	SM 4500H+B	
Static Head Measurement	17.1		Feet	1		18-Aug-20 13:24	maw	FIELD	
Temperature	16		°C	1		18-Aug-20 13:24	maw	SM 2550B	
Turbidity	21	0.10	NTU	1		18-Aug-20 13:24	maw	SM 2130B	

Sample Name: MW-2

Lab #: L008009-02 Ground Water **Collected: 18-Aug-20 16:45** **By: Marc Wahrer**

Analyte	Result	Reporting Limit	Units	Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
Conductivity	1800	1.0	uS/cm	1		18-Aug-20 16:45	maw	SM 2510B	
Dissolved oxygen	0.150	0.100	mg/L	1		18-Aug-20 16:45	maw	FIELD	
Gallons Purged	2.50		Gallons	1		18-Aug-20 16:45	maw	FIELD	
Oxidation Reduction Potential	38.20	-999.0	mV	1		18-Aug-20 16:45	maw	FIELD	
pH	6.8	7.0	pH Units	1		18-Aug-20 16:45	maw	SM 4500H+B	
Static Head Measurement	20.8		Feet	1		18-Aug-20 16:45	maw	FIELD	
Temperature	14		°C	1		18-Aug-20 16:45	maw	SM 2550B	
Turbidity	6.0	0.10	NTU	1		18-Aug-20 16:45	maw	SM 2130B	

Lansing Board of Water and Light
Environmental Services Laboratory
1232 Haco Dr.
Lansing, Michigan 48901

Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 10/12/2020

Sample Name: MW-4

Lab #: L008009-03 Ground Water **Collected: 18-Aug-20 10:05** **By: Marc Wahrer**

Analyte	Result	Reporting Limit	Units	Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
Conductivity	880	1.0	uS/cm	1		18-Aug-20 10:05	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		18-Aug-20 10:05	maw	FIELD	
Gallons Purged	2.50		Gallons	1		18-Aug-20 10:05	maw	FIELD	
Oxidation Reduction Potential	-75.00	-999.0	mV	1		18-Aug-20 10:05	maw	FIELD	
pH	7.2	7.0	pH Units	1		18-Aug-20 10:05	maw	SM 4500H+B	
Static Head Measurement	18.4		Feet	1		18-Aug-20 10:05	maw	FIELD	
Temperature	14		°C	1		18-Aug-20 10:05	maw	SM 2550B	
Turbidity	1.6	0.10	NTU	1		18-Aug-20 10:05	maw	SM 2130B	

Sample Name: MW-5

Lab #: L008009-04 Ground Water **Collected: 18-Aug-20 17:25** **By: Marc Wahrer**

Analyte	Result	Reporting Limit	Units	Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
Conductivity	1800	1.0	uS/cm	1		18-Aug-20 17:25	maw	SM 2510B	
Dissolved oxygen	2.50	0.100	mg/L	1		18-Aug-20 17:25	maw	FIELD	
Gallons Purged	3.50		Gallons	1		18-Aug-20 17:25	maw	FIELD	
Oxidation Reduction Potential	69.50	-999.0	mV	1		18-Aug-20 17:25	maw	FIELD	
pH	7.3	7.0	pH Units	1		18-Aug-20 17:25	maw	SM 4500H+B	
Static Head Measurement	18.8		Feet	1		18-Aug-20 17:25	maw	FIELD	
Temperature	13		°C	1		18-Aug-20 17:25	maw	SM 2550B	
Turbidity	20	0.10	NTU	1		18-Aug-20 17:25	maw	SM 2130B	

Lansing Board of Water and Light
Environmental Services Laboratory
1232 Haco Dr.
Lansing, Michigan 48901

Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 10/12/2020

Sample Name: MW-6

Lab #: L008009-05 Ground Water **Collected: 18-Aug-20 15:08** **By: Marc Wahrer**

Analyte	Result	Reporting Limit	Units	Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
Conductivity	1100	1.0	uS/cm	1		18-Aug-20 15:08	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		18-Aug-20 15:08	maw	FIELD	
Gallons Purged	3.00		Gallons	1		18-Aug-20 15:08	maw	FIELD	
Oxidation Reduction Potential	91.10	-999.0	mV	1		18-Aug-20 15:08	maw	FIELD	
pH	6.8	7.0	pH Units	1		18-Aug-20 15:08	maw	SM 4500H+B	
Static Head Measurement	20.4		Feet	1		18-Aug-20 15:08	maw	FIELD	
Temperature	13		°C	1		18-Aug-20 15:08	maw	SM 2550B	
Turbidity	9.0	0.10	NTU	1		18-Aug-20 15:08	maw	SM 2130B	

Lansing Board of Water and Light
Environmental Services Laboratory
1232 Haco Dr.
Lansing, Michigan 48901

Analytical Report

Client: BWL - Erickson Station
Address: 3725 S. Canal
Lansing MI, 48917

Client Project Manager: Cheryl Louden

Report Date: 10/12/2020

Approved By: Jennifer Caporale

Notes and Definitions

AL	Action Level (Action Level = Regulatory Limit)
MCL	Maximum Contaminant Level
PEL	Permissible Exposure Limit (Permissible Exposure Limit = Regulatory Limit)
RPD	Relative Percent Difference
OT	Odor Threshold
ND	Non Detect

All drinking water regulatory limits are MCL's with the exception of Lead and Copper unless otherwise noted.

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BOARD OF WATER & LIGHT

ERICKSON GMP

SDG Batch:

16695

Pages 1 - 275

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BOARD OF WATER & LIGHT

PROJECT:
ERICKSON GMP

SDG Batch:
16695.01

Prepared by:
Merit Laboratories, Inc.

September 28, 2020

Laboratory Name: Merit Laboratories, Inc.
City / State: East Lansing, MI
Sample Delivery Group: S16695.01 - .07

	References		Pages		Checklist	
Deliverable	**Form**	**CLP**	**From**	**To**	**Lab**	**Audit**
1. **Inventory Sheet** (not numbered)	This	DC-2			☑	☐
2. **SDG Case Narrative**			1	2	☑	☐
3. **Analytical Summary Report**			3	34	☑	☐
4. **ICP/MS Metals Data**			35	168		
Sequence / Injection Log		F.0			☑	☐
Data Sheet		F. I			☑	☐
Initial Calibration and Calibration Verification		F. IIA			☑	☐
CRDL Standards		F. IIB			☐	☐
Blanks		F. III			☑	☐
Interference Check Sample		F. IVB			☑	☐
Spike Sample Recovery		F. VA			☑	☐
Post-Digest Spike Sample Recovery		F. VB			☑	☐
Duplicates		F. VI			☐	☐
Laboratory Control Sample		F. VII			☑	☐
Serial Dilutions		F. VIII			☑	☐
Analysis Run Log		F. XIII			☑	☐
ICP/MS Tune		F. XIV			☑	☐
Internal Standard Relative Intensity Summary		F. XV			☑	☐
Instrument Detection Limits (IDL) & MDLs		F. IX			☑	☐
Linear Ranges		F. XI			☑	☐
ICP/MS Raw Data					☑	☐
Preparation / Digestion Log		F. XII			☑	☐
5. **Mercury Data**			169	187		
Sequence / Injection Log		F.0			☑	☐
Data Sheet		F. I			☑	☐
Initial Calibration and Calibration Verification		F. IIA			☑	☐
CRDL Standards		F. IIB			☐	☐
Blanks		F. III			☑	☐
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Duplicates		F. VI			☐	☐
Laboratory Control Sample		F. VII			☑	☐
Analysis Run Log		F. XIII			☑	☐
Mercury Cold Vapor Raw Data					☑	☐
Preparation / Digestion Log					☑	☐
6. **Ion Chromatography Data**			188	268		
Bench Sheet - sample and QC sample evaluation					☑	☐
Calibration Curve - data and evaluation					☑	☐
7. **Total Suspended Solids Data**			269	269		
Bench Sheet - sample and QC sample evaluation					☑	☐

Deliverable	References Form	References CLP	Pages From	Pages To	Checklist Lab	Checklist Audit
8. **Total Dissolved Solids Data**			270	270		
Bench Sheet - sample and QC sample evaluation					☑	☐
9. **Shipping / Receiving Documents**			271	275		
Chain-of-Custody					☑	☐
Sample log-in sheet					☑	
Sample Receipt					☑	☐
10. **Subcontracted Analysis Report**						
GEL Laboratories – Radiological Analysis (Total Pages 54)					☑	☐

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CASE NARRATIVE
CLIENT: BOARD OF WATER & LIGHT
PROJECT: ERICKSON GMP
Merit IDs: S16695.01-S16695.07

Field Sampling: Marc Wahrer performed the fieldwork.

Analytical Bottles: All bottles were sent with the appropriate preservation in it. Please see the bottle list attached.

Sample Receiving: All samples were received by the laboratory (08/19/2020). Dates and signatures can be found on the Chain of Custody Records. The sample receipts specify the actual tags and bottles received and logged into the laboratory "vlims" system.

ANALYSES

Metals: All metal analyses were performed according to Method 200.8. The metal digestion was performed according to Method 3015A. The QC requirements were followed for this specific project and method-specified criteria were met. *Outliers*: None

Mercury: All mercury QC requirements were met according to the specifications in Method 245.1. *Outliers*: None

Fluoride: All fluoride QC requirements were met according to the specifications in Method 300.0. *Outliers:* None

Chloride: All chloride QC requirements were met according to the specifications in Method 300.0. *Outliers*: None

Sulfate: All Sulfate QC requirements were met according to the specifications in Method 300.0. *Outliers:* None

Total Suspended Solids: All total suspended solids QC requirements were met according to the specifications in Method 2540 D. *Outliers*: None

Total Dissolved Solids: All total suspended solids QC requirements were met according to the specifications in Method 2540 C. *Outliers*: None

Radium 226 & 228: All radiological analysis were subcontracted out to GEL Laboratories. GEL Laboratories analytical report is included.

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Data Reporting: The analytical reports are reflective of what is on a given Chain-of-Custody record (COC). Merit's IDs were assigned to the samples as they were delivered and accepted by our log-in staff.

"I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness, for other than the condition detailed above. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature."

09/28/2020

Barb Ball — Date

QA Officer

Analytical Laboratory Report

Report ID: S16695.01(01)
Generated on 09/21/2020

Report to

Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX:
Email: Environmental_Laboratory@LBWL.com

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S16695.01-S16695.07
Project: Erickson GMP
Collected Date(s): 08/18/2020
Submitted Date/Time: 08/19/2020 09:27
Sampled by: Marc Wahrer
P.O. #:

Table of Contents

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

All Metal Results Are Reported As Total

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
E245.1	EPA Method 245.1 Revision 3.0
E300.0	EPA Method 300.0 Revision 2.1
SM2540C	Standard Method 2540 C 2011
SM2540D	Standard Method 2540 D 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007

Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S16695.01	MW-1 L008009-01	Groundwater	08/18/20 13:24
S16695.02	MW-2 L008009-02	Groundwater	08/18/20 16:45
S16695.03	MW-4 L008009-03	Groundwater	08/18/20 10:05
S16695.04	MW-5 L008009-04	Groundwater	08/18/20 17:25
S16695.05	MW-6 L008009-05	Groundwater	08/18/20 15:02
S16695.06	MW-4 Duplicate L008009-06	Groundwater	08/18/20 10:05
S16695.07	Field Blank L008009-07	Water	08/18/20 07:25

Lab Sample ID: S16695.01
Sample Tag: MW-1 L008009-01
Collected Date/Time: 08/18/2020 13:24
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 10:17, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	65	5	0.06	mg/L	5	16887-00-6	
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	
Sulfate	75	5	0.52	mg/L	5	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	776	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	48	3	1	mg/L	2.86		

Metals

Method: E200.8, Run Date: 08/19/20 16:45, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	161	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:05, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.006	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.152	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	0.41	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	0.034	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Lab Sample ID: S16695.01 (continued)

Sample Tag: MW-1 L008009-01

Method: E245.1, Run Date: 08/26/20 12:46, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.

Lab Sample ID: S16695.02
Sample Tag: MW-2 L008009-02
Collected Date/Time: 08/18/2020 16:45
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 10:30, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 08/20/20 10:04, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	85	25	0.40	mg/L	25	16887-00-6	
Sulfate	580	25	1.5	mg/L	25	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,430	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	14	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 08/19/20 16:50, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	272	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:08, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.045	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	5.19	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	0.057	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	0.011	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	

Lab Sample ID: S16695.02 (continued)

Sample Tag: MW-2 L008009-02

Method: E200.8, Run Date: 08/19/20 13:08, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 08/26/20 12:47, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.

Lab Sample ID: S16695.03
Sample Tag: MW-4 L008009-03
Collected Date/Time: 08/18/2020 10:05
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 10:43, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 08/20/20 10:17, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	70	10	0.16	mg/L	10	16887-00-6	
Sulfate	58	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	582	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 08/19/20 16:52, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	111	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:15, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.008	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.166	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	0.06	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	Not detected	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	

Lab Sample ID: S16695.03 (continued)

Sample Tag: MW-4 L008009-03

Method: E200.8, Run Date: 08/19/20 13:15, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 08/26/20 12:49, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.

Lab Sample ID: S16695.04
Sample Tag: MW-5 L008009-04
Collected Date/Time: 08/18/2020 17:25
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 10:56, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 08/20/20 10:30, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	76	50	0.80	mg/L	50	16887-00-6	
Sulfate	714	50	3.0	mg/L	50	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,520	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	20	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 08/19/20 16:56, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	266	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:37, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.003	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.056	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	4.48	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	0.003	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	0.085	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	0.067	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	

Lab Sample ID: S16695.04 (continued)

Sample Tag: MW-5 L008009-04

Method: E200.8, Run Date: 08/19/20 13:37, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 08/26/20 12:51, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.

Lab Sample ID: S16695.05
Sample Tag: MW-6 L008009-05
Collected Date/Time: 08/18/2020 15:02
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 11:08, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 08/20/20 10:43, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	37	10	0.16	mg/L	10	16887-00-6	
Sulfate	222	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	820	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 08/19/20 16:58, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	170	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:44, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.053	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	0.86	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	0.044	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	0.030	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	

Lab Sample ID: S16695.05 (continued)

Sample Tag: MW-6 L008009-05

Method: E200.8, Run Date: 08/19/20 13:44, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 08/26/20 12:53, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.

Lab Sample ID: S16695.06
Sample Tag: MW-4 Duplicate L008009-06
Collected Date/Time: 08/18/2020 10:05
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 11:21, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.08	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 08/20/20 11:47, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	71	10	0.16	mg/L	10	16887-00-6	
Sulfate	59	10	0.59	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	552	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 08/19/20 16:47, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	107	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:51, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	0.007	0.002	0.000255	mg/L	5	7440-38-2	
Barium	0.167	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	0.06	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	Not detected	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	

Lab Sample ID: S16695.06 (continued)

Sample Tag: MW-4 Duplicate L008009-06

Method: E200.8, Run Date: 08/19/20 13:51, Analyst: CCM (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 08/26/20 12:55, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.

Lab Sample ID: S16695.07
Sample Tag: Field Blank L008009-07
Collected Date/Time: 08/18/2020 07:25
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.3	IR
2	1L Plastic	None	Yes	2.3	IR
1	125ml Plastic	HNO3	Yes	2.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	08/26/20 09:40	JRH	
Metal Digestion	Completed	SW3015A	08/19/20 10:30	CCM	

Inorganics

Method: E300.0, Run Date: 08/20/20 12:25, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	2.5	0.03	mg/L	2.5	16887-00-6	
Fluoride (Undistilled)	Not detected	0.5	0.04	mg/L	2.5	16984-48-8	
Sulfate	Not detected	2.5	0.26	mg/L	2.5	14808-79-8	

Method: SM2540C, Run Date: 08/25/20 18:05, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	Not detected	20	2	mg/L	2		

Method: SM2540D, Run Date: 08/23/20 21:45, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	Not detected	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 08/19/20 16:43, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	Not detected	0.50	0.0435	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 08/19/20 13:34, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.00255	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000255	mg/L	5	7440-38-2	
Barium	Not detected	0.005	0.000162	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000215	mg/L	5	7440-41-7	
Boron	Not detected	0.04	0.00175	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000190	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000108	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Lithium*	Not detected	0.010	0.00163	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000217	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.0000855	mg/L	5	7440-28-0	

Lab Sample ID: S16695.07 (continued)

Sample Tag: Field Blank L008009-07

Method: E245.1, Run Date: 08/26/20 13:29, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	Not detected	0.0002	0.000016	mg/L	1	7439-97-6	

Other / Misc.

Method: , Run Date: 09/15/20 12:10, Analyst: GEL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Misc. Special Project*	Completed				1		O

O-Analysis performed by outside laboratory. See attached report.

