Data Set: MT4-20-0505A
Run Date: 05/05/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 043
Method: 01-MINERALS.mth
Acq Time: 18:07:19 Tue 05-May-20
Sample Name: 13569.03s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	6748786.667	29.864689	mg/L		3
Mg	24	5511398.889	39.682260	mg/L		3
K	39	476856.667	1.570886	mg/L		3
Ca	44	693237.778	113.318349	mg/L		3

Data Set: MT4-20-0505A
Run Date: 05/05/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 045
Method: 01-MINERALS.mth
Acq Time: 18:08:52 Tue 05-May-20
Sample Name: 13569.04s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	6807737.778	29.822628	mg/L		3
Mg	24	5626773.333	40.050478	mg/L		3
K	39	470725.556	1.519986	mg/L		3
Ca	44	689990.000	111.708516	mg/L		3

Data Set: MT4-20-0505A
Run Date: 05/05/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 047
Method: 01-MINERALS.mth
Acq Time: 18:10:25 Tue 05-May-20
Sample Name: 13569.05s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	19864103.333	88.326849	mg/L		3
Mg	24	8717970.000	63.030779	mg/L		3
K	39	1617223.333	7.370066	mg/L		3
Ca	44	1490082.222	245.824194	mg/L		3

Data Set: MT4-20-0505A
Run Date: 05/05/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 049
Method: 01-MINERALS.mth
Acq Time: 18:11:57 Tue 05-May-20
Sample Name: 13569.06s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	8516270.000	36.362555	mg/L		3
Mg	24	4251204.444	29.520870	mg/L		3
K	39	1431684.444	6.145013	mg/L		3
Ca	44	898797.778	142.066793	mg/L		3

Data Set: MT4-20-0505A
Run Date: 05/05/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 058
Method: 01-MINERALS.mth
Acq Time: 18:25:25 Tue 05-May-20
Sample Name: 13569.01 dil
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 50

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	1163894.444	49.640638	mg/L		3
Mg	24	630736.667	43.895543	mg/L		3
K	39	206658.889	1.761457	mg/L		3
Ca	44	105988.889	159.714874	mg/L		3

Data Set: MT4-20-0505A
Run Date: 05/05/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 059
Method: 01-MINERALS.mth
Acq Time: 18:26:12 Tue 05-May-20
Sample Name: CCV3-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 04/29/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2461331.111	2.164710	mg/L		3
Mg	24	1437604.444	2.060392	mg/L		3
K	39	2276647.778	2.129541	mg/L		3
Ca	44	69883.333	2.092557	mg/L		3

Data Set: MT4-20-0505A
Run Date: 05/05/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 060
Method: 01-MINERALS.mth
Acq Time: 18:26:56 Tue 05-May-20
Sample Name: CCB3
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	23548.889	0.009765	mg/L		3
Mg	24	12191.111	0.011139	mg/L		3
K	39	173162.222	0.008518	mg/L		3
Ca	44	6283.333	0.000455	mg/L		3

Data Set: MT4-20-0505A
Run Date: 05/05/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 063
Method: 01-MINERALS.mth
Acq Time: 18:48:06 Tue 05-May-20
Sample Name: CCV4-2.0
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 04/29/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	2398592.222	2.013948	mg/L		3
Mg	24	1444110.000	1.975614	mg/L		3
K	39	2363570.000	2.106021	mg/L		3
Ca	44	71531.111	2.036027	mg/L		3

Data Set: MT4-20-0505A
Run Date: 05/05/20

Metals Quantitation Summary Report

Analyst: JRH
Instrument: PE NEXION

Sequence #: 064
Method: 01-MINERALS.mth
Acq Time: 18:48:51 Tue 05-May-20
Sample Name: CCB4
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0505A.cal
Cal Type: External Calibration
Last Calib: MTD-050520-1
Bkg File:
Int Correct:
Blank File: Blank.022

Element	Mass		Concentration	Units	RSD %	Rep
Na	23	23130.000	0.009205	mg/L		3
Mg	24	12020.000	0.010691	mg/L		3
K	39	178032.222	0.012626	mg/L		3
Ca	44	5986.667	-0.010301	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 001
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 10:47:19 Wed 06-May-20
Sample Name: Blank
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	9778.352	0	mg/L		3
Be	9	66.667	0	mg/L		3
B	10	40.000	0	mg/L		3
Cr	52	178.334	0	mg/L		3
Co	59	55.000	0	mg/L		3
As	75	138.334	0	mg/L		3
Mo	95	390.548	0	mg/L		3
Cd	114	198.045	0	mg/L		3
Sb	121	373.338	0	mg/L		3
Ba	137	138.334	0	mg/L		3
Tl	205	168.334	0	mg/L		3
Pb	208	1680.378	0	mg/L		3
Se	82	-6.784	0	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 002
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 10:48:37 Wed 06-May-20
Sample Name: Std-0.0
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	9896.762	0.000095	mg/L		3
Be	9	75.000	0.000012	mg/L		3
B	10	35.000	-0.000033	mg/L		3
Cr	52	185.001	0.000004	mg/L		3
Co	59	68.333	0.000002	mg/L		3
As	75	155.001	0.000072	mg/L		3
Mo	95	375.570	-0.000003	mg/L		3
Cd	114	203.090	0.000003	mg/L		3
Sb	121	353.338	-0.000004	mg/L		3
Ba	137	133.334	-0.000001	mg/L		3
Tl	205	131.667	-0.000001	mg/L		3
Pb	208	1660.376	-0.000001	mg/L		3
Se	82	-69.068	-0.000381	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 003
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 10:49:55 Wed 06-May-20
Sample Name: Std-0.0001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	10724.054	0.000061	mg/L		3
Be	9	171.668	0.000105	mg/L		3
B	10	58.333	0.000089	mg/L		3
Cr	52	493.342	0.000098	mg/L		3
Co	59	941.698	0.000131	mg/L		3
As	75	183.335	0.000134	mg/L		3
Mo	95	521.761	0.000047	mg/L		3
Cd	114	582.752	0.000123	mg/L		3
Sb	121	905.029	0.000169	mg/L		3
Ba	137	405.006	0.000144	mg/L		3
Tl	205	2921.966	0.000090	mg/L		3
Pb	208	4527.381	0.000088	mg/L		3
Se	82	-0.287	0.000033	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 004
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 10:51:13 Wed 06-May-20
Sample Name: Std-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	12610.565	0.000667	mg/L		3
Be	9	561.678	0.000513	mg/L		3
B	10	2011.809	0.011761	mg/L		3
Cr	52	1836.785	0.000515	mg/L		3
Co	59	3557.110	0.000506	mg/L		3
As	75	326.670	0.000596	mg/L		3
Mo	95	1561.726	0.000462	mg/L		3
Cd	114	1799.602	0.000509	mg/L		3
Sb	121	1916.795	0.000488	mg/L		3
Ba	137	1086.708	0.000507	mg/L		3
Tl	205	14662.524	0.000458	mg/L		3
Pb	208	16507.300	0.000452	mg/L		3
Se	82	17.447	0.000147	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 005
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 10:52:31 Wed 06-May-20
Sample Name: Std-0.005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	27220.944	0.005031	mg/L		3
Be	9	5005.878	0.005074	mg/L		3
B	10	898.362	0.005019	mg/L		3
Cr	52	17061.888	0.005272	mg/L		3
Co	59	36566.742	0.005283	mg/L		3
As	75	1656.763	0.004987	mg/L		3
Mo	95	12179.636	0.004740	mg/L		3
Cd	114	16166.418	0.005114	mg/L		3
Sb	121	16557.930	0.005198	mg/L		3
Ba	137	9883.420	0.005250	mg/L		3
Tl	205	153343.672	0.004746	mg/L		3
Pb	208	156865.145	0.004681	mg/L		3
Se	82	774.239	0.004540	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 006
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 10:53:50 Wed 06-May-20
Sample Name: Std-0.02
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	76407.138	0.019239	mg/L		3
Be	9	19731.957	0.019655	mg/L		3
B	10	3510.432	0.019843	mg/L		3
Cr	52	66949.847	0.020563	mg/L		3
Co	59	142204.404	0.020243	mg/L		3
As	75	6286.384	0.019997	mg/L		3
Mo	95	48893.062	0.019180	mg/L		3
Cd	114	65044.376	0.020453	mg/L		3
Sb	121	65170.015	0.020491	mg/L		3
Ba	137	38003.848	0.020107	mg/L		3
Tl	205	607328.237	0.019018	mg/L		3
Pb	208	634608.023	0.019317	mg/L		3
Se	82	3353.562	0.019638	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 007
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 10:55:08 Wed 06-May-20
Sample Name: Std-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	170366.061	0.048963	mg/L		3
Be	9	48062.576	0.050092	mg/L		3
B	10	8452.520	0.050242	mg/L		3
Cr	52	165262.499	0.051959	mg/L		3
Co	59	344678.170	0.050179	mg/L		3
As	75	14952.828	0.049362	mg/L		3
Mo	95	126251.338	0.050976	mg/L		3
Cd	114	157311.608	0.050611	mg/L		3
Sb	121	158957.963	0.051273	mg/L		3
Ba	137	93206.441	0.050561	mg/L		3
Tl	205	1508748.113	0.048815	mg/L		3
Pb	208	1552920.574	0.048944	mg/L		3
Se	82	8196.933	0.048642	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 008
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 10:56:27 Wed 06-May-20
Sample Name: Std-0.2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	671725.477	0.200334	mg/L		3
Be	9	193110.413	0.200010	mg/L		3
B	10	33831.795	0.199955	mg/L		3
Cr	52	656965.063	0.199447	mg/L		3
Co	59	1423397.044	0.199924	mg/L		3
As	75	62389.300	0.200160	mg/L		3
Mo	95	511840.166	0.199845	mg/L		3
Cd	114	643031.061	0.199799	mg/L		3
Sb	121	640362.197	0.199628	mg/L		3
Ba	137	381520.632	0.199843	mg/L		3
Tl	205	6517765.289	0.200401	mg/L		3
Pb	208	6689106.944	0.200340	mg/L		3
Se	82	33564.005	0.200388	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 009
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 10:58:21 Wed 06-May-20
Sample Name: ICV-0.1
Sample Type: Sample
Matrix: Liquid
Comments: Spex-std made 04/29/
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	327707.103	0.102490	mg/L		3
Be	9	95971.830	0.105466	mg/L		3
B	10	16631.372	0.104319	mg/L		3
Cr	52	321903.431	0.098972	mg/L		3
Co	59	706583.276	0.100505	mg/L		3
As	75	30034.875	0.097329	mg/L		3
Mo	95	257544.230	0.101728	mg/L		3
Cd	114	317134.933	0.099740	mg/L		3
Sb	121	285117.133	0.089943	mg/L		3
Ba	137	192348.100	0.101972	mg/L		3
Tl	205	3305669.440	0.104818	mg/L		3
Pb	208	3427727.382	0.105869	mg/L		3
Se	82	16733.270	0.099289	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 010
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 10:59:38 Wed 06-May-20
Sample Name: CCV-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 04/29/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	333945.859	0.108874	mg/L		3
Be	9	96048.773	0.109737	mg/L		3
B	10	16346.023	0.106675	mg/L		3
Cr	52	316779.359	0.099094	mg/L		3
Co	59	698011.497	0.101058	mg/L		3
As	75	29201.505	0.096286	mg/L		3
Mo	95	259057.746	0.104164	mg/L		3
Cd	114	320683.564	0.102624	mg/L		3
Sb	121	289057.665	0.092809	mg/L		3
Ba	137	188173.727	0.101589	mg/L		3
Tl	205	3242085.247	0.102701	mg/L		3
Pb	208	3322679.737	0.102527	mg/L		3
Se	82	16496.066	0.100671	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 011
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:05:14 Wed 06-May-20
Sample Name: rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	9801.700	0.000048	mg/L		3
Be	9	55.000	-0.000013	mg/L		3
B	10	88.334	0.000316	mg/L		3
Cr	52	348.338	0.000062	mg/L		3
Co	59	455.007	0.000064	mg/L		3
As	75	178.335	0.000170	mg/L		3
Mo	95	1990.730	0.000720	mg/L		3
Cd	114	310.641	0.000043	mg/L		3
Sb	121	2728.596	0.000843	mg/L		3
Ba	137	201.668	0.000041	mg/L		3
Tl	205	2600.240	0.000084	mg/L		3
Pb	208	2813.803	0.000038	mg/L		3
Se	82	-79.434	-0.000473	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 012
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:06:32 Wed 06-May-20
Sample Name: ICB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	9388.084	0.000146	mg/L		3
Be	9	36.667	-0.000029	mg/L		3
B	10	66.667	0.000209	mg/L		3
Cr	52	340.004	0.000060	mg/L		3
Co	59	336.671	0.000046	mg/L		3
As	75	205.001	0.000272	mg/L		3
Mo	95	1556.794	0.000532	mg/L		3
Cd	114	329.313	0.000050	mg/L		3
Sb	121	2286.850	0.000692	mg/L		3
Ba	137	223.335	0.000055	mg/L		3
Tl	205	2048.481	0.000065	mg/L		3
Pb	208	2320.423	0.000022	mg/L		3
Se	82	-131.155	-0.000796	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 013
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:07:50 Wed 06-May-20
Sample Name: CCB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	9771.688	0.000151	mg/L		3
Be	9	30.000	-0.000039	mg/L		3
B	10	70.000	0.000211	mg/L		3
Cr	52	283.336	0.000036	mg/L		3
Co	59	256.669	0.000031	mg/L		3
As	75	150.001	0.000046	mg/L		3
Mo	95	1343.576	0.000413	mg/L		3
Cd	114	332.178	0.000047	mg/L		3
Sb	121	1845.119	0.000508	mg/L		3
Ba	137	180.001	0.000025	mg/L		3
Tl	205	1620.092	0.000050	mg/L		3
Pb	208	1878.721	0.000006	mg/L		3
Se	82	44.558	0.000337	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 014
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:09:17 Wed 06-May-20
Sample Name: BS-0.0001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Be	9	135.001	0.000073	mg/L		3
As	75	165.001	0.000073	mg/L		3
Cd	114	582.017	0.000123	mg/L		3
Tl	205	4162.273	0.000128	mg/L		3
Pb	208	4665.740	0.000089	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 015
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:10:51 Wed 06-May-20
Sample Name: BS-0.0005
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11434.576	0.000431	mg/L		3
Be	9	465.008	0.000427	mg/L		3
Cr	52	1768.444	0.000504	mg/L		3
Co	59	3580.449	0.000518	mg/L		3
As	75	300.003	0.000525	mg/L		3
Cd	114	1803.258	0.000517	mg/L		3
Ba	137	1153.380	0.000554	mg/L		3
Tl	205	15069.613	0.000481	mg/L		3
Pb	208	15578.437	0.000434	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 016
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:14:46 Wed 06-May-20
Sample Name: BS-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	13870.069	0.001159	mg/L		3
Be	9	916.696	0.000904	mg/L		3
B	10	250.002	0.001271	mg/L		3
Cr	52	3522.102	0.001050	mg/L		3
Co	59	7086.758	0.001024	mg/L		3
As	75	475.008	0.001099	mg/L		3
Mo	95	3021.255	0.001057	mg/L		3
Cd	114	3536.365	0.001072	mg/L		3
Sb	121	4355.664	0.001282	mg/L		3
Ba	137	2101.822	0.001063	mg/L		3
Tl	205	30153.483	0.000977	mg/L		3
Pb	208	31348.200	0.000940	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 017
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:16:03 Wed 06-May-20
Sample Name: BS-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	13503.081	0.001048	mg/L		3
Be	9	930.030	0.000922	mg/L		3
B	10	238.335	0.001200	mg/L		3
Cr	52	3488.760	0.001068	mg/L		3
Co	59	7186.809	0.001064	mg/L		3
As	75	453.341	0.001064	mg/L		3
Mo	95	3060.191	0.001104	mg/L		3
Cd	114	3278.653	0.001016	mg/L		3
Sb	121	4455.695	0.001350	mg/L		3
Ba	137	2096.821	0.001090	mg/L		3
Tl	205	30280.394	0.000981	mg/L		3
Pb	208	31296.411	0.000937	mg/L		3
Se	82	212.810	0.001348	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 018
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:17:21 Wed 06-May-20
Sample Name: BS-0.001
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Se	82	199.555	0.001210	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 019
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:18:41 Wed 06-May-20
Sample Name: Solu-AB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Cr	52	66018.914	0.021044	mg/L		3
Co	59	140127.314	0.020702	mg/L		3
As	75	6203.014	0.020499	mg/L		3
Mo	95	491489.158	0.201857	mg/L		3
Cd	114	64119.729	0.020896	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 020
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:21:16 Wed 06-May-20
Sample Name: Solu-AA
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	11251.120	-0.000091	mg/L		3
Be	9	20.000	-0.000055	mg/L		3
B	10	100.000	0.000286	mg/L		3
Cr	52	365.005	0.000045	mg/L		3
Co	59	220.002	0.000021	mg/L		3
As	75	161.668	0.000003	mg/L		3
Mo	95	5208.374	0.001749	mg/L		3
Cd	114	251.767	0.000006	mg/L		3
Sb	121	705.017	0.000080	mg/L		3
Ba	137	250.002	0.000044	mg/L		3
Tl	205	676.683	0.000014	mg/L		3
Pb	208	1858.722	-0.000005	mg/L		3
Se	82	-69.238	-0.000310	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 021
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:23:02 Wed 06-May-20
Sample Name: 050620_1 LCS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	176392.528	0.050083	mg/L		3
Be	9	48059.112	0.049496	mg/L		3
B	10	8310.751	0.048831	mg/L		3
Cr	52	170239.274	0.052083	mg/L		3
Co	59	369480.395	0.052328	mg/L		3
As	75	15249.810	0.048953	mg/L		3
Mo	95	127754.812	0.050168	mg/L		3
Cd	114	164484.578	0.051469	mg/L		3
Sb	121	160136.449	0.050236	mg/L		3
Ba	137	96904.228	0.051130	mg/L		3
Tl	205	1517751.928	0.047162	mg/L		3
Pb	208	1622674.468	0.049104	mg/L		3
Se	82	8188.418	0.047930	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 023
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:25:41 Wed 06-May-20
Sample Name: 050620_1 LRB
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	9933.462	0.000058	mg/L		3
Be	9	35.000	-0.000034	mg/L		3
B	10	83.334	0.000277	mg/L		3
Cr	52	270.003	0.000030	mg/L		3
Co	59	240.002	0.000028	mg/L		3
As	75	176.668	0.000133	mg/L		3
Mo	95	2357.180	0.000838	mg/L		3
Cd	114	236.724	0.000013	mg/L		3
Sb	121	636.681	0.000090	mg/L		3
Ba	137	183.335	0.000025	mg/L		3
Tl	205	1695.101	0.000052	mg/L		3
Pb	208	2408.762	0.000023	mg/L		3
Se	82	-37.556	-0.000172	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 024
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:28:48 Wed 06-May-20
Sample Name: 13569.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 2

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	10593.945	0.000224	mg/L		3
Be	9	25.000	-0.000095	mg/L		3
Cr	52	296.670	0.000063	mg/L		3
Co	59	136.667	0.000022	mg/L		3
As	75	195.001	0.000288	mg/L		3
Mo	95	1301.745	0.000696	mg/L		3
Cd	114	228.895	0.000009	mg/L		3
Sb	121	488.342	0.000053	mg/L		3
Ba	137	193.335	0.000046	mg/L		3
Tl	205	728.352	0.000033	mg/L		3
Pb	208	1227.022	-0.000039	mg/L		3
Se	82	-106.050	-0.001147	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 025
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:41:06 Wed 06-May-20
Sample Name: 13569.01 dil
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 50

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	12740.695	0.044057	mg/L		3
Be	9	21.667	-0.002529	mg/L		3
Cr	52	435.007	0.003603	mg/L		3
Co	59	453.341	0.002740	mg/L		3
As	75	211.668	0.009490	mg/L		3
Mo	95	870.205	0.008542	mg/L		3
Cd	114	270.360	0.000811	mg/L		3
Sb	121	430.007	0.000293	mg/L		3
Ba	137	5951.242	0.150897	mg/L		3
Tl	205	631.681	0.000725	mg/L		3
Pb	208	1505.367	-0.000471	mg/L		3
Se	82	-28.117	-0.008025	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 026
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:42:22 Wed 06-May-20
Sample Name: 13569.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	33669.648	0.036122	mg/L		3
Be	9	28.333	-0.000221	mg/L		3
Cr	52	1121.711	0.001500	mg/L		3
Co	59	2838.616	0.002063	mg/L		3
As	75	380.005	0.004010	mg/L		3
Mo	95	1685.690	0.002643	mg/L		3
Cd	114	295.136	0.000149	mg/L		3
Sb	121	370.005	-0.000026	mg/L		3
Ba	137	54369.943	0.149950	mg/L		3
Tl	205	471.675	0.000048	mg/L		3
Pb	208	3410.531	0.000261	mg/L		3
Se	82	-7.385	-0.000082	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 028
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:53:12 Wed 06-May-20
Sample Name: 13569.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	45642.825	0.054655	mg/L		3
Be	9	15.000	-0.000289	mg/L		3
Cr	52	315.003	0.000186	mg/L		3
Co	59	5274.310	0.003686	mg/L		3
As	75	261.669	0.001798	mg/L		3
Mo	95	5601.902	0.010172	mg/L		3
Cd	114	273.524	0.000092	mg/L		3
Sb	121	345.004	-0.000095	mg/L		3
Ba	137	14779.308	0.038546	mg/L		3
Tl	205	341.671	0.000027	mg/L		3
Pb	208	1507.035	-0.000040	mg/L		3
Se	82	-33.013	-0.000730	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 030
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 11:57:32 Wed 06-May-20
Sample Name: 13569.03s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	16721.479	0.009102	mg/L		3
Be	9	13.333	-0.000302	mg/L		3
Cr	52	263.336	0.000117	mg/L		3
Co	59	733.352	0.000489	mg/L		3
As	75	520.009	0.006193	mg/L		3
Mo	95	2410.453	0.004024	mg/L		3
Cd	114	202.482	-0.000011	mg/L		3
Sb	121	316.670	-0.000127	mg/L		3
Ba	137	58390.770	0.157433	mg/L		3
Tl	205	248.336	0.000012	mg/L		3
Pb	208	752.006	-0.000162	mg/L		3
Se	82	37.461	0.001330	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 032
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:00:18 Wed 06-May-20
Sample Name: 13569.04s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	16809.909	0.008463	mg/L		3
Be	9	18.333	-0.000280	mg/L		3
Cr	52	211.668	0.000039	mg/L		3
Co	59	781.688	0.000530	mg/L		3
As	75	536.677	0.006564	mg/L		3
Mo	95	2206.836	0.003661	mg/L		3
Cd	114	223.905	0.000026	mg/L		3
Sb	121	285.003	-0.000173	mg/L		3
Ba	137	57108.926	0.155603	mg/L		3
Tl	205	178.334	0.000001	mg/L		3
Pb	208	763.673	-0.000156	mg/L		3
Se	82	-54.550	-0.001495	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 034
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:03:03 Wed 06-May-20
Sample Name: 13569.05s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	66122.975	0.090963	mg/L		3
Be	9	51.667	-0.000084	mg/L		3
Cr	52	7048.409	0.010163	mg/L		3
Co	59	8189.014	0.005582	mg/L		3
As	75	491.675	0.005293	mg/L		3
Mo	95	50456.913	0.095528	mg/L		3
Cd	114	365.554	0.000219	mg/L		3
Sb	121	515.009	0.000148	mg/L		3
Ba	137	25060.299	0.063793	mg/L		3
Tl	205	1235.054	0.000178	mg/L		3
Pb	208	32883.102	0.005102	mg/L		3
Se	82	122.231	0.004121	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 036
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:10:32 Wed 06-May-20
Sample Name: 13569.06s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	35851.744	0.037258	mg/L		3
Be	9	8.333	-0.000329	mg/L		3
Cr	52	328.337	0.000212	mg/L		3
Co	59	808.356	0.000535	mg/L		3
As	75	166.668	0.000294	mg/L		3
Mo	95	11222.803	0.021473	mg/L		3
Cd	114	385.498	0.000274	mg/L		3
Sb	121	293.336	-0.000172	mg/L		3
Ba	137	16018.992	0.042332	mg/L		3
Tl	205	283.336	0.000018	mg/L		3
Pb	208	1738.714	-0.000002	mg/L		3
Se	82	16.224	0.000659	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 043
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:23:24 Wed 06-May-20
Sample Name: 13569.06 MS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	213614.393	0.304981	mg/L		3
Be	9	51785.604	0.264364	mg/L		3
Cr	52	172742.005	0.257834	mg/L		3
Co	59	366293.674	0.253107	mg/L		3
As	75	15800.407	0.247578	mg/L		3
Mo	95	139222.527	0.266892	mg/L		3
Cd	114	163339.041	0.249494	mg/L		3
Sb	121	128147.298	0.196083	mg/L		3
Ba	137	109123.734	0.281184	mg/L		3
Tl	205	1425100.123	0.236887	mg/L		3
Pb	208	1468285.490	0.237628	mg/L		3
Se	82	8631.861	0.262525	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 044
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:26:20 Wed 06-May-20
Sample Name: 13569.06 MSD-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	210731.449	0.297444	mg/L		3
Be	9	51052.813	0.258425	mg/L		3
Cr	52	171853.609	0.257086	mg/L		3
Co	59	370663.666	0.256863	mg/L		3
As	75	15973.934	0.250973	mg/L		3
Mo	95	141968.330	0.272794	mg/L		3
Cd	114	160940.156	0.246318	mg/L		3
Sb	121	131500.800	0.201725	mg/L		3
Ba	137	108092.446	0.279018	mg/L		3
Tl	205	1416182.245	0.235158	mg/L		3
Pb	208	1471257.536	0.237858	mg/L		3
Se	82	8444.892	0.258575	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 045
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:29:14 Wed 06-May-20
Sample Name: CCV2-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 04/29/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	372939.135	0.099872	mg/L		3
Be	9	105082.724	0.098607	mg/L		3
B	10	19166.253	0.102580	mg/L		3
Cr	52	351295.684	0.103803	mg/L		3
Co	59	769733.501	0.105266	mg/L		3
As	75	31167.316	0.097105	mg/L		3
Mo	95	264668.596	0.100528	mg/L		3
Cd	114	334326.462	0.101066	mg/L		3
Sb	121	296502.654	0.089927	mg/L		3
Ba	137	193076.931	0.098424	mg/L		3
Tl	205	3266864.535	0.106387	mg/L		3
Pb	208	3351973.182	0.106304	mg/L		3
Se	82	16948.379	0.097262	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 046
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:39:20 Wed 06-May-20
Sample Name: Rinse
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	10538.913	0.000193	mg/L		3
Be	9	10.000	-0.000063	mg/L		3
B	10	93.334	0.000334	mg/L		3
Cr	52	228.335	0.000016	mg/L		3
Co	59	138.334	0.000013	mg/L		3
As	75	183.335	0.000157	mg/L		3
Mo	95	728.780	0.000142	mg/L		3
Cd	114	216.288	0.000006	mg/L		3
Sb	121	1376.734	0.000339	mg/L		3
Ba	137	131.667	-0.000004	mg/L		3
Tl	205	560.011	0.000015	mg/L		3
Pb	208	825.341	-0.000027	mg/L		3
Se	82	-47.831	-0.000266	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 047
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:40:38 Wed 06-May-20
Sample Name: CCB2
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
Li	7	10200.320	-0.000071	mg/L		3
Be	9	20.000	-0.000052	mg/L		3
B	10	100.000	0.000341	mg/L		3
Cr	52	246.669	0.000022	mg/L		3
Co	59	106.667	0.000008	mg/L		3
As	75	161.668	0.000078	mg/L		3
Mo	95	724.488	0.000140	mg/L		3
Cd	114	184.953	-0.000005	mg/L		3
Sb	121	1241.721	0.000293	mg/L		3
Ba	137	136.667	-0.000001	mg/L		3
Tl	205	478.341	0.000011	mg/L		3
Pb	208	880.342	-0.000026	mg/L		3
Se	82	-12.529	-0.000018	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 048
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:42:17 Wed 06-May-20
Sample Name: 13569.07s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 2