Quality Control Cover Page

Report ID: S16695.01(01)
Report Date: 09/21/2020
Project: Erickson GMP
Lab Sample ID(s): S16695.01-S16695.07

Report to:

Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Sample ID	Sample Tag	Collected	Matrix	Analysis Departments
S16695.01	MW-1 L008009-01	08/18/2020 13:24	Groundwater	Inorganics, Metals
S16695.02	MW-2 L008009-02	08/18/2020 16:45	Groundwater	Inorganics, Metals
S16695.03	MW-4 L008009-03	08/18/2020 10:05	Groundwater	Inorganics, Metals
S16695.04	MW-5 L008009-04	08/18/2020 17:25	Groundwater	Inorganics, Metals
S16695.05	MW-6 L008009-05	08/18/2020 15:02	Groundwater	Inorganics, Metals
S16695.06	MW-4 Duplicate L008009-06	08/18/2020 10:05	Groundwater	Inorganics, Metals
S16695.07	Field Blank L008009-07	08/18/2020 07:25	Water	Inorganics, Metals

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Quality Control Report

Report ID: QC-S16695-01
Generated on 09/25/2020

Report to

Attention: Jennifer Caporale
Board of Water & Light
P.O. Box 13007
Lansing, MI 48901

Phone: 517-702-6372 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S16695.01-S16695.07
Project: Erickson GMP
Submitted Date/Time: 08/19/2020 09:27
Sampled by: Marc Wahrer
P.O. #:

QC Report Sections

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S16695.01

Sample Tag: MW-1 L008009-01

Collected Date/Time: 08/18/2020 13:24

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	08/20/20 10:17	CL200820-W1-A	CL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 10:17	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 10:17	SFT200820-W1-A	SFT200820-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:45	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 12:46	HG2-HG3-20-0826A	HGD-082620-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:05	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

Lab Sample ID: S16695.02

Sample Tag: MW-2 L008009-02

Collected Date/Time: 08/18/2020 16:45

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	08/20/20 10:04	CL200820-W1-B	CL200820-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 10:30	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 10:04	SFT200820-W1-B	SFT200820-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:50	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 12:47	HG2-HG3-20-0826A	HGD-082620-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:08	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

Lab Sample ID: S16695.03

Sample Tag: MW-4 L008009-03

Collected Date/Time: 08/18/2020 10:05

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	08/20/20 10:17	CL200820-W1-B	CL200820-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 10:43	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 10:17	SFT200820-W1-B	SFT200820-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:52	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 12:49	HG2-HG3-20-0826A	HGD-082620-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:15	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

Lab Sample ID: S16695.04

Sample Tag: MW-5 L008009-04

Collected Date/Time: 08/18/2020 17:25

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	08/20/20 10:30	CL200820-W1-B	CL200820-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 10:56	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 10:30	SFT200820-W1-B	SFT200820-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:56	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 12:51	HG2-HG3-20-0826A	HGD-082620-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:37	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

Lab Sample ID: S16695.05

Sample Tag: MW-6 L008009-05

Collected Date/Time: 08/18/2020 15:02

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	08/20/20 10:43	CL200820-W1-B	CL200820-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 11:08	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 10:43	SFT200820-W1-B	SFT200820-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:58	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 12:53	HG2-HG3-20-0826A	HGD-082620-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:44	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

Lab Sample ID: S16695.06

Sample Tag: MW-4 Duplicate L008009-06

Collected Date/Time: 08/18/2020 10:05

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	08/20/20 11:47	CL200820-W1-B	CL200820-W1-B	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 11:21	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 11:47	SFT200820-W1-B	SFT200820-W1-B	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:47	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 12:55	HG2-HG3-20-0826A	HGD-082620-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:51	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

Lab Sample ID: S16695.07

Sample Tag: Field Blank L008009-07

Collected Date/Time: 08/18/2020 07:25

Matrix: Water

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	08/20/20 12:25	CL200820-W1-A	CL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	08/20/20 12:25	FL200820-W1-A	FL200820-W1-A	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	08/20/20 12:25	SFT200820-W1-A	SFT200820-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A	TDS200825A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A	TSS200823A	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Barium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Beryllium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Boron	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cadmium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Calcium	E200.8	08/19/20 16:43	MT4-20-0819B	MTD-081920-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Cobalt	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lead	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Lithium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Mercury	E245.1	08/26/20 13:29	HG2-HG3-20-0826A	HGD-082620-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD
Thallium	E200.8	08/19/20 13:34	MT4-20-0819A	MTD-081920-1	No	BLK/LCS/MS/MSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: CL200820-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Chloride	E300.0	08/20/20 10:17	CL200820-W1-A
S16695.07	Chloride	E300.0	08/20/20 12:25	CL200820-W1-A

Inorganics, Prep Batch ID: CL200820-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.02	Chloride	E300.0	08/20/20 10:04	CL200820-W1-B
S16695.03	Chloride	E300.0	08/20/20 10:17	CL200820-W1-B
S16695.04	Chloride	E300.0	08/20/20 10:30	CL200820-W1-B
S16695.05	Chloride	E300.0	08/20/20 10:43	CL200820-W1-B
S16695.06	Chloride	E300.0	08/20/20 11:47	CL200820-W1-B

Inorganics, Prep Batch ID: FL200820-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Fluoride (Undistilled)	E300.0	08/20/20 10:17	FL200820-W1-A
S16695.02	Fluoride (Undistilled)	E300.0	08/20/20 10:30	FL200820-W1-A
S16695.03	Fluoride (Undistilled)	E300.0	08/20/20 10:43	FL200820-W1-A
S16695.04	Fluoride (Undistilled)	E300.0	08/20/20 10:56	FL200820-W1-A
S16695.05	Fluoride (Undistilled)	E300.0	08/20/20 11:08	FL200820-W1-A
S16695.06	Fluoride (Undistilled)	E300.0	08/20/20 11:21	FL200820-W1-A
S16695.07	Fluoride (Undistilled)	E300.0	08/20/20 12:25	FL200820-W1-A

Inorganics, Prep Batch ID: SFT200820-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Sulfate	E300.0	08/20/20 10:17	SFT200820-W1-A
S16695.07	Sulfate	E300.0	08/20/20 12:25	SFT200820-W1-A

Inorganics, Prep Batch ID: SFT200820-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.02	Sulfate	E300.0	08/20/20 10:04	SFT200820-W1-B
S16695.03	Sulfate	E300.0	08/20/20 10:17	SFT200820-W1-B
S16695.04	Sulfate	E300.0	08/20/20 10:30	SFT200820-W1-B
S16695.05	Sulfate	E300.0	08/20/20 10:43	SFT200820-W1-B
S16695.06	Sulfate	E300.0	08/20/20 11:47	SFT200820-W1-B

Inorganics, Prep Batch ID: TDS200825A

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A
S16695.02	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A
S16695.03	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A
S16695.04	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A
S16695.05	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A
S16695.06	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A
S16695.07	Total Dissolved Solids	SM2540C	08/25/20 18:05	TDS200825A

Inorganics, Prep Batch ID: TSS200823A

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A
S16695.02	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A
S16695.03	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A
S16695.04	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A
S16695.05	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A
S16695.06	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A
S16695.07	Total Suspended Solids	SM2540D	08/23/20 21:45	TSS200823A

Metals, Prep Batch ID: HGD-082620-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Mercury	E245.1	08/26/20 12:46	HG2-HG3-20-0826A
S16695.02	Mercury	E245.1	08/26/20 12:47	HG2-HG3-20-0826A
S16695.03	Mercury	E245.1	08/26/20 12:49	HG2-HG3-20-0826A
S16695.04	Mercury	E245.1	08/26/20 12:51	HG2-HG3-20-0826A
S16695.05	Mercury	E245.1	08/26/20 12:53	HG2-HG3-20-0826A
S16695.06	Mercury	E245.1	08/26/20 12:55	HG2-HG3-20-0826A
S16695.07	Mercury	E245.1	08/26/20 13:29	HG2-HG3-20-0826A

Metals, Prep Batch ID: MTD-081920-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.01	Antimony	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Arsenic	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Barium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Beryllium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Boron	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Cadmium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Calcium	E200.8	08/19/20 16:45	MT4-20-0819B
S16695.01	Chromium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Cobalt	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Lead	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Lithium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Molybdenum	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Selenium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.01	Thallium	E200.8	08/19/20 13:05	MT4-20-0819A
S16695.02	Antimony	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Arsenic	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Barium	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Beryllium	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Boron	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Cadmium	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Calcium	E200.8	08/19/20 16:50	MT4-20-0819B
S16695.02	Chromium	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Cobalt	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Lead	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Lithium	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Molybdenum	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.02	Selenium	E200.8	08/19/20 13:08	MT4-20-0819A

Metals, Prep Batch ID: MTD-081920-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.02	Thallium	E200.8	08/19/20 13:08	MT4-20-0819A
S16695.03	Antimony	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Arsenic	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Barium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Beryllium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Boron	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Cadmium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Calcium	E200.8	08/19/20 16:52	MT4-20-0819B
S16695.03	Chromium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Cobalt	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Lead	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Lithium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Molybdenum	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Selenium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.03	Thallium	E200.8	08/19/20 13:15	MT4-20-0819A
S16695.04	Antimony	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Arsenic	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Barium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Beryllium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Boron	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Cadmium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Calcium	E200.8	08/19/20 16:56	MT4-20-0819B
S16695.04	Chromium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Cobalt	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Lead	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Lithium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Molybdenum	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Selenium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.04	Thallium	E200.8	08/19/20 13:37	MT4-20-0819A
S16695.05	Antimony	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Arsenic	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Barium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Beryllium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Boron	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Cadmium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Calcium	E200.8	08/19/20 16:58	MT4-20-0819B
S16695.05	Chromium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Cobalt	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Lead	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Lithium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Molybdenum	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Selenium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.05	Thallium	E200.8	08/19/20 13:44	MT4-20-0819A
S16695.06	Antimony	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Arsenic	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Barium	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Beryllium	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Boron	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Cadmium	E200.8	08/19/20 13:51	MT4-20-0819A

Metals, Prep Batch ID: MTD-081920-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S16695.06	Calcium	E200.8	08/19/20 16:47	MT4-20-0819B
S16695.06	Chromium	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Cobalt	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Lead	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Lithium	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Molybdenum	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Selenium	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.06	Thallium	E200.8	08/19/20 13:51	MT4-20-0819A
S16695.07	Antimony	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Arsenic	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Barium	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Beryllium	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Boron	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Cadmium	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Calcium	E200.8	08/19/20 16:43	MT4-20-0819B
S16695.07	Chromium	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Cobalt	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Lead	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Lithium	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Molybdenum	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Selenium	E200.8	08/19/20 13:34	MT4-20-0819A
S16695.07	Thallium	E200.8	08/19/20 13:34	MT4-20-0819A

Form 0: Sequence Log

Data Set ID: MT4-20-0819A
Analysis Date: 08/19/20

Instrument ID: PE NEXION
Analyst: CCM

Filename	*Run Time*	*Sample ID*	*Matrix*	*QC Type*
001	11:17:02 Wed 19-Aug-20	Blank	Liquid	
002	11:18:32 Wed 19-Aug-20	Std-0.0	Liquid	
003	11:20:03 Wed 19-Aug-20	Std-0.0001	Liquid	
004	11:21:33 Wed 19-Aug-20	Std-0.0005	Liquid	
005	11:23:04 Wed 19-Aug-20	Std-0.005	Liquid	
006	11:24:34 Wed 19-Aug-20	Std-0.02	Liquid	
007	11:26:05 Wed 19-Aug-20	Std-0.05	Liquid	
008	11:27:37 Wed 19-Aug-20	Std-0.2	Liquid	
009	11:29:07 Wed 19-Aug-20	ICV-0.1	Liquid	ICV
010	11:30:56 Wed 19-Aug-20	CCV-0.1	Liquid	CCV
011	11:37:37 Wed 19-Aug-20	rinse	Liquid	
012	11:39:07 Wed 19-Aug-20	ICB	Liquid	ICB
013	11:40:37 Wed 19-Aug-20	CCB	Liquid	CCB
014	11:45:47 Wed 19-Aug-20	BS-0.0001	Liquid	BS
015	11:47:34 Wed 19-Aug-20	rinse	Liquid	
016	11:49:07 Wed 19-Aug-20	BS-0.0005	Liquid	BS
017	11:53:56 Wed 19-Aug-20	rinse	Liquid	
018	11:55:27 Wed 19-Aug-20	BS-0.0005	Liquid	BS
019	11:57:28 Wed 19-Aug-20	BS-0.001	Liquid	BS
020	11:59:04 Wed 19-Aug-20	BS-0.002	Liquid	BS
021	12:00:51 Wed 19-Aug-20	Solu-AB	Liquid	AB
022	12:06:24 Wed 19-Aug-20	rinse	Liquid	
023	12:07:54 Wed 19-Aug-20	Solu-AA	Liquid	AA
024	12:10:22 Wed 19-Aug-20	081920_1 LCS-0.05	Liquid	LCS
025	12:25:41 Wed 19-Aug-20	Rinse	Liquid	
026	12:27:11 Wed 19-Aug-20	081920_1 LRB	Liquid	LRB
027	12:34:00 Wed 19-Aug-20	16653.01s	Liquid	S
028	12:40:24 Wed 19-Aug-20	Rinse	Liquid	
029	12:42:02 Wed 19-Aug-20	16402.01 dil	Liquid	DIL
030	12:43:31 Wed 19-Aug-20	16402.01s dis	Liquid	S
031	12:45:20 Wed 19-Aug-20	Rinse	Liquid	
032	12:46:54 Wed 19-Aug-20	16402.02s	Liquid	S
033	12:49:11 Wed 19-Aug-20	Rinse	Liquid	
034	12:50:45 Wed 19-Aug-20	16531.01s dis	Liquid	S
035	12:52:17 Wed 19-Aug-20	Rinse	Liquid	
036	12:54:12 Wed 19-Aug-20	16531.01s tot	Liquid	S
037	12:55:45 Wed 19-Aug-20	Rinse	Liquid	
038	12:57:21 Wed 19-Aug-20	16513.02s	Liquid	S
039	12:59:37 Wed 19-Aug-20	Rinse	Liquid	
040	13:01:51 Wed 19-Aug-20	16561.01s	Liquid	S
041	13:03:33 Wed 19-Aug-20	Rinse	Liquid	
042	13:05:27 Wed 19-Aug-20	16695.01s	Liquid	S
043	13:07:00 Wed 19-Aug-20	Rinse	Liquid	
044	13:08:48 Wed 19-Aug-20	16695.02s	Liquid	S
045	13:13:22 Wed 19-Aug-20	Rinse	Liquid	
046	13:15:02 Wed 19-Aug-20	16695.03s	Liquid	S
047	13:16:45 Wed 19-Aug-20	Rinse	Liquid	
048	13:18:41 Wed 19-Aug-20	16402.02 MS-0.05	Liquid	MS
049	13:20:11 Wed 19-Aug-20	16402.02 MSD-0.05	Liquid	MSD
050	13:21:52 Wed 19-Aug-20	CCV2-0.1	Liquid	CCV
051	13:29:41 Wed 19-Aug-20	Rinse	Liquid	
052	13:31:11 Wed 19-Aug-20	CCB2	Liquid	CCB
053	13:34:20 Wed 19-Aug-20	16695.07s	Liquid	S
054	13:35:53 Wed 19-Aug-20	Rinse	Liquid	
055	13:37:26 Wed 19-Aug-20	16695.04s	Liquid	S
056	13:42:33 Wed 19-Aug-20	Rinse	Liquid	

Form 0: Sequence Log

Data Set ID: MT4-20-0819A
Analysis Date: 08/19/20

Instrument ID: PE NEXION
Analyst: CCM

Filename	*Run Time*	*Sample ID*	*Matrix*	*QC Type*
057	13:44:08 Wed 19-Aug-20	16695.05s	Liquid	S
058	13:47:15 Wed 19-Aug-20	Rinse	Liquid	
059	13:51:54 Wed 19-Aug-20	16695.06s	Liquid	S
060	13:53:26 Wed 19-Aug-20	Rinse	Liquid	
061	13:55:05 Wed 19-Aug-20	16689.01s	Liquid	S
062	13:56:37 Wed 19-Aug-20	Rinse	Liquid	
063	13:59:10 Wed 19-Aug-20	16663.01s	Liquid	S
064	14:00:42 Wed 19-Aug-20	Rinse	Liquid	
065	14:02:15 Wed 19-Aug-20	16663.02s	Liquid	S
066	14:03:48 Wed 19-Aug-20	Rinse	Liquid	
067	14:05:20 Wed 19-Aug-20	16663.03s	Liquid	S
068	14:06:53 Wed 19-Aug-20	Rinse	Liquid	
069	14:08:25 Wed 19-Aug-20	16663.04s	Liquid	S
070	14:09:58 Wed 19-Aug-20	Rinse	Liquid	
071	14:11:30 Wed 19-Aug-20	16663.05s	Liquid	S
072	14:13:04 Wed 19-Aug-20	Rinse	Liquid	
073	14:14:51 Wed 19-Aug-20	16695.06 MS-0.05	Liquid	MS
074	14:16:22 Wed 19-Aug-20	16695.06 MSD-0.05	Liquid	MSD
075	14:18:26 Wed 19-Aug-20	CCV3-0.1	Liquid	CCV
076	14:26:21 Wed 19-Aug-20	Rinse	Liquid	
077	14:27:52 Wed 19-Aug-20	CCB3	Liquid	CCB
078	14:30:12 Wed 19-Aug-20	081920_2 LCS-0.05	Liquid	LCS
079	14:36:18 Wed 19-Aug-20	Rinse	Liquid	
080	14:37:48 Wed 19-Aug-20	081920_2 LRB	Liquid	LRB
081	14:41:49 Wed 19-Aug-20	Rinse	Liquid	
082	14:43:20 Wed 19-Aug-20	16479.01s	Soil	DIL
083	14:44:52 Wed 19-Aug-20	Rinse	Liquid	
084	14:46:58 Wed 19-Aug-20	16479.01s	Soil	S
085	14:48:36 Wed 19-Aug-20	Rinse	Liquid	
086	14:50:35 Wed 19-Aug-20	16479.01s	Soil	
087	15:09:59 Wed 19-Aug-20	Rinse	Liquid	
088	15:11:44 Wed 19-Aug-20	16479.01 MS-0.1	Soil	MS
089	15:14:06 Wed 19-Aug-20	16479.01 MSD-0.1	Soil	MSD
090	15:16:01 Wed 19-Aug-20	Rinse	Liquid	
091	15:17:49 Wed 19-Aug-20	CCV4-0.1	Liquid	CCV
092	15:28:34 Wed 19-Aug-20	Rinse	Liquid	
093	15:30:05 Wed 19-Aug-20	CCB4	Liquid	CCB