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
B	10	86.667	0.000501	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 049
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:44:13 Wed 06-May-20
Sample Name: 13569.04s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
B	11	8959.478	0.049227	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 051
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:47:10 Wed 06-May-20
Sample Name: 13569.03s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
B	10	1621.759	0.047838	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 053
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:49:53 Wed 06-May-20
Sample Name: 13569.01s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
B	10	16177.512	0.480000	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 055
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:52:57 Wed 06-May-20
Sample Name: 13569.06s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
B	10	19832.107	0.564313	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 057
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 12:55:39 Wed 06-May-20
Sample Name: 13569.02s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
B	10	125583.476	3.568901	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 059
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 13:00:40 Wed 06-May-20
Sample Name: 13569.05 dil
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 25

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
B	11	178983.384	4.915376	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 060
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 13:01:59 Wed 06-May-20
Sample Name: 13569.05s
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
B	11	868189.279	4.997121	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 062
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 13:05:36 Wed 06-May-20
Sample Name: 13569.06 MS-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
B	10	28946.024	0.855487	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 063
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 13:06:55 Wed 06-May-20
Sample Name: 13569.06 MSD-0.05
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 5

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
B	10	29759.483	0.855660	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 064
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 13:08:30 Wed 06-May-20
Sample Name: CCV3-0.1
Sample Type: Sample
Matrix: Liquid
Comments: IV-std made 04/29/20
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
B	10	19409.845	0.107218	mg/L		3

Data Set: MT4-20-0506A
Run Date: 05/06/20

Metals Quantitation Summary Report

Analyst: CCM
Instrument: PE NEXION

Sequence #: 066
Method: 13-Sb-As-Ba-Be-B-Cd-Cr-Co-Li-P
Acq Time: 13:11:16 Wed 06-May-20
Sample Name: CCB3
Sample Type: Sample
Matrix: Liquid
Comments:
Dilution: 1

Operator:
Acq Mode: Data Acquisition
Cal Title: 20-0506A.cal
Cal Type: External Calibration
Last Calib: mtd-050620-1
Bkg File:
Int Correct:
Blank File: Blank.008

Element	Mass		Concentration	Units	RSD %	Rep
B	10	335.004	0.001682	mg/L		3

Metals Digestion 3015A \ 3050B

DATE 5/5/20 PREP BATCH MTD- 050520-1

TIME START 14:30 TIME FINISH 15:00 ANALYST SB

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	1.000	1.002	Bias: Mean ± 2% of nominal value Precision: RSD ≤1% of nominal value	3	1	0.500	0.501	Bias: Mean ± 2% of nominal value Precision: RSD ≤1% of nominal value
	2		1.001			2		0.501	
	3		1.000			3		0.503	

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	FINAL VOLUME (ml)	REMARKS	% TOTAL SOLIDS	DILUTION FACTOR
LCS - 050520-1	----	50	50		—	1
LRB-050520-1	----	50	50		—	1
13482.01		1.0				50
13537.01						
13538.01						
13556.01						
13604.01						
01 MS						
01 MSD						
13618.01						
13625.01		25				2
02		25				
02 MS		25				
02 MSD		25				
13569.01		10				5
02						
03						
04						
05						
06						
07		25		field blank		2
13586.01		10				5
02						
02 MS						
02 MSD						
13234.07						

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: 4/29/20

2) Spike values for minerals (Ca-Mg-K-Na)
5/1/20 SB
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 # 192752-500

3) HNO_3 Lot # ~~0000245675~~ 248841

4) Centrifuge Tube Lot # 191210-060

5) Balance ID: M2

Reviewed by CCM On 5-6-20

Metals Digestion 3015A / 3050B

DATE 5-6-20 PREP BATCH MTD-050620-1

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

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	1.0	1.001	Bias: Mean ± 2% of nominal value Precision: RSD ≤1% of nominal value	3	1	0.5	0.500	Bias: Mean ± 2% of nominal value Precision: RSD ≤1% of nominal value
	2	1	1.003			2	1	0.499	
	3	1	1.003			3	1	0.500	

SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	FINAL VOLUME (ml)	REMARKS	% TOTAL SOLIDS	DILUTION FACTOR
LCS-050620-1	----	50	50		—	1
LRB-050620-1	----	50	50		—	1
13569.01		10				5
.02		↓				↓
.03						
.04						
.05						
.06						
.06 MS						
.06 MSD		↓				↓
.07		25				2
13664.02		10				5
13665.02		↓				↓
13666.01		↓				↓

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: 4-29-20

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 # 192752-500

3) HNO_3 Lot # ~~0000245675~~ 246841 QM 5/12/20

4) Centrifuge Tube Lot # 191210-060

5) Balance ID: M1

Reviewed by QM On 5/6/20

Form 0: Sequence Log

Data Set ID: HG2-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
Analyst: JRH

Filename	*Run Time*	*Sample ID*	*Matrix*	*QC Type*
001	5/1/2020 4:25:22 PM	Calibration Blank	Liquid	
002	5/1/2020 4:27:13 PM	Standard #1	Liquid	
003	5/1/2020 4:29:05 PM	Standard #2	Liquid	
004	5/1/2020 4:30:57 PM	Standard #3	Liquid	
005	5/1/2020 4:32:48 PM	Standard #4	Liquid	
006	5/1/2020 4:34:40 PM	Standard #5	Liquid	
007	5/1/2020 4:36:32 PM	Standard #6	Liquid	
008	5/1/2020 4:39:10 PM	Standard #7	Liquid	
009	5/1/2020 4:41:56 PM	Standard #8	Liquid	
010	5/1/2020 4:45:00 PM	ICV-5.0 ppb	Liquid	ICV
011	5/1/2020 4:46:52 PM	ICB	Liquid	ICB
012	5/1/2020 4:48:43 PM	CCV1-2.0 ppb	Liquid	CCV
013	5/1/2020 4:50:35 PM	CCB1	Liquid	CCB
014	5/1/2020 4:55:14 PM	BS-0.10	Liquid	BS
015	5/1/2020 4:57:05 PM	050120_1 LCS-2.0	Liquid	LCS
016	5/1/2020 4:58:55 PM	050120_1 LRB	Liquid	LRB
017	5/1/2020 5:01:59 PM	13492.01s	Liquid	S
018	5/1/2020 5:03:46 PM	13499.01s	Liquid	S
019	5/1/2020 5:05:33 PM	13516.01s tclp	Liquid	S
020	5/1/2020 5:07:21 PM	13518.01s tclp	Liquid	S
021	5/1/2020 5:09:09 PM	13533.01s	Liquid	S
022	5/1/2020 5:10:58 PM	13533.01 MS-2.0	Liquid	MS
023	5/1/2020 5:12:47 PM	13533.01 MSD	Liquid	MSD
024	5/1/2020 5:14:34 PM	13533.02s	Liquid	S
025	5/1/2020 5:16:21 PM	13559.01s	Liquid	S
026	5/1/2020 5:18:08 PM	13567.01s	Liquid	S
027	5/1/2020 5:19:56 PM	13586.01s	Liquid	S
028	5/1/2020 5:21:44 PM	13586.02s	Liquid	S
029	5/1/2020 5:23:36 PM	CCV2-2.0 ppb	Liquid	CCV
030	5/1/2020 5:25:28 PM	CCB2	Liquid	CCB
031	5/1/2020 5:27:16 PM	13569.01s	Liquid	S
032	5/1/2020 5:37:02 PM	13569.02s	Liquid	S
033	5/1/2020 5:38:49 PM	13569.03s	Liquid	S
034	5/1/2020 5:40:36 PM	13569.04s	Liquid	S
035	5/1/2020 5:42:23 PM	13569.05s	Liquid	S
036	5/1/2020 5:44:11 PM	13569.06s	Liquid	S
037	5/1/2020 5:46:00 PM	13569.07s	Liquid	S
038	5/1/2020 5:47:48 PM	13570.02s	Liquid	S
039	5/1/2020 5:49:38 PM	13592.01s	Liquid	S
040	5/1/2020 5:51:25 PM	13592.01 MS-2.0	Liquid	MS
041	5/1/2020 5:53:13 PM	13592.01 MSD	Liquid	MSD
042	5/1/2020 5:55:05 PM	CCV3-2.0 ppb	Liquid	CCV
043	5/1/2020 5:56:56 PM	CCB3	Liquid	CCB

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
Analyst: JRH

Lab Sample ID: S13569.01
Sample Tag: L004070-01 MW-1
Date Collected: 04/28/2020
Matrix: Wastewater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	05/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
Analyst: JRH

Lab Sample ID: S13569.02
Sample Tag: L004070-02 MW-2
Date Collected: 04/28/2020
Matrix: Wastewater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	05/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
Analyst: JRH

Lab Sample ID: S13569.03
Sample Tag: L004070-03 MW-4
Date Collected: 04/28/2020
Matrix: Wastewater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	05/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
Analyst: JRH

Lab Sample ID: S13569.04
Sample Tag: L004070-04 MW-4 Duplicate
Date Collected: 04/28/2020
Matrix: Wastewater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	05/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
Analyst: JRH

Lab Sample ID: S13569.05
Sample Tag: L004070-05 MW-5
Date Collected: 04/28/2020
Matrix: Wastewater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	05/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
Analyst: JRH

Lab Sample ID: S13569.06
Sample Tag: L004070-06 MW-6
Date Collected: 04/28/2020
Matrix: Wastewater

CAS #	Analyte	Result	RL	MDL	Units	Dilute	Run Date	Notes
7439-97-6	Mercury	Not detected	0.0002	0.000016	mg/L	1	05/01/2020	

Form 1: Metals Analysis Data Sheet

Data Set ID: HG2-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
Analyst: JRH

Lab Sample ID: S13569.07
Sample Tag: L004070-07 Field Blank
Date Collected: 04/28/2020
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	05/01/2020	

Form 1: Metals Analysis Data Sheet - Flag Description Key

Data Set ID: HG2-HG3-20-0501A
Analysis Date: 05/01/20
Instrument ID: HG QuickTrace
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-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
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	5.200	5.0	104	90/110	ug/L	Liquid
012 CCV1-2.0 ppb	CCV	1.0	Hg	2.046	2.0	102	90/110	ug/L	Liquid
029 CCV2-2.0 ppb	CCV	1.0	Hg	1.938	2.0	97	90/110	ug/L	Liquid
042 CCV3-2.0 ppb	CCV	1.0	Hg	1.919	2.0	96	90/110	ug/L	Liquid

Form 3: Blanks

Data Set ID: HG2-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
Analyst: JRH

Sample Name	*QC Type*	*Dilute*	*Element*	*Sample Conc*	*Raw Conc*	*Units*	*Matrix*
011 ICB	ICB	1.0	Hg	<0.03	-0.0150	ug/L	Liquid
013 CCB1	CCB	1.0	Hg	<0.03	-0.0102	ug/L	Liquid
016 050120_1 LRB	LRB	1.0	Hg	<0.03	-0.0092	ug/L	Liquid
030 CCB2	CCB	1.0	Hg	<0.03	-0.0125	ug/L	Liquid
043 CCB3	CCB	1.0	Hg	<0.03	-0.0100	ug/L	Liquid

Form 5A: Matrix Spike Sample Recovery

Data Set ID: HG2-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
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	0.105	ND	0.10	105	70/130	ug/L	Liquid
022 13533.01 MS-2.0	**021 13533.01s**	1.0	Hg	1.901	<0.2	2.0	95	80/120	ug/L	Liquid
040 13592.01 MS-2.0	**039 13592.01s**	1.0	Hg	1.733	<0.2	2.0	87	80/120	ug/L	Liquid

Form 5B: Matrix Spike Duplicate Evaluation

Data Set ID: HG2-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
Analyst: JRH

Duplicate Name	*Sample Name*	*Dilute*	*Element*	*Dup Conc*	*Samp Conc*	*%RPD*	*LCL/UCL*	*Units*	*Matrix*
023 13533.01 MSD	**022 13533.01 MS-2.0**	1.0	Hg	1.969	1.901	4	0/20	ug/L	Liquid
041 13592.01 MSD	**040 13592.01 MS-2.0**	1.0	Hg	1.765	1.733	2	0/20	ug/L	Liquid

Form 7: Laboratory Control Sample

Data Set ID: HG2-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
Analyst: JRH

Sample Name	*Dilute*	*Element*	*Sample Conc*	*Actual Conc*	*%Rec*	*LCL/UCL*	*Units*	*Matrix*
015 050120_1 LCS-2.0	1.0	Hg	1.951	2.0	98	85/115	ug/L	Liquid

Form 13: Analysis Run Log

Data Set ID: HG2-HG3-20-0501A
Instrument ID: HG QuickTrace
Analysis Date: 05/01/20
Analyst: JRH

Filename	*Run Time*	*Matrix*	*Analytes*
001 Calibration Blank	5/1/2020 4:25:22 PM	Liquid	Hg
002 Standard #1	5/1/2020 4:27:13 PM	Liquid	Hg
003 Standard #2	5/1/2020 4:29:05 PM	Liquid	Hg
004 Standard #3	5/1/2020 4:30:57 PM	Liquid	Hg
005 Standard #4	5/1/2020 4:32:48 PM	Liquid	Hg
006 Standard #5	5/1/2020 4:34:40 PM	Liquid	Hg
007 Standard #6	5/1/2020 4:36:32 PM	Liquid	Hg
008 Standard #7	5/1/2020 4:39:10 PM	Liquid	Hg
009 Standard #8	5/1/2020 4:41:56 PM	Liquid	Hg
010 ICV-5.0 ppb	5/1/2020 4:45:00 PM	Liquid	Hg
011 ICB	5/1/2020 4:46:52 PM	Liquid	Hg
012 CCV1-2.0 ppb	5/1/2020 4:48:43 PM	Liquid	Hg
013 CCB1	5/1/2020 4:50:35 PM	Liquid	Hg
014 BS-0.10	5/1/2020 4:55:14 PM	Liquid	Hg
015 050120_1 LCS-2.0	5/1/2020 4:57:05 PM	Liquid	Hg
016 050120_1 LRB	5/1/2020 4:58:55 PM	Liquid	Hg
017 13492.01s	5/1/2020 5:01:59 PM	Liquid	Hg
018 13499.01s	5/1/2020 5:03:46 PM	Liquid	Hg
019 13516.01s tclp	5/1/2020 5:05:33 PM	Liquid	Hg
020 13518.01s tclp	5/1/2020 5:07:21 PM	Liquid	Hg
021 13533.01s	5/1/2020 5:09:09 PM	Liquid	Hg
022 13533.01 MS-2.0	5/1/2020 5:10:58 PM	Liquid	Hg
023 13533.01 MSD	5/1/2020 5:12:47 PM	Liquid	Hg
024 13533.02s	5/1/2020 5:14:34 PM	Liquid	Hg
025 13559.01s	5/1/2020 5:16:21 PM	Liquid	Hg
026 13567.01s	5/1/2020 5:18:08 PM	Liquid	Hg
027 13586.01s	5/1/2020 5:19:56 PM	Liquid	Hg
028 13586.02s	5/1/2020 5:21:44 PM	Liquid	Hg
029 CCV2-2.0 ppb	5/1/2020 5:23:36 PM	Liquid	Hg
030 CCB2	5/1/2020 5:25:28 PM	Liquid	Hg
031 13569.01s	5/1/2020 5:27:16 PM	Liquid	Hg
032 13569.02s	5/1/2020 5:37:02 PM	Liquid	Hg
033 13569.03s	5/1/2020 5:38:49 PM	Liquid	Hg
034 13569.04s	5/1/2020 5:40:36 PM	Liquid	Hg
035 13569.05s	5/1/2020 5:42:23 PM	Liquid	Hg
036 13569.06s	5/1/2020 5:44:11 PM	Liquid	Hg
037 13569.07s	5/1/2020 5:46:00 PM	Liquid	Hg
038 13570.02s	5/1/2020 5:47:48 PM	Liquid	Hg
039 13592.01s	5/1/2020 5:49:38 PM	Liquid	Hg
040 13592.01 MS-2.0	5/1/2020 5:51:25 PM	Liquid	Hg
041 13592.01 MSD	5/1/2020 5:53:13 PM	Liquid	Hg
042 CCV3-2.0 ppb	5/1/2020 5:55:05 PM	Liquid	Hg
043 CCB3	5/1/2020 5:56:56 PM	Liquid	Hg

Data Set: HG2-HG3-20-0501A
Run Date: 05/01/20

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	5/1/2020 4:25:22 PM	Calibration Blank	39.1500	0.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	002	5/1/2020 4:27:13 PM	Standard #1	981.0000	0.1000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	003	5/1/2020 4:29:05 PM	Standard #2	1903.0000	0.2000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	004	5/1/2020 4:30:57 PM	Standard #3	4463.0000	0.5000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	005	5/1/2020 4:32:48 PM	Standard #4	8897.0000	1.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	006	5/1/2020 4:34:40 PM	Standard #5	17260.0000	2.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	007	5/1/2020 4:36:32 PM	Standard #6	51750.0000	6.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	008	5/1/2020 4:39:10 PM	Standard #7	69070.0000	8.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	009	5/1/2020 4:41:56 PM	Standard #8	86750.0000	10.0000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	010	5/1/2020 4:45:00 PM	ICV-5.0 ppb	45030.0000	5.2000	ug/L	Liquid	1.0	1.0000	1.0000
Hg	011	5/1/2020 4:46:52 PM	ICB	-27.9400	-0.0150	ug/L	Liquid	1.0	1.0000	1.0000
Hg	012	5/1/2020 4:48:43 PM	CCV1-2.0 ppb	17780.0000	2.0460	ug/L	Liquid	1.0	1.0000	1.0000
Hg	013	5/1/2020 4:50:35 PM	CCB1	13.5500	-0.0102	ug/L	Liquid	1.0	1.0000	1.0000
Hg	014	5/1/2020 4:55:14 PM	BS-0.10	1011.0000	0.1053	ug/L	Liquid	1.0	1.0000	1.0000
Hg	015	5/1/2020 4:57:05 PM	050120_1 LCS-2.0	16960.0000	1.9510	ug/L	Liquid	1.0	1.0000	1.0000
Hg	016	5/1/2020 4:58:55 PM	050120_1 LRB	21.5300	-0.0092	ug/L	Liquid	1.0	1.0000	1.0000
Hg	029	5/1/2020 5:23:36 PM	CCV2-2.0 ppb	16850.0000	1.9380	ug/L	Liquid	1.0	1.0000	1.0000
Hg	030	5/1/2020 5:25:28 PM	CCB2	-7.1030	-0.0125	ug/L	Liquid	1.0	1.0000	1.0000
Hg	031	5/1/2020 5:27:16 PM	13569.01s	34.9700	-0.0077	ug/L	Liquid	1.0	1.0000	1.0000
Hg	032	5/1/2020 5:37:02 PM	13569.02s	3.4170	-0.0113	ug/L	Liquid	1.0	1.0000	1.0000
Hg	033	5/1/2020 5:38:49 PM	13569.03s	35.4900	-0.0076	ug/L	Liquid	1.0	1.0000	1.0000
Hg	034	5/1/2020 5:40:36 PM	13569.04s	25.7500	-0.0087	ug/L	Liquid	1.0	1.0000	1.0000
Hg	035	5/1/2020 5:42:23 PM	13569.05s	119.3000	0.0021	ug/L	Liquid	1.0	1.0000	1.0000
Hg	036	5/1/2020 5:44:11 PM	13569.06s	29.7800	-0.0083	ug/L	Liquid	1.0	1.0000	1.0000
Hg	037	5/1/2020 5:46:00 PM	13569.07s	33.8700	-0.0078	ug/L	Liquid	1.0	1.0000	1.0000
Hg	042	5/1/2020 5:55:05 PM	CCV3-2.0 ppb	16680.0000	1.9190	ug/L	Liquid	1.0	1.0000	1.0000
Hg	043	5/1/2020 5:56:56 PM	CCB3	14.5100	-0.0100	ug/L	Liquid	1.0	1.0000	1.0000

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

TIME START: 1430 | Beginning | End | DATE 5/1/20
TIME FINISH: 1630 | block #1 95 °C | block #1 95 °C ID # P4279 | ANALYST BRL
PREP BATCH: HGD-050120-1 | block #2 ____ °C | block #2 ____ °C ID # ____ | REVIEWED BY CM
BALANCE ID: M2 | block #3 ____ °C | block #3 ____ °C ID # ____ | REVIEW DATE 5-4-20

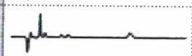
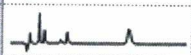
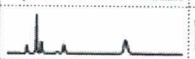
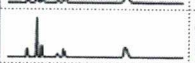
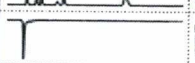
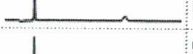
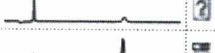
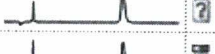
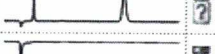
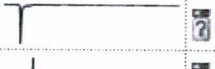
SAMPLE#	BTL ID	SAMPLE AMOUNT GRAMS (g)	%TOT. SOLIDS	DRY SAMPLE WT.	DILUTION FACTOR	FINAL VOLUME	REMARKS
LCS 050120-1	------	25	--------	----------	1	25g	
LRB 050120-1	------	25	--------	----------		25g	
13492.01		25					
13499.01		25					
13516.01		12.5			2		tclp
13518.01		0.528			47		tclp
13533.01		25			1		drinking water
01MS							
01MSD							
02							
13559.01							
13567.01							
13569.01							
02							
03							
04							
05							
06							
07							fb
13570.02		12.5			2		
13586.01		25			1		
02							
13592.01							
01MS							
01MSD							

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: 4/30/20 Exp)
Centrifuge Tube Lot # 191216-060
HNO_3 Lot # ~~000024567S~~ 248841 exp 6/1/20
H_2SO_4 Lot # ~~000022875~~ 20190413171 exp 3/1/20

Pipet Calibration:

Test #	Pipet Volume Setting mL	Wt. of water from pipet, g	Notes
1	0.500	0.505	
2		0.504	
3		0.503	

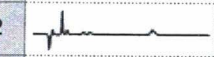
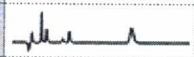
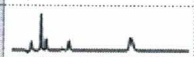
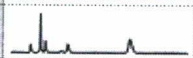
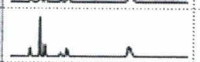
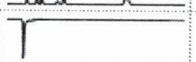
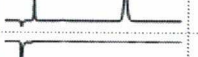
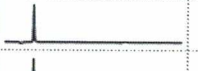
ICS-1100 A Dionex IC / Meth 300.0 **043020**

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:58:12 AM...	1.0000
2		1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:29 A...	1.0000
3		1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:17 A...	1.0000
4		1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:36:06 A...	1.0000
5		1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:55 A...	1.0000
6		1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:43 A...	1.0000
7		Blank	Unknown		1	Norm Method	Anion	Finished	4/30/2020 9:25:14 AM...	1.0000
8		BSpike 11705BS1	Check Standard		2	Norm Method	Anion	Finished	4/30/2020 9:37:30 AM...	1.0000
9		LCS 11705LCS1	Check Standard		3	Norm Method	Anion	Finished	4/30/2020 9:50:19 AM...	1.0000
10		LOD 1132LOD1	Unknown		4	Norm Method	Anion	Finished	4/30/2020 10:03:08 A...	1.0000
11		LOQ 1132LOQ1	Unknown		5	Norm Method	Anion	Finished	4/30/2020 10:15:56 A...	1.0000
12		13569.01	Unknown		6	Norm Method	Anion	Finished	4/30/2020 10:28:51 A...	1.0000
13		13569.01 dup	Unknown		7	Norm Method	Anion	Finished	4/30/2020 10:41:43 A...	1.0000
14		13569.01 MS 12969...	Unknown		8	Norm Method	Anion	Finished	4/30/2020 10:54:32 A...	1.0000
15		13569.01 MSD 1296...	Unknown		9	Norm Method	Anion	Finished	4/30/2020 11:07:20 A...	1.0000
16		13569.02	Unknown		10	Norm Method	Anion	Finished	4/30/2020 11:20:09 A...	1.0000
17		13569.03	Unknown		11	Norm Method	Anion	Finished	4/30/2020 11:32:57 A...	1.0000
18		13569.04	Unknown		12	Norm Method	Anion	Finished	4/30/2020 11:45:46 A...	1.0000
19		13569.05	Unknown		13	Norm Method	Anion	Finished	4/30/2020 11:58:35 A...	1.0000
20		13569.06	Unknown		14	Norm Method	Anion	Finished	4/30/2020 12:11:23 P...	1.0000
21		13569.07	Unknown		15	Norm Method	Anion	Finished	4/30/2020 12:24:12 P...	1.0000
22		BSpike 11705BS1	Check Standard		16	Norm Method	Anion	Finished	4/30/2020 12:37:00 P...	1.0000
23		13575.04	Unknown		17	Norm Method	Anion	Finished	4/30/2020 12:49:48 P...	1.0000
24		13575.05	Unknown		18	Norm Method	Anion	Finished	4/30/2020 1:02:37 PM...	1.0000