Form 0: Sequence Log

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Filename	*Run Time*	*Sample ID*	*Matrix*	*QC Type*
001	16:09:08 Wed 19-Aug-20	Blank	Liquid	
002	16:09:51 Wed 19-Aug-20	Std-0.0	Liquid	
003	16:10:34 Wed 19-Aug-20	Std-0.20	Liquid	
004	16:11:17 Wed 19-Aug-20	Std-0.50	Liquid	
005	16:12:00 Wed 19-Aug-20	Std-1.0	Liquid	
006	16:12:43 Wed 19-Aug-20	Std-2.0	Liquid	
007	16:13:26 Wed 19-Aug-20	Std-5.0	Liquid	
008	16:14:09 Wed 19-Aug-20	ICV-2.0	Liquid	ICV
009	16:15:02 Wed 19-Aug-20	CCV-2.0	Liquid	CCV
010	16:16:01 Wed 19-Aug-20	ICB	Liquid	ICB
011	16:16:44 Wed 19-Aug-20	CCB	Liquid	CCB
012	16:17:33 Wed 19-Aug-20	BS-0.05	Liquid	BS
013	16:18:18 Wed 19-Aug-20	BS-0.1	Liquid	BS
014	16:20:03 Wed 19-Aug-20	081920_1 LCS-1.0	Liquid	LCS
015	16:21:01 Wed 19-Aug-20	081920_2 LRB	Liquid	LRB
016	16:26:02 Wed 19-Aug-20	16402.01 dil	Liquid	DIL
017	16:26:45 Wed 19-Aug-20	16402.01s dis	Liquid	S
018	16:27:51 Wed 19-Aug-20	rinse	Liquid	
019	16:28:38 Wed 19-Aug-20	16402.02s	Liquid	S
020	16:35:04 Wed 19-Aug-20	rinse	Liquid	
021	16:35:53 Wed 19-Aug-20	16531.01s dis	Liquid	S
022	16:36:40 Wed 19-Aug-20	rinse	Liquid	
023	16:37:35 Wed 19-Aug-20	16531.01s	Liquid	S
024	16:40:35 Wed 19-Aug-20	16402.02 MS-2.0	Liquid	MS
025	16:41:20 Wed 19-Aug-20	16402.02 MSD-2.0	Liquid	MSD
026	16:42:12 Wed 19-Aug-20	CCV2-2.0	Liquid	CCV
027	16:42:58 Wed 19-Aug-20	CCB2	Liquid	CCB
028	16:43:58 Wed 19-Aug-20	16695.07s	Liquid	S
029	16:44:55 Wed 19-Aug-20	rinse	Liquid	
030	16:45:41 Wed 19-Aug-20	16695.01s	Liquid	S
031	16:47:11 Wed 19-Aug-20	rinse	Liquid	
032	16:47:57 Wed 19-Aug-20	16695.06s	Liquid	S
033	16:49:36 Wed 19-Aug-20	rinse	Liquid	
034	16:50:22 Wed 19-Aug-20	16695.02s	Liquid	S
035	16:51:52 Wed 19-Aug-20	rinse	Liquid	
036	16:52:39 Wed 19-Aug-20	16695.03s	Liquid	S
037	16:54:09 Wed 19-Aug-20	rinse	Liquid	
038	16:54:55 Wed 19-Aug-20	16695.02 dil	Liquid	DIL
039	16:55:41 Wed 19-Aug-20	rinse	Liquid	
040	16:56:33 Wed 19-Aug-20	16695.04s	Liquid	S
041	16:58:02 Wed 19-Aug-20	rinse	Liquid	
042	16:58:48 Wed 19-Aug-20	16695.05s	Liquid	S
043	16:59:34 Wed 19-Aug-20	rinse	Liquid	
044	17:00:36 Wed 19-Aug-20	16695.06 MS-2.0	Liquid	MS
045	17:01:19 Wed 19-Aug-20	16695.06 MSD-2.0	Liquid	MSD
046	17:02:13 Wed 19-Aug-20	rinse	Liquid	
047	17:03:03 Wed 19-Aug-20	CCV3-2.0	Liquid	CCV
048	17:03:48 Wed 19-Aug-20	CCB3	Liquid	CCB
049	17:05:11 Wed 19-Aug-20	081920_2 LCS-1.0	Liquid	LCS
050	17:06:01 Wed 19-Aug-20	081920_2 LRB	Liquid	LRB
051	17:07:09 Wed 19-Aug-20	16479.01s	Soil	S
052	17:08:13 Wed 19-Aug-20	rinse	Liquid	
053	17:09:29 Wed 19-Aug-20	16479.01s	Soil	S
054	17:10:14 Wed 19-Aug-20	rinse	Liquid	
055	17:11:48 Wed 19-Aug-20	16479.01s	Soil	S
056	17:12:17 Wed 19-Aug-20	rinse	Liquid	

Form 0: Sequence Log

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Filename	*Run Time*	*Sample ID*	*Matrix*	*QC Type*
057	17:15:31 Wed 19-Aug-20	16479.01 MS-2.0	Soil	MS
058	17:16:28 Wed 19-Aug-20	16479.01 MSD-2.0	Soil	MSD
059	17:17:49 Wed 19-Aug-20	CCV4-2.0	Liquid	CCV
060	17:18:34 Wed 19-Aug-20	CCB4	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.01
Sample Tag: MW-1 L008009-01
Date Collected: 08/18/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	0.41	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	0.006	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	0.152	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	0.034	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.01
Sample Tag: MW-1 L008009-01
Date Collected: 08/18/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-70-2	Calcium	161	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.02
Sample Tag: MW-2 L008009-02
Date Collected: 08/18/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	5.19	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	Not detected	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	0.011	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	0.045	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	0.057	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.02
Sample Tag: MW-2 L008009-02
Date Collected: 08/18/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-70-2	Calcium	272	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.03
Sample Tag: MW-4 L008009-03
Date Collected: 08/18/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	0.06	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	0.008	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	0.166	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	Not detected	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.03
Sample Tag: MW-4 L008009-03
Date Collected: 08/18/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-70-2	Calcium	111	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.04
Sample Tag: MW-5 L008009-04
Date Collected: 08/18/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	4.48	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	0.003	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	0.067	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	0.056	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	0.003	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	0.085	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.04
Sample Tag: MW-5 L008009-04
Date Collected: 08/18/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-70-2	Calcium	266	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.05
Sample Tag: MW-6 L008009-05
Date Collected: 08/18/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	0.86	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	Not detected	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	0.030	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	0.053	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	0.044	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.05
Sample Tag: MW-6 L008009-05
Date Collected: 08/18/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-70-2	Calcium	170	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.06
Sample Tag: MW-4 Duplicate L008009-06
Date Collected: 08/18/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	0.06	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	0.007	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	0.167	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	Not detected	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.06
Sample Tag: MW-4 Duplicate L008009-06
Date Collected: 08/18/2020
Matrix: Groundwater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-70-2	Calcium	107	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.07
Sample Tag: Field Blank L008009-07
Date Collected: 08/18/2020
Matrix: Water

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-47-3	Chromium	Not detected	0.005	0.0000965	mg/L	5	08/19/2020	
7440-42-8	Boron	Not detected	0.04	0.00175	mg/L	5	08/19/2020	
7440-38-2	Arsenic	Not detected	0.002	0.000255	mg/L	5	08/19/2020	
7782-49-2	Selenium	Not detected	0.005	0.00209	mg/L	5	08/19/2020	
7439-98-7	Molybdenum	Not detected	0.005	0.000217	mg/L	5	08/19/2020	
7440-43-9	Cadmium	Not detected	0.0005	0.000190	mg/L	5	08/19/2020	
7440-36-0	Antimony	Not detected	0.005	0.00255	mg/L	5	08/19/2020	
7440-39-3	Barium	Not detected	0.005	0.000162	mg/L	5	08/19/2020	
7440-28-0	Thallium	Not detected	0.002	0.0000855	mg/L	5	08/19/2020	
7439-92-1	Lead	Not detected	0.003	0.000190	mg/L	5	08/19/2020	
7440-41-7	Beryllium	Not detected	0.001	0.000215	mg/L	5	08/19/2020	
7440-48-4	Cobalt	Not detected	0.005	0.000108	mg/L	5	08/19/2020	
7439-93-2	Lithium	Not detected	0.010	0.00163	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Lab Sample ID: S16695.07
Sample Tag: Field Blank L008009-07
Date Collected: 08/18/2020
Matrix: Water

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7440-70-2	Calcium	Not detected	0.50	0.0435	mg/L	5	08/19/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Note/Qualifier Key	
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
m	Duplicate injection precision not met
n	Spiked sample recovery outside control limits
s	Reported value determined by the MSA
u	Analyte not detected above reporting limit
A	TIC is a suspected aldol-condensation product
B	Compound also found in associated method blank
C	Analyte presence confirmed by GC/MS
D	Identified in an analysis at a secondary dilution factor
E	Concentration exceeds calibration range
J	Estimated value less than reporting limit, but greater than MDL
N	Presumptive evidence of TIC
P	Pesticide/Aroclor 2-column RPD exceeds limit
U	Analyte not detected above reporting limit
!	Result is outside of stated limit criteria
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
K	Elevated reporting limit due to low total solids
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
Q	Reported result represents most abundant aroclor
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
V	Accurate value not available due to presence of multiple aroclors
W	Surrogate result not applicable due to sample dilution
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
Z	Estimated result due to matrix interference
a	ASTM prep method F963-11
d	Duplicate analysis not within control limits
f	Filtered and preserved in lab
i	Incremental sampling
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one
r	This analyte is being reported as the best result from multiple
v	VOCs analyzed outside of holding time based on the measurement of
x	Preserved from bulk sample
c	Filtered in lab

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
009 ICV-0.1	ICV	1	Li	0.104	0.1	104	90/110	mg/L	Liquid
			Be	0.103	0.1	103	90/110		
			B	0.109	0.1	109	90/110		
			Al	0.108	0.1	108	90/110		
			Ti	0.101	0.1	101	90/110		
			V	0.0971	0.1	97	90/110		
			Cr	0.0969	0.1	97	90/110		
			Mn	0.0997	0.1	100	90/110		
			Fe	0.100	0.1	100	90/110		
			Co	0.0960	0.1	96	90/110		
			Ni	0.0976	0.1	98	90/110		
			Cu	0.0993	0.1	99	90/110		
			Zn	0.100	0.1	100	90/110		
			As	0.0995	0.1	100	90/110		
			Sr	0.0984	0.1	98	90/110		
			Mo	0.106	0.1	106	90/110		
			Ag	0.0997	0.1	100	90/110		
			Cd	0.0993	0.1	99	90/110		
			Sn	0.106	0.1	106	90/110		
			Sb	0.0942	0.1	94	90/110		
			Ba	0.0967	0.1	97	90/110		
			Tl	0.109	0.1	109	90/110		
			Pb	0.0925	0.1	93	90/110		
			Se	0.106	0.1	106	90/110		
010 CCV-0.1	CCV	1	Li	0.102	0.1	102	90/110	mg/L	Liquid
			Be	0.0999	0.1	100	90/110		
			B	0.104	0.1	104	90/110		
			Al	0.102	0.1	102	90/110		
			Ti	0.100	0.1	100	90/110		
			V	0.0993	0.1	99	90/110		
			Cr	0.0965	0.1	97	90/110		
			Mn	0.100	0.1	100	90/110		
			Fe	0.100	0.1	100	90/110		
			Co	0.0981	0.1	98	90/110		
			Ni	0.0998	0.1	100	90/110		
			Cu	0.0987	0.1	99	90/110		
			Zn	0.100	0.1	100	90/110		
			As	0.0993	0.1	99	90/110		
			Sr	0.0997	0.1	100	90/110		
			Mo	0.107	0.1	107	90/110		
			Ag	0.0985	0.1	99	90/110		
			Cd	0.101	0.1	101	90/110		
			Sn	0.108	0.1	108	90/110		
			Sb	0.0945	0.1	95	90/110		
			Ba	0.0972	0.1	97	90/110		
			Tl	0.101	0.1	101	90/110		
			Pb	0.0936	0.1	94	90/110		
			Se	0.101	0.1	101	90/110		
050 CCV2-0.1	CCV	1	Li	0.0979	0.1	98	90/110	mg/L	Liquid
			Be	0.100	0.1	100	90/110		
			B	0.101	0.1	101	90/110		
			Al	0.0989	0.1	99	90/110		
			Ti	0.0997	0.1	100	90/110		
			V	0.0996	0.1	100	90/110		
			Cr	0.100	0.1	100	90/110		
			Mn	0.102	0.1	102	90/110		
			Fe	0.103	0.1	103	90/110		

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
050 CCV2-0.1	CCV	1	Co	0.0960	0.1	96	90/110	mg/L	Liquid
			Ni	0.101	0.1	101	90/110		
			Cu	0.0978	0.1	98	90/110		
			Zn	0.103	0.1	103	90/110		
			As	0.0983	0.1	98	90/110		
			Sr	0.103	0.1	103	90/110		
			Mo	0.103	0.1	103	90/110		
			Ag	0.0991	0.1	99	90/110		
			Cd	0.103	0.1	103	90/110		
			Sn	0.100	0.1	100	90/110		
			Sb	0.0977	0.1	98	90/110		
			Ba	0.100	0.1	100	90/110		
			Tl	0.104	0.1	104	90/110		
			Pb	0.0961	0.1	96	90/110		
			Se	0.104	0.1	104	90/110		
075 CCV3-0.1	CCV	1	Li	0.0994	0.1	99	90/110	mg/L	Liquid
			Be	0.0977	0.1	98	90/110		
			B	0.0991	0.1	99	90/110		
			Al	0.0978	0.1	98	90/110		
			Ti	0.102	0.1	102	90/110		
			V	0.101	0.1	101	90/110		
			Cr	0.101	0.1	101	90/110		
			Mn	0.104	0.1	104	90/110		
			Fe	0.104	0.1	104	90/110		
			Co	0.100	0.1	100	90/110		
			Ni	0.102	0.1	102	90/110		
			Cu	0.100	0.1	100	90/110		
			Zn	0.103	0.1	103	90/110		
			As	0.0999	0.1	100	90/110		
			Sr	0.101	0.1	101	90/110		
			Mo	0.103	0.1	103	90/110		
			Ag	0.100	0.1	100	90/110		
			Cd	0.104	0.1	104	90/110		
			Sn	0.0998	0.1	100	90/110		
			Sb	0.0986	0.1	99	90/110		
			Ba	0.0978	0.1	98	90/110		
			Tl	0.0990	0.1	99	90/110		
			Pb	0.0936	0.1	94	90/110		
			Se	0.102	0.1	102	90/110		
091 CCV4-0.1	CCV	1	Al	0.100	0.1	100	90/110	mg/L	Liquid
			Ti	0.106	0.1	106	90/110		
			V	0.102	0.1	102	90/110		
			Mn	0.104	0.1	104	90/110		
			Fe	0.104	0.1	104	90/110		
			Cu	0.101	0.1	101	90/110		
			Zn	0.104	0.1	104	90/110		
			Sr	0.105	0.1	105	90/110		
			Ba	0.0990	0.1	99	90/110		

Form 2A: Initial and Continuing Calibration Verification

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
008 ICV-2.0	ICV	1	Na	1.97	2.0	99	90/110	mg/L	Liquid
			Mg	1.99	2.0	100	90/110		
			K	2.02	2.0	101	90/110		
			Ca	1.97	2.0	99	90/110		
009 CCV-2.0	CCV	1	Na	1.92	2.0	96	90/110	mg/L	Liquid
			Mg	1.92	2.0	96	90/110		
			K	1.92	2.0	96	90/110		
			Ca	1.94	2.0	97	90/110		
026 CCV2-2.0	CCV	1	Na	1.95	2.0	98	90/110	mg/L	Liquid
			Mg	1.97	2.0	99	90/110		
			K	1.98	2.0	99	90/110		
			Ca	1.95	2.0	98	90/110		
047 CCV3-2.0	CCV	1	Na	1.94	2.0	97	90/110	mg/L	Liquid
			Mg	1.96	2.0	98	90/110		
			K	1.91	2.0	96	90/110		
			Ca	1.95	2.0	98	90/110		
059 CCV4-2.0	CCV	1	Na	1.97	2.0	99	90/110	mg/L	Liquid
			Mg	1.91	2.0	96	90/110		
			K	1.98	2.0	99	90/110		
			Ca	1.95	2.0	98	90/110		

Form 3: Blanks

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Sample Name	*QC Type*	*Dilute*	*Element*	*Sample Conc*	*Raw Conc*	*Units*	*Matrix*
012 ICB	ICB	1	Li	<0.002	0.000012	mg/L	Liquid
			Be	<0.0002	0.000089		
			B	<0.008	0.000253		
			Al	<0.002	-0.000003		
			Ti	<0.001	0.000047		
			V	<0.001	0.000055		
			Cr	<0.001	0.000065		
			Mn	<0.001	0.000060		
			Fe	<0.004	-0.000104		
			Co	<0.001	0.000052		
			Ni	<0.001	0.000057		
			Cu	<0.001	0.000060		
			Zn	<0.001	0.000016		
			As	<0.0004	0.000156		
			Sr	<0.001	0.000048		
			Mo	<0.001	0.000824		
			Ag	<0.0001	0.000072		
			Cd	<0.0001	0.000061		
			Sn	<0.004	0.001425		
			Sb	<0.001	0.000492		
			Ba	<0.001	0.000042		
			Tl	<0.0004	0.000067		
			Pb	<0.0006	0.000060		
			Se	<0.001	0.000324		
013 CCB	CCB	1	Li	<0.002	-0.000055	mg/L	Liquid
			Be	<0.0002	0.000075		
			B	<0.008	0.000183		
			Al	<0.002	-0.000044		
			Ti	<0.001	-0.000164		
			V	<0.001	0.000048		
			Cr	<0.001	0.000040		
			Mn	<0.001	0.000025		
			Fe	<0.004	-0.000126		
			Co	<0.001	0.000041		
			Ni	<0.001	0.000042		
			Cu	<0.001	0.000046		
			Zn	<0.001	-0.000002		
			As	<0.0004	0.000085		
			Sr	<0.001	0.000042		
			Mo	<0.001	0.000707		
			Ag	<0.0001	0.000065		
			Cd	<0.0001	0.000074		
			Sn	<0.004	0.001121		
			Sb	<0.001	0.000425		
			Ba	<0.001	0.000018		
			Tl	<0.0004	0.000050		
			Pb	<0.0006	0.000044		
			Se	<0.001	0.000130		
026 081920_1 LRB	LRB	1	Li	<0.002	-0.000243	mg/L	Liquid
			Be	<0.0002	0.000006		
			B	<0.008	-0.000023		
			Al	<0.002	0.001112		
			Ti	<0.001	-0.000057		
			V	<0.001	0.000004		
			Cr	<0.001	0.000007		
			Mn	<0.001	0.000010		
			Fe	<0.004	0.000503		