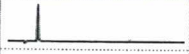
CAL INH ICSA0316 20 CAL

CL 200430-WL-A
SFT 200430-WL-A

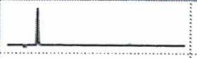
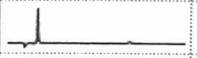
043020

#	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		1.0000	1.0000		Jeff Phifer	
11		1.0000	1.0000		Jeff Phifer	
12		10.0000	1.0000		Jeff Phifer	
13		10.0000	1.0000		Jeff Phifer	
14		1.0000	1.0000		Jeff Phifer	
15		1.0000	1.0000		Jeff Phifer	
16		25.0000	1.0000		Jeff Phifer	
17		10.0000	1.0000		Jeff Phifer	
18		10.0000	1.0000		Jeff Phifer	
19		25.0000	1.0000		Jeff Phifer	
20		10.0000	1.0000		Jeff Phifer	
21		2.5000	1.0000		Jeff Phifer	
22		1.0000	1.0000		Jeff Phifer	
23		25.0000	1.0000		Jeff Phifer	
24		25.0000	1.0000		Jeff Phifer	

043020

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
25		13575.06	Unknown		19	Norm Method	Anion	Finished	4/30/2020 1:15:27 PM...	1.0000
26		13575.07	Unknown		20	Norm Method	Anion	Finished	4/30/2020 1:28:16 PM...	1.0000
27		BSpike 11705BS1	Check Standard		21	Norm Method	Anion	Finished	4/30/2020 1:41:04 PM...	1.0000
28	Loading...	Blank	Unknown		22	Norm Method	Anion	Finished	4/30/2020 1:53:53 PM...	1.0000
	Click here to add a new injection									

043020

#	ECD_1	Dilution	IntStd	Replicate ID	Comment	Spike Grou
25		25.0000	1.0000		Jeff Phifer	
26		5.0000	1.0000		Jeff Phifer	
27		1.0000	1.0000		Jeff Phifer	
28	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				

4.30.20

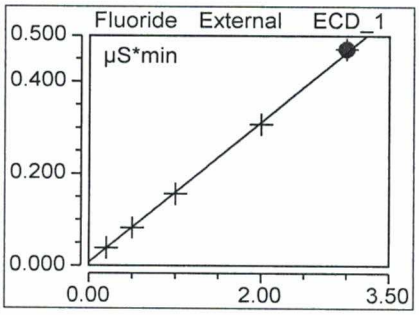
Calibration Batch Report
CAL ID# ICSA031620CAL

Sequence:	**043020**	*Injection Volu.*	**2,500.00**
Instrument Method:	**Norm Method**	*Operator:*	**Jeff Phifer**
Inj. Date / Time:	**16-Mar-2020 / 11:01**	*Column:*	**AS4A-SC 038777**

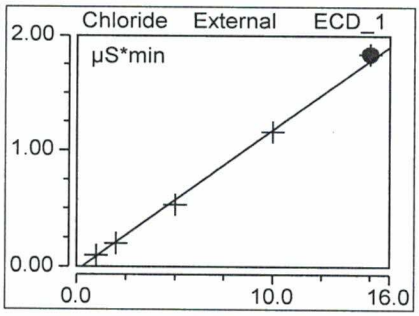
Calibration Summary

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	0.007	0.152	0.000	0.9998
Chloride	Area	Lin, WithOffset, 1/A	0.02	-0.033	0.121	0.000	0.9987
Nitrite	Area	Lin, WithOffset, 1/A	0.03	-0.003	0.227	0.000	0.9997
Bromide	Area	Lin, WithOffset, 1/A	0.05	-0.001	0.043	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.07	-0.001	0.260	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.33	-0.007	0.079	0.000	0.9996
		AVERAGE:		-0.0064	0.1471	0.0000	0.9996

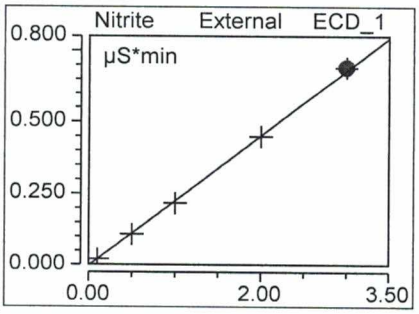
Injection Name / **Fluoride**	Ret.Time min Fluoride	Area µS*min Fluoride	Height µS Fluoride	Amount Fluoride
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	1.118	0.0386	0.506	0.206
1130Cal2	1.118	0.0822	1.190	0.493
1130Cal3	1.118	0.1559	2.362	0.978
1130Cal4	1.118	0.3073	4.834	1.974
1130Cal5	1.118	0.4705	7.546	3.048
Average	1.118			
Rel. Std. Dev.	0.000 %			



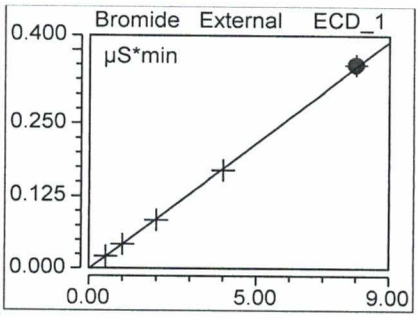
Injection Name / **Chloride**	Ret.Time min Chloride	Area µS*min Chloride	Height µS Chloride	Amount Chloride
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	1.651	0.0980	1.539	1.086
1130Cal2	1.651	0.2000	3.158	1.929
1130Cal3	1.661	0.5307	8.559	4.662
1130Cal4	1.664	1.1594	18.897	9.858
1130Cal5	1.664	1.8377	29.851	15.464
Average	1.658			
Rel. Std. Dev.	0.412 %			



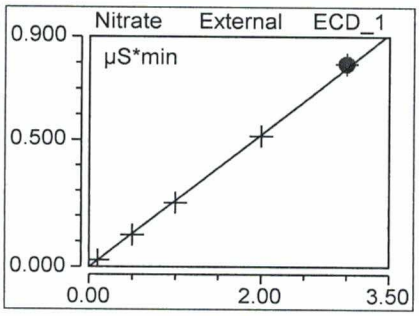
Injection Name / **Nitrite**	Ret.Time min Nitrite	Area µS*min Nitrite	Height µS Nitrite	Amount Nitrite
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	1.944	0.0206	0.280	0.105
1130Cal2	1.948	0.1071	1.441	0.486
1130Cal3	1.954	0.2163	2.949	0.967
1130Cal4	1.954	0.4487	6.229	1.989
1130Cal5	1.948	0.6905	9.755	3.054
Average	1.950			
Rel. Std. Dev.	0.229 %			



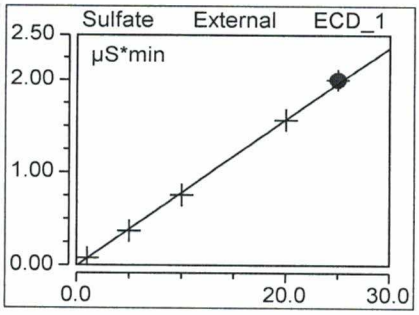
Injection Name **Bromide**	Ret.Time min Bromide	Area µS*min Bromide	Height µS Bromide	Amount Bromide
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	2.871	0.0210	0.228	0.511
1130Cal2	2.868	0.0422	0.461	0.999
1130Cal3	2.884	0.0843	0.917	1.969
1130Cal4	2.874	0.1696	1.866	3.936
1130Cal5	2.848	0.3497	3.898	8.085
Average	2.869			
Rel. Std. Dev.	0.469 %			



Injection Name **Nitrate**	Ret.Time min Nitrate	Area µS*min Nitrate	Height µS Nitrate	Amount Nitrate
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	3.244	0.0266	0.254	0.105
1130Cal2	3.234	0.1249	1.182	0.483
1130Cal3	3.248	0.2515	2.359	0.970
1130Cal4	3.228	0.5145	4.808	1.982
1130Cal5	3.194	0.7947	7.457	3.060
Average	3.230			
Rel. Std. Dev.	0.659 %			



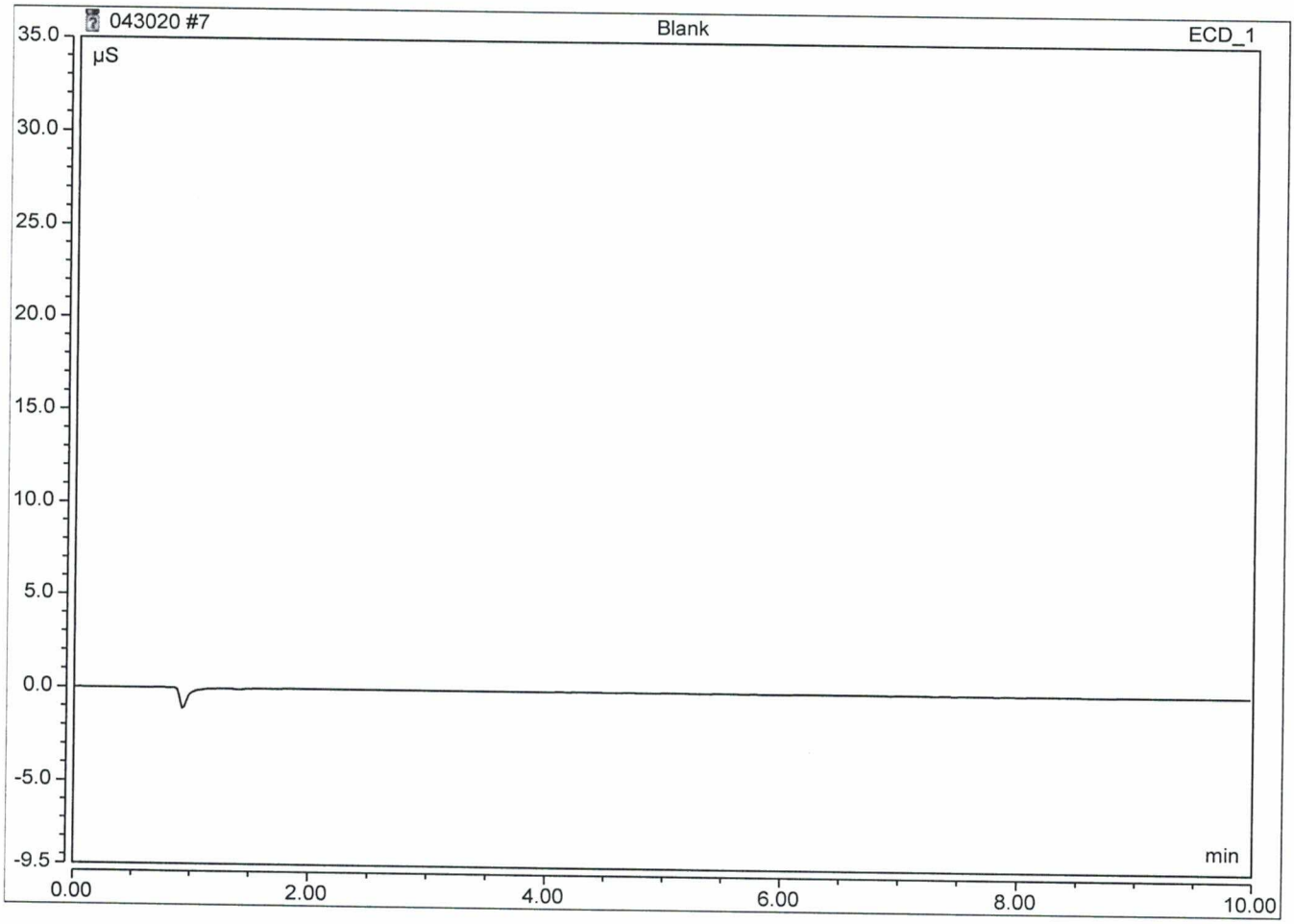
Injection Name **Sulfate**	Ret.Time min Sulfate	Area µS*min Sulfate	Height µS Sulfate	Amount Sulfate
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	6.768	0.0763	0.333	1.054
1130Cal2	6.754	0.3712	1.645	4.800
1130Cal3	6.744	0.7553	3.326	9.676
1130Cal4	6.721	1.5656	6.872	19.966
1130Cal5	6.718	2.0017	8.764	25.504
Average	6.741			
Rel. Std. Dev.	0.319 %			



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:	**30-Apr-2020 / 09:25**	*Operator:*	**Jeff Phifer**

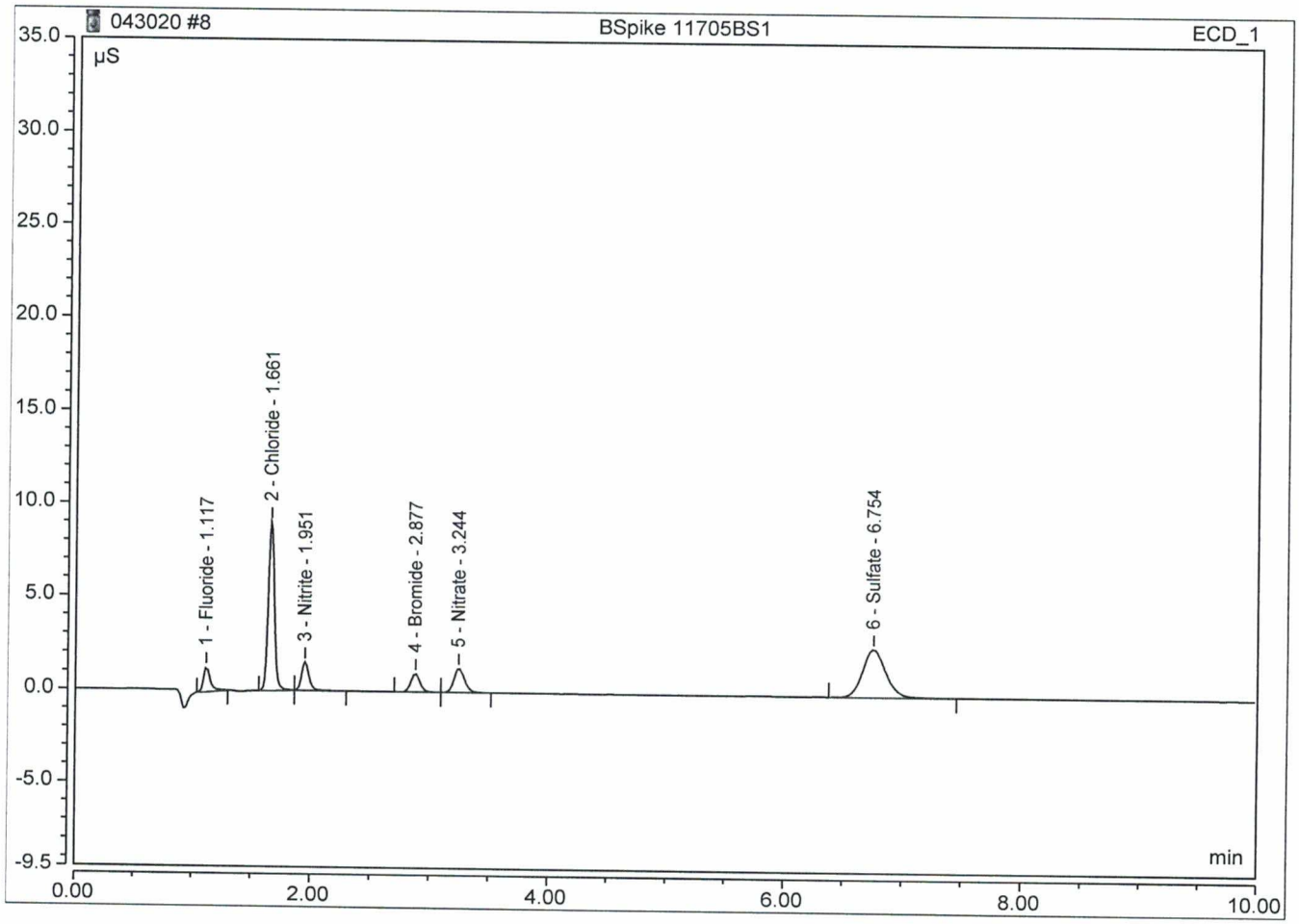
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	**BSpike 11705BS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 09:37**	*Operator:*	**Jeff Phifer**

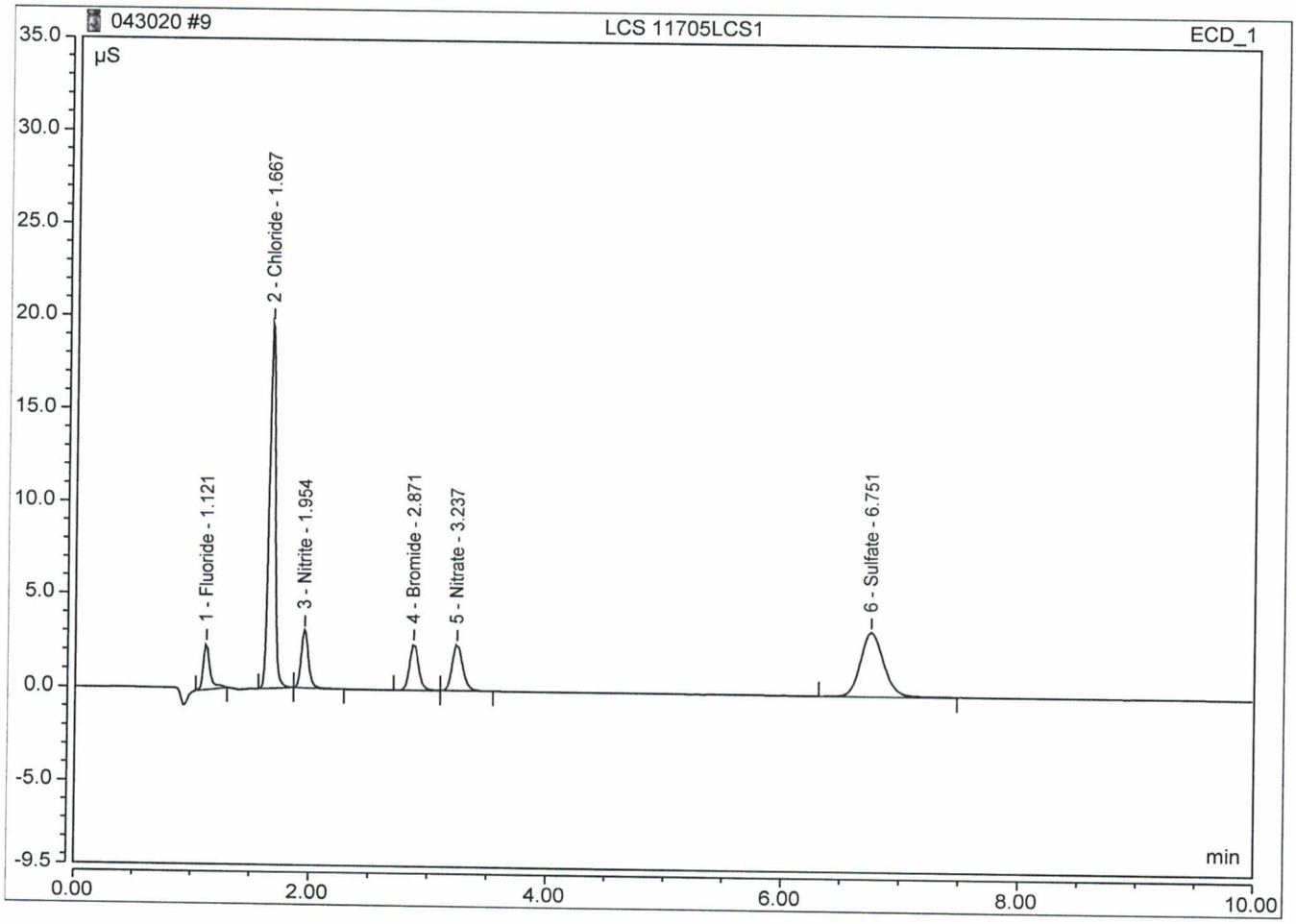
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L	
1	1.12	Fluoride	BMB	0.086	1.308	0.5 0.5169	104 %
2	1.66	Chloride	BMB	0.544	9.026	5 4.7753	96 %
3	1.95	Nitrite	BMB	0.107	1.493	0.5 0.4835	96 %
4	2.88	Bromide	BMB	0.087	0.973	2 2.0417	102 %
5	3.24	Nitrate	BMB	0.131	1.283	0.5 0.5084	102 %
6	6.75	Sulfate	BMB	0.573	2.542	7.5 7.3578	99 %
TOTAL:				1.53	16.62	15.68	



Peak Integration Report

Sample Name:	**LCS 11705LCS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 09:50**	*Operator:*	**Jeff Phifer**

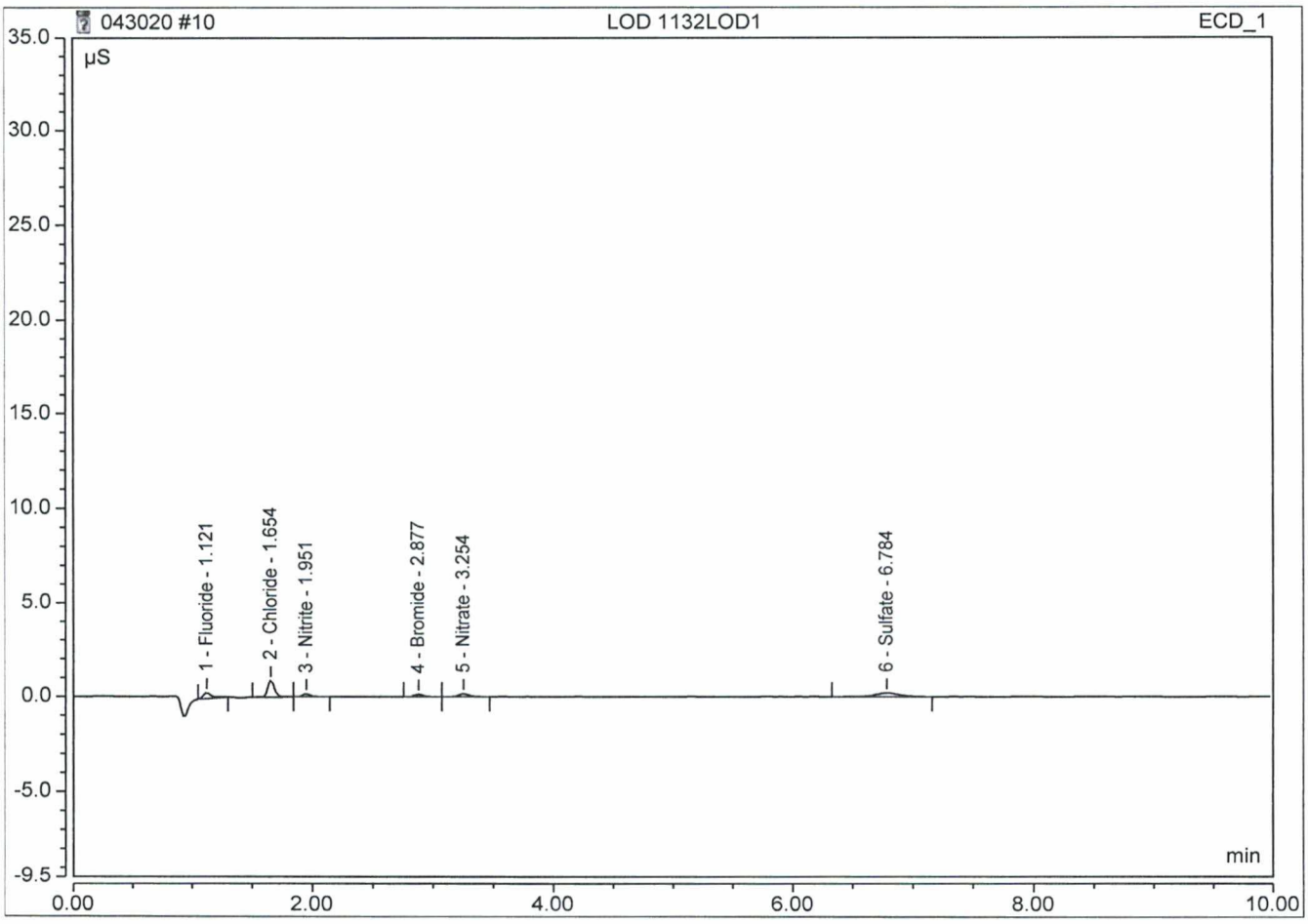
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L	
1	1.12	Fluoride	BMB	0.158	2.430	1 0.9894	99 %
2	1.67	Chloride	BMB	1.174	19.655	10 9.9790	100 %
3	1.95	Nitrite	BMB	0.216	3.076	1 0.9644	96 %
4	2.87	Bromide	BMB	0.219	2.447	5 5.0683	101 %
5	3.24	Nitrate	BMB	0.251	2.439	1 0.9663	97 %
6	6.75	Sulfate	BMB	0.764	3.391	10 9.7841	98 %
TOTAL:				2.78	33.44	27.75	



Peak Integration Report

Sample Name:	**LOD 1132LOD1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 10:03**	*Operator:*	**Jeff Phifer**