Form 3: Blanks

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Sample Name	*QC Type*	*Dilute*	*Element*	*Sample Conc*	*Raw Conc*	*Units*	*Matrix*
026 081920_1 LRB	LRB	1	Co	<0.001	0.000007	mg/L	Liquid
			Ni	<0.001	0.000009		
			Cu	<0.001	0.000014		
			Zn	<0.001	0.000131		
			As	<0.0004	0.000035		
			Sr	<0.001	0.000017		
			Mo	<0.001	0.000179		
			Ag	<0.0001	0.000018		
			Cd	<0.0001	-0.000034		
			Sn	<0.004	0.000092		
			Sb	<0.001	0.000027		
			Ba	<0.001	-0.000029		
			Tl	<0.0004	0.000009		
			Pb	<0.0006	0.000005		
			Se	<0.001	-0.000234		
052 CCB2	CCB	1	Li	<0.002	-0.000006	mg/L	Liquid
			Be	<0.0002	0.000046		
			B	<0.008	0.000371		
			Al	<0.002	-0.000014		
			Ti	<0.001	0.000402		
			V	<0.001	0.000023		
			Cr	<0.001	0.000007		
			Mn	<0.001	0.000022		
			Fe	<0.004	0.000207		
			Co	<0.001	0.000013		
			Ni	<0.001	0.000013		
			Cu	<0.001	0.000026		
			Zn	<0.001	0.000017		
			As	<0.0004	-0.000060		
			Sr	<0.001	0.000044		
			Mo	<0.001	0.000531		
			Ag	<0.0001	0.000026		
			Cd	<0.0001	0.000018		
			Sn	<0.004	0.000634		
			Sb	<0.001	0.000347		
			Ba	<0.001	-0.000017		
			Tl	<0.0004	0.000023		
			Pb	<0.0006	0.000020		
			Se	<0.001	-0.000240		
077 CCB3	CCB	1	Li	<0.002	-0.000101	mg/L	Liquid
			Be	<0.0002	0.000030		
			B	<0.008	0.000232		
			Al	<0.002	-0.000068		
			Ti	<0.001	-0.000203		
			V	<0.001	0.000024		
			Cr	<0.001	0.000025		
			Mn	<0.001	0.000031		
			Fe	<0.004	0.000028		
			Co	<0.001	0.000018		
			Ni	<0.001	0.000012		
			Cu	<0.001	0.000016		
			Zn	<0.001	0.000090		
			As	<0.0004	0.000082		
			Sr	<0.001	0.000020		
			Mo	<0.001	0.000519		
			Ag	<0.0001	0.000027		
			Cd	<0.0001	0.000014		

Form 3: Blanks

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Sample Name	*QC Type*	*Dilute*	*Element*	*Sample Conc*	*Raw Conc*	*Units*	*Matrix*
077 CCB3	CCB	1	Sn	<0.004	0.000575	mg/L	Liquid
			Sb	<0.001	0.000366		
			Ba	<0.001	-0.000011		
			Tl	<0.0004	0.000022		
			Pb	<0.0006	0.000021		
			Se	<0.001	-0.000188		
080 081920_2 LRB	LRB	1	Al	<0.002	0.000357	mg/L	Liquid
			Ti	<0.001	-0.000057		
			V	<0.001	0.000003		
			Mn	<0.001	0.000032		
			Fe	<0.004	0.000007		
			Cu	<0.001	0.000017		
			Zn	<0.001	0.000161		
			Sr	<0.001	0.000053		
			Ba	<0.001	-0.000005		
093 CCB4	CCB	1	Al	<0.002	-0.000099	mg/L	Liquid
			Ti	<0.001	-0.000109		
			V	<0.001	0.000034		
			Mn	<0.001	0.000037		
			Fe	<0.004	0.000148		
			Cu	<0.001	0.000907		
			Zn	<0.001	0.000749		
			Sr	<0.001	0.000066		
			Ba	<0.001	0.000046		

Form 3: Blanks

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Sample Name	QC Type	Dilute	Element	Sample Conc	Raw Conc	Units	Matrix
010 ICB	ICB	1	Na	<0.05	0.005486	mg/L	Liquid
			Mg	<0.05	0.005230		
			K	<0.05	0.002275		
			Ca	<0.05	0.003850		
011 CCB	CCB	1	Na	<0.05	0.001468	mg/L	Liquid
			Mg	<0.05	0.000892		
			K	<0.05	0.000040		
			Ca	<0.05	-0.004807		
015 081920_2 LRB	LRB	1	Na	<0.05	0.001758	mg/L	Liquid
			Mg	<0.05	0.001155		
			K	<0.05	0.000426		
			Ca	<0.05	-0.006774		
027 CCB2	CCB	1	Na	<0.05	0.012181	mg/L	Liquid
			Mg	<0.05	0.008724		
			K	<0.05	0.005892		
			Ca	<0.05	-0.007937		
048 CCB3	CCB	1	Na	<0.05	0.012008	mg/L	Liquid
			Mg	<0.05	0.009468		
			K	<0.05	-0.002649		
			Ca	<0.05	-0.003047		
050 081920_2 LRB	LRB	1	Na	<0.05	0.010531	mg/L	Liquid
			Mg	<0.05	0.006305		
			K	<0.05	-0.000580		
			Ca	<0.05	-0.005661		
060 CCB4	CCB	1	Na	<0.05	0.010917	mg/L	Liquid
			Mg	<0.05	0.007753		
			K	<0.05	0.003540		
			Ca	<0.05	-0.011117		

Form 4B: ICP Interference Check Sample

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Sample Name	QC Type	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
021 Solu-AB	AB	1	Al	10.0	10	100	65/135	mg/L	Liquid
			Ti	0.224	0.20	112	65/135		
			Cr	0.0216	0.02	108	65/135		
			Mn	0.0235	0.02	118	65/135		
			Fe	11.0	10	110	65/135		
			Co	0.0209	0.02	105	65/135		
			Ni	0.0212	0.020	106	65/135		
			Cu	0.0201	0.02	101	65/135		
			Zn	0.0214	0.02	107	65/135		
			As	0.0215	0.02	108	65/135		
			Mo	0.211	0.20	106	65/135		
			Ag	0.0198	0.02	99	65/135		
			Cd	0.0217	0.02	109	65/135		
023 Solu-AA	AA	1	Li	<0.010	0.0	N/A	N/A	mg/L	Liquid
			Be	<0.001	0.0	N/A	N/A		
			B	<0.04	0.0	N/A	N/A		
			Al	<0.010	0.0	N/A	N/A		
			Ti	<0.005	0.0	N/A	N/A		
			V	<0.005	0.0	N/A	N/A		
			Cr	<0.005	0.0	N/A	N/A		
			Mn	<0.005	0.0	N/A	N/A		
			Fe	<0.02	0.0	N/A	N/A		
			Co	<0.005	0.0	N/A	N/A		
			Ni	<0.005	0.0	N/A	N/A		
			Cu	<0.005	0.0	N/A	N/A		
			Zn	<0.005	0.0	N/A	N/A		
			As	<0.002	0.0	N/A	N/A		
			Sr	<0.005	0.0	N/A	N/A		
			Mo	<0.005	0.0	N/A	N/A		
			Ag	<0.0005	0.0	N/A	N/A		
			Cd	<0.0005	0.0	N/A	N/A		
			Sn	<0.02	0.0	N/A	N/A		
			Sb	<0.005	0.0	N/A	N/A		
			Ba	<0.005	0.0	N/A	N/A		
			Tl	<0.002	0.0	N/A	N/A		
			Pb	<0.003	0.0	N/A	N/A		
			Se	<0.005	0.0	N/A	N/A		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Spike Name	Sample Name	Dilute	Element	Spike Conc	Sample Conc	Spike Amount	%Rec	LCL/UCL	Units	Matrix
014 BS-0.0001		1	Be	0.000123	ND	0.0001	123	70/130	mg/L	Liquid
			V	0.000127	ND	0.0001	127	70/130		
			Cr	0.000113	ND	0.0001	113	70/130		
			Sr	0.000129	ND	0.0001	129	70/130		
			Ag	0.000105	ND	0.0001	105	70/130		
			Cd	0.000107	ND	0.0001	107	70/130		
			Ba	0.000130	ND	0.0001	130	70/130		
			Pb	0.000130	ND	0.0001	130	70/130		
016 BS-0.0005		1	Li	0.000376	ND	0.0005	75	70/130	mg/L	Liquid
			Be	0.000548	ND	0.0005	110	70/130		
			B	0.000592	ND	0.0005	118	70/130		
			Al	0.000442	ND	0.0005	88	70/130		
			Ti	0.000452	ND	0.0005	90	70/130		
			V	0.000489	ND	0.0005	98	70/130		
			Cr	0.000546	ND	0.0005	109	70/130		
			Mn	0.000605	ND	0.0005	121	70/130		
			Fe	0.000490	ND	0.0005	98	70/130		
			Co	0.000521	ND	0.0005	104	70/130		
			Ni	0.000527	ND	0.0005	105	70/130		
			Cu	0.000556	ND	0.0005	111	70/130		
			As	0.000481	ND	0.0005	96	70/130		
			Sr	0.000531	ND	0.0005	106	70/130		
			Ag	0.000386	ND	0.0005	77	70/130		
			Cd	0.000549	ND	0.0005	110	70/130		
			Ba	0.000624	ND	0.0005	125	70/130		
			Tl	0.000528	ND	0.0005	106	70/130		
			Pb	0.000457	ND	0.0005	91	70/130		
			Se	0.000496	ND	0.0005	99	70/130		
018 BS-0.0005		1	Sb	0.000632	ND	0.0005	126	70/130	mg/L	Liquid
019 BS-0.001		1	Li	0.000750	ND	0.001	75	70/130	mg/L	Liquid
			Be	0.000987	ND	0.001	99	70/130		
			B	0.00122	ND	0.001	122	70/130		
			Al	0.00125	ND	0.001	125	70/130		
			Ti	0.000966	ND	0.001	97	70/130		
			V	0.00103	ND	0.001	103	70/130		
			Cr	0.00104	ND	0.001	104	70/130		
			Mn	0.00109	ND	0.001	109	70/130		
			Fe	0.000929	ND	0.001	93	70/130		
			Co	0.00105	ND	0.001	105	70/130		
			Ni	0.00108	ND	0.001	108	70/130		
			Cu	0.00104	ND	0.001	104	70/130		
			Zn	0.00105	ND	0.001	105	70/130		
			As	0.00120	ND	0.001	120	70/130		
			Sr	0.00108	ND	0.001	108	70/130		
			Mo	0.00111	ND	0.001	111	70/130		
			Ag	0.000860	ND	0.001	86	70/130		
			Cd	0.000986	ND	0.001	99	70/130		
			Sb	0.00112	ND	0.001	112	70/130		
			Ba	0.00109	ND	0.001	109	70/130		
			Tl	0.00104	ND	0.001	104	70/130		
			Pb	0.000893	ND	0.001	89	70/130		
			Se	0.000704	ND	0.001	70	70/130		
020 BS-0.002		1	Li	0.00174	ND	0.002	87	70/130	mg/L	Liquid
			Be	0.00195	ND	0.002	98	70/130		
			B	0.00210	ND	0.002	105	70/130		
			Al	0.00186	ND	0.002	93	70/130		
			Ti	0.00244	ND	0.002	122	70/130		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Spike Name	Sample Name	Dilute	Element	Spike Conc	Sample Conc	Spike Amount	%Rec	LCL/UCL	Units	Matrix
020 BS-0.002		1	V	0.00198	ND	0.002	99	70/130	mg/L	Liquid
			Cr	0.00201	ND	0.002	101	70/130		
			Mn	0.00212	ND	0.002	106	70/130		
			Fe	0.00196	ND	0.002	98	70/130		
			Co	0.00203	ND	0.002	102	70/130		
			Ni	0.00216	ND	0.002	108	70/130		
			Cu	0.00202	ND	0.002	101	70/130		
			Zn	0.00223	ND	0.002	112	70/130		
			As	0.00177	ND	0.002	89	70/130		
			Sr	0.00207	ND	0.002	104	70/130		
			Mo	0.00193	ND	0.002	97	70/130		
			Ag	0.00171	ND	0.002	86	70/130		
			Cd	0.00189	ND	0.002	95	70/130		
			Sn	0.00223	ND	0.002	112	70/130		
			Sb	0.00203	ND	0.002	102	70/130		
			Ba	0.00210	ND	0.002	105	70/130		
			Tl	0.00210	ND	0.002	105	70/130		
			Pb	0.00187	ND	0.002	94	70/130		
			Se	0.00163	ND	0.002	82	70/130		
048 16402.02	**032 16402.02s**	5	Li	0.252	<0.010	0.25	101	75/125	mg/L	Liquid
			Be	0.253	<0.001	0.25	101	75/125		
			B	0.267	<0.04	0.25	107	75/125		
			Al	0.260	<0.010	0.25	104	75/125		
			Ti	0.272	<0.005	0.25	109	75/125		
			V	0.260	<0.005	0.25	104	75/125		
			Cr	0.261	<0.005	0.25	104	75/125		
			Mn	0.273	<0.005	0.25	109	75/125		
			Fe	0.279	<0.02	0.25	112	75/125		
			Co	0.258	<0.005	0.25	103	75/125		
			Ni	0.270	<0.005	0.25	108	75/125		
			Cu	0.269	0.007	0.25	105	75/125		
			Zn	0.279	0.009	0.25	108	75/125		
			As	0.261	<0.002	0.25	104	75/125		
			Sr	0.272	<0.005	0.25	109	75/125		
			Mo	0.246	<0.005	0.25	98	75/125		
			Ag	0.250	<0.0005	0.25	100	75/125		
			Cd	0.272	<0.0005	0.25	109	75/125		
			Sn	0.245	<0.02	0.25	98	75/125		
			Sb	0.202	<0.005	0.25	81	75/125		
			Ba	0.264	<0.005	0.25	106	75/125		
			Tl	0.266	<0.002	0.25	106	75/125		
			Pb	0.243	<0.003	0.25	97	75/125		
			Se	0.265	<0.005	0.25	106	75/125		
073 16695.06	**059 16695.06s**	5	Li	0.264	<0.010	0.25	106	75/125	mg/L	Liquid
			Be	0.254	<0.001	0.25	102	75/125		
			B	0.314	0.06	0.25	102	75/125		
			Al	0.255	<0.010	0.25	102	75/125		
			Ti	0.275	<0.005	0.25	110	75/125		
			V	0.267	<0.005	0.25	107	75/125		
			Cr	0.266	<0.005	0.25	106	75/125		
			Mn	0.335	0.057	0.25	111	75/125		
			Fe	1.72	1.48	0.25	96	75/125		
			Co	0.258	<0.005	0.25	103	75/125		
			Ni	0.258	<0.005	0.25	103	75/125		
			Cu	0.254	<0.005	0.25	102	75/125		
			Zn	0.272	<0.005	0.25	109	75/125		
			As	0.274	0.007	0.25	107	75/125		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Spike Name	Sample Name	Dilute	Element	Spike Conc	Sample Conc	Spike Amount	%Rec	LCL/UCL	Units	Matrix
073 16695.06	**059 16695.06s**	5	Sr	0.408	0.144	0.25	106	75/125	mg/L	Liquid
			Mo	0.258	0.005	0.25	101	75/125		
			Ag	0.245	<0.0005	0.25	98	75/125		
			Cd	0.271	<0.0005	0.25	108	75/125		
			Sn	0.251	<0.02	0.25	100	75/125		
			Sb	0.206	<0.005	0.25	82	75/125		
			Ba	0.428	0.167	0.25	104	75/125		
			Tl	0.257	<0.002	0.25	103	75/125		
			Pb	0.230	<0.003	0.25	92	75/125		
			Se	0.262	<0.005	0.25	105	75/125		
088 16479.01 MS-0.1	**084 16479.01s**	11737	Al	1250	14.0	1173.7	105	75/125	mg/kg	Soil
			Ti	1300	2.40	1173.7	111	75/125		
			V	1260	<0.50	1173.7	107	75/125		
			Mn	1370	77.0	1173.7	110	75/125		
			Fe	1910	596	1173.7	112	75/125		
			Cu	4180	2950	1173.7	105	75/125		
			Zn	4010	2820	1173.7	101	75/125		
			Sr	1480	217	1173.7	108	75/125		
			Ba	1280	95.0	1173.7	101	75/125		

Form 5A: Matrix Spike Sample Recovery

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Spike Name	Sample Name	Dilute	Element	Spike Conc	Sample Conc	Spike Amount	%Rec	LCL/UCL	Units	Matrix
012 BS-0.05		1	Na	0.0503	ND	0.05	101	70/130	mg/L	Liquid
			Mg	0.0469	ND	0.05	94	70/130		
			K	0.0440	ND	0.05	88	70/130		
			Ca	0.0392	ND	0.05	78	70/130		
013 BS-0.1		1	Na	0.103	ND	0.1	103	70/130	mg/L	Liquid
			Mg	0.101	ND	0.1	101	70/130		
			K	0.0930	ND	0.1	93	70/130		
			Ca	0.0844	ND	0.1	84	70/130		
024 16402.02 MS-2.0	**019 16402.02s**	5	Na	10.1	<0.50	10.0	101	75/125	mg/L	Liquid
			Mg	10.0	<0.50	10.0	100	75/125		
			K	10.0	<0.50	10.0	100	75/125		
			Ca	10.8	<0.50	10.0	108	75/125		
044 16695.06 MS-2.0	**032 16695.06s**	5	Na	35.5	26.2	10.0	93	75/125	mg/L	Liquid
			Mg	47.1	38.3	10.0	88	75/125		
			K	11.6	1.36	10.0	102	75/125		
			Ca	119	107	10.0	120	75/125		
057 16479.01 MS-2.0	**051 16479.01s**	117370	Na	239000	823234740.0		102	75/125	mg/kg	Soil
			Mg	263000	33100234740.0		98	75/125		
			K	243000	<0.50234740.0		104	75/125		
			Ca	588000	334000234740.0		108	75/125		

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Duplicate Name	Sample Name	Dilute	Element	Dup Conc	Samp Conc	%RPD	LCL/UCL	Units	Matrix
049 16402.02	**048 16402.02 MS-0.05**	5	Li	0.264	0.252	5	0/20	mg/L	Liquid
			Be	0.264	0.253	4	0/20		
			B	0.264	0.267	1	0/20		
			Al	0.274	0.260	5	0/20		
			Ti	0.257	0.272	6	0/20		
			V	0.268	0.260	3	0/20		
			Cr	0.269	0.261	3	0/20		
			Mn	0.272	0.273	0	0/20		
			Fe	0.277	0.279	1	0/20		
			Co	0.266	0.258	3	0/20		
			Ni	0.261	0.270	3	0/20		
			Cu	0.273	0.269	1	0/20		
			Zn	0.280	0.279	0	0/20		
			As	0.261	0.261	0	0/20		
			Sr	0.269	0.272	1	0/20		
			Mo	0.269	0.246	9	0/20		
			Ag	0.262	0.250	5	0/20		
			Cd	0.271	0.272	0	0/20		
			Sn	0.265	0.245	8	0/20		
			Sb	0.208	0.202	3	0/20		
			Ba	0.268	0.264	2	0/20		
			Tl	0.267	0.266	0	0/20		
			Pb	0.242	0.243	0	0/20		
			Se	0.274	0.265	3	0/20		
074 16695.06	**073 16695.06 MS-0.05**	5	Li	0.271	0.264	3	0/20	mg/L	Liquid
			Be	0.266	0.254	5	0/20		
			B	0.309	0.314	2	0/20		
			Al	0.259	0.255	2	0/20		
			Ti	0.285	0.275	4	0/20		
			V	0.267	0.267	0	0/20		
			Cr	0.262	0.266	2	0/20		
			Mn	0.333	0.335	1	0/20		
			Fe	1.74	1.72	1	0/20		
			Co	0.256	0.258	1	0/20		
			Ni	0.257	0.258	0	0/20		
			Cu	0.253	0.254	0	0/20		
			Zn	0.278	0.272	2	0/20		
			As	0.272	0.274	1	0/20		
			Sr	0.412	0.408	1	0/20		
			Mo	0.279	0.258	8	0/20		
			Ag	0.252	0.245	3	0/20		
			Cd	0.268	0.271	1	0/20		
			Sn	0.262	0.251	4	0/20		
			Sb	0.212	0.206	3	0/20		
			Ba	0.425	0.428	1	0/20		
			Tl	0.265	0.257	3	0/20		
			Pb	0.231	0.230	0	0/20		
			Se	0.272	0.262	4	0/20		
089 16479.01 MSD-0.1	**088 16479.01 MS-0.1**	11737	Al	1250	1250	0	0/20	mg/kg	Soil
			Ti	1350	1300	4	0/20		
			V	1330	1260	5	0/20		
			Mn	1430	1370	4	0/20		
			Fe	1960	1910	3	0/20		
			Cu	4370	4180	4	0/20		
			Zn	4250	4010	6	0/20		
			Sr	1540	1480	4	0/20		
			Ba	1380	1280	8	0/20		

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Duplicate Name	Sample Name	Dilute	Element	Dup Conc	Samp Conc	%RPD	LCL/UCL	Units	Matrix
025 16402.02 MSD-2.0	**024 16402.02 MS-2.0**	5	Na	9.92	10.1	2	0/20	mg/L	Liquid
			Mg	9.80	10.0	2	0/20		
			K	9.92	10.0	1	0/20		
			Ca	11.1	10.8	3	0/20		
045 16695.06 MSD-2.0	**044 16695.06 MS-2.0**	5	Na	36.5	35.5	3	0/20	mg/L	Liquid
			Mg	47.8	47.1	1	0/20		
			K	11.7	11.6	1	0/20		
			Ca	119	119	0	0/20		
058 16479.01 MSD-2.0	**057 16479.01 MS-2.0**	117370	Na	249000	239000	4	0/20	mg/kg	Soil
			Mg	270000	263000	3	0/20		
			K	247000	243000	2	0/20		
			Ca	590000	588000	0	0/20		

Form 7: Laboratory Control Sample

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Sample Name	Dilute	Element	Sample Conc	Actual Conc	%Rec	LCL/UCL	Units	Matrix
024 081920_1 LCS-0.05	1	Li	0.0487	0.05	97	85/115	mg/L	Liquid
		Be	0.0484	0.05	97	85/115		
		B	0.0493	0.05	99	85/115		
		Al	0.0564	0.05	113	85/115		
		Ti	0.0510	0.05	102	85/115		
		V	0.0484	0.05	97	85/115		
		Cr	0.0483	0.05	97	85/115		
		Mn	0.0497	0.05	99	85/115		
		Fe	0.0550	0.05	110	85/115		
		Co	0.0484	0.05	97	85/115		
		Ni	0.0487	0.05	97	85/115		
		Cu	0.0491	0.05	98	85/115		
		Zn	0.0507	0.05	101	85/115		
		As	0.0473	0.05	95	85/115		
		Sr	0.0498	0.05	100	85/115		
		Mo	0.0480	0.05	96	85/115		
		Ag	0.0483	0.05	97	85/115		
		Cd	0.0499	0.05	100	85/115		
		Sn	0.0475	0.05	95	85/115		
		Sb	0.0475	0.05	95	85/115		
		Ba	0.0477	0.05	95	85/115		
		Tl	0.0518	0.05	104	85/115		
		Pb	0.0469	0.05	94	85/115		
		Se	0.0499	0.05	100	85/115		
078 081920_2 LCS-0.05	1	Al	0.0485	0.05	97	85/115	mg/L	Liquid
		Ti	0.0524	0.05	105	85/115		
		V	0.0483	0.05	97	85/115		
		Mn	0.0519	0.05	104	85/115		
		Fe	0.0522	0.05	104	85/115		
		Cu	0.0501	0.05	100	85/115		
		Zn	0.0514	0.05	103	85/115		
		Sr	0.0511	0.05	102	85/115		
		Ba	0.0481	0.05	96	85/115		

Form 7: Laboratory Control Sample

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Sample Name	*Dilute*	*Element*	*Sample Conc*	*Actual Conc*	*%Rec*	*LCL/UCL*	*Units*	*Matrix*
014 081920_1 LCS-1.0	1	Na	0.950	1.0	95	85/115	mg/L	Liquid
		Mg	0.955	1.0	96	85/115		
		K	0.988	1.0	99	85/115		
		Ca	0.976	1.0	98	85/115		
049 081920_2 LCS-1.0	1	Na	0.993	1.0	99	85/115	mg/L	Liquid
		Mg	0.965	1.0	97	85/115		
		K	0.992	1.0	99	85/115		
		Ca	0.974	1.0	97	85/115		

Form 8: Serial Dilutions

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Duplicate Name	Sample Name	Dilute	Element	Dup Conc	Samp Conc	%D	LCL/UCL	Units	Matrix
029 16402.01 dil	**030 16402.01s dis**	25	Li	<0.010	<0.010	NC	0/10	mg/L	Liquid
			Be	<0.001	<0.001	NC	0/10		
			B	<0.04	<0.04	NC	0/10		
			Al	0.023	<0.010	NC	0/10		
			Ti	<0.005	<0.005	NC	0/10		
			V	<0.005	<0.005	NC	0/10		
			Cr	<0.005	<0.005	NC	0/10		
			Mn	<0.005	<0.005	NC	0/10		
			Fe	0.03	<0.02	NC	0/10		
			Co	<0.005	<0.005	NC	0/10		
			Ni	<0.005	<0.005	NC	0/10		
			Cu	0.006	0.006	0	0/10		
			Zn	0.016	0.011	45*	0/10		
			As	<0.002	<0.002	NC	0/10		
			Sr	0.013	<0.005	NC	0/10		
			Mo	0.005	<0.005	NC	0/10		
			Ag	<0.0005	<0.0005	NC	0/10		
			Cd	<0.0005	<0.0005	NC	0/10		
			Sn	<0.02	<0.02	NC	0/10		
			Sb	<0.005	<0.005	NC	0/10		
			Ba	0.011	<0.005	NC	0/10		
			Tl	<0.002	<0.002	NC	0/10		
			Pb	<0.003	<0.003	NC	0/10		
			Se	<0.005	<0.005	NC	0/10		
082 16479.01s	**084 16479.01s**	117371	Al	18.7	14.0	34*	0/10	mg/kg	Soil
			Ti	<1.0	2.40	100*	0/10		
			V	1.49	<0.50	NC	0/10		
			Mn	87.5	77.0	14*	0/10		
			Fe	605	596	2	0/10		
			Cu	3070	2950	4	0/10		
			Zn	2860	2820	1	0/10		
			Sr	224	217	3	0/10		
			Ba	97.1	95.0	2	0/10		

Serial Dilution test not applicable if measured sample concentration is < 100 x MDL.

Form 8: Serial Dilutions

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Duplicate Name	Sample Name	Dilute	Element	Dup Conc	Samp Conc	%D	LCL/UCL	Units	Matrix
016 16402.01 dil	**017 16402.01s dis**	25	Na	0.148	<0.50	NC	0/10	mg/L	Liquid
			Mg	0.0101	<0.50	NC	0/10		
			K	<0.00005	<0.50	NC	0/10		
			Ca	1.68	<0.50	NC	0/10		
038 16695.02 dil	**034 16695.02s**	50	Na	63.3	61.6	3	0/10	mg/L	Liquid
			Mg	66.9	67.6	1	0/10		
			K	1.56	1.00	56*	0/10		
			Ca	266	272	2	0/10		

Serial Dilution test not applicable if measured sample concentration is < 100 x MDL.

Form 13: Analysis Run Log

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Filename	*Run Time*	*Matrix*	*Analytes*
001 Blank	11:17:02 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
002 Std-0.0	11:18:32 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
003 Std-0.0001	11:20:03 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
004 Std-0.0005	11:21:33 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
005 Std-0.005	11:23:04 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
006 Std-0.02	11:24:34 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
007 Std-0.05	11:26:05 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
008 Std-0.2	11:27:37 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
009 ICV-0.1	11:29:07 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
010 CCV-0.1	11:30:56 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
011 rinse	11:37:37 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
012 ICB	11:39:07 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
013 CCB	11:40:37 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
014 BS-0.0001	11:45:47 Wed	Liquid	Ag,Ba,Be,Cd,Cr,Pb,Sr,V
015 rinse	11:47:34 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
016 BS-0.0005	11:49:07 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Ni,Pb,Se,Sr,Ti,Tl,V
017 rinse	11:53:56 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
018 BS-0.0005	11:55:27 Wed	Liquid	Sb
019 BS-0.001	11:57:28 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sr,Ti,Tl,V,Zn
020 BS-0.002	11:59:04 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
021 Solu-AB	12:00:51 Wed	Liquid	Ag,Al,As,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Ti,Zn
022 rinse	12:06:24 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
023 Solu-AA	12:07:54 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
024 081920_1 LCS-0.05	12:10:22 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
025 Rinse	12:25:41 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
026 081920_1 LRB	12:27:11 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
027 16653.01s	12:34:00 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
028 Rinse	12:40:24 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
029 16402.01 dil	12:42:02 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
030 16402.01s dil	12:43:31 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S

Form 13: Analysis Run Log

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Filename	*Run Time*	*Matrix*	*Analytes*
			b,Se,Sn,Sr,Ti,Tl,V,Zn
031 Rinse	12:45:20 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
032 16402.02s	12:46:54 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
033 Rinse	12:49:11 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
034 16531.01s dis	12:50:45 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
035 Rinse	12:52:17 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
036 16531.01s tot	12:54:12 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
037 Rinse	12:55:45 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
038 16513.02s	12:57:21 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
039 Rinse	12:59:37 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
040 16561.01s	13:01:51 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
041 Rinse	13:03:33 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
042 16695.01s	13:05:27 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
043 Rinse	13:07:00 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
044 16695.02s	13:08:48 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
045 Rinse	13:13:22 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
046 16695.03s	13:15:02 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
047 Rinse	13:16:45 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
048 16402.02 MS-0.05	13:18:41 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
049 16402.02 MSD-0.05	13:20:11 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
050 CCV2-0.1	13:21:52 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
051 Rinse	13:29:41 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
052 CCB2	13:31:11 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
053 16695.07s	13:34:20 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
054 Rinse	13:35:53 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
055 16695.04s	13:37:26 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
056 Rinse	13:42:33 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
057 16695.05s	13:44:08 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
058 Rinse	13:47:15 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S

Form 13: Analysis Run Log

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Filename	Run Time	Matrix	Analytes
			b,Se,Sn,Sr,Ti,Tl,V,Zn
059 16695.06s	13:51:54 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
060 Rinse	13:53:26 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
061 16689.01s	13:55:05 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
062 Rinse	13:56:37 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
063 16663.01s	13:59:10 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
064 Rinse	14:00:42 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
065 16663.02s	14:02:15 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
066 Rinse	14:03:48 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
067 16663.03s	14:05:20 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
068 Rinse	14:06:53 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
069 16663.04s	14:08:25 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
070 Rinse	14:09:58 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
071 16663.05s	14:11:30 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
072 Rinse	14:13:04 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
073 16695.06 MS-0.05	14:14:51 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
074 16695.06 MSD-0.05	14:16:22 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
075 CCV3-0.1	14:18:26 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
076 Rinse	14:26:21 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
077 CCB3	14:27:52 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
078 081920_2 LCS-0.05	14:30:12 Wed	Liquid	Al,Ba,Cu,Fe,Mn,Sr,Ti,V,Zn
079 Rinse	14:36:18 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
080 081920_2 LRB	14:37:48 Wed	Liquid	Al,Ba,Cu,Fe,Mn,Sr,Ti,V,Zn
081 Rinse	14:41:49 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
082 16479.01s	14:43:20 Wed	Soil	Al,Ba,Cu,Fe,Mn,Sr,Ti,V,Zn
083 Rinse	14:44:52 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
084 16479.01s	14:46:58 Wed	Soil	Al,Ba,Cu,Fe,Mn,Sr,Ti,V,Zn
085 Rinse	14:48:36 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
086 16479.01s	14:50:35 Wed	Soil	Al,Ba,Cu,Fe,Mn,Sr,Ti,V,Zn
087 Rinse	15:09:59 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,S
			b,Se,Sn,Sr,Ti,Tl,V,Zn
088 16479.01 MS-0.1	15:11:44 Wed	Soil	Al,Ba,Cu,Fe,Mn,Sr,Ti,V,Zn
089 16479.01 MSD-0.1	15:14:06 Wed	Soil	Al,Ba,Cu,Fe,Mn,Sr,Ti,V,Zn

Form 13: Analysis Run Log

Data Set ID: MT4-20-0819A
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Filename	*Run Time*	*Matrix*	*Analytes*
090 Rinse	15:16:01 Wed	Liquid	Al,Ba,Cu,Fe,Mn,Sr,Ti,V,Zn
091 CCV4-0.1	15:17:49 Wed	Liquid	Al,Ba,Cu,Fe,Mn,Sr,Ti,V,Zn
092 Rinse	15:28:34 Wed	Liquid	Ag,Al,As,B,Ba,Be,Cd,Co,Cr,Cu,Fe,Li,Mn,Mo,Ni,Pb,Sb,Se,Sn,Sr,Ti,Tl,V,Zn
093 CCB4	15:30:05 Wed	Liquid	Al,Ba,Cu,Fe,Mn,Sr,Ti,V,Zn