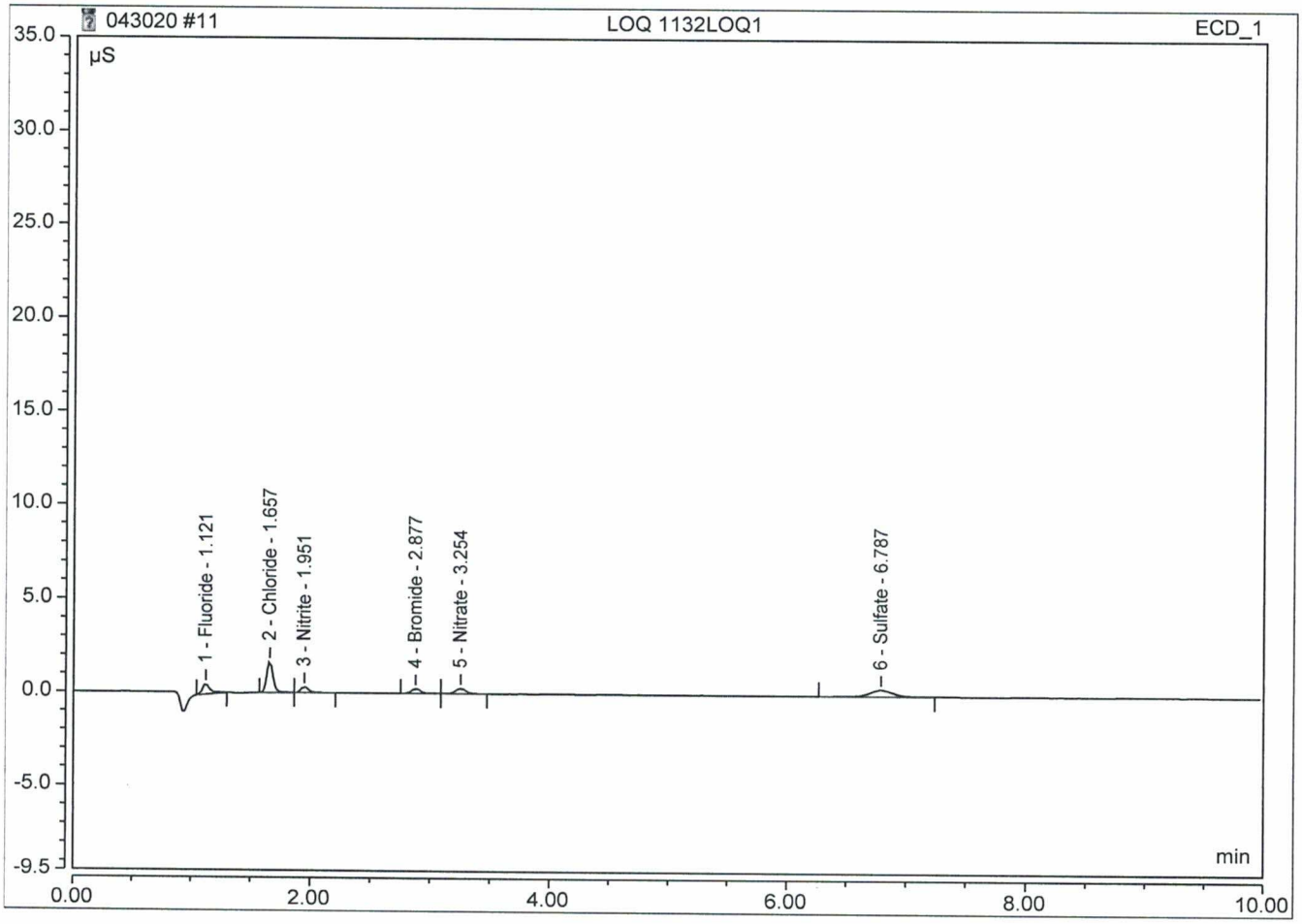
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L	
1	1.12	**Fluoride**	BMB	0.023	0.294	0.1	0.1046
2	1.65	**Chloride**	BMB	0.054	0.858	0.5	0.7221
3	1.95	**Nitrite**	BMB	0.011	0.154	0.05	0.0648
4	2.88	**Bromide**	BMB	0.012	0.129	0.25	0.3006
5	3.25	**Nitrate**	BMB	0.016	0.160	0.05	0.0657
6	6.78	**Sulfate**	BMB	0.046	0.196	0.5	0.6656
TOTAL:				0.16	1.79		1.92



Peak Integration Report

Sample Name:	**LOQ 1132LOQ1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 10:15**	*Operator:*	**Jeff Phifer**

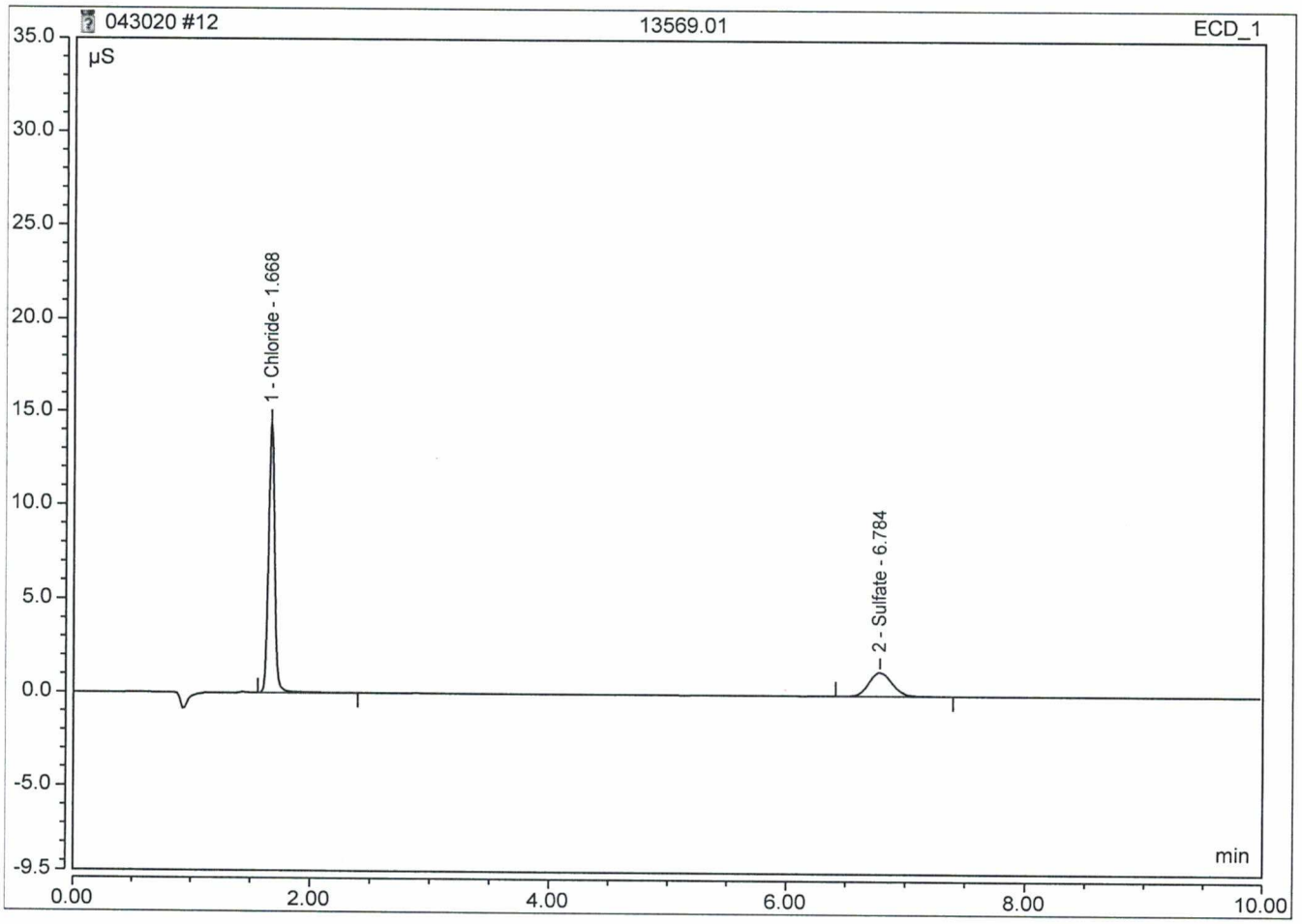
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L	
1	1.12	Fluoride	BMB	0.038	0.522	0.2	0.2006
2	1.66	Chloride	BMB	0.103	1.663	1	1.1266
3	1.95	Nitrite	BMB	0.022	0.297	0.1	0.1122
4	2.88	Bromide	BMB	0.022	0.244	0.5	0.5353
5	3.25	Nitrate	BMB	0.028	0.270	0.1	0.1092
6	6.79	Sulfate	BMB	0.083	0.357	1	1.1413
TOTAL:				0.30	3.35		3.23



Peak Integration Report

Sample Name:	**13569.01**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**10.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 10:28**	*Operator:*	**Jeff Phifer**

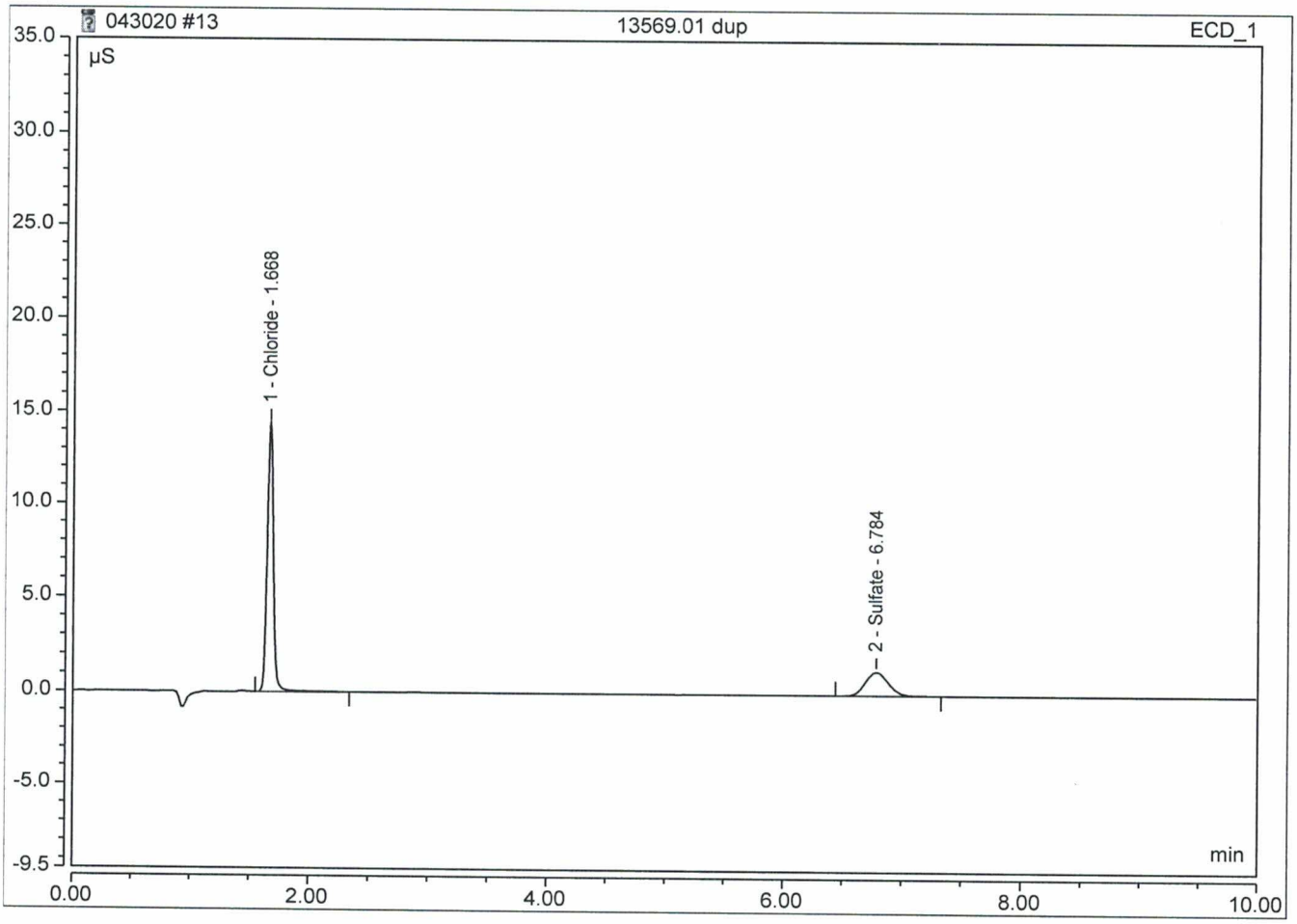
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.67	**Chloride**	BMB	0.868	14.344	74.4622
2	6.78	**Sulfate**	BMB	0.291	1.280	37.7717
TOTAL:				1.16	15.62	112.23



Peak Integration Report

Sample Name:	**13569.01 dup**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**10.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 10:41**	*Operator:*	**Jeff Phifer**

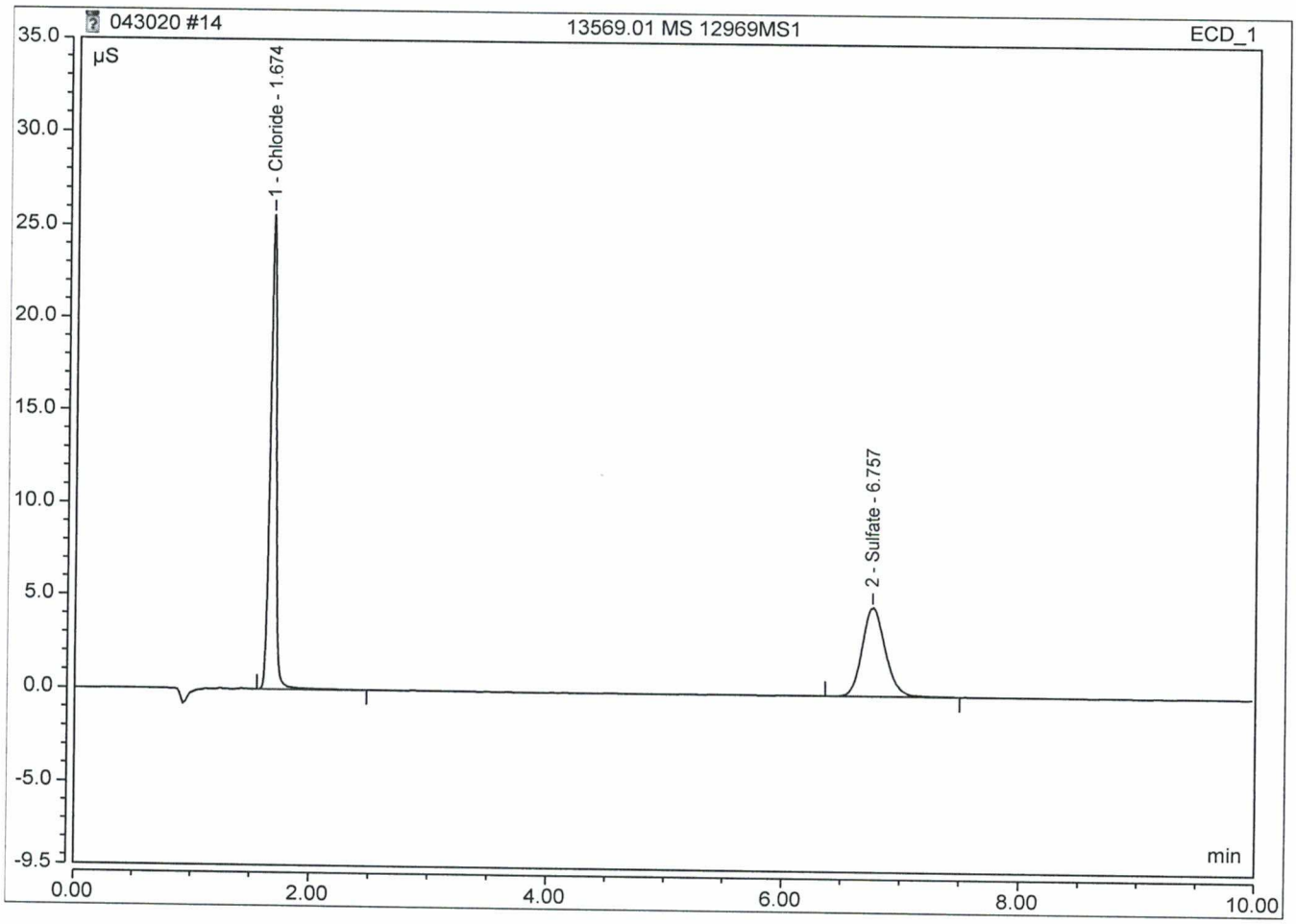
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.67	Chloride	BMB	0.866	14.360	74.3251
2	6.78	Sulfate	BMB	0.287	1.271	37.3504
TOTAL:				1.15	15.63	111.68



Peak Integration Report

Sample Name:	**13569.01 MS 12969MS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 10:54**	*Operator:*	**Jeff Phifer**

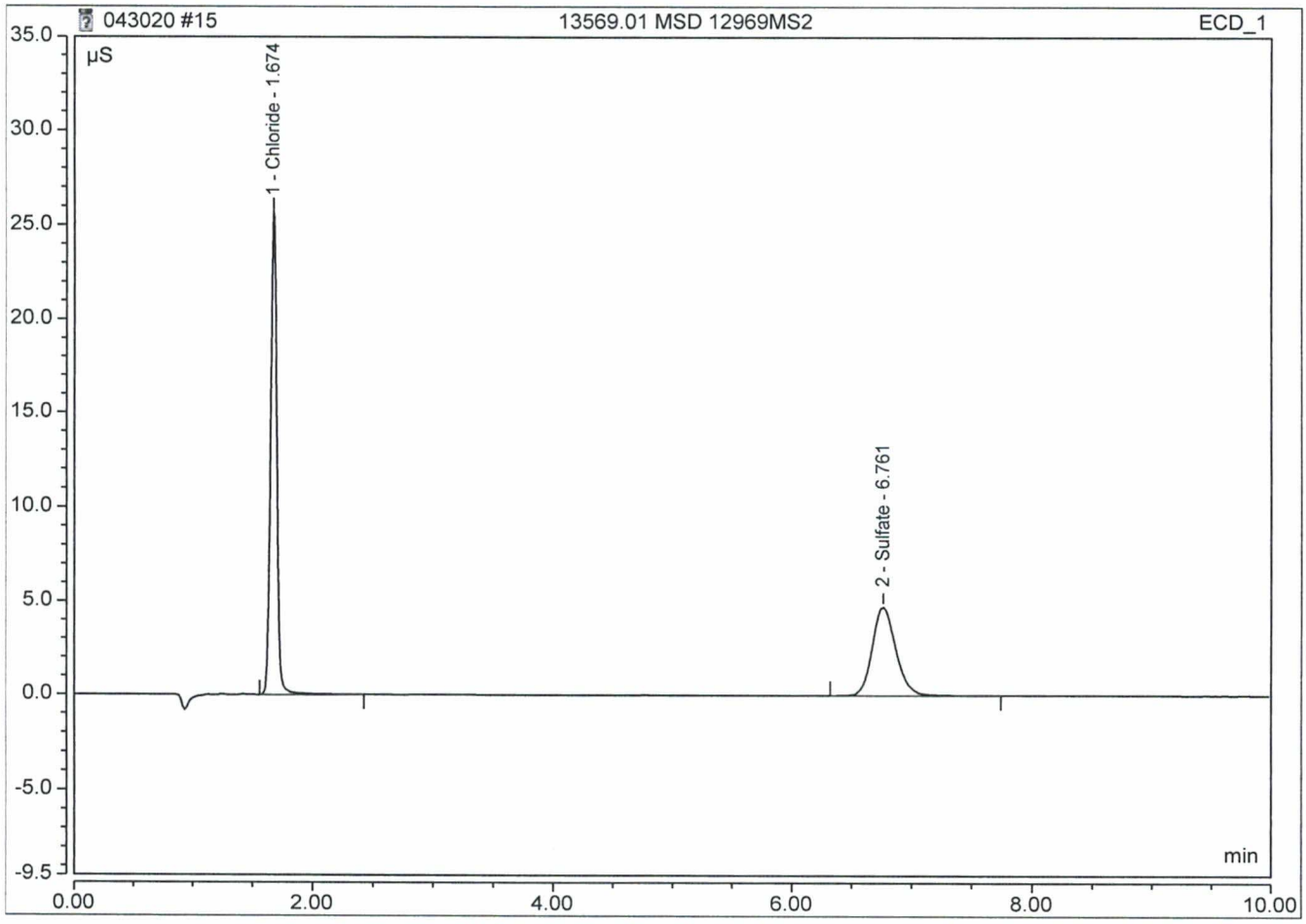
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.67	Chloride	BMB	1.561	25.652	5 13.1770 −7.4 = 116 ?
2	6.76	Sulfate	BMB	1.065	4.724	10 13.6079 −3.8 = 98 ?
TOTAL:				2.63	30.38	26.78



Peak Integration Report

Sample Name:	**13569.01 MSD 12969MS2**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 11:07**	*Operator:*	**Jeff Phifer**

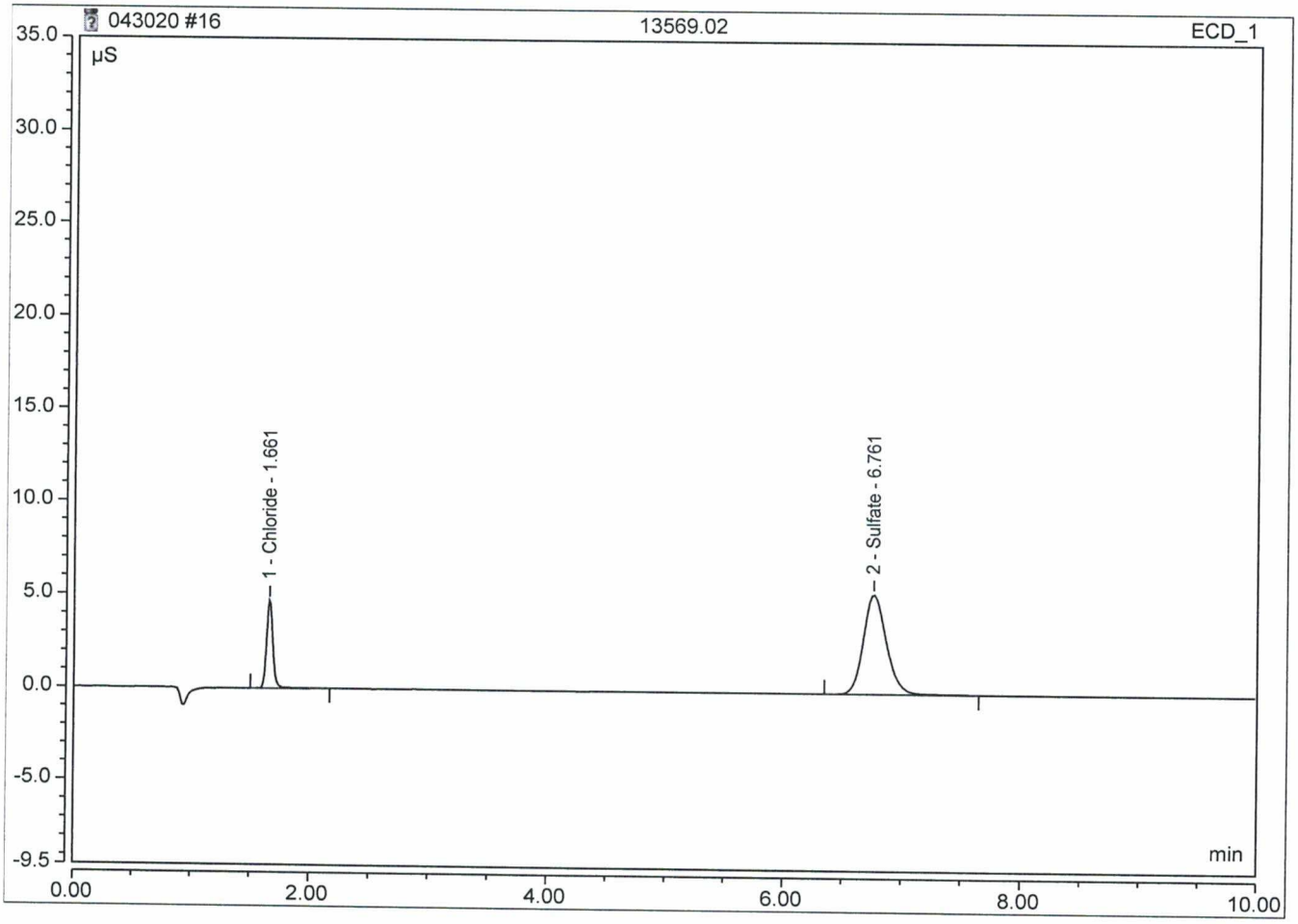
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.67	**Chloride**	BMB	1.556	25.670	5 13.1358 − 7.4 = 1148
2	6.76	**Sulfate**	BMB	1.073	4.729	10 13.7049 − 3.8 = 993
TOTAL:				2.63	30.40	26.84



Peak Integration Report

Sample Name:	**13569.02**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**25.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 11:20**	*Operator:*	**Jeff Phifer**

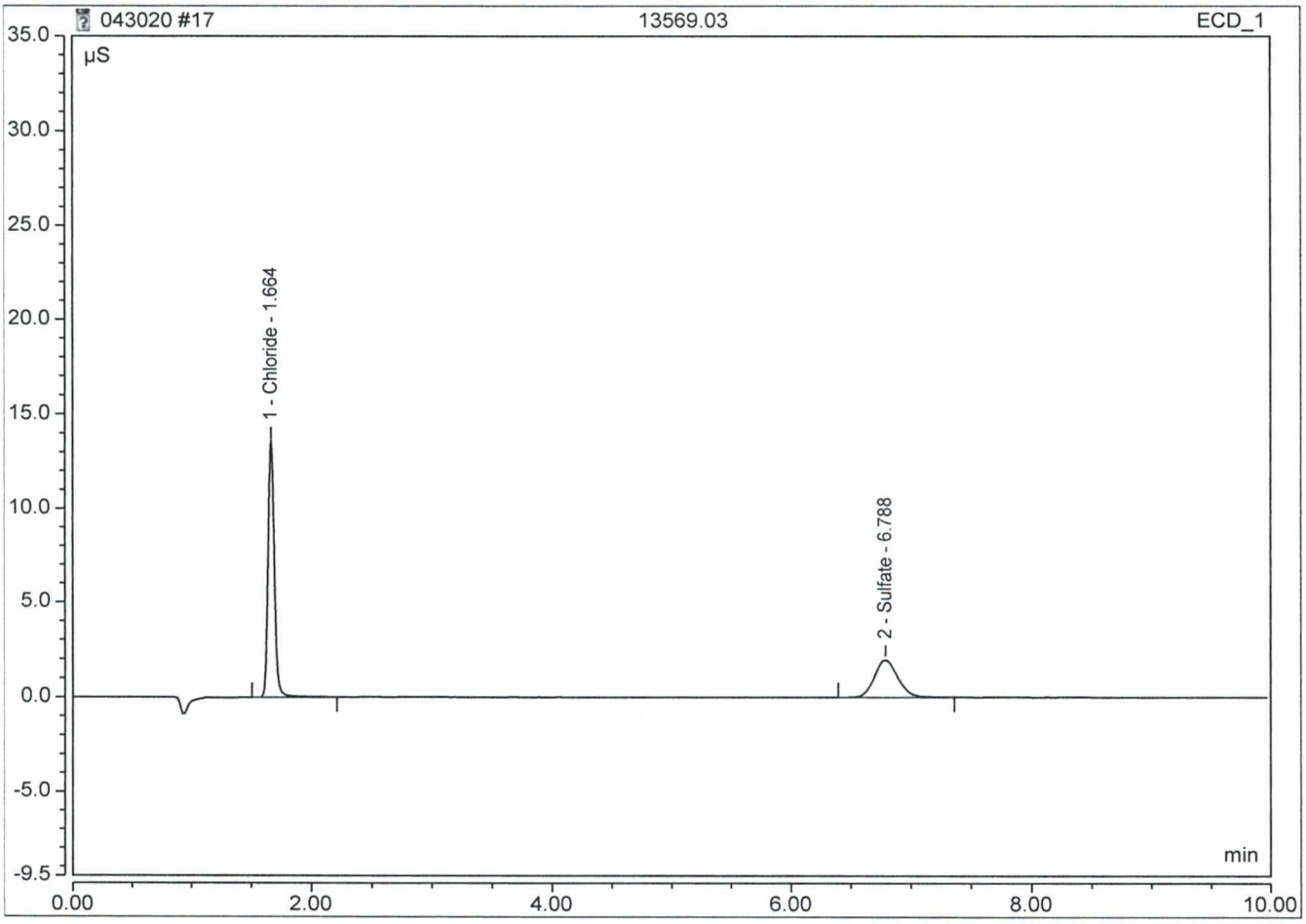
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.66	Chloride	BMB	0.293	4.705	67.3758
2	6.76	Sulfate	BMB	1.210	5.342	386.2336
TOTAL:				1.50	10.05	453.61



Peak Integration Report

Sample Name:	**13569.03**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**10.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 11:32**	*Operator:*	**Jeff Phifer**

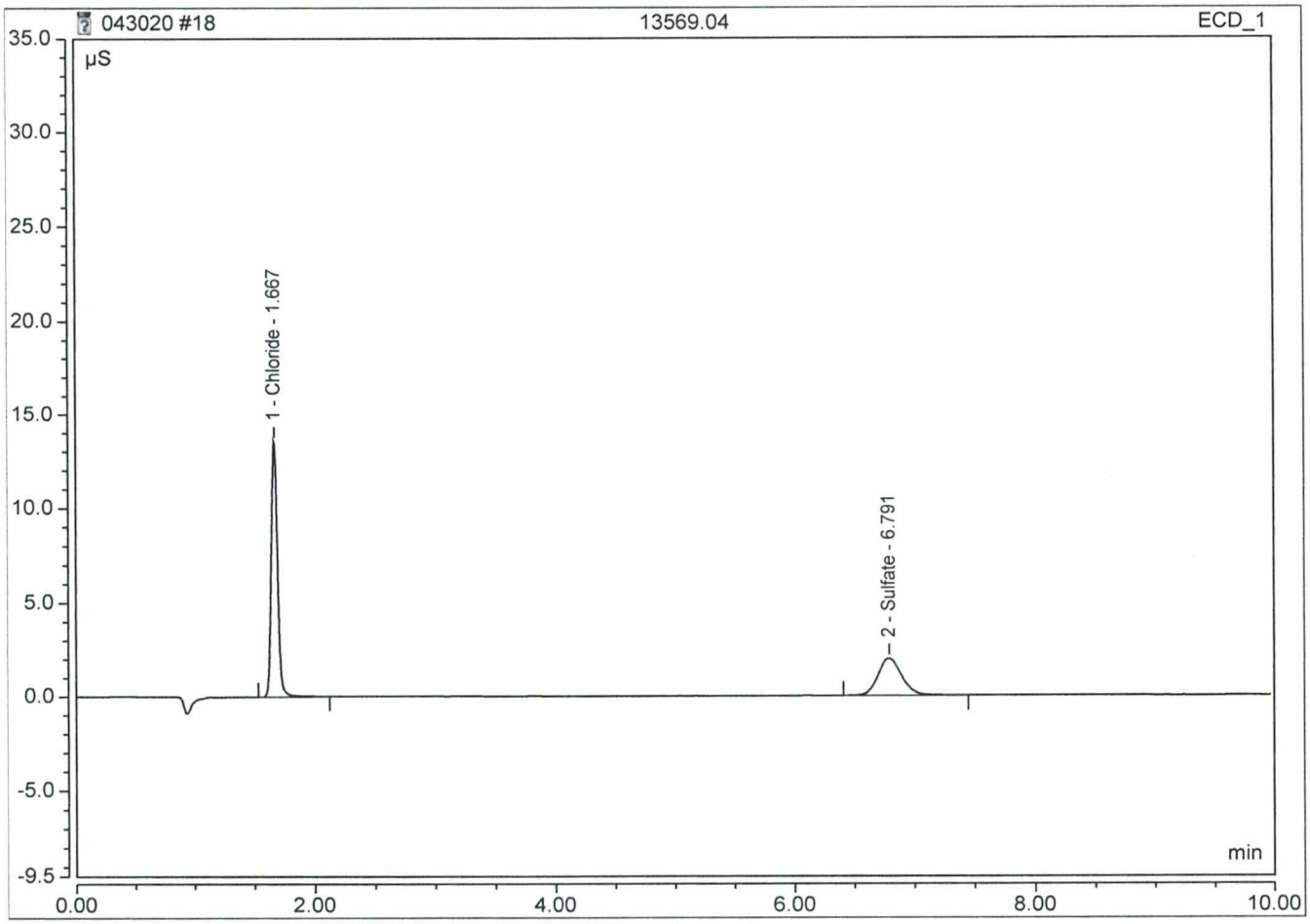
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.66	Chloride	BMB	0.820	13.556	70.5724
2	6.79	Sulfate	BMB	0.440	1.953	56.7658
TOTAL:				1.26	15.51	127.34



Peak Integration Report

Sample Name:	**13569.04**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**10.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 11:45**	*Operator:*	**Jeff Phifer**

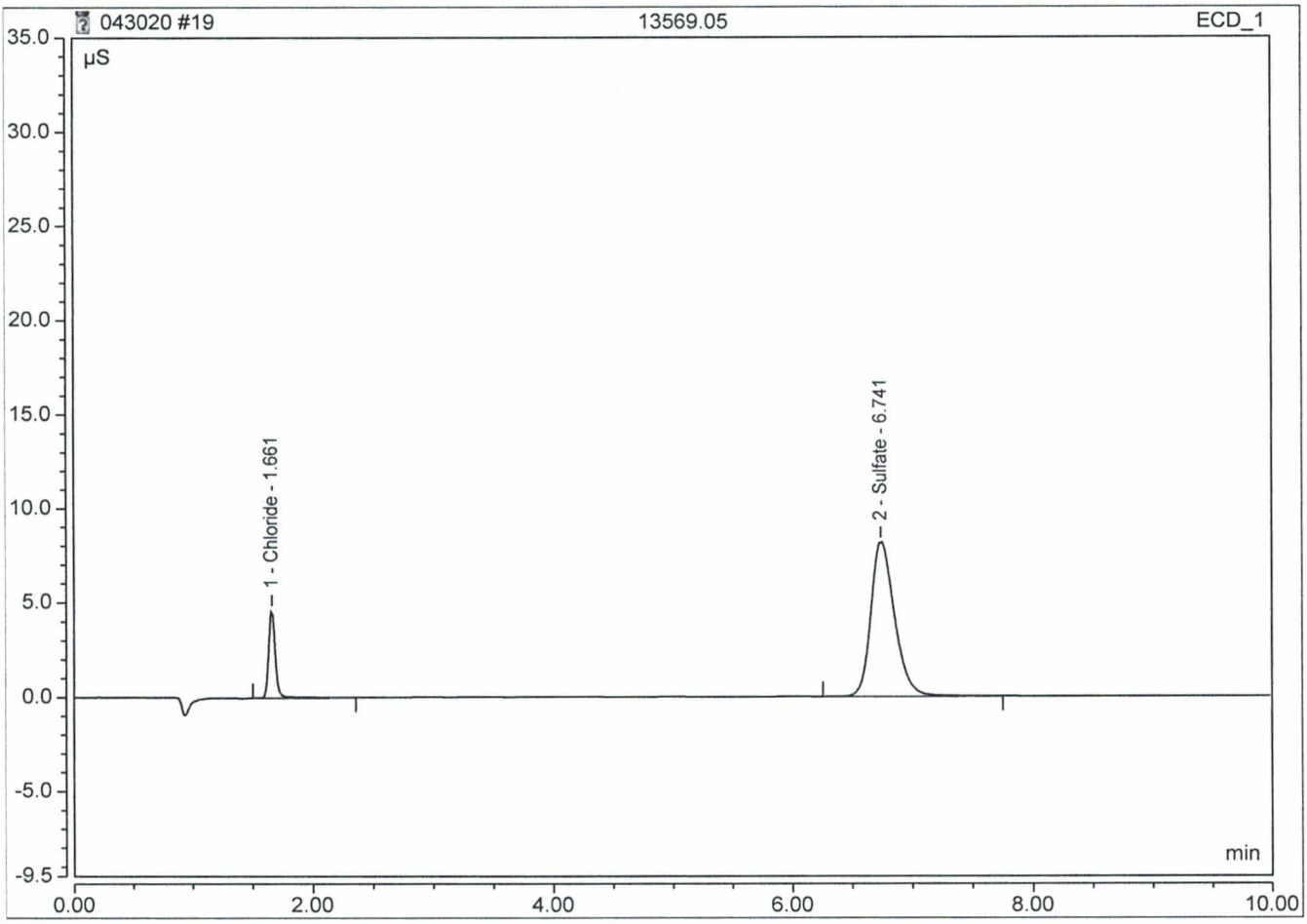
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.67	**Chloride**	BMB	0.818	13.570	70.3726
2	6.79	**Sulfate**	BMB	0.452	1.989	58.2229
TOTAL:				1.27	15.56	128.60



Peak Integration Report

Sample Name:	**13569.05**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**25.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 11:58**	*Operator:*	**Jeff Phifer**

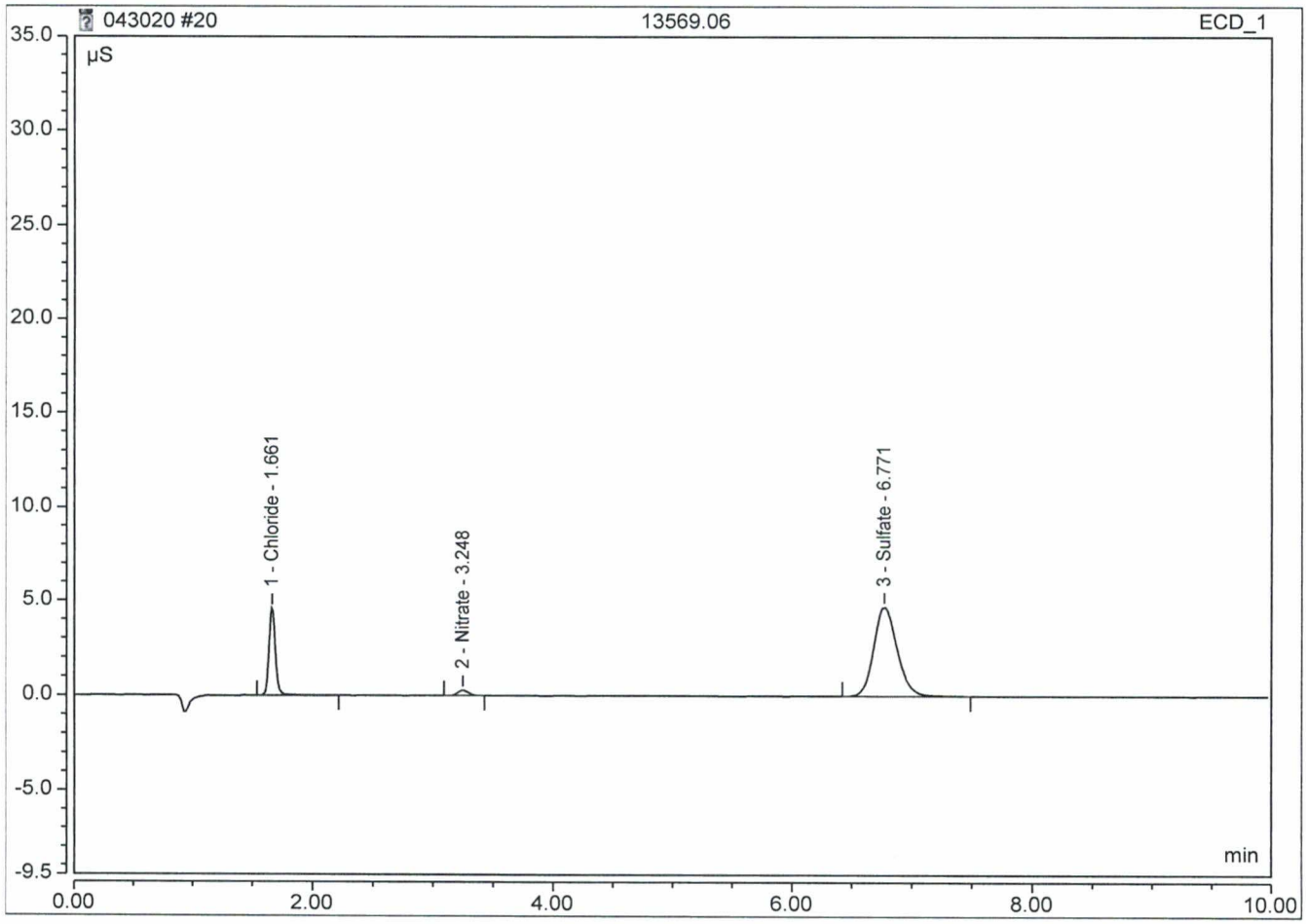
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.66	**Chloride**	BMB	0.297	4.665	68.2985
2	6.74	**Sulfate**	BMB	1.856	8.195	591.2960
TOTAL:				2.15	12.86	659.59



Peak Integration Report

Sample Name:	**13569.06**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**10.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 12:11**	*Operator:*	**Jeff Phifer**

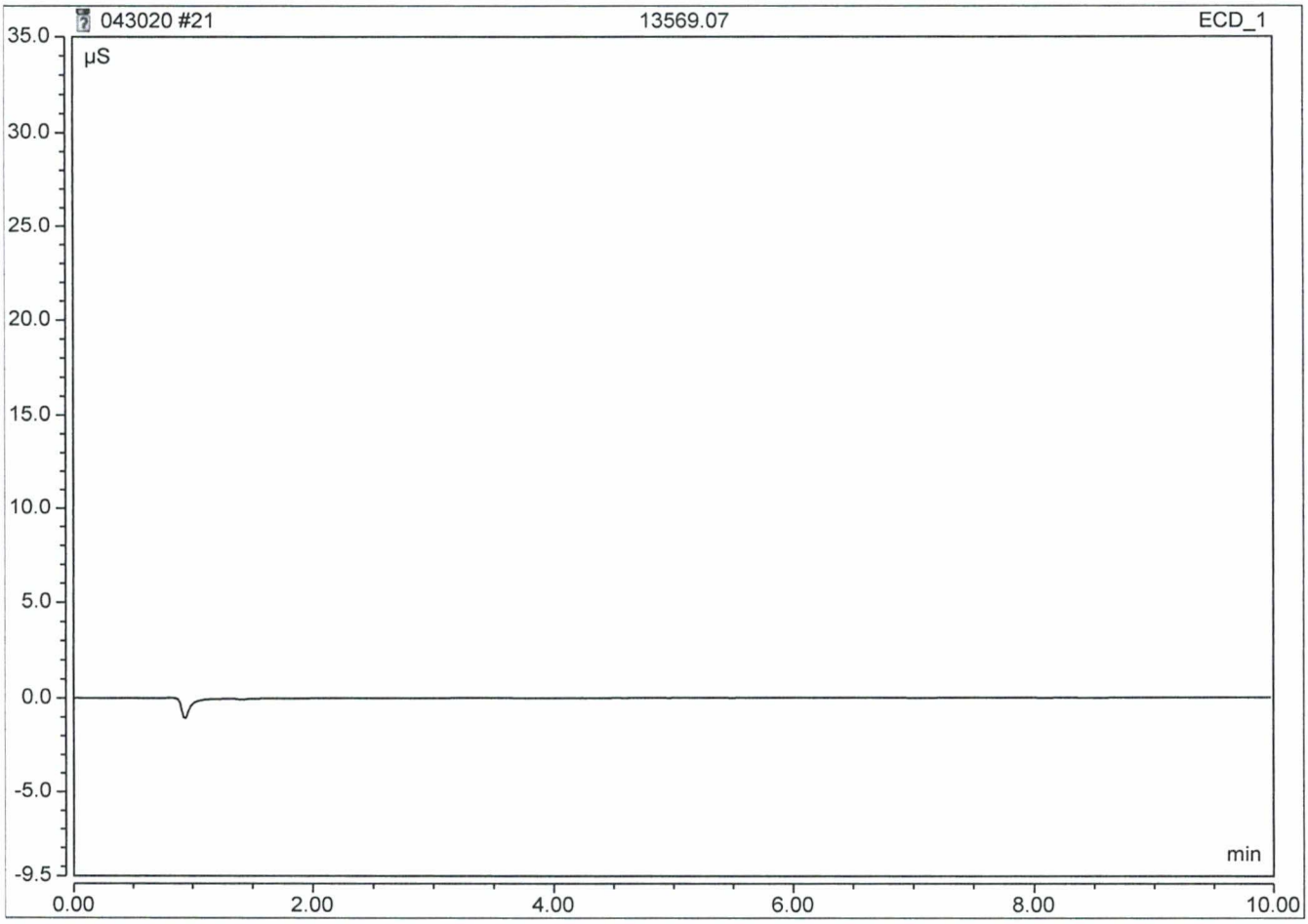
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.66	Chloride	BMB	0.285	4.592	26.3528
2	3.25	Nitrate	BMB	0.029	0.290	1.1606
3	6.77	Sulfate	BMB	1.057	4.693	135.1041
TOTAL:				1.37	9.58	162.62



Peak Integration Report

Sample Name:	**13569.07**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**2.5000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 12:24**	*Operator:*	**Jeff Phifer**

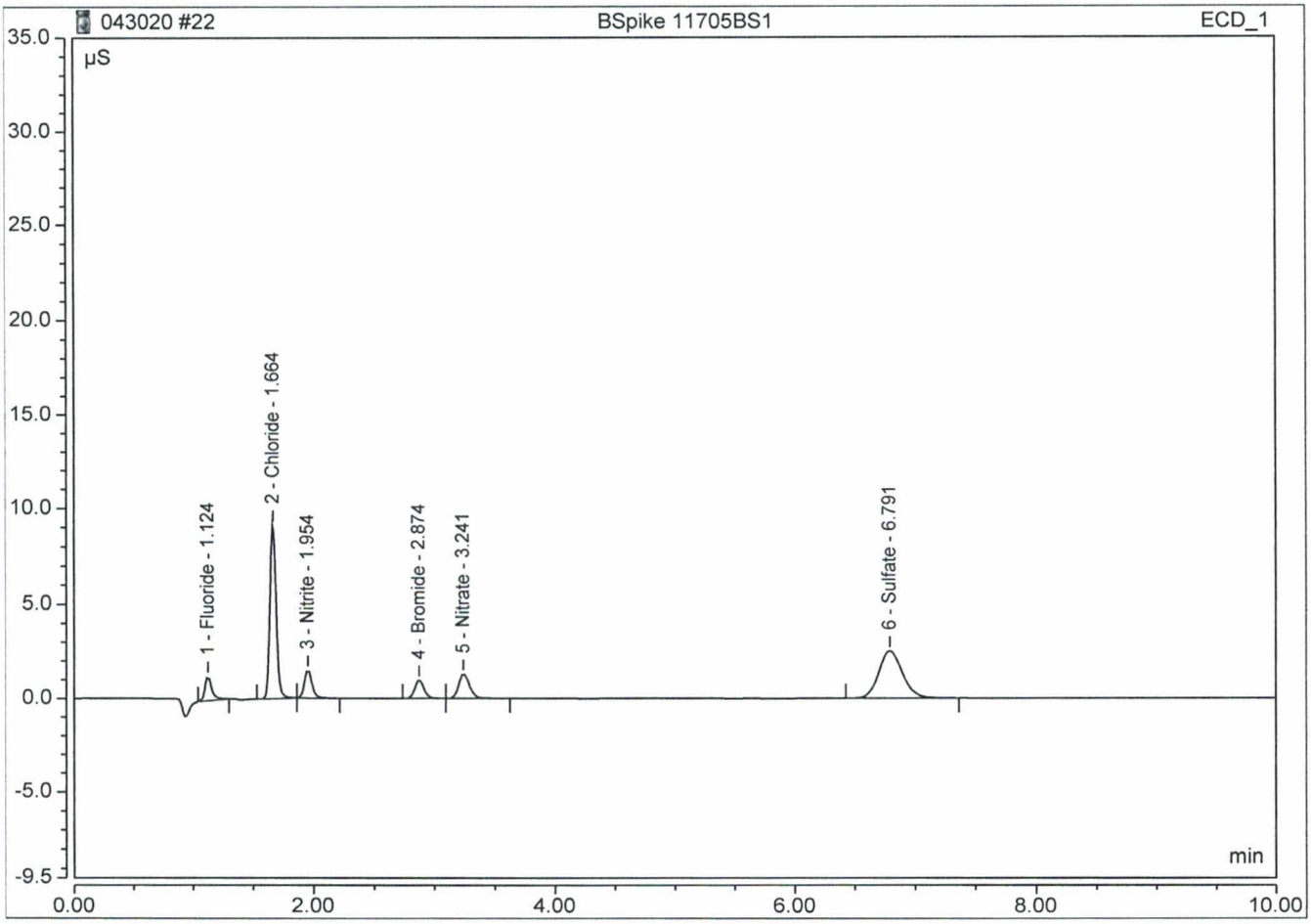
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	**BSpike 11705BS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 12:37**	*Operator:*	**Jeff Phifer**

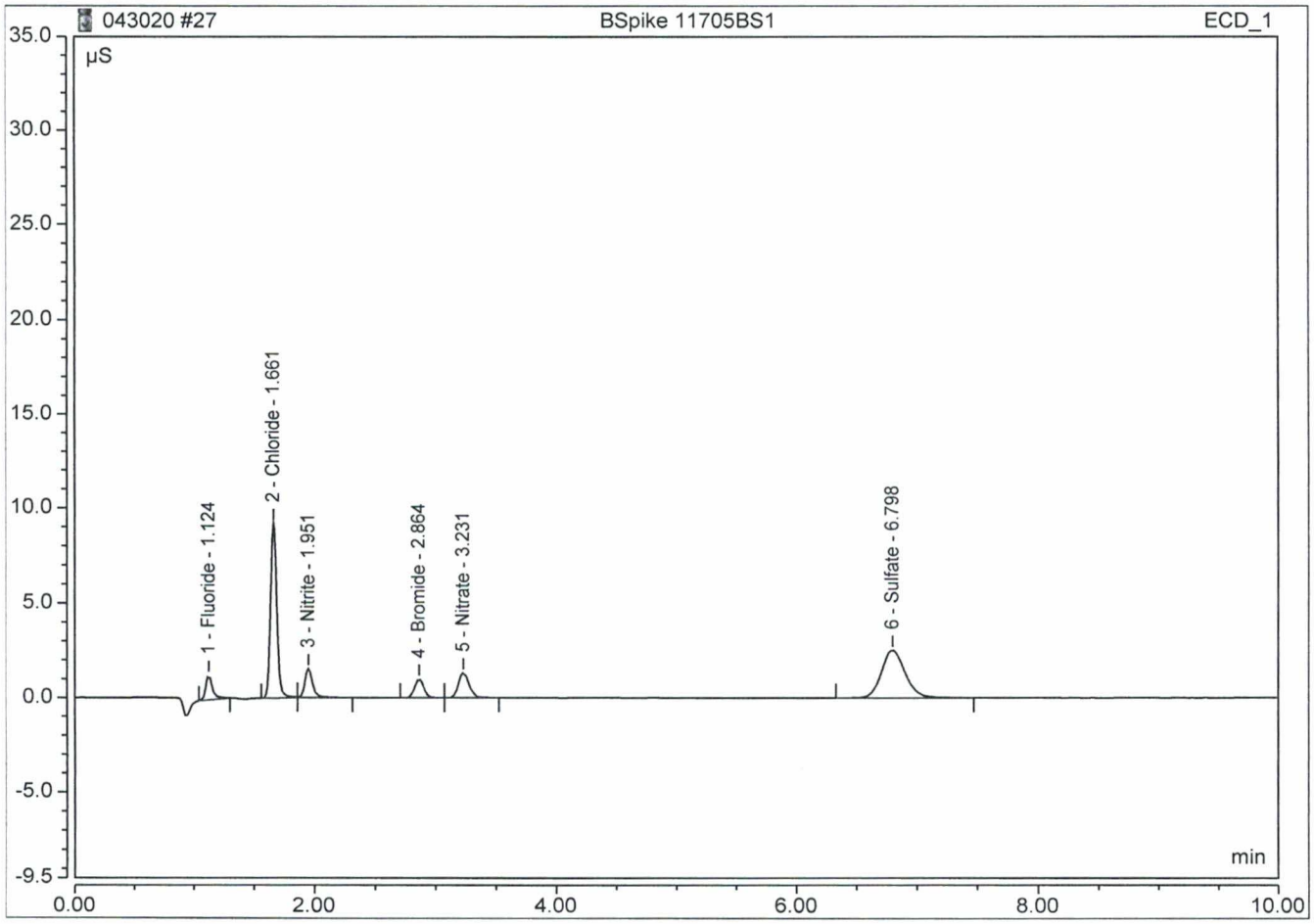
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L		
1	1.12	**Fluoride**	BMB	0.085	1.296	0.5	0.5101	102 %
2	1.66	**Chloride**	BMB	0.550	9.122	5	4.8249	96 %
3	1.95	**Nitrite**	BMB	0.106	1.494	0.5	0.4824	96 %
4	2.87	**Bromide**	BMB	0.089	0.984	2	2.0739	104 %
5	3.24	**Nitrate**	BMB	0.135	1.302	0.5	0.5236	104 %
6	6.79	**Sulfate**	BMB	0.571	2.527	7.5	7.3306	97 %
TOTAL:				1.54	16.72		15.75	



Peak Integration Report

Sample Name:	**BSpike 11705BS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 13:41**	*Operator:*	**Jeff Phifer**