Form 13: Analysis Run Log

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Filename	*Run Time*	*Matrix*	*Analytes*
001 Blank	16:09:08 Wed	Liquid	Ca,K,Mg,Na
002 Std-0.0	16:09:51 Wed	Liquid	Ca,K,Mg,Na
003 Std-0.20	16:10:34 Wed	Liquid	Ca,K,Mg,Na
004 Std-0.50	16:11:17 Wed	Liquid	Ca,K,Mg,Na
005 Std-1.0	16:12:00 Wed	Liquid	Ca,K,Mg,Na
006 Std-2.0	16:12:43 Wed	Liquid	Ca,K,Mg,Na
007 Std-5.0	16:13:26 Wed	Liquid	Ca,K,Mg,Na
008 ICV-2.0	16:14:09 Wed	Liquid	Ca,K,Mg,Na
009 CCV-2.0	16:15:02 Wed	Liquid	Ca,K,Mg,Na
010 ICB	16:16:01 Wed	Liquid	Ca,K,Mg,Na
011 CCB	16:16:44 Wed	Liquid	Ca,K,Mg,Na
012 BS-0.05	16:17:33 Wed	Liquid	Ca,K,Mg,Na
013 BS-0.1	16:18:18 Wed	Liquid	Ca,K,Mg,Na
014 081920_1 LCS-1.0	16:20:03 Wed	Liquid	Ca,K,Mg,Na
015 081920_2 LRB	16:21:01 Wed	Liquid	Ca,K,Mg,Na
016 16402.01 dil	16:26:02 Wed	Liquid	Ca,K,Mg,Na
017 16402.01s dis	16:26:45 Wed	Liquid	Ca,K,Mg,Na
018 rinse	16:27:51 Wed	Liquid	Ca,K,Mg,Na
019 16402.02s	16:28:38 Wed	Liquid	Ca,K,Mg,Na
020 rinse	16:35:04 Wed	Liquid	Ca,K,Mg,Na
021 16531.01s dis	16:35:53 Wed	Liquid	Ca,K,Mg,Na
022 rinse	16:36:40 Wed	Liquid	Ca,K,Mg,Na
023 16531.01s	16:37:35 Wed	Liquid	Ca,K,Mg,Na
024 16402.02 MS-2.0	16:40:35 Wed	Liquid	Ca,K,Mg,Na
025 16402.02 MSD-2.0	16:41:20 Wed	Liquid	Ca,K,Mg,Na
026 CCV2-2.0	16:42:12 Wed	Liquid	Ca,K,Mg,Na
027 CCB2	16:42:58 Wed	Liquid	Ca,K,Mg,Na
028 16695.07s	16:43:58 Wed	Liquid	Ca,K,Mg,Na
029 rinse	16:44:55 Wed	Liquid	Ca,K,Mg,Na
030 16695.01s	16:45:41 Wed	Liquid	Ca,K,Mg,Na
031 rinse	16:47:11 Wed	Liquid	Ca,K,Mg,Na
032 16695.06s	16:47:57 Wed	Liquid	Ca,K,Mg,Na
033 rinse	16:49:36 Wed	Liquid	Ca,K,Mg,Na
034 16695.02s	16:50:22 Wed	Liquid	Ca,K,Mg,Na
035 rinse	16:51:52 Wed	Liquid	Ca,K,Mg,Na
036 16695.03s	16:52:39 Wed	Liquid	Ca,K,Mg,Na
037 rinse	16:54:09 Wed	Liquid	Ca,K,Mg,Na
038 16695.02 dil	16:54:55 Wed	Liquid	Ca,K,Mg,Na
039 rinse	16:55:41 Wed	Liquid	Ca,K,Mg,Na
040 16695.04s	16:56:33 Wed	Liquid	Ca,K,Mg,Na
041 rinse	16:58:02 Wed	Liquid	Ca,K,Mg,Na
042 16695.05s	16:58:48 Wed	Liquid	Ca,K,Mg,Na
043 rinse	16:59:34 Wed	Liquid	Ca,K,Mg,Na
044 16695.06 MS-2.0	17:00:36 Wed	Liquid	Ca,K,Mg,Na
045 16695.06 MSD-2.0	17:01:19 Wed	Liquid	Ca,K,Mg,Na
046 rinse	17:02:13 Wed	Liquid	Ca,K,Mg,Na
047 CCV3-2.0	17:03:03 Wed	Liquid	Ca,K,Mg,Na
048 CCB3	17:03:48 Wed	Liquid	Ca,K,Mg,Na
049 081920_2 LCS-1.0	17:05:11 Wed	Liquid	Ca,K,Mg,Na
050 081920_2 LRB	17:06:01 Wed	Liquid	Ca,K,Mg,Na
051 16479.01s	17:07:09 Wed	Soil	Ca,K,Mg,Na
052 rinse	17:08:13 Wed	Liquid	Ca,K,Mg,Na
053 16479.01s	17:09:29 Wed	Soil	Ca,K,Mg,Na
054 rinse	17:10:14 Wed	Liquid	Ca,K,Mg,Na
055 16479.01s	17:11:48 Wed	Soil	Ca,K,Mg,Na
056 rinse	17:13:17 Wed	Liquid	Ca,K,Mg,Na

Form 13: Analysis Run Log

Data Set ID: MT4-20-0819B
Instrument ID: PE NEXION
Analysis Date: 08/19/20
Analyst: CCM

Filename	*Run Time*	*Matrix*	*Analytes*
057 16479.01 MS-2.0	17:15:31 Wed	Soil	Ca,K,Mg,Na
058 16479.01 MSD-2.0	17:16:28 Wed	Soil	Ca,K,Mg,Na
059 CCV4-2.0	17:17:49 Wed	Liquid	Ca,K,Mg,Na
060 CCB4	17:18:34 Wed	Liquid	Ca,K,Mg,Na

Performance Check Report

Sample ID: STD Performance Check
Sample Date/Time: Wednesday, August 19, 2020 11:01:50
Sample Description:
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\STD Performance Check.mth
Dataset File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\DataSet\Optimize2020\STD Performance Check.1328
MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Conditions File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Dual Detector Mode: Pulse
Acq. Dead Time (ns): 35
Current Dead Time (ns): 35
Torch Z position (mm): 0.00

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD	Mode
	Be	9.0	9732.4	9732.448	150.241	1.5	Standard
	In	114.9	63458.8	63458.835	244.636	0.4	Standard
	U	238.1	47710.8	47710.808	318.229	0.7	Standard
⌈	CeO	155.9	1155.7	0.020	0.001	2.7	Standard
| >	Ce	139.9	58201.3	58201.252	175.092	0.3	Standard
⌊	Ce++	70.0	1296.9	0.022	0.000	2.1	Standard
	Bkgd	220.0	0.1	0.067	0.091	136.9	Standard

Current Conditions File Data

Current Value	Description
0.92	Nebulizer Gas Flow STD/KED [NEB]
1.20	Auxiliary Gas Flow
18.00	Plasma Gas Flow
-12.00	Deflector Voltage
1600.00	ICP RF Power
-1675.00	Analog Stage Voltage
1300.00	Pulse Stage Voltage
-4.00	Quadrupole Rod Offset STD [QRO]
-15.00	Cell Rod Offset STD [CRO]
14.00	Discriminator Threshold
-9.00	Cell Entrance/Exit Voltage STD
0.00	RPa
0.45	RPq
0.92	DRC Mode NEB
-9.00	DRC Mode QRO
-2.00	DRC Mode CRO
-7.00	DRC Mode Cell Entrance/Exit Voltage
0.60	Cell Gas A
200.00	Axial Field Voltage
-13.00	KED Mode CRO
-12.00	KED Mode QRO
-8.00	KED Mode Cell Entrance Voltage
-32.00	KED Mode Cell Exit Voltage
4.00	KED Cell Gas A
0.00	KED RPa
0.25	KED RPq
475.00	KED Mode Axial Field Voltage

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\daily optimization.swz

Start Time: 8/19/2020 10:56:29 AM
End Time: 8/19/2020 11:03:55 AM

Torch Alignment - [Passed]

Vertical	Horizontal	Intensity
0.62 mm	-0.05 mm	67134.38

Nebulizer Gas Flow STD/KED [NEB] - [Passed] Optimum value(s): 0.92
Obtained Intensity (In 115): 66294.47
Obtained Formula (CeO 156 / Ce 140): 0.0204 (=1223.05 / 59874.21)

QID STD/DRC - Optimum value(s): Correlation Coefficient = 1.000; Intercept = -12.55

KED Mode QID - Optimum value(s): Correlation Coefficient = 0.999; Intercept = -13.47

Mass Calibration and Resolution - [Passed] Optimum value(s): N/A
Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.708)
Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.716)
Target/Obtained mass (114.904/114.875), Target/Obtained resolution (0.7/0.711)
Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.705)

STD Performance Check - [Passed] Optimum value(s): N/A
Obtained Intensity (Be 9): 9732.45
Obtained Intensity (In 115): 63458.84
Obtained Intensity (U 238): 47710.81
Obtained Intensity (Bkgd 220): 0.07
Obtained Formula (CeO 156 / Ce 140): 0.020 (=1155.71 / 58201.25)
Obtained Formula (Ce++ 70 / Ce 140): 0.022 (=1296.86 / 58201.25)

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\daily optimization.swz

Optimization Status

Start Time: 8/19/2020 10:56:29 AM

Torch Alignment

Optimization Settings:

Method: Torch Alignment.mth.

Intensity Criterion: In 115 Maximum

Optimization Results:

	Vertical	Horizontal	Intensity
[Passed]	0.62 mm	-0.05 mm	67134.38

Nebulizer Gas Flow STD/KED [NEB]

Optimization Settings:

Method: Optimize.mth.

Initial Try - Start/End/Step: 0.9/0.96/0.01.

Intensity Criterion: In 115 Maximum

Formula Criterion: CeO 156 / Ce 140 <= 0.025

Optimization Results:

Initial Try

Obtained Intensity (In 115): 66294.47

Obtained Formula (CeO 156 / Ce 140): 0.0204 (=1223.05 / 59874.21)

[Passed] Optimum value(s): 0.92

QID STD/DRC

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 1.000; Intercept = -12.55

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-13	41151.2
Mg	24	41	-13.5	49365.1
In	115	41	-10.5	64645.9
Ce	140	41	-9.5	59499.6
Pb	208	41	-8.5	25855.4
U	238	41	-8	47526.9

KED Mode QID

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.999; Intercept = -13.47

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-13.5	31927.6
Mg	24	41	-13.5	55636.1
In	115	41	-11	61757.2
Ce	140	41	-10.5	45067
Pb	208	41	-9	18191.6
U	238	41	-8.5	44914.5

Mass Calibration and Resolution
Optimization Settings:
Method: Tuning.mth.
MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Iterations: 6
Target accuracy (+/- amu): 0.05 for Mass Cal. and 0.03 for Resolution
Peak height (%) for Res. Opt.: 10

Optimization Results:
Initial Try
Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.708)
Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.716)
Target/Obtained mass (114.904/114.875), Target/Obtained resolution (0.7/0.711)
Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.705)
[Passed] Optimum value(s): N/A

STD Performance Check
Optimization Settings:
Method: STD Performance Check.mth.
Intensity Criterion: Be 9 > 2000
Intensity Criterion: In 115 > 30000
Intensity Criterion: U 238 > 30000
Intensity Criterion: Bkgd 220 <= 5
Formula Criterion: CeO 156 / Ce 140 <= 0.025
Formula Criterion: Ce++ 70 / Ce 140 <= 0.03

Optimization Results:
Initial Try
Obtained Intensity (Be 9): 9732.45
Obtained Intensity (In 115): 63458.84
Obtained Intensity (U 238): 47710.81
Obtained Intensity (Bkgd 220): 0.07
Obtained Formula (CeO 156 / Ce 140): 0.020 (=1155.71 / 58201.25)
Obtained Formula (Ce++ 70 / Ce 140): 0.022 (=1296.86 / 58201.25)

[Passed] Optimum value(s): N/A

End Time: 8/19/2020 11:03:55 AM

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

		non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		
Element	Count	LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	Flags
Li	206620	70-125	144634-258275	80-120	165296-247944	0
Rh	754128	70-125	527890-942660	80-120	603302-904954	1
Re	867486	70-125	607240-1084358	80-120	693989-1040983	1
Rh-1	1890288	70-125	1323202-2362860	80-120	1512230-2268346	1

Seq ID	QC Type	Li	Rh	Re	Rh-1
001		100	100	100	100
002		101	97	102	98
003		103	102	104	104
004		103	99	102	100
005		102	99	101	100
006		100	100	100	99
007		99	99	104	100
008		102	101	107	99
009	ICV	97	104	107	102
010	CCV	99	104	108	101
011		100	97	100	99
012	ICB	99	98	98	100
013	CCB	99	99	104	100
014	BS	103	103	105	101
015		101	99	101	99
016	BS	103	100	105	103
017		101	99	104	99
018	BS	101	101	101	99
019	BS	106	100	107	107
020	BS	107	102	103	108
021	AB	102	94	105	99
022		98	97	101	98
023	AA	99	98	102	99
024	LCS	103	103	105	99
025		102	99	102	99
026	LRB	102	96	103	99
027	S	100	89	99	91
028		106	100	102	100
029	DIL	107	100	107	105
030	S	105	98	104	100
031		108	100	105	99
032	S	106	99	103	104
033		108	99	107	107
034	S	103	90	104	92
035		106	97	103	105
036	S	102	92	104	91
037		104	100	105	104
038	S	105	93	102	91
039		110	102	106	101
040	S	89	75	91	78

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Element	Count	non-ICB/CCB/ICV/CCV LCL-UCL	non-ICB/CCB/ICV/CCV Accept.Range	ICB/CCB/ICV/CCV LCL-UCL	ICB/CCB/ICV/CCV Accept.Range	Flags
Li	206620	70-125	144634-258275	80-120	165296-247944	0
Rh	754128	70-125	527890-942660	80-120	603302-904954	1
Re	867486	70-125	607240-1084358	80-120	693989-1040983	1
Rh-1	1890288	70-125	1323202-2362860	80-120	1512230-2268346	1

Seq ID	QC Type	Li	Rh	Re	Rh-1
041		102	97	104	100
042	S	99	91	104	90
043		101	96	103	98
044	S	99	91	103	91
045		104	98	102	101
046	S	103	93	102	94
047		105	100	106	105
048	MS	103	97	104	97
049	MSD	98	96	104	94
050	CCV	105	100	105	99
051		103	98	102	99
052	CCB	101	97	99	99
053	S	105	97	104	99
054		103	96	101	99
055	S	98	88	102	91
056		104	96	102	99
057	S	103	91	103	92
058		106	97	102	99
059	S	100	93	104	93
060		106	99	105	100
061	S	99	85	97	88
062		105	96	103	98
063	S	104	95	102	95
064		107	97	106	99
065	S	105	91	103	92
066		104	97	103	98
067	S	103	89	102	91
068		106	93	100	97
069	S	103	91	102	93
070		104	97	105	97
071	S	104	96	104	96
072		105	94	103	100
073	MS	100	92	103	92
074	MSD	98	91	101	93
075	CCV	104	99	108	99
076		106	97	101	96
077	CCB	102	95	101	98
078	LCS	106	100	106	98
079		103	95	101	98
080	LRB	103	95	101	95

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT4-20-0819A

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

		non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		
Element	Count	LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	Flags
Li	206620	70-125	144634-258275	80-120	165296-247944	0
Rh	754128	70-125	527890-942660	80-120	603302-904954	1
Re	867486	70-125	607240-1084358	80-120	693989-1040983	1
Rh-1	1890288	70-125	1323202-2362860	80-120	1512230-2268346	1

Seq ID	QC Type	Li	Rh	Re	Rh-1
081		107	93	98	99
082	S	106	97	103	100
083		103	97	101	97
084	S	109	96	105	97
085		110	95	100	99
086	S	74	59***	65***	54***
087		101	96	95	92
088	MS	95	93	93	87
089	MSD	95	89	95	87
090		97	93	94	93
091	CCV	96	94	97	93
092		95	88	96	89
093	CCB	94	90	92	89

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

Element	Count	non-ICB/CCB/ICV/CCV LCL-UCL	non-ICB/CCB/ICV/CCV Accept.Range	ICB/CCB/ICV/CCV LCL-UCL	ICB/CCB/ICV/CCV Accept.Range	Flags
Rh	53758	70-125	37631-67198	80-120	43006-64510	0

Seq ID	QC Type	Rh
001		100
002		101
003		104
004		103
005		102
006		101
007		103
008	ICV	102
009	CCV	103
010	ICB	99
011	CCB	100
012	BS	102
013	BS	104
014	LCS	103
015	LRB	99
016	DIL	104
017	S	106
018		101
019	S	102
020		101
021	S	104
022		105
023	S	102
024	MS	102
025	MSD	100
026	CCV	103
027	CCB	100
028	S	104
029		103
030	S	102
031		100
032	S	100
033		100
034	S	101
035		101
036	S	99
037		101
038	DIL	102
039		99
040	S	102

Form 15: Internal Standards Summary

IS Check Reference Sample: 001 Blank

Data Set ID: MT4-20-0819B

Instrument ID: PE NEXION

Analysis Date: 08/19/20

Analyst: CCM

		non-ICB/CCB/ICV/CCV		ICB/CCB/ICV/CCV		
Element	Count	LCL-UCL	Accept.Range	LCL-UCL	Accept.Range	Flags
Rh	53758	70-125	37631-67198	80-120	43006-64510	0

Seq ID	QC Type	Rh
041		102
042	S	103
043		101
044	MS	100
045	MSD	100
046		101
047	CCV	105
048	CCB	102
049	LCS	103
050	LRB	101
051	S	102
052		100
053	S	103
054		102
055	S	103
056		99
057	MS	100
058	MSD	99
059	CCV	102
060	CCB	102

Form 9

Analysis Date	varies	
Analytical Method	6020A/6020/200.8	
Digestion Date	varies	
Spiked Value	varies	(ug/L)
Estimated Limit	varies	(ug/L)

Element/Mass	Date	Spike (ug/l)	MDL (ug/l)	Prep Batch
Al-27	4/9/2012	0.50	0.189	MTD-040212-1
Sb-121	3/20/2012	1.00	0.105	MTD-032012-3
As-75	3/20/2012	0.05	0.032	MTD-032012-2
Ba-137	3/20/2012	0.50	0.202	MTD-032012-2
Be-9	4/10/2012	0.10	0.079	MTD-041012-1
B-10	3/20/2012	1.00	0.589	MTD-032012-3
B-11	3/20/2012	1.00	0.277	MTD-032012-3
Cd-111	3/20/2012	0.05	0.038	MTD-032012-2
Cd-114	3/20/2012	0.10	0.030	MTD-032012-2
Cr-52	3/20/2012	0.10	0.023	MTD-032012-2
Cr-53	3/20/2012	0.10	0.054	MTD-032012-2
Co-59	3/20/2012	0.10	0.035	MTD-032012-2
Cu-65	3/20/2012	0.50	0.068	MTD-032012-2
Fe-56	4/9/2012	2.00	0.470	MTD-040912-1
Fe-57	4/9/2012	2.00	0.824	MTD-040912-1
Pb-208	3/20/2012	0.10	0.052	MTD-032012-2
Li-7	3/20/2012	1.00	0.166	MTD-032012-3
Mn-55	3/20/2012	0.10	0.187	MTD-032012-2
Mo-95	4/9/2012	0.50	0.442	MTD-040212-1
Ni-60	4/13/2012	0.10	0.035	MTD-041012-1
Se-78	3/20/2012	0.10	0.058	MTD-032012-2
Se-82	3/20/2012	0.50	0.475	MTD-032012-2
Ag-107	3/20/2012	0.10	0.025	MTD-032012-2
Sr-88	3/20/2012	0.10	0.016	MTD-032012-2
Tl-205	4/9/2012	0.50	0.089	MTD-040212-1
Sn-118	3/20/2012	0.10	0.079	MTD-032012-2
Ti-47	3/20/2012	0.50	0.124	MTD-032012-2
V-51	3/20/2012	0.05	0.018	MTD-032012-2
Zn-66	4/9/2012	2.00	0.366	MTD-040912-1

Element/Mass	Date	Spike (mg/l)	MDL (mg/l)	Prep Batch
Ca-43	4/16/2012	0.01	0.0101	MTD-041012-4
Ca-44	4/16/2012	0.01	0.0041	MTD-041012-4
Mg-24	4/16/2012	0.01	0.0006	MTD-041012-4
K-39	4/16/2012	0.01	0.0030	MTD-041012-4
Na-23	4/16/2012	0.10	0.0101	MTD-041012-4

Linear Range June 2012

		Prep Batch	Run Batch
Aluminum	5.0ppm	MTD-061912-5	MT3-12-0619C
Antimony	5.0ppm	MTD-061912-5	MT3-12-0619C
Arsenic	1.0ppm	MTD-061912-5	MT3-12-0619C
Barium	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-10	5.0ppm	MTD-061912-5	MT3-12-0619C
Boron-11	5.0ppm	MTD-061912-5	MT3-12-0619C
Beryllium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-111	5.0ppm	MTD-061912-5	MT3-12-0619C
Cadmium-114	5.0ppm	MTD-061912-5	MT3-12-0619C
Chromium	2.0ppm	MTD-061912-5	MT3-12-0619C
Cobalt	2.0ppm	MTD-061912-5	MT3-12-0619C
Copper	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-56	5.0ppm	MTD-061912-5	MT3-12-0619C
Iron-57	2.0ppm	MTD-061912-5	MT3-12-0619C
Lead	5.0ppm	MTD-061912-5	MT3-12-0619C
Lithium	2.0ppm	MTD-061912-5	MT3-12-0619C
Manganese	1.0ppm	MTD-061912-5	MT3-12-0619C
Molybdenum	1.0ppm	MTD-061912-5	MT3-12-0619C
Nickel	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-78	5.0ppm	MTD-061912-5	MT3-12-0619C
Selenium-82	5.0ppm	MTD-061912-5	MT3-12-0619C
Silver	1.0ppm	MTD-061912-5	MT3-12-0619C
Strontium-86	5.0ppm	MTD-061912-5	MT3-12-0619C
Thallium	5.0ppm	MTD-061912-5	MT3-12-0619C
Tin	1.0ppm	MTD-061912-5	MT3-12-0619C
Titanium	1.0ppm	MTD-061912-5	MT3-12-0619C
Vanadium	1.0ppm	MTD-061912-5	MT3-12-0619C
Zinc	2.0ppm	MTD-061912-5	MT3-12-0619C

Sodium-23	50ppm	MTD-061912-5	MT3-12-0619B
Magnesium-24	50ppm	MTD-061912-5	MT3-12-0619B
Potassium-39	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-43	50ppm	MTD-061912-5	MT3-12-0619B
Calcium-44	50ppm	MTD-061912-5	MT3-12-0619B

Maximum spiking levels are instated to ensure the safety and longevity of the instrument. Any sample results above this level result in extended wash runs and sample dilution.

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 001
Method: 01-LONG LIST.mth
Acq Time: 11:17:02 Wed 19-Aug-20
Sample Name: Blank
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11769.861	0	mg/L		3
Be	9	5.000	0	mg/L		3
B	11	225.002	0	mg/L		3
Al	27	965.033	0	mg/L		3
Ti	47	41.667	0	mg/L		3
V	51	60.000	0	mg/L		3
Cr	52	161.668	0	mg/L		3
Mn	55	85.000	0	mg/L		3
Fe	56	3262.039	0	mg/L		3
Co	59	50.000	0	mg/L		3
Ni	60	50.000	0	mg/L		3
Cu	65	80.000	0	mg/L		3
Zn	66	65.000	0	mg/L		3
As	75	58.333	0	mg/L		3
Sr	88	96.667	0	mg/L		3
Mo	95	229.201	0	mg/L		3
Ag	107	120.001	0	mg/L		3
Cd	111	88.334	0	mg/L		3
Sn	118	660.015	0	mg/L		3
Sb	121	151.668	0	mg/L		3
Ba	137	96.667	0	mg/L		3
Tl	205	21.667	0	mg/L		3
Pb	208	340.334	0	mg/L		3
Se	78	1198.916	0	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 002
Method: 01-LONG LIST.mth
Acq Time: 11:18:32 Wed 19-Aug-20
Sample Name: Std-0.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11159.360	-0.000207	mg/L		3
Be	9	1.667	-0.000003	mg/L		3
B	11	233.335	0.000008	mg/L		3
Al	27	851.693	-0.000047	mg/L		3
Ti	47	50.000	0.000171	mg/L		3
V	51	43.333	-0.000008	mg/L		3
Cr	52	128.334	-0.000011	mg/L		3
Mn	55	63.333	-0.000013	mg/L		3
Fe	56	3192.024	0.000019	mg/L		3
Co	59	36.667	-0.000002	mg/L		3
Ni	60	40.000	-0.000006	mg/L		3
Cu	65	103.334	0.000014	mg/L		3
Zn	66	70.000	0.000018	mg/L		3
As	75	53.333	-0.000013	mg/L		3
Sr	88	91.667	-0.000001	mg/L		3
Mo	95	193.652	-0.000017	mg/L		3
Ag	107	148.334	0.000005	mg/L		3
Cd	111	100.000	0.000019	mg/L		3
Sn	118	628.347	-0.000005	mg/L		3
Sb	121	125.001	-0.000011	mg/L		3
Ba	137	71.667	-0.000022	mg/L		3
Tl	205	25.000	0.000000	mg/L		3
Pb	208	332.000	-0.000001	mg/L		3
Se	78	1214.323	0.000159	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 003
Method: 01-LONG LIST.mth
Acq Time: 11:20:03 Wed 19-Aug-20
Sample Name: Std-0.0001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11993.369	-0.000020	mg/L		3
Be	9	113.334	0.000102	mg/L		3
B	11	408.339	0.000203	mg/L		3
Al	27	3918.871	0.001128	mg/L		3
Ti	47	48.333	0.000099	mg/L		3
V	51	273.336	0.000102	mg/L		3
Cr	52	436.673	0.000101	mg/L		3
Mn	55	1186.716	0.000750	mg/L		3
Fe	56	4322.322	0.000432	mg/L		3
Co	59	606.680	0.000101	mg/L		3
Ni	60	365.005	0.000208	mg/L		3
Cu	65	535.010	0.000227	mg/L		3
Zn	66	905.029	0.001951	mg/L		3
As	75	73.334	0.000060	mg/L		3
Sr	88	331.671	0.000108	mg/L		3
Mo	95	345.710	0.000067	mg/L		3
Ag	107	390.005	0.000040	mg/L		3
Cd	111	183.335	0.000116	mg/L		3
Sn	118	1460.075	0.000475	mg/L		3
Sb	121	375.005	0.000109	mg/L		3
Ba	137	230.002	0.000125	mg/L		3
Tl	205	1958.468	0.000106	mg/L		3
Pb	208	2230.415	0.000091	mg/L		3
Se	78	1182.036	-0.000180	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 004
Method: 01-LONG LIST.mth
Acq Time: 11:21:33 Wed 19-Aug-20
Sample Name: Std-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	13189.436	0.000305	mg/L		3
Be	9	540.010	0.000502	mg/L		3
B	11	708.351	0.000551	mg/L		3
Al	27	2605.238	0.000623	mg/L		3
Ti	47	45.000	0.000065	mg/L		3
V	51	1066.707	0.000494	mg/L		3
Cr	52	1465.076	0.000492	mg/L		3
Mn	55	946.698	0.000602	mg/L		3
Fe	56	4689.104	0.000639	mg/L		3
Co	59	2823.613	0.000518	mg/L		3
Ni	60	755.020	0.000481	mg/L		3
Cu	65	1060.040	0.000503	mg/L		3
Zn	66	321.670	0.000616	mg/L		3
As	75	181.668	0.000547	mg/L		3
Sr	88	1236.721	0.000539	mg/L		3
Mo	95	932.769	0.000432	mg/L		3
Ag	107	2053.481	0.000298	mg/L		3
Cd	111	521.676	0.000551	mg/L		3
Sn	118	1356.731	0.000433	mg/L		3
Sb	121	1166.714	0.000513	mg/L		3
Ba	137	748.353	0.000638	mg/L		3
Tl	205	9273.010	0.000517	mg/L		3
Pb	208	9008.542	0.000428	mg/L		3
Se	78	1298.925	0.000323	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 005
Method: 01-LONG LIST.mth
Acq Time: 11:23:04 Wed 19-Aug-20
Sample Name: Std-0.005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	29303.398	0.004739	mg/L		3
Be	9	5155.932	0.004852	mg/L		3
B	11	4462.365	0.004938	mg/L		3
Al	27	13971.838	0.004998	mg/L		3
Ti	47	361.671	0.005500	mg/L		3
V	51	10080.223	0.004902	mg/L		3
Cr	52	13573.112	0.005052	mg/L		3
Mn	55	7772.114	0.005361	mg/L		3
Fe	56	15398.295	0.005323	mg/L		3
Co	59	26853.560	0.004999	mg/L		3
Ni	60	7813.803	0.005283	mg/L		3
Cu	65	9986.824	0.005069	mg/L		3
Zn	66	2448.544	0.005684	mg/L		3
As	75	1210.051	0.005073	mg/L		3
Sr	88	10870.802	0.005085	mg/L		3
Mo	95	7355.526	0.004352	mg/L		3
Ag	107	28403.211	0.004362	mg/L		3
Cd	111	4077.250	0.005054	mg/L		3
Sn	118	8165.670	0.004624	mg/L		3
Sb	121	9970.145	0.004950	mg/L		3
Ba	137	5032.553	0.004813	mg/L		3
Tl	205	92429.779	0.005213	mg/L		3
Pb	208	90996.087	0.004524	mg/L		3
Se	78	2554.747	0.004708	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 006
Method: 01-LONG LIST.mth
Acq Time: 11:24:34 Wed 19-Aug-20
Sample Name: Std-0.02
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	81753.553	0.019643	mg/L		3
Be	9	20109.214	0.019302	mg/L		3
B	11	17183.682	0.020208	mg/L		3
Al	27	52279.041	0.020157	mg/L		3
Ti	47	1288.391	0.021243	mg/L		3
V	51	40764.754	0.019766	mg/L		3
Cr	52	54585.757	0.020347	mg/L		3
Mn	55	29493.749	0.020357	mg/L		3
Fe	56	50176.314	0.020381	mg/L		3
Co	59	105815.821	0.019593	mg/L		3
Ni	60	30290.436	0.020437	mg/L		3
Cu	65	39873.930	0.020215	mg/L		3
Zn	66	8904.444	0.020920	mg/L		3
As	75	4604.076	0.019870	mg/L		3
Sr	88	44746.647	0.020919	mg/L		3
Mo	95	29357.323	0.017649	mg/L		3
Ag	107	124680.097	0.019066	mg/L		3
Cd	111	16396.070	0.020509	mg/L		3
Sn	118	31127.240	0.018621	mg/L		3
Sb	121	39305.669	0.019595	mg/L		3
Ba	137	20768.422	0.020002	mg/L		3
Tl	205	372451.236	0.021220	mg/L		3
Pb	208	381953.224	0.019241	mg/L		3
Se	78	6867.036	0.020021	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 007
Method: 01-LONG LIST.mth
Acq Time: 11:26:05 Wed 19-Aug-20
Sample Name: Std-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	188624.216	0.050171	mg/L		3
Be	9	51750.537	0.050294	mg/L		3
B	11	41299.766	0.049476	mg/L		3
Al	27	131217.762	0.051762	mg/L		3
Ti	47	2960.307	0.050269	mg/L		3
V	51	102546.775	0.050271	mg/L		3
Cr	52	136091.853	0.051339	mg/L		3
Mn	55	74924.347	0.052339	mg/L		3
Fe	56	118843.989	0.050740	mg/L		3
Co	59	274846.740	0.051411	mg/L		3
Ni	60	75914.511	0.051764	mg/L		3
Cu	65	98882.956	0.050694	mg/L		3
Zn	66	21791.611	0.051929	mg/L		3
As	75	11641.409	0.051135	mg/L		3
Sr	88	108834.721	0.051472	mg/L		3
Mo	95	77818.567	0.047476	mg/L		3
Ag	107	324689.445	0.050177	mg/L		3
Cd	111	40231.579	0.050984	mg/L		3
Sn	118	78367.772	0.047981	mg/L		3
Sb	121	99409.698	0.050167	mg/L		3
Ba	137	50984.151	0.049739	mg/L		3
Tl	205	902899.207	0.049491	mg/L		3
Pb	208	947357.258	0.045950	mg/L		3
Se	78	15664.097	0.050232	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 008
Method: 01-LONG LIST.mth
Acq Time: 11:27:37 Wed 19-Aug-20
Sample Name: Std-0.2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	691724.117	0.187879	mg/L		3
Be	9	198146.423	0.187846	mg/L		3
B	11	170464.435	0.200112	mg/L		3
Al	27	515847.356	0.199544	mg/L		3
Ti	47	11833.233	0.199797	mg/L		3
V	51	414154.696	0.199958	mg/L		3
Cr	52	537185.377	0.199629	mg/L		3
Mn	55	289742.546	0.199370	mg/L		3
Fe	56	465675.530	0.199769	mg/L		3
Co	59	1084876.942	0.199688	mg/L		3
Ni	60	297097.785	0.199508	mg/L		3
Cu	65	395818.021	0.199803	mg/L		3
Zn	66	84832.861	0.199408	mg/L		3
As	75	46013.988	0.199727	mg/L		3
Sr	88	428364.706	0.199538	mg/L		3
Mo	95	333618.217	0.200883	mg/L		3
Ag	107	1314645.674	0.200066	mg/L		3
Cd	111	159824.672	0.199702	mg/L		3
Sn	118	330953.055	0.200652	mg/L		3
Sb	121	343447.168	0.170786	mg/L		3
Ba	137	208035.485	0.200069	mg/L		3
Tl	205	4361293.421	0.232668	mg/L		3
Pb	208	4255556.470	0.201100	mg/L		3
Se	78	58131.726	0.199948	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 009
Method: 01-LONG LIST.mth
Acq Time: 11:29:07 Wed 19-Aug-20
Sample Name: ICV-0.1
Sample Type: Sample
Matrix: Liquid
Comments: Spex-std made 08/19/
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	372241.982	0.104764	mg/L		3
Be	9	104059.757	0.103776	mg/L		3
B	11	89134.498	0.109787	mg/L		3
Al	27	266766.610	0.108336	mg/L		3
Ti	47	6254.703	0.101684	mg/L		3
V	51	208328.433	0.097167	mg/L		3
Cr	52	270012.012	0.096915	mg/L		3
Mn	55	150076.082	0.099728	mg/L		3
Fe	56	243121.217	0.100064	mg/L		3
Co	59	539773.770	0.096001	mg/L		3
Ni	60	150562.787	0.097669	mg/L		3
Cu	65	203847.530	0.099396	mg/L		3
Zn	66	44433.998	0.100830	mg/L		3
As	75	23763.088	0.099526	mg/L		3
Sr	88	218805.370	0.098446	mg/L		3
Mo	95	182354.367	0.106013	mg/L		3
Ag	107	678565.843	0.099761	mg/L		3
Cd	111	82333.244	0.099348	mg/L		3
Sn	118	181431.749	0.106094	mg/L		3
Sb	121	196151.048	0.094211	mg/L		3
Ba	137	104141.711	0.096724	mg/L		3
Tl	205	2061160.659	0.109920	mg/L		3
Pb	208	1962202.082	0.092561	mg/L		3
Se	78	32775.630	0.106869	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 010
Method: 01-LONG LIST.mth
Acq Time: 11:30:56 Wed 19-Aug-20
Sample Name: CCV-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 08/19/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	372709.095	0.102346	mg/L		3
Be	9	102774.744	0.099964	mg/L		3
B	11	86619.387	0.104143	mg/L		3
Al	27	258884.914	0.102539	mg/L		3
Ti	47	6179.671	0.100417	mg/L		3
V	51	213087.913	0.099314	mg/L		3
Cr	52	269228.907	0.096574	mg/L		3
Mn	55	151565.300	0.100680	mg/L		3
Fe	56	245440.928	0.100939	mg/L		3
Co	59	552289.317	0.098128	mg/L		3
Ni	60	154106.895	0.099895	mg/L		3
Cu	65	202645.655	0.098714	mg/L		3
Zn	66	44288.550	0.100429	mg/L		3
As	75	23743.048	0.099351	mg/L		3
Sr	88	221860.046	0.099753	mg/L		3
Mo	95	184993.152	0.107451	mg/L		3
Ag	107	671269.600	0.098598	mg/L		3
Cd	111	84376.854	0.101701	mg/L		3
Sn	118	186439.399	0.108976	mg/L		3
Sb	121	196924.739	0.094513	mg/L		3
Ba	137	104769.525	0.097237	mg/L		3
Tl	205	1932194.490	0.101945	mg/L		3
Pb	208	2005142.188	0.093604	mg/L		3
Se	78	30655.333	0.101452	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 011
Method: 01-LONG LIST.mth
Acq Time: 11:37:37 Wed 19-Aug-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11464.624	-0.000092	mg/L		3
Be	9	105.000	0.000097	mg/L		3
B	11	430.007	0.000245	mg/L		3
Al	27	975.033	0.000004	mg/L		3
Ti	47	51.667	0.000199	mg/L		3
V	51	193.335	0.000068	mg/L		3
Cr	52	336.671	0.000069	mg/L		3
Mn	55	183.335	0.000072	mg/L		3
Fe	56	2930.302	-0.000107	mg/L		3
Co	59	420.006	0.000071	mg/L		3
Ni	60	130.001	0.000057	mg/L		3
Cu	65	221.668	0.000075	mg/L		3
Zn	66	83.334	0.000052	mg/L		3
As	75	95.000	0.000174	mg/L		3
Sr	88	230.002	0.000066	mg/L		3
Mo	95	2034.185	0.001131	mg/L		3
Ag	107	735.019	0.000098	mg/L		3
Cd	111	136.667	0.000067	mg/L		3
Sn	118	3615.460	0.001870	mg/L		3
Sb	121	1215.052	0.000550	mg/L		3
Ba	137	166.668	0.000073	mg/L		3
Tl	205	1455.074	0.000082	mg/L		3
Pb	208	1923.726	0.000080	mg/L		3
Se	78	1341.204	0.000541	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 012
Method: 01-LONG LIST.mth
Acq Time: 11:39:07 Wed 19-Aug-20
Sample Name: ICB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11683.143	0.000012	mg/L		3
Be	9	95.000	0.000089	mg/L		3
B	11	430.006	0.000253	mg/L		3
Al	27	938.364	-0.000003	mg/L		3
Ti	47	43.333	0.000047	mg/L		3
V	51	168.334	0.000055	mg/L		3
Cr	52	326.670	0.000065	mg/L		3
Mn	55	168.334	0.000060	mg/L		3
Fe	56	2950.305	-0.000104	mg/L		3
Co	59	323.337	0.000052	mg/L		3
Ni	60	130.001	0.000057	mg/L		3
Cu	65	193.335	0.000060	mg/L		3
Zn	66	70.000	0.000016	mg/L		3
As	75	91.667	0.000156	mg/L		3
Sr	88	195.001	0.000048	mg/L		3
Mo	95	1551.682	0.000824	mg/L		3
Ag	107	578.345	0.000072	mg/L		3
Cd	111	133.334	0.000061	mg/L		3
Sn	118	2921.969	0.001425	mg/L		3
Sb	121	1108.377	0.000492	mg/L		3
Ba	137	136.667	0.000042	mg/L		3
Tl	205	1178.382	0.000067	mg/L		3
Pb	208	1490.367	0.000060	mg/L		3
Se	78	1289.025	0.000324	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 013
Method: 01-LONG LIST.mth
Acq Time: 11:40:37 Wed 19-Aug-20
Sample Name: CCB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11421.234	-0.000055	mg/L		3
Be	9	81.667	0.000075	mg/L		3
B	11	373.338	0.000183	mg/L		3
Al	27	840.025	-0.000044	mg/L		3
Ti	47	31.667	-0.000164	mg/L		3
V	51	156.668	0.000048	mg/L		3
Cr	52	265.002	0.000040	mg/L		3
Mn	55	120.001	0.000025	mg/L		3
Fe	56	2930.301	-0.000126	mg/L		3
Co	59	268.336	0.000041	mg/L		3
Ni	60	110.000	0.000042	mg/L		3
Cu	65	168.334	0.000046	mg/L		3
Zn	66	63.333	-0.000002	mg/L		3
As	75	76.667	0.000085	mg/L		3
Sr	88	183.335	0.000042	mg/L		3
Mo	95	1376.709	0.000707	mg/L		3
Ag	107	536.677	0.000065	mg/L		3
Cd	111	145.001	0.000074	mg/L		3
Sn	118	2460.213	0.001121	mg/L		3
Sb	121	986.701	0.000425	mg/L		3
Ba	137	113.334	0.000018	mg/L		3
Tl	205	931.698	0.000050	mg/L		3
Pb	208	1255.356	0.000044	mg/L		3
Se	78	1235.890	0.000130	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 014
Method: 01-LONG LIST.mth
Acq Time: 11:45:47 Wed 19-Aug-20
Sample Name: BS-0.0001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Be	9	136.667	0.000123	mg/L		3
V	51	330.004	0.000127	mg/L		3
Cr	52	478.341	0.000113	mg/L		3
Sr	88	381.672	0.000129	mg/L		3
Ag	107	830.024	0.000105	mg/L		3
Cd	111	178.334	0.000107	mg/L		3
Ba	137	238.335	0.000130	mg/L		3
Pb	208	3053.827	0.000130	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 015
Method: 01-LONG LIST.mth
Acq Time: 11:47:34 Wed 19-Aug-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11097.650	-0.000214	mg/L		3
Be	9	38.333	0.000032	mg/L		3
B	11	253.336	0.000031	mg/L		3
Al	27	723.352	-0.000096	mg/L		3
Ti	47	36.667	-0.000075	mg/L		3
V	51	110.000	0.000025	mg/L		3
Cr	52	205.001	0.000017	mg/L		3
Mn	55	103.334	0.000014	mg/L		3
Fe	56	2786.939	-0.000192	mg/L		3
Co	59	160.001	0.000021	mg/L		3
Ni	60	85.000	0.000024	mg/L		3
Cu	65	130.001	0.000026	mg/L		3
Zn	66	56.667	-0.000018	mg/L		3
As	75	60.000	0.000008	mg/L		3
Sr	88	148.334	0.000025	mg/L		3
Mo	95	789.039	0.000346	mg/L		3
Ag	107	468.341	0.000054	mg/L		3
Cd	111	111.667	0.000031	mg/L		3
Sn	118	1553.418	0.000558	mg/L		3
Sb	121	656.682	0.000257	mg/L		3
Ba	137	80.000	-0.000015	mg/L		3
Tl	205	501.675	0.000027	mg/L		3
Pb	208	982.012	0.000032	mg/L		3
Se	78	1207.157	0.000091	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 016
Method: 01-LONG LIST.mth
Acq Time: 11:49:07 Wed 19-Aug-20
Sample Name: BS-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	13466.355	0.000376	mg/L		3
Be	9	590.012	0.000548	mg/L		3
B	11	740.019	0.000592	mg/L		3
Al	27	2140.161	0.000442	mg/L		3
Ti	47	68.334	0.000452	mg/L		3
V	51	1068.373	0.000489	mg/L		3
Cr	52	1623.426	0.000546	mg/L		3
Mn	55	960.032	0.000605	mg/L		3
Fe	56	4392.342	0.000490	mg/L		3
Co	59	2868.622	0.000521	mg/L		3
Ni	60	831.691	0.000527	mg/L		3
Cu	65	1175.048	0.000556	mg/L		3
As	75	168.334	0.000481	mg/L		3
Sr	88	1230.053	0.000531	mg/L		3
Ag	107	2645.245	0.000386	mg/L		3
Cd	111	525.010	0.000549	mg/L		3
Ba	137	741.686	0.000624	mg/L		3
Tl	205	9775.012	0.000528	mg/L		3
Pb	208	9893.873	0.000457	mg/L		3
Se	78	1380.346	0.000496	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 017
Method: 01-LONG LIST.mth
Acq Time: 11:53:56 Wed 19-Aug-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11601.396	-0.000086	mg/L		3
Be	9	28.333	0.000022	mg/L		3
B	11	295.003	0.000079	mg/L		3
Al	27	698.350	-0.000107	mg/L		3
Ti	47	45.000	0.000066	mg/L		3
V	51	73.334	0.000007	mg/L		3
Cr	52	176.668	0.000006	mg/L		3
Mn	55	85.000	0.000001	mg/L		3
Fe	56	2603.571	-0.000274	mg/L		3
Co	59	110.000	0.000011	mg/L		3
Ni	60	58.333	0.000006	mg/L		3
Cu	65	118.334	0.000020	mg/L		3
Zn	66	73.334	0.000021	mg/L		3
As	75	78.334	0.000091	mg/L		3
Sr	88	93.334	-0.000001	mg/L		3
Mo	95	509.757	0.000172	mg/L		3
Ag	107	311.670	0.000030	mg/L		3
Cd	111	111.667	0.000031	mg/L		3
Sn	118	1240.054	0.000362	mg/L		3
Sb	121	465.008	0.000159	mg/L		3
Ba	137	106.667	0.000011	mg/L		3
Tl	205	430.007	0.000022	mg/L		3
Pb	208	677.005	0.000016	mg/L		3
Se	78	1192.308	0.000010	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 018
Method: 01-LONG LIST.mth
Acq Time: 11:55:27 Wed 19-Aug-20
Sample Name: BS-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Sb	121	1423.405	0.000632	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 019
Method: 01-LONG LIST.mth
Acq Time: 11:57:28 Wed 19-Aug-20
Sample Name: BS-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	15228.113	0.000750	mg/L		3
Be	9	1086.708	0.000987	mg/L		3
B	11	1321.728	0.001223	mg/L		3
Al	27	4369.002	0.001250	mg/L		3
Ti	47	98.334	0.000966	mg/L		3
V	51	2188.502	0.001032	mg/L		3
Cr	52	2971.977	0.001047	mg/L		3
Mn	55	1663.430	0.001090	mg/L		3
Fe	56	5414.360	0.000929	mg/L		3
Co	59	5736.152	0.001050	mg/L		3
Ni	60	1660.097	0.001085	mg/L		3
Cu	65	2131.826	0.001040	mg/L		3
Zn	66	510.009	0.001050	mg/L		3
As	75	335.004	0.001209	mg/L		3
Sr	88	2420.205	0.001087	mg/L		3
Mo	95	2068.825	0.001113	mg/L		3
Ag	107	5752.825	0.000860	mg/L		3
Cd	111	875.027	0.000986	mg/L		3
Sb	121	2401.869	0.001124	mg/L		3
Ba	137	1226.719	0.001091	mg/L		3
Tl	205	19676.894	0.001044	mg/L		3
Pb	208	19354.398	0.000893	mg/L		3
Se	78	1485.204	0.000704	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 020
Method: 01-LONG LIST.mth
Acq Time: 11:59:04 Wed 19-Aug-20
Sample Name: BS-0.002
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	19151.209	0.001741	mg/L		3
Be	9	2166.832	0.001952	mg/L		3
B	11	2108.489	0.002102	mg/L		3
Al	27	6049.615	0.001860	mg/L		3
Ti	47	188.335	0.002444	mg/L		3
V	51	4218.956	0.001987	mg/L		3
Cr	52	5634.445	0.002012	mg/L		3
Mn	55	3200.358	0.002121	mg/L		3
Fe	56	7910.523	0.001965	mg/L		3
Co	59	11224.413	0.002037	mg/L		3
Ni	60	3302.048	0.002161	mg/L		3
Cu	65	4137.266	0.002026	mg/L		3
Zn	66	1023.370	0.002230	mg/L		3
As	75	471.675	0.001772	mg/L		3
Sr	88	4599.076	0.002074	mg/L		3
Mo	95	3469.440	0.001930	mg/L		3
Ag	107	11507.967	0.001715	mg/L		3
Cd	111	1621.759	0.001895	mg/L		3
Sn	118	4390.676	0.002235	mg/L		3
Sb	121	4287.311	0.002034	mg/L		3
Ba	137	2308.520	0.002106	mg/L		3
Tl	205	38013.844	0.002105	mg/L		3
Pb	208	38596.444	0.001876	mg/L		3
Se	78	1792.769	0.001633	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 021
Method: 01-LONG LIST.mth
Acq Time: 12:00:51 Wed 19-Aug-20
Sample Name: Solu-AB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Al	27	26000315.823	10.015137	mg/L		3
Ti	47	12433.744	0.224712	mg/L		3
Cr	52	54612.553	0.021661	mg/L		3
Mn	55	32102.702	0.023574	mg/L		3
Fe	56	23943259.718	11.062352	mg/L		3
Co	59	106448.730	0.020956	mg/L		3
Ni	60	29575.594	0.021217	mg/L		3
Cu	65	37335.425	0.020126	mg/L		3
Zn	66	8565.901	0.021404	mg/L		3
As	75	4682.434	0.021516	mg/L		3
Mo	95	328730.877	0.211761	mg/L		3
Ag	107	122104.657	0.019862	mg/L		3
Cd	111	16366.037	0.021777	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 022
Method: 01-LONG LIST.mth
Acq Time: 12:06:24 Wed 19-Aug-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11075.981	-0.000124	mg/L		3
Be	9	16.667	0.000012	mg/L		3
B	11	280.003	0.000074	mg/L		3
Al	27	22057.038	0.008562	mg/L		3
Ti	47	33.333	-0.000120	mg/L		3
V	51	73.334	0.000008	mg/L		3
Cr	52	188.335	0.000012	mg/L		3
Mn	55	105.000	0.000017	mg/L		3
Fe	56	17610.849	0.006501	mg/L		3
Co	59	143.334	0.000018	mg/L		3
Ni	60	95.000	0.000032	mg/L		3
Cu	65	131.667	0.000029	mg/L		3
Zn	66	58.333	-0.000009	mg/L		3
As	75	46.667	-0.000045	mg/L		3
Sr	88	121.667	0.000014	mg/L		3
Mo	95	2499.991	0.001429	mg/L		3
Ag	107	506.676	0.000062	mg/L		3
Cd	111	120.001	0.000044	mg/L		3
Sn	118	838.358	0.000128	mg/L		3
Sb	121	340.004	0.000101	mg/L		3
Ba	137	96.667	0.000004	mg/L		3
Tl	205	241.669	0.000012	mg/L		3
Pb	208	507.002	0.000008	mg/L		3
Se	78	1099.822	-0.000258	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 023
Method: 01-LONG LIST.mth
Acq Time: 12:07:54 Wed 19-Aug-20
Sample Name: Solu-AA
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11055.964	-0.000178	mg/L		3
Be	9	8.333	0.000003	mg/L		3
B	11	230.002	0.000009	mg/L		3
Al	27	14719.249	0.005467	mg/L		3
Ti	47	51.667	0.000190	mg/L		3
V	51	70.000	0.000006	mg/L		3
Cr	52	195.001	0.000014	mg/L		3
Mn	55	90.000	0.000005	mg/L		3
Fe	56	13097.679	0.004412	mg/L		3
Co	59	96.667	0.000009	mg/L		3
Ni	60	55.000	0.000004	mg/L		3
Cu	65	98.334	0.000011	mg/L		3
Zn	66	55.000	-0.000020	mg/L		3
As	75	65.000	0.000037	mg/L		3
Sr	88	123.334	0.000014	mg/L		3
Mo	95	1855.098	0.001011	mg/L		3
Ag	107	425.006	0.000048	mg/L		3
Cd	111	101.667	0.000020	mg/L		3
Sn	118	808.357	0.000102	mg/L		3
Sb	121	296.670	0.000076	mg/L		3
Ba	137	100.000	0.000006	mg/L		3
Tl	205	216.668	0.000011	mg/L		3
Pb	208	497.002	0.000007	mg/L		3
Se	78	1103.561	-0.000266	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 024
Method: 01-LONG LIST.mth
Acq Time: 12:10:22 Wed 19-Aug-20
Sample Name: 081920_1 LCS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	190299.688	0.048763	mg/L		3
Be	9	51603.137	0.048453	mg/L		3
B	11	42635.253	0.049350	mg/L		3
Al	27	148393.975	0.056499	mg/L		3
Ti	47	3133.678	0.051044	mg/L		3
V	51	103208.192	0.048481	mg/L		3
Cr	52	133866.707	0.048392	mg/L		3
Mn	55	74379.831	0.049797	mg/L		3
Fe	56	134305.309	0.055047	mg/L		3
Co	59	270047.436	0.048405	mg/L		3
Ni	60	74574.266	0.048745	mg/L		3
Cu	65	100051.058	0.049130	mg/L		3
Zn	66	22250.650	0.050799	mg/L		3
As	75	11257.768	0.047379	mg/L		3
Sr	88	109958.346	0.049809	mg/L		3
Mo	95	82166.026	0.048048	mg/L		3
Ag	107	326704.073	0.048386	mg/L		3
Cd	111	41117.425	0.049934	mg/L		3
Sn	118	80947.215	0.047506	mg/L		3
Sb	121	98255.087	0.047514	mg/L		3
Ba	137	51084.535	0.047749	mg/L		3
Tl	205	957860.115	0.051871	mg/L		3
Pb	208	980762.803	0.046991	mg/L		3
Se	78	15499.254	0.049902	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 025
Method: 01-LONG LIST.mth
Acq Time: 12:25:41 Wed 19-Aug-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	10979.225	-0.000282	mg/L		3
Be	9	18.333	0.000013	mg/L		3
B	11	230.002	0.000001	mg/L		3
Al	27	3285.379	0.000891	mg/L		3
Ti	47	50.000	0.000141	mg/L		3
V	51	61.667	0.000001	mg/L		3
Cr	52	185.001	0.000009	mg/L		3
Mn	55	98.334	0.000010	mg/L		3
Fe	56	4455.695	0.000531	mg/L		3
Co	59	91.667	0.000008	mg/L		3
Ni	60	56.667	0.000005	mg/L		3
Cu	65	103.334	0.000012	mg/L		3
Zn	66	65.000	0.000001	mg/L		3
As	75	61.667	0.000016	mg/L		3
Sr	88	96.667	0.000000	mg/L		3
Mo	95	551.059	0.000197	mg/L		3
Ag	107	203.335	0.000013	mg/L		3
Cd	111	98.334	0.000013	mg/L		3
Sn	118	770.021	0.000071	mg/L		3
Sb	121	230.002	0.000040	mg/L		3
Ba	137	76.667	-0.000019	mg/L		3
Tl	205	206.668	0.000010	mg/L		3
Pb	208	498.668	0.000007	mg/L		3
Se	78	1156.493	-0.000091	mg/L		3