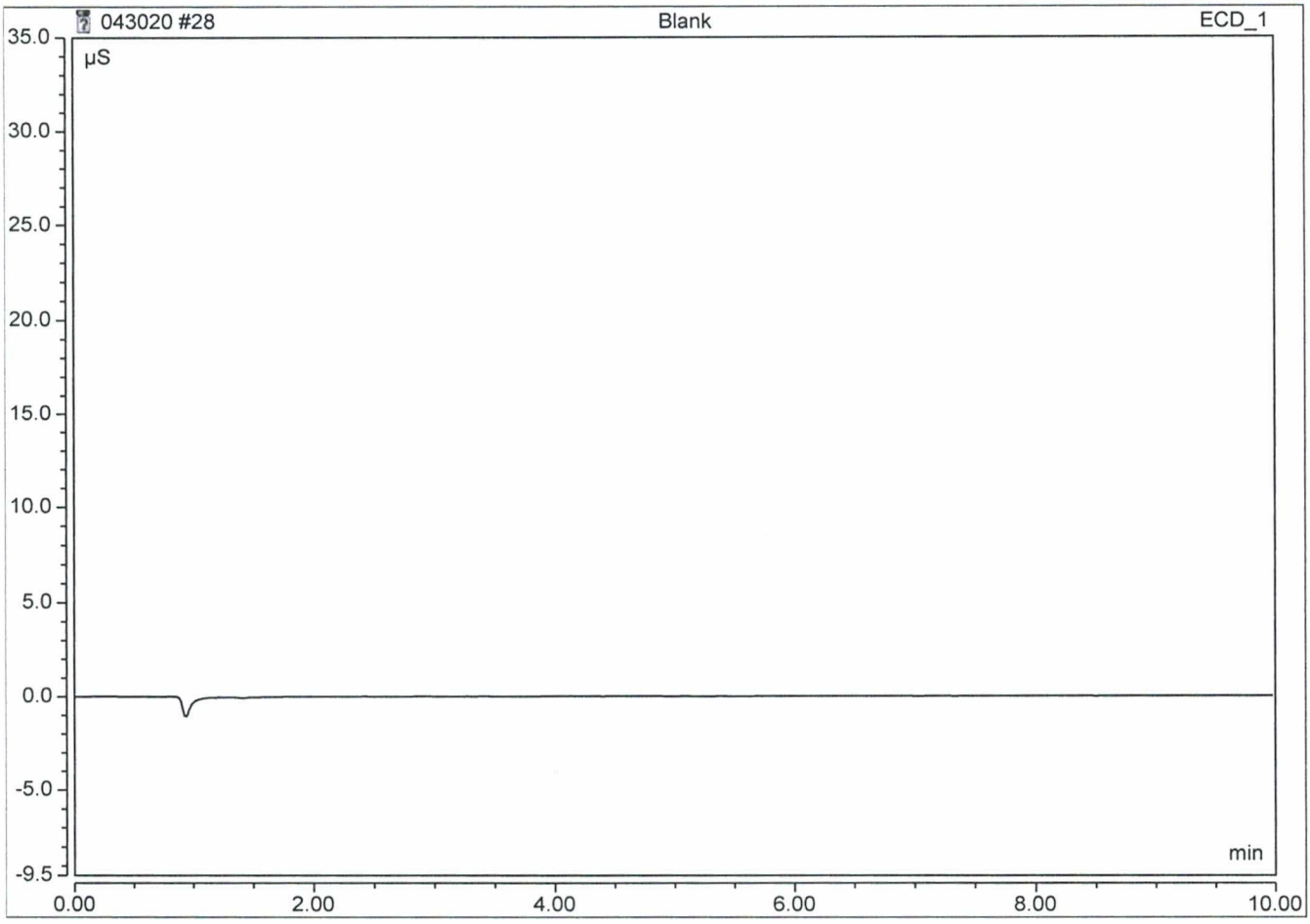
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L	
1	1.12	**Fluoride**	BMB	0.084	1.286	0.5 0.5035	101 %
2	1.66	**Chloride**	BMB	0.552	9.171	5 4.8392	96.8
3	1.95	**Nitrite**	BMB	0.109	1.508	0.5 0.4922	98.4
4	2.86	**Bromide**	BMB	0.089	0.990	2 2.0688	103 %
5	3.23	**Nitrate**	BMB	0.134	1.311	0.5 0.5187	104 %
6	6.80	**Sulfate**	BMB	0.572	2.525	7.5 7.3477	97.9
		TOTAL:		1.54	16.79	15.77	



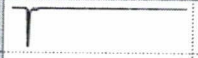
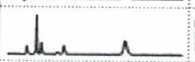
Peak Integration Report

Sample Name:	**Blank**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**30-Apr-2020 / 13:53**	*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

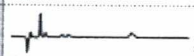
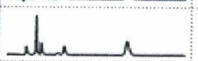
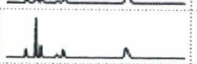


ICS-1100 A Dionex IC/Meth 300.0 **031620** (New Cal.) all ions (new guard col) JH

#	ECD_1	Name	Type	Level	Positio	Instrument Method	Processing Method	Status	Inject Time	Weight
1		water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:58:12 AM...	1.0000
2		1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:29 A...	1.0000
3		1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:17 A...	1.0000
4		1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:36:06 A...	1.0000
5		1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:55 A...	1.0000
6		1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:43 A...	1.0000
		Click here to add a new injection								

CAL ID# ICSA031620 CAL

031620

#	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				

JF 3.16-20

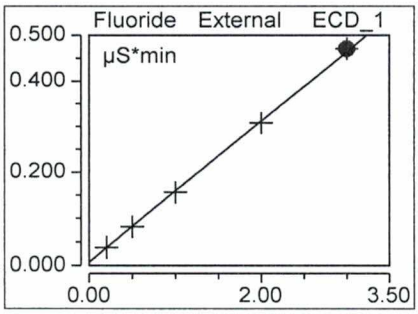
Calibration Batch Report
CAL ID# ICSA031620CAL

Sequence:	**031620**	*Injection Volu.*	**2,500.00**
Instrument Method:	**Norm Method**	*Operator:*	**Jeff Phifer**
Inj. Date / Time:	**16-Mar-2020 / 11:01**	*Column:*	**AS4A-SC 038777**

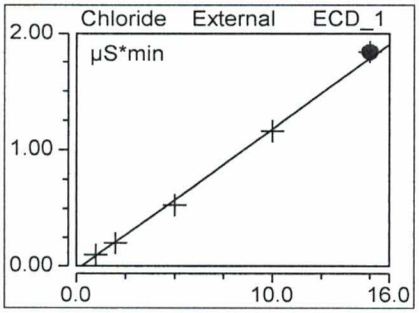
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Window Width min	Offset (C0)	Slope (C1)	Curve (C2)	Corr.Coeff.
Fluoride	Area	Lin, WithOffset, 1/A	0.02	0.007	0.152	0.000	0.9998
Chloride	Area	Lin, WithOffset, 1/A	0.04	-0.033	0.121	0.000	0.9987
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.003	0.227	0.000	0.9997
Bromide	Area	Lin, WithOffset, 1/A	0.15	-0.001	0.043	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.17	-0.001	0.260	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.46	-0.007	0.079	0.000	0.9996
		AVERAGE:		-0.0064	0.1471	0.0000	0.9996

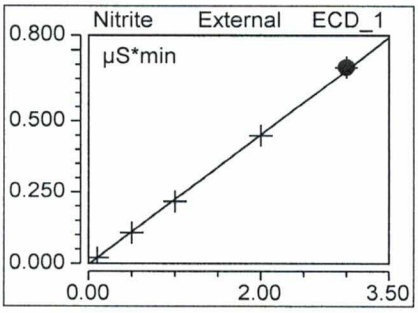
Injection Name / **Fluoride**	Ret.Time min Fluoride	Area µS*min Fluoride	Height µS Fluoride	Amount Fluoride
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	1.118	0.0386	0.506	0.206
1130Cal2	1.118	0.0822	1.190	0.493
1130Cal3	1.118	0.1559	2.362	0.978
1130Cal4	1.118	0.3073	4.834	1.974
1130Cal5	1.118	0.4705	7.546	3.048
Average	1.118			
Rel. Std. Dev.	0.000 %			



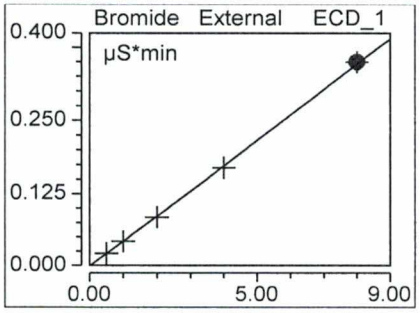
Injection Name / **Chloride**	Ret.Time min Chloride	Area µS*min Chloride	Height µS Chloride	Amount Chloride
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	1.651	0.0980	1.539	1.086
1130Cal2	1.651	0.2000	3.158	1.929
1130Cal3	1.661	0.5307	8.559	4.662
1130Cal4	1.664	1.1594	18.897	9.858
1130Cal5	1.664	1.8377	29.851	15.464
Average	1.658			
Rel. Std. Dev.	0.412 %			



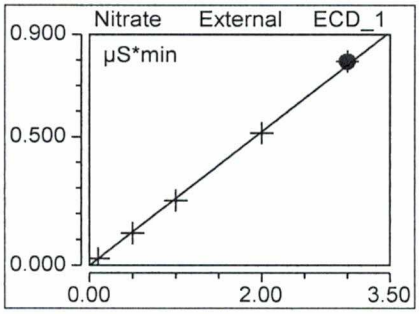
Injection Name / **Nitrite**	Ret.Time min Nitrite	Area µS*min Nitrite	Height µS Nitrite	Amount Nitrite
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	1.944	0.0206	0.280	0.105
1130Cal2	1.948	0.1071	1.441	0.486
1130Cal3	1.954	0.2163	2.949	0.967
1130Cal4	1.954	0.4487	6.229	1.989
1130Cal5	1.948	0.6905	9.755	3.054
Average	1.950			
Rel. Std. Dev.	0.229 %			



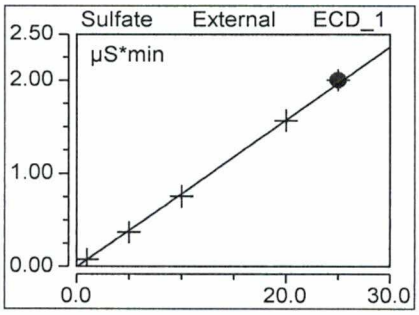
Injection Name **Bromide**	Ret.Time min Bromide	Area µS*min Bromide	Height µS Bromide	Amount Bromide
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	2.871	0.0210	0.228	0.511
1130Cal2	2.868	0.0422	0.461	0.999
1130Cal3	2.884	0.0843	0.917	1.969
1130Cal4	2.874	0.1696	1.866	3.936
1130Cal5	2.848	0.3497	3.898	8.085
Average	2.869			
Rel. Std. Dev.	0.469 %			



Injection Name **Nitrate**	Ret.Time min Nitrate	Area µS*min Nitrate	Height µS Nitrate	Amount Nitrate
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	3.244	0.0266	0.254	0.105
1130Cal2	3.234	0.1249	1.182	0.483
1130Cal3	3.248	0.2515	2.359	0.970
1130Cal4	3.228	0.5145	4.808	1.982
1130Cal5	3.194	0.7947	7.457	3.060
Average	3.230			
Rel. Std. Dev.	0.659 %			



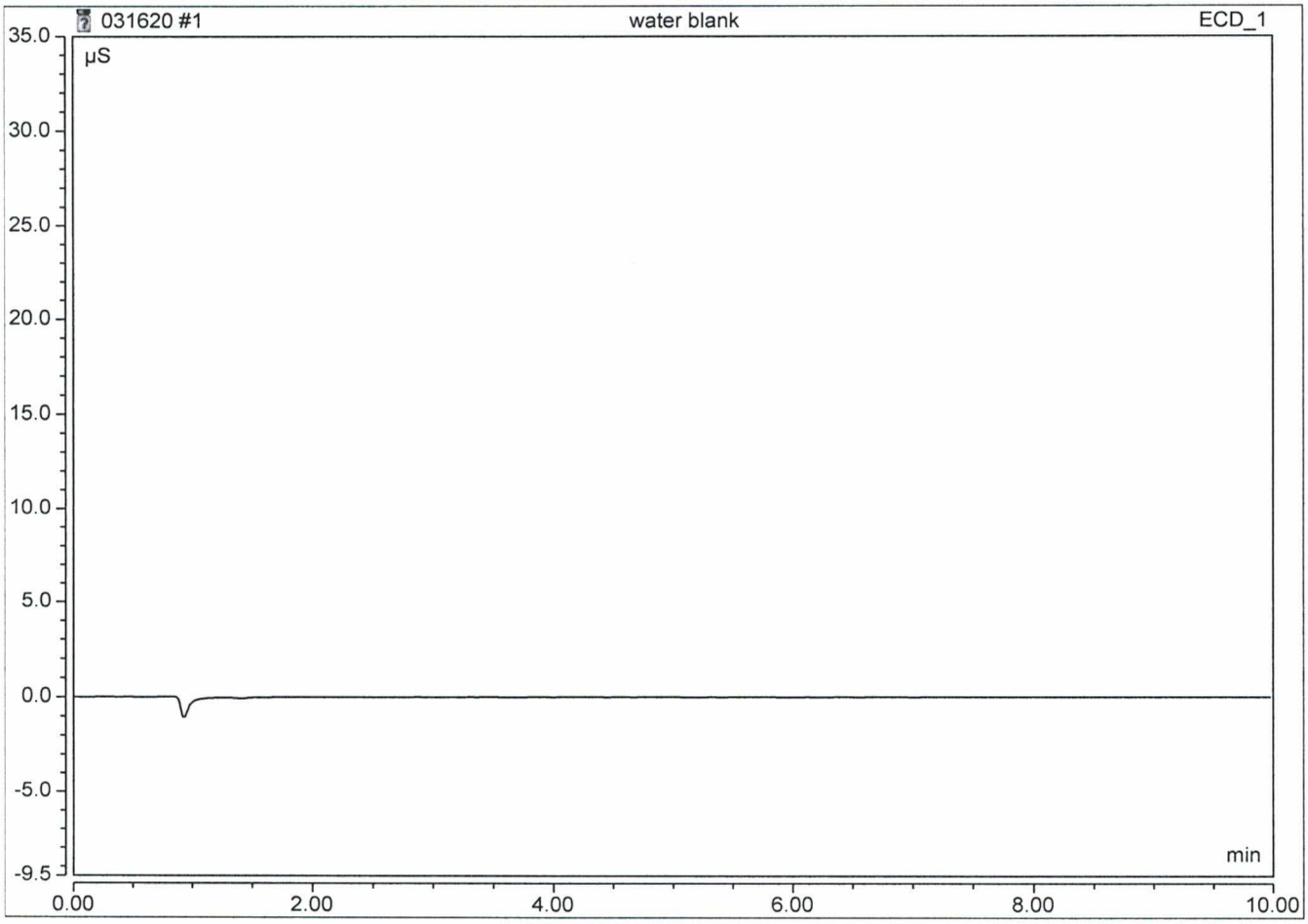
Injection Name **Sulfate**	Ret.Time min Sulfate	Area µS*min Sulfate	Height µS Sulfate	Amount Sulfate
	ECD_1	ECD_1	ECD_1	ECD_1
1130Cal1	6.768	0.0763	0.333	1.054
1130Cal2	6.754	0.3712	1.645	4.800
1130Cal3	6.744	0.7553	3.326	9.676
1130Cal4	6.721	1.5656	6.872	19.966
1130Cal5	6.718	2.0017	8.764	25.504
Average	6.741			
Rel. Std. Dev.	0.319 %			



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:	**16-Mar-2020 / 09:58**	*Operator:*	**Jeff Phifer**

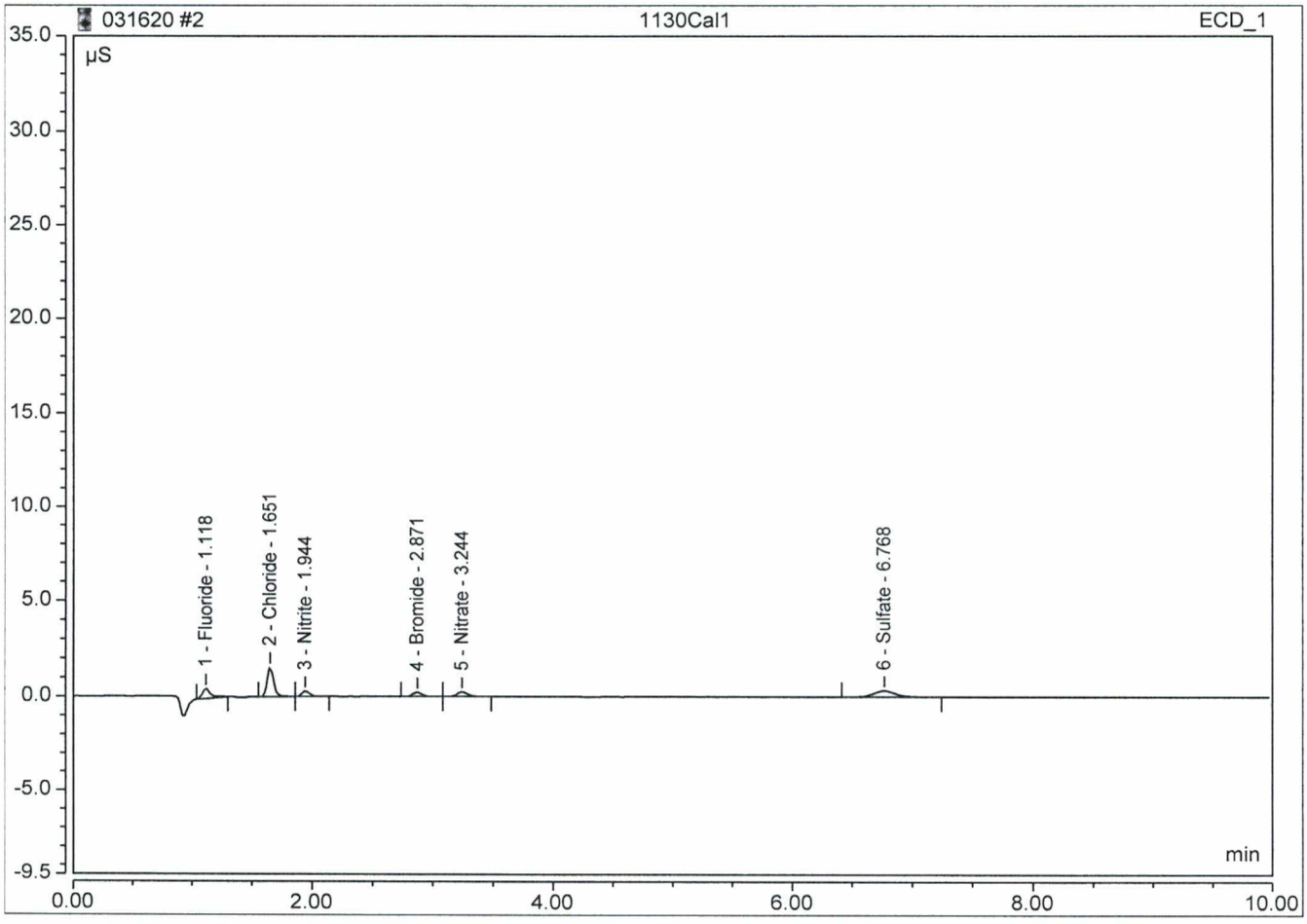
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	**1130Cal1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**16-Mar-2020 / 10:10**	*Operator:*	**Jeff Phifer**

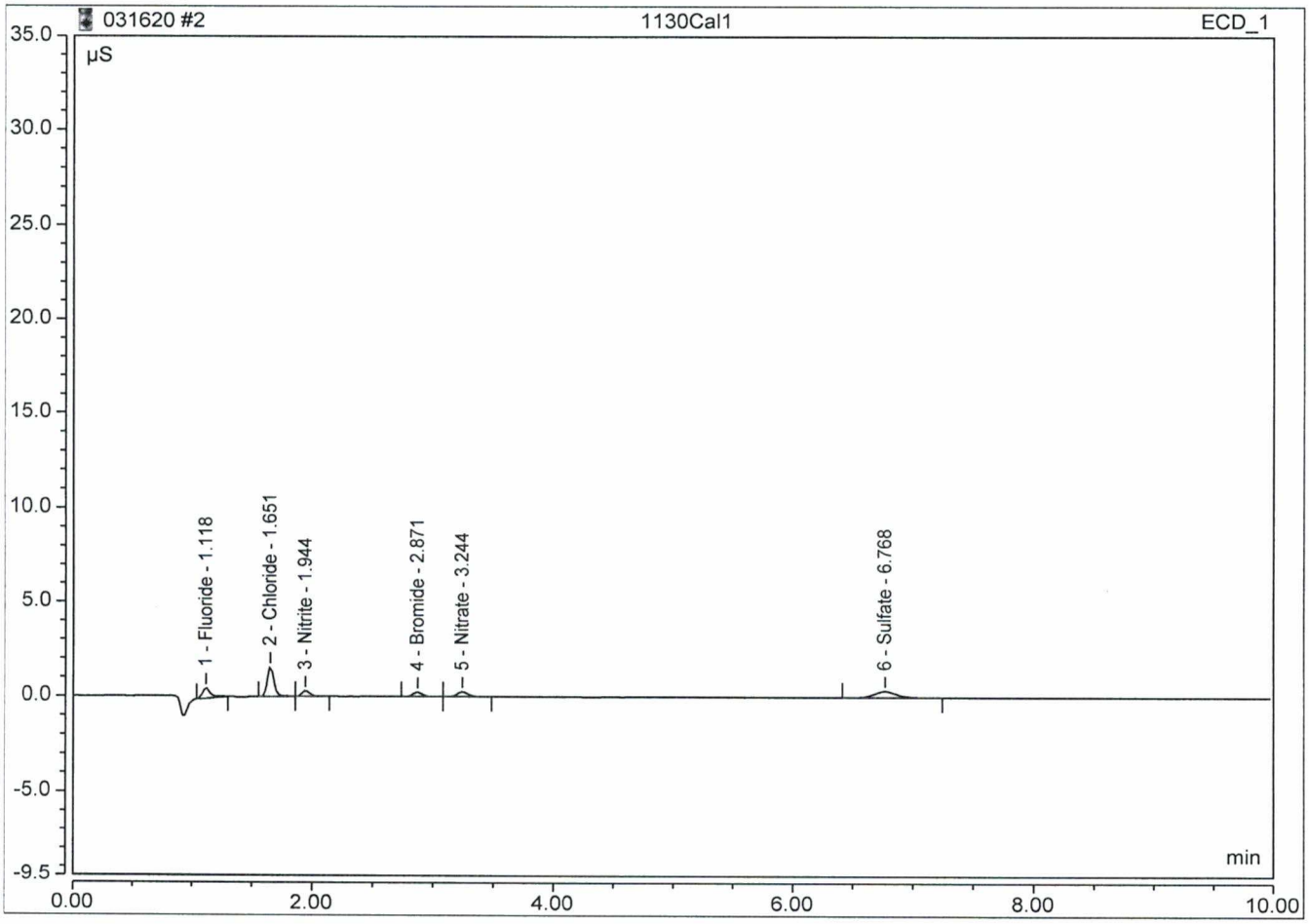
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.12	**Fluoride**	BMB	0.039	0.506	0.2 0.2064
2	1.65	**Chloride**	BMB	0.098	1.539	1 1.0862
3	1.94	**Nitrite**	BMB	0.021	0.280	0.1 0.1050
4	2.87	**Bromide**	BMB	0.021	0.228	0.5 0.5111
5	3.24	**Nitrate**	BMB	0.027	0.254	0.1 0.1053
6	6.77	**Sulfate**	BMB	0.076	0.333	1 1.0540
TOTAL:				0.28	3.14	3.07



Peak Integration Report

Sample Name:	**1130Cal1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**16-Mar-2020 / 10:10**	*Operator:*	**Jeff Phifer**

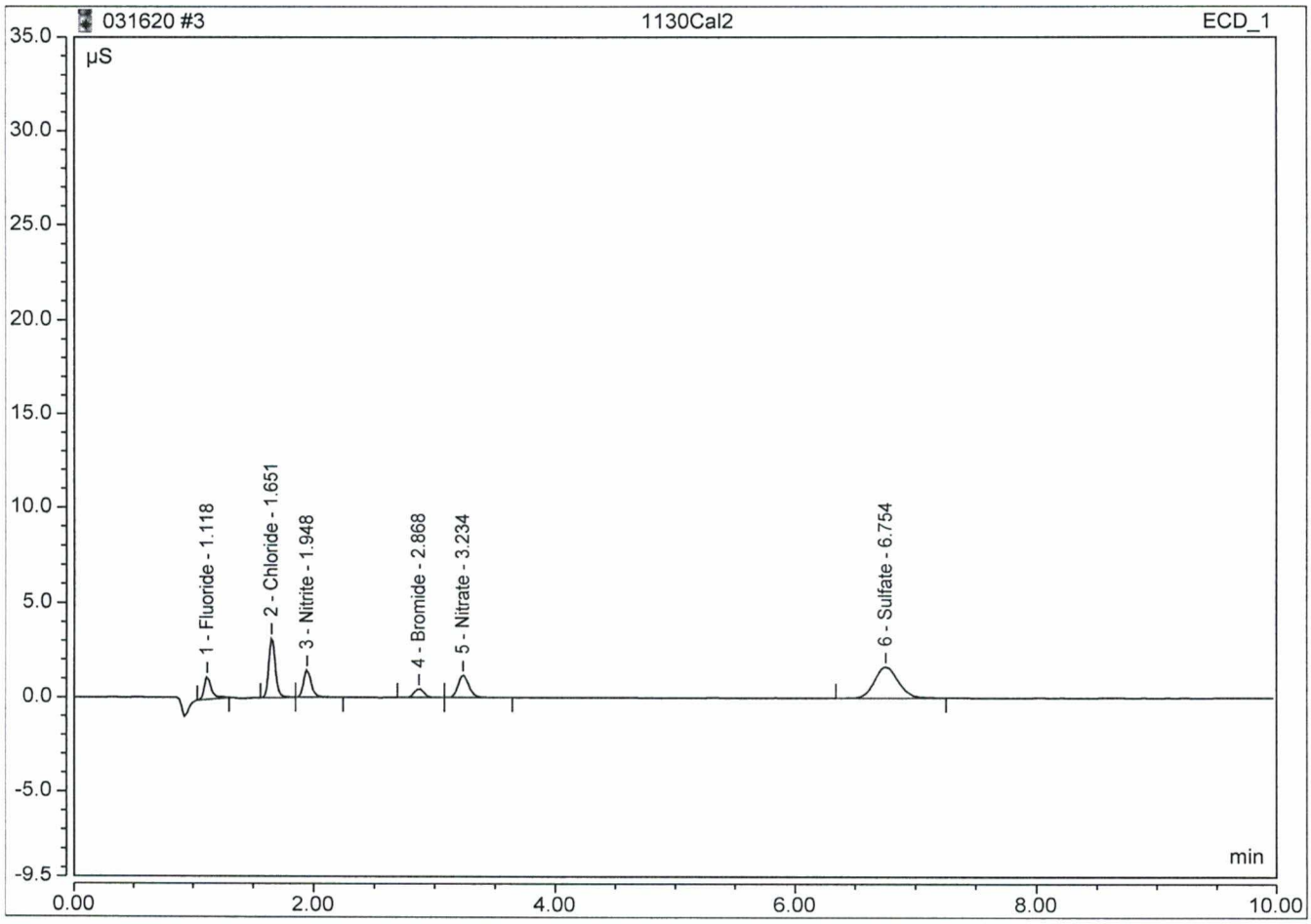
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.12	**Fluoride**	BMB	0.039	0.506	n.a.
2	1.65	**Chloride**	BMB	0.098	1.539	n.a.
3	1.94	**Nitrite**	BMB	0.021	0.280	n.a.
4	2.87	**Bromide**	BMB	0.021	0.228	n.a.
5	3.24	**Nitrate**	BMB	0.027	0.254	n.a.
6	6.77	**Sulfate**	BMB	0.076	0.333	n.a.
TOTAL:				0.28	3.14	0.00