Data Set: MT4-20-0819A
Run Date: 08/19/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 026
Method: 01-LONG LIST.mth
Acq Time: 12:27:11 Wed 19-Aug-20
Sample Name: 081920_1 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0819A.cal
Cal Type: External Calibration
Last Calib: MTD-081920-1
Bkg File:
Int Correct:
Blank File: Blank.007

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11050.957	-0.000243	mg/L		3
Be	9	11.667	0.000006	mg/L		3
B	11	208.335	-0.000023	mg/L		3
Al	27	3842.183	0.001112	mg/L		3
Ti	47	36.667	-0.000057	mg/L		3
V	51	65.000	0.000004	mg/L		3
Cr	52	173.334	0.000007	mg/L		3
Mn	55	95.000	0.000010	mg/L		3
Fe	56	4225.626	0.000503	mg/L		3
Co	59	83.334	0.000007	mg/L		3
Ni	60	60.000	0.000009	mg/L		3
Cu	65	103.334	0.000014	mg/L		3
Zn	66	115.000	0.000131	mg/L		3
As	75	63.333	0.000035	mg/L		3
Sr	88	126.667	0.000017	mg/L		3
Mo	95	501.445	0.000179	mg/L		3
Ag	107	225.002	0.000018	mg/L		3
Cd	111	58.333	-0.000034	mg/L		3
Sn	118	775.021	0.000092	mg/L		3
Sb	121	196.668	0.000027	mg/L		3
Ba	137	63.333	-0.000029	mg/L		3
Tl	205	176.668	0.000009	mg/L		3
Pb	208	452.001	0.000005	mg/L		3
Se	78	1113.858	-0.000234	mg/L		3