Peak Integration Report

Sample Name:	**1130Cal2**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**16-Mar-2020 / 10:23**	*Operator:*	**Jeff Phifer**

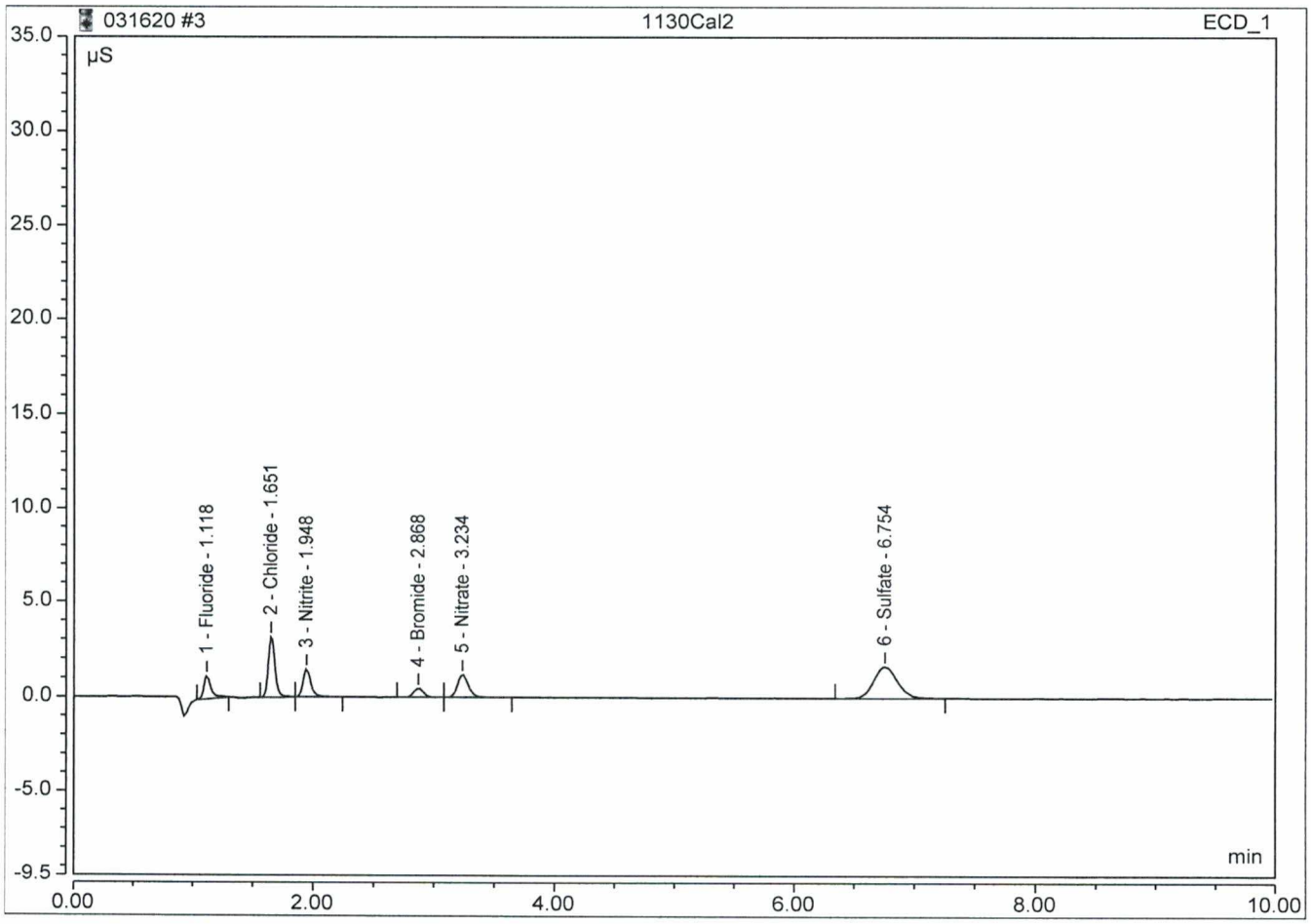
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.12	**Fluoride**	BMB	0.082	1.190	0.5 0.4934
2	1.65	**Chloride**	BMB	0.200	3.158	2 1.9291
3	1.95	**Nitrite**	BMB	0.107	1.441	0.5 0.4857
4	2.87	**Bromide**	BMB	0.042	0.461	1 0.9986
5	3.23	**Nitrate**	BMB	0.125	1.182	0.5 0.4831
6	6.75	**Sulfate**	BMB	0.371	1.645	5 4.7996
TOTAL:				0.93	9.08	9.19



Peak Integration Report

Sample Name:	**1130Cal2**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**16-Mar-2020 / 10:23**	*Operator:*	**Jeff Phifer**

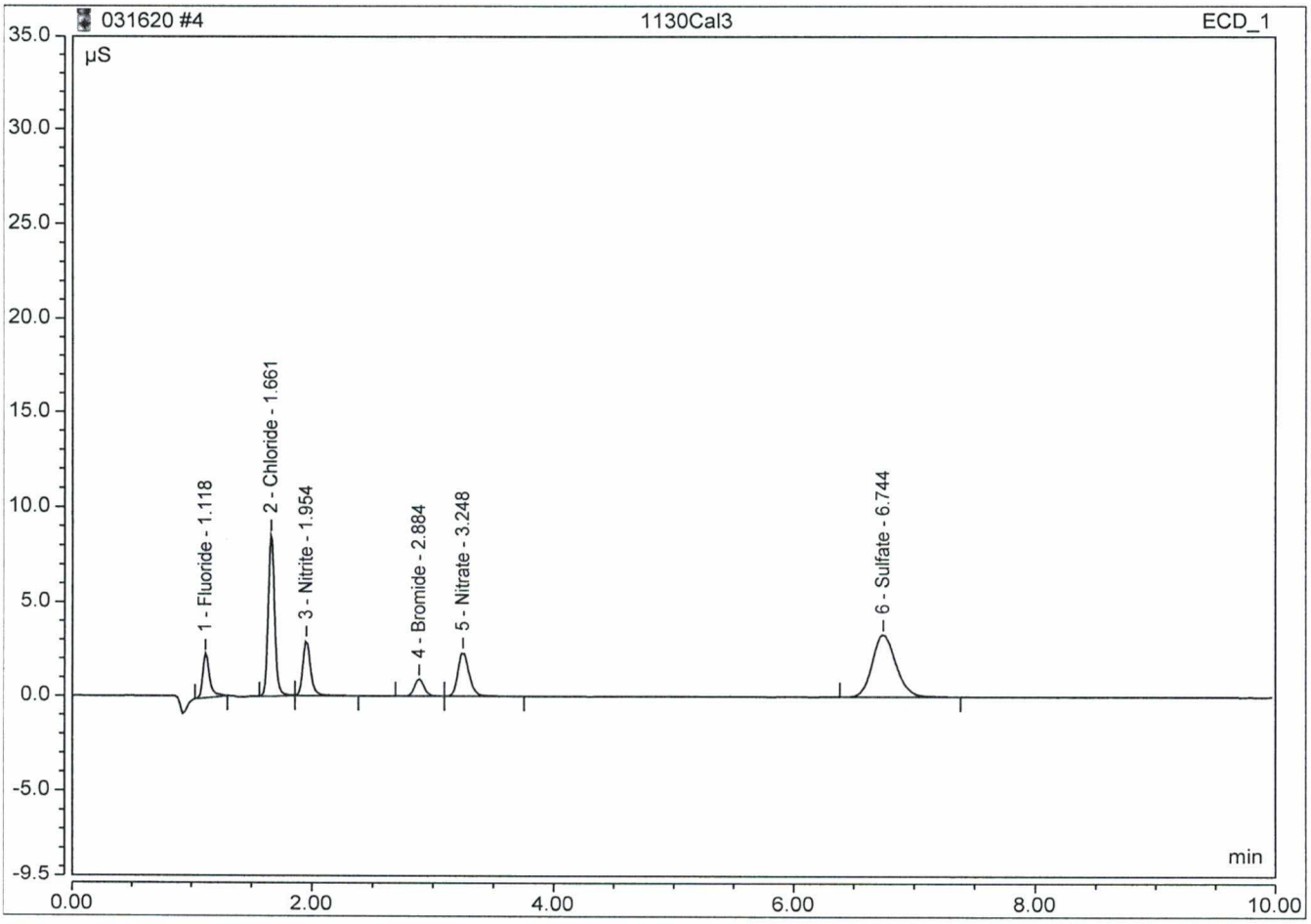
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.12	**Fluoride**	BMB	0.082	1.190	0.5000
2	1.65	**Chloride**	BMB	0.200	3.158	2.0000
3	1.95	**Nitrite**	BMB	0.107	1.441	0.5000
4	2.87	**Bromide**	BMB	0.042	0.461	1.0000
5	3.23	**Nitrate**	BMB	0.125	1.182	0.5000
6	6.75	**Sulfate**	BMB	0.371	1.645	5.0000
TOTAL:				0.93	9.08	9.50



Peak Integration Report

Sample Name:	**1130Cal3**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**16-Mar-2020 / 10:36**	*Operator:*	**Jeff Phifer**

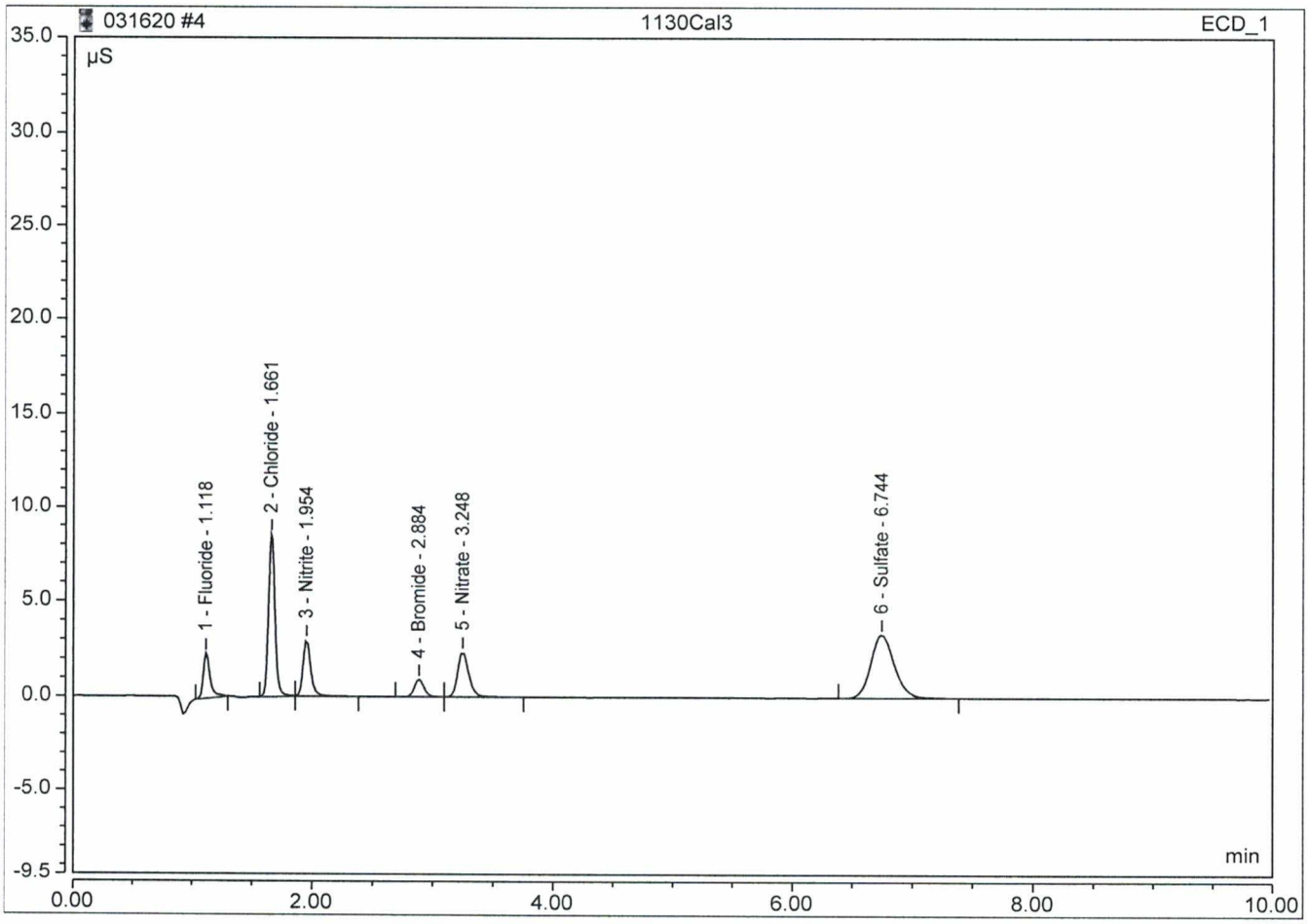
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.12	**Fluoride**	BMB	0.156	2.362	1 0.9783
2	1.66	**Chloride**	BMB	0.531	8.559	5 4.6623
3	1.95	**Nitrite**	BMB	0.216	2.949	1 0.9666
4	2.88	**Bromide**	BMB	0.084	0.917	2 1.9694
5	3.25	**Nitrate**	BMB	0.252	2.359	1 0.9702
6	6.74	**Sulfate**	BMB	0.755	3.326	10 9.6764
TOTAL:				1.99	20.47	19.22



Peak Integration Report

Sample Name:	**1130Cal3**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**16-Mar-2020 / 10:36**	*Operator:*	**Jeff Phifer**

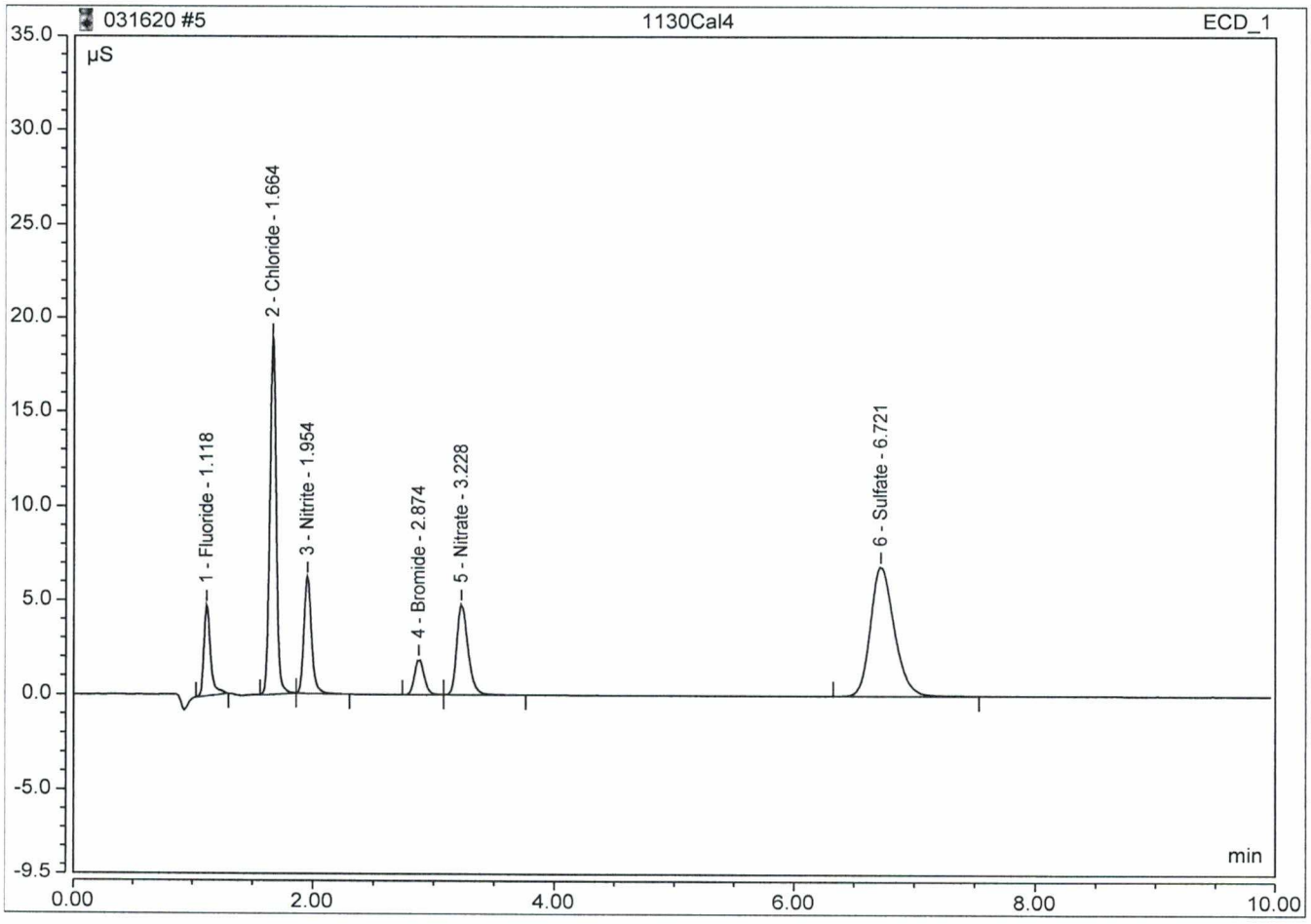
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.12	**Fluoride**	BMB	0.156	2.362	1.0013
2	1.66	**Chloride**	BMB	0.531	8.559	5.0249
3	1.95	**Nitrite**	BMB	0.216	2.949	1.0014
4	2.88	**Bromide**	BMB	0.084	0.917	1.9993
5	3.25	**Nitrate**	BMB	0.252	2.359	1.0042
6	6.74	**Sulfate**	BMB	0.755	3.326	10.0555
TOTAL:				1.99	20.47	20.09



Peak Integration Report

Sample Name:	**1130Cal4**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**16-Mar-2020 / 10:48**	*Operator:*	**Jeff Phifer**

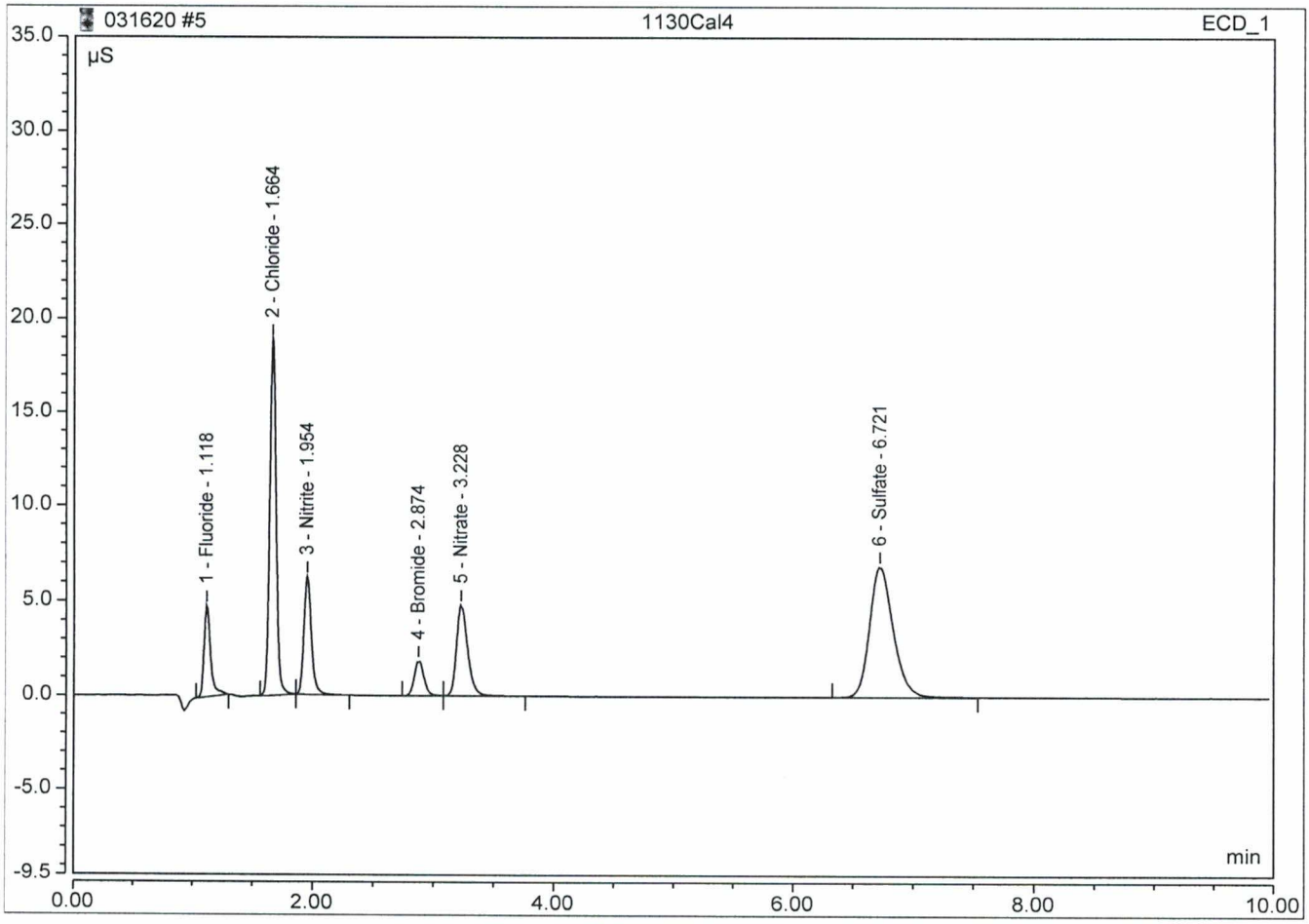
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.12	**Fluoride**	BMB	0.307	4.834	2 1.9744
2	1.66	**Chloride**	BMB	1.159	18.897	10 9.8582
3	1.95	**Nitrite**	BMB	0.449	6.229	2 1.9892
4	2.87	**Bromide**	BMB	0.170	1.866	4 3.9361
5	3.23	**Nitrate**	BMB	0.515	4.808	2 1.9818
6	6.72	**Sulfate**	BMB	1.566	6.872	20 19.9659
TOTAL:				4.17	43.50	39.71



Peak Integration Report

Sample Name:	**1130Cal4**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**16-Mar-2020 / 10:48**	*Operator:*	**Jeff Phifer**

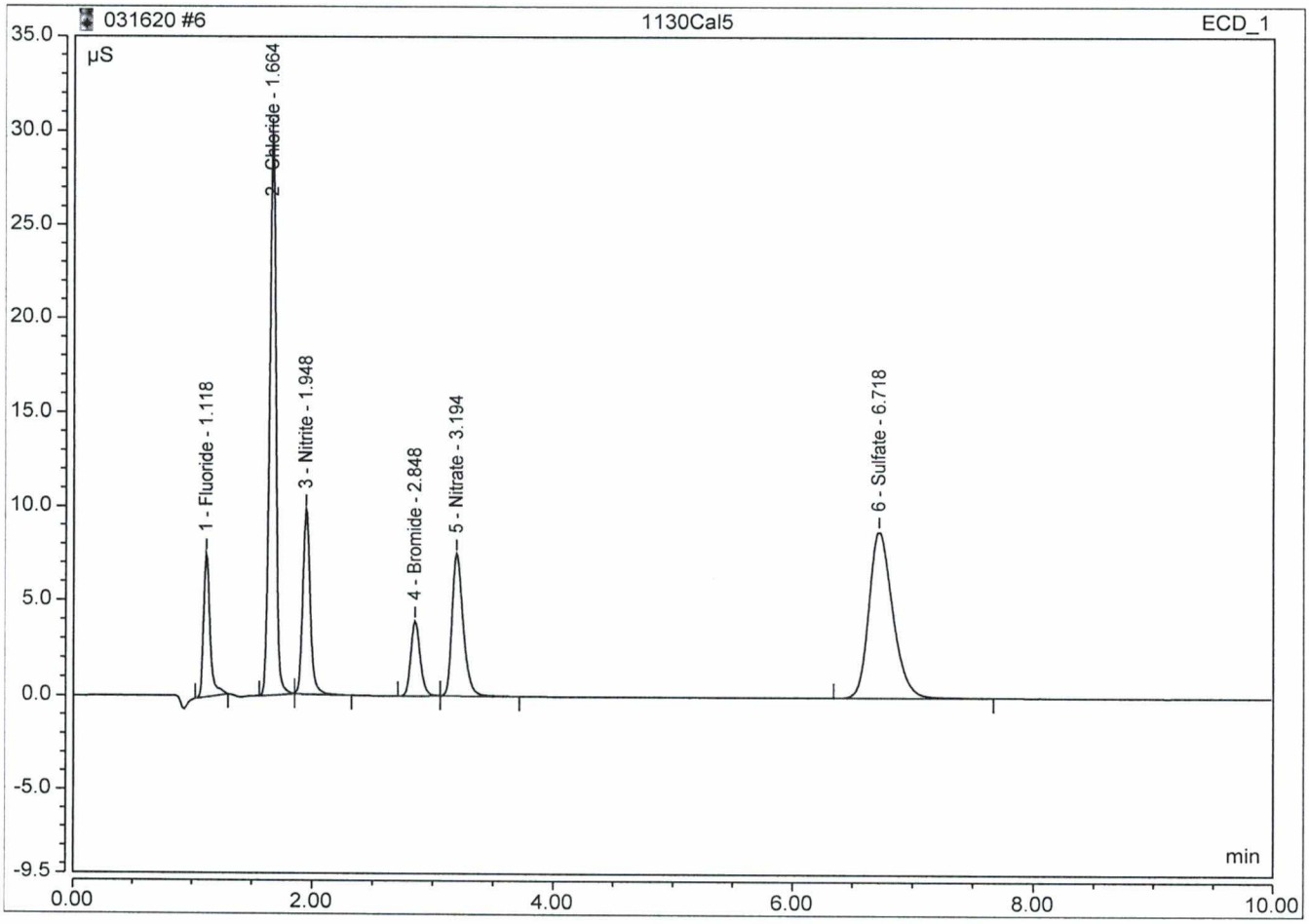
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.12	Fluoride	BMB	0.307	4.834	2.0102
2	1.66	Chloride	BMB	1.159	18.897	10.2226
3	1.95	Nitrite	BMB	0.449	6.229	2.0251
4	2.87	Bromide	BMB	0.170	1.866	4.0058
5	3.23	Nitrate	BMB	0.515	4.808	2.0216
6	6.72	Sulfate	BMB	1.566	6.872	20.2999
TOTAL:				4.17	43.50	40.59



Peak Integration Report

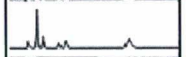
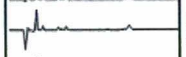
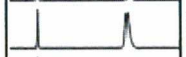
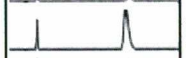
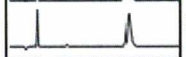
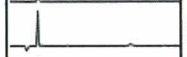
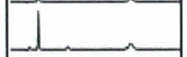
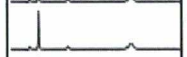
Sample Name:	**1130Cal5**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 038777**
Inj. Date / Time:	**16-Mar-2020 / 11:01**	*Operator:*	**Jeff Phifer**

No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount mg/L
1	1.12	**Fluoride**	BMB	0.470	7.546	3 3.0476
2	1.66	**Chloride**	BMB	1.838	29.851	15 15.4642
3	1.95	**Nitrite**	BMB	0.690	9.755	3 3.0536
4	2.85	**Bromide**	BMB	0.350	3.898	8 8.0849
5	3.19	**Nitrate**	BMB	0.795	7.457	3 3.0595
6	6.72	**Sulfate**	BMB	2.002	8.764	25 25.5041
TOTAL:				6.14	67.27	58.21



Sequence: 043020
Last Update Operator: pcuser

ICS-1100 B Dionex IC / Meth 300.0

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:57:49 AM -C
	1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:09 AM -
	1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:01 AM -
	1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:35:53 AM -
	1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:45 AM -
	1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:35 AM -
	Blank	Unknown		1	Norm Method	Anion	Finished	4/30/2020 8:25:10 AM -C
	BSpike 11705BS1	Check Standard		2	Norm Method	Anion	Finished	4/30/2020 8:37:29 AM -C
	LCS 11705LCS1	Check Standard		3	Norm Method	Anion	Finished	4/30/2020 8:50:20 AM -C
	LOD 1132LOD1	Unknown		4	Norm Method	Anion	Finished	4/30/2020 9:03:12 AM -C
	LOQ 1132LOQ1	Unknown		5	Norm Method	Anion	Finished	4/30/2020 9:16:04 AM -C
	13569.01	Unknown		6	Norm Method	Anion	Finished	4/30/2020 9:28:56 AM -C
	13569.02	Unknown		7	Norm Method	Anion	Finished	4/30/2020 9:41:47 AM -C
	13569.03	Unknown		8	Norm Method	Anion	Finished	4/30/2020 9:54:39 AM -C
	13569.04	Unknown		9	Norm Method	Anion	Finished	4/30/2020 10:07:29 AM -
	13569.05	Unknown		10	Norm Method	Anion	Finished	4/30/2020 10:20:21 AM -
	13569.06	Unknown		11	Norm Method	Anion	Finished	4/30/2020 10:33:13 AM -
	13569.07	Unknown		12	Norm Method	Anion	Finished	4/30/2020 10:46:05 AM -
	13575.06	Unknown		13	Norm Method	Anion	Finished	4/30/2020 10:58:57 AM -
	13575.07	Unknown		14	Norm Method	Anion	Finished	4/30/2020 11:11:48 AM -
	13569.01 dup	Unknown		15	Norm Method	Anion	Finished	4/30/2020 11:24:39 AM -
	13569.01 MS 12970MS	Unknown		16	Norm Method	Anion	Finished	4/30/2020 11:37:31 AM -
	13569.01 MSD 12970M	Unknown		17	Norm Method	Anion	Finished	4/30/2020 11:50:23 AM -
	BSpike 11705BS1	Check Standard		18	Norm Method	Anion	Finished	4/30/2020 12:03:14 PM -

CAL ID# ICSB031620CAL

SFT 200430-WL-B
NTRA 200430-WL-B
FL 200430-WL-B

	Blank	Unknown		19	Norm Method	Anion	Finished	4/30/2020 12:16:05 PM

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	
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1.0000	1.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	2.5000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	1.0000		Jeff Phifer	
1.0000	5.0000	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				

4.30.20

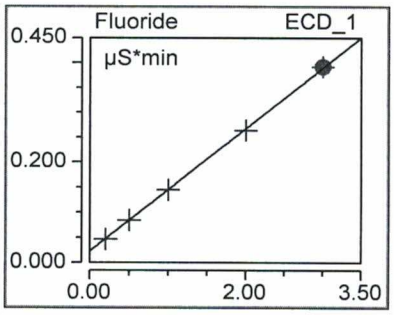
Calibration Batch Report
CAL ID# ICSB031620CAL

Sequence:	**043020**	*Injection Volu*	**2,500.00**
Instrument Method:	**Norm Method**	*Operator:*	**Jeff Phifer**
Inj. Date / Time:	**16-Mar-2020 / 11:01**	*Column:*	**AS4A-SC 040144**

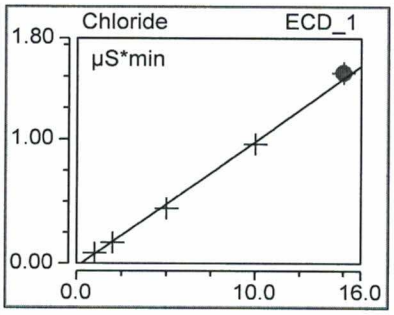
Calibration Summary

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	0.023	0.122	0.000	0.9999
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.025	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.193	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	-0.001	0.036	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.004	0.064	0.000	0.9997
		AVERAGE:		-0.0017	0.1217	0.0000	0.9996

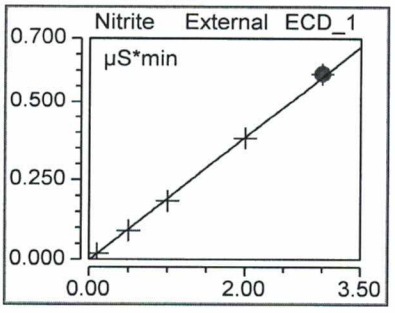
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Fluoride	Fluoride	Fluoride	Fluoride
1130Cal1	1.087	0.0469	0.474	0.199
1130Cal2	1.088	0.0842	1.010	0.505
1130Cal3	1.088	0.1447	1.902	0.999
1130Cal4	1.088	0.2638	3.720	1.974
1130Cal5	1.088	0.3918	5.690	3.022
Average	1.087			
Rel. Std. Dev.	0.007 %			



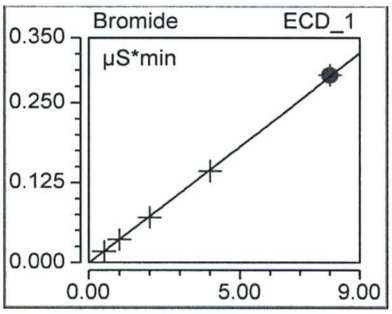
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Chloride	Chloride	Chloride	Chloride
1130Cal1	1.647	0.0837	1.369	1.083
1130Cal2	1.648	0.1692	2.803	1.934
1130Cal3	1.654	0.4442	7.527	4.674
1130Cal4	1.658	0.9621	16.388	9.834
1130Cal5	1.661	1.5282	25.842	15.474
Average	1.653			
Rel. Std. Dev.	0.363 %			



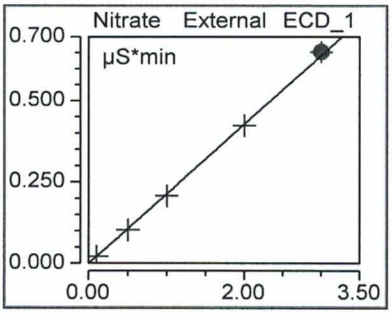
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Nitrite	Nitrite	Nitrite	Nitrite
1130Cal1	1.964	0.0180	0.249	0.106
1130Cal2	1.964	0.0909	1.255	0.483
1130Cal3	1.968	0.1837	2.564	0.963
1130Cal4	1.971	0.3820	5.338	1.989
1130Cal5	1.968	0.5890	8.308	3.060
Average	1.967			
Rel. Std. Dev.	0.144 %			



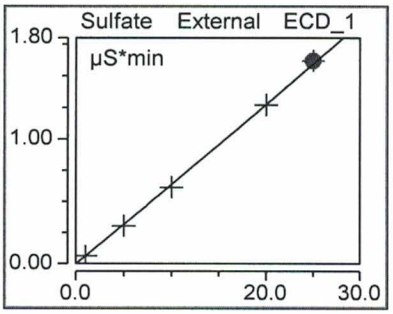
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Bromide	Bromide	Bromide	Bromide
1130Cal1	2.957	0.0176	0.183	0.507
1130Cal2	2.954	0.0358	0.371	1.006
1130Cal3	2.958	0.0707	0.738	1.967
1130Cal4	2.961	0.1430	1.493	3.955
1130Cal5	2.938	0.2925	3.112	8.064
Average	2.953			
Rel. Std. Dev.	0.313 %			



Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Nitrate	Nitrate	Nitrate	Nitrate
1130Cal1	3.351	0.0215	0.195	0.105
1130Cal2	3.341	0.1029	0.922	0.486
1130Cal3	3.341	0.2071	1.848	0.972
1130Cal4	3.334	0.4230	3.741	1.982
1130Cal5	3.301	0.6525	5.776	3.055
Average	3.333			
Rel. Std. Dev.	0.575 %			



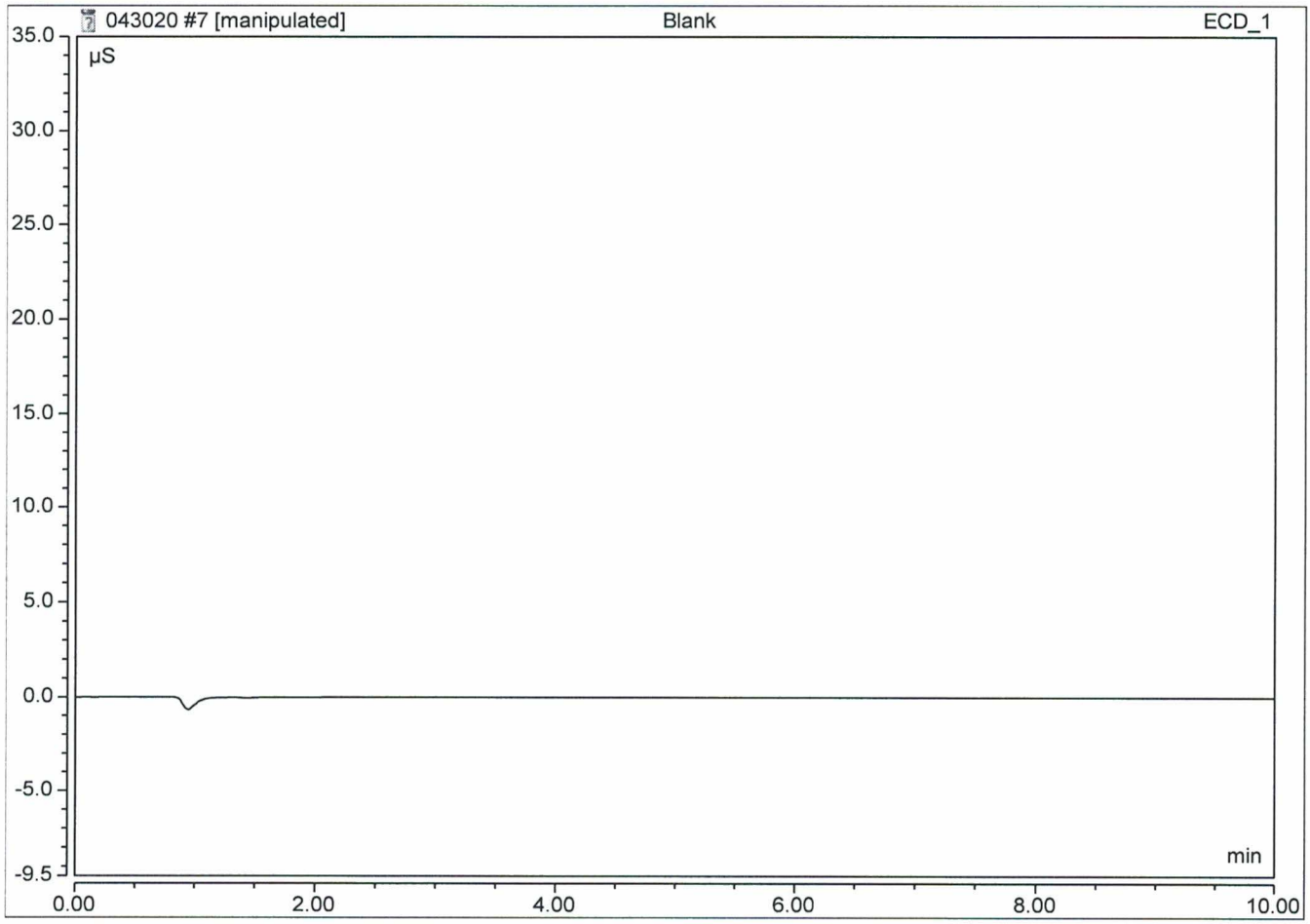
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Sulfate	Sulfate	Sulfate	Sulfate
1130Cal1	7.057	0.0628	0.254	1.044
1130Cal2	7.048	0.3053	1.246	4.843
1130Cal3	7.028	0.6158	2.526	9.709
1130Cal4	7.018	1.2715	5.210	19.984
1130Cal5	7.011	1.6185	6.632	25.419
Average	7.032			
Rel. Std. Dev.	0.281 %			



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:	**30-Apr-2020 / 08:25**	*Operator:*	**Jeff Phifer**

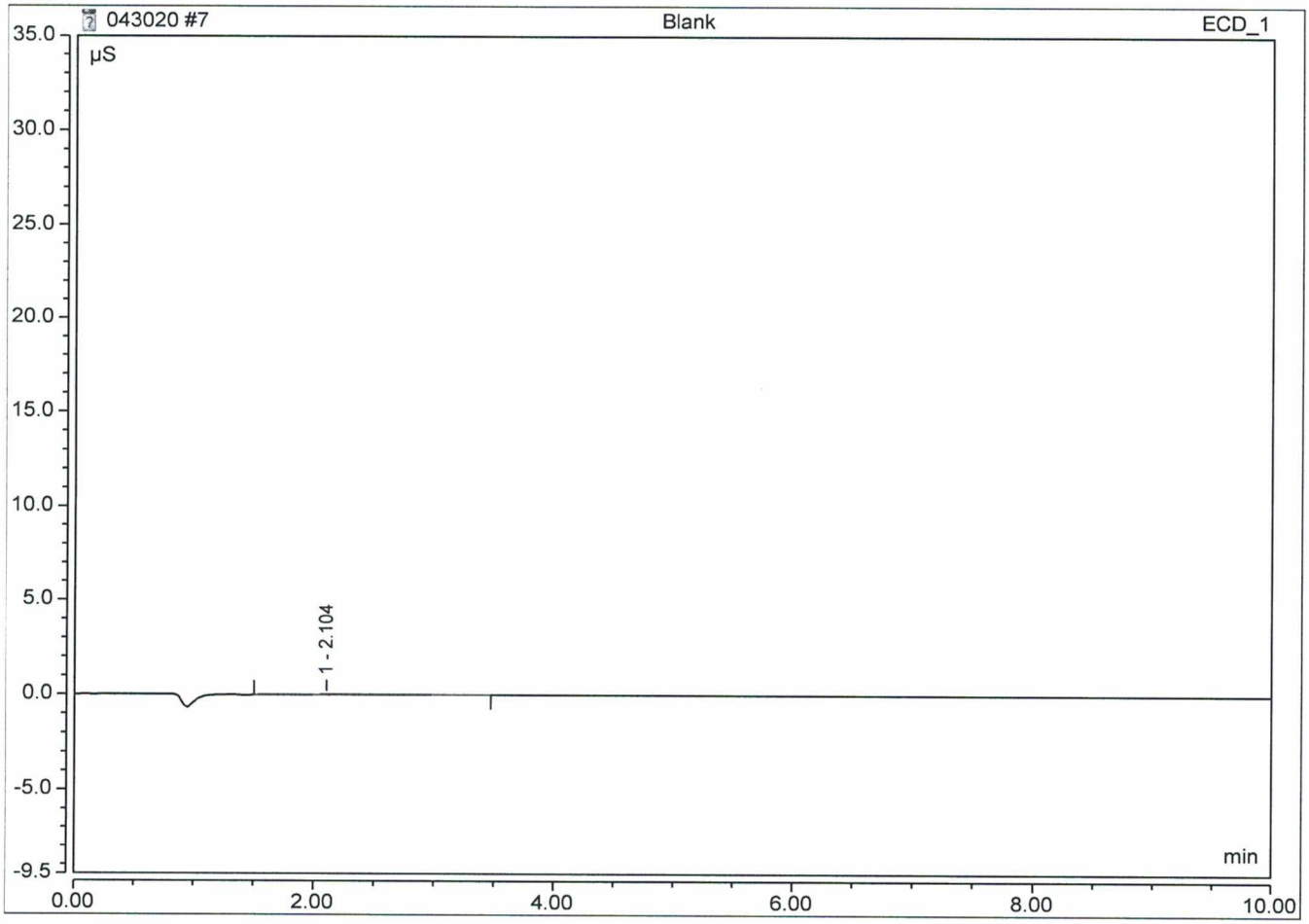
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	**Blank**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 08:25**	*Operator:*	**Jeff Phifer**

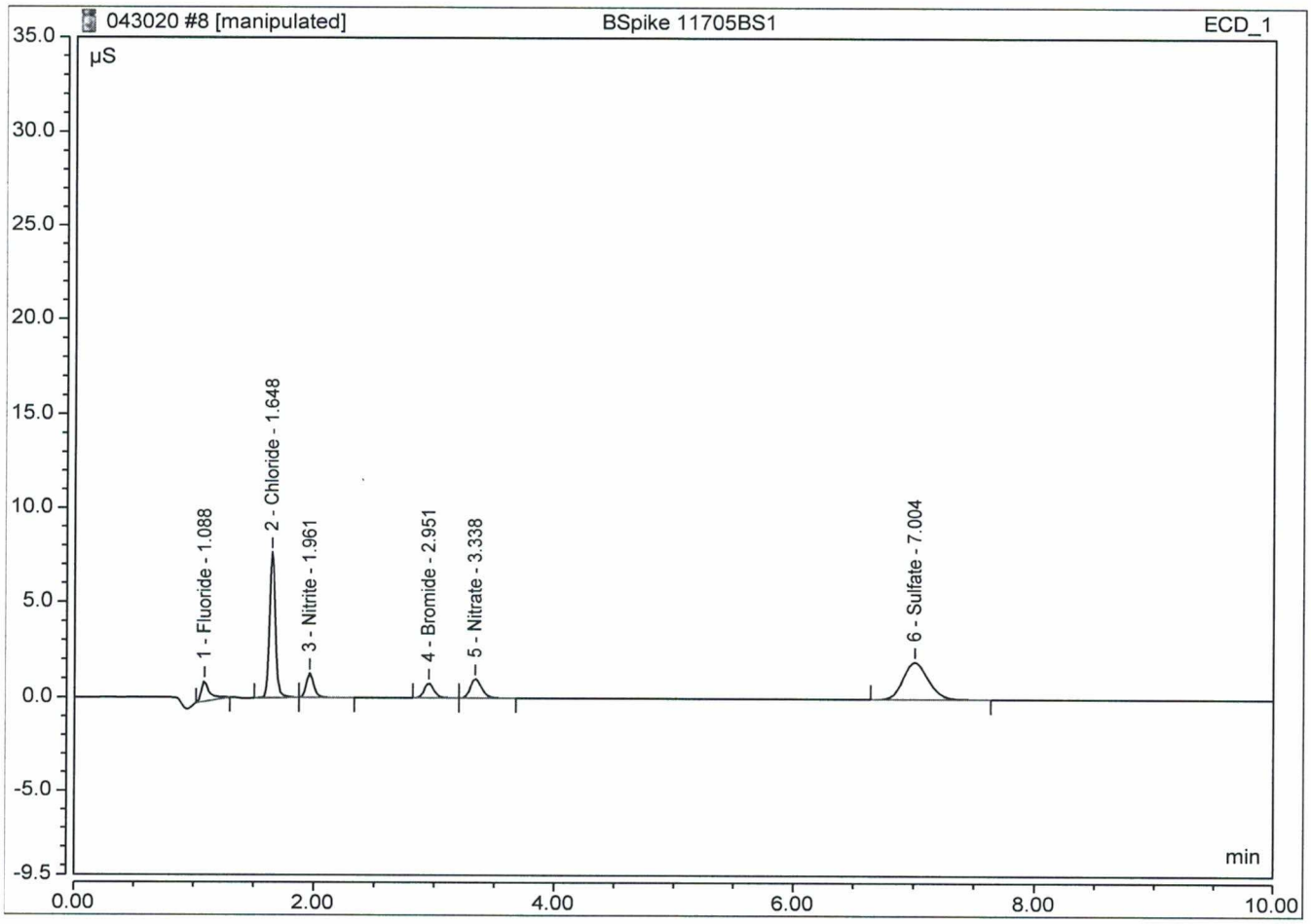
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	**BSpike 11705BS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 08:37**	*Operator:*	**Jeff Phifer**

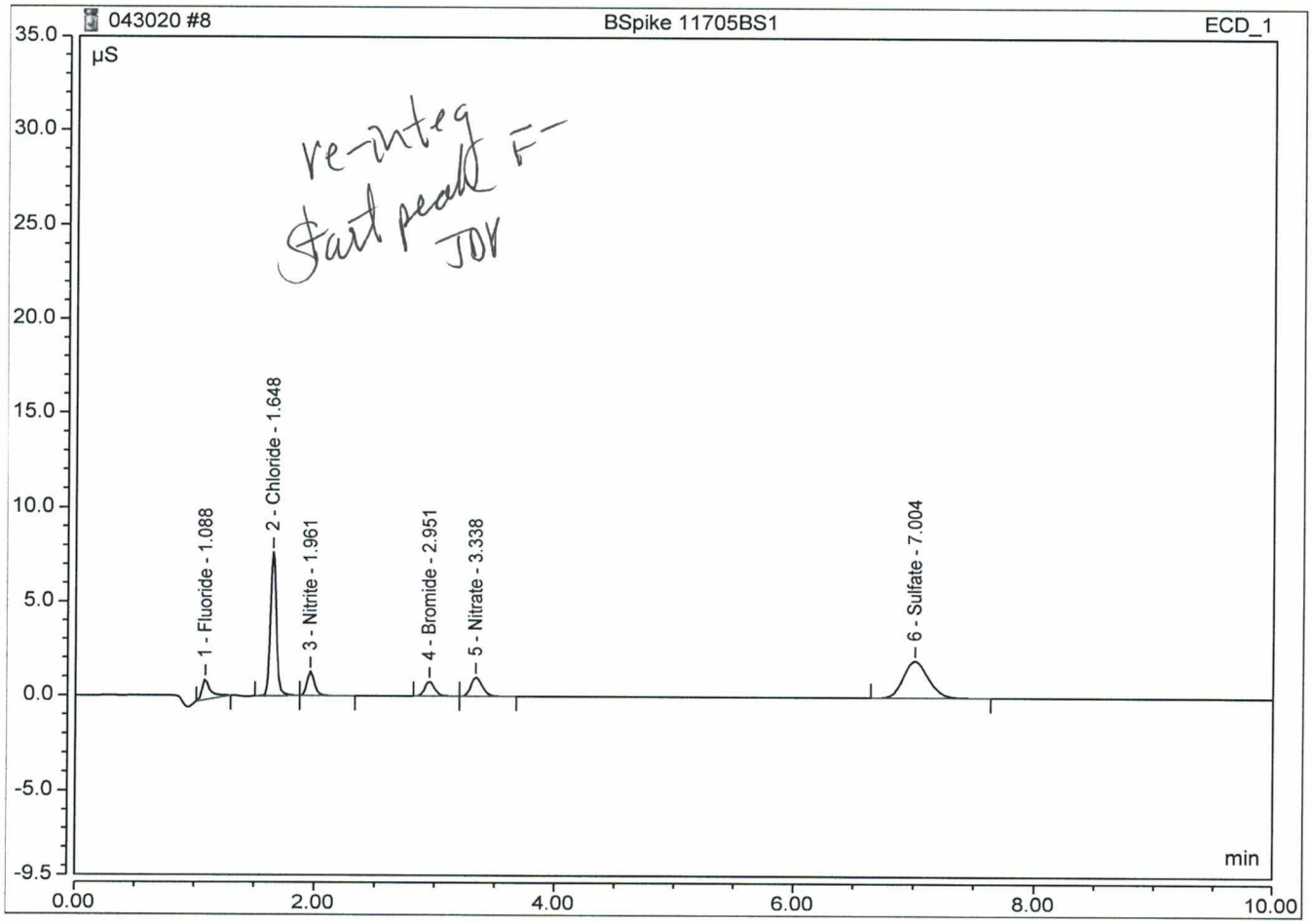
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount		
1	1.09	**Fluoride**	BMB*	0.085	1.059	0.5	0.5137	102 %
2	1.65	**Chloride**	BMB	0.454	7.662	5	4.7702	96 %
3	1.96	**Nitrite**	BMB	0.091	1.271	0.5	0.4858	96 %
4	2.95	**Bromide**	BMB	0.073	0.768	2	2.0308	102 %
5	3.34	**Nitrate**	BMB	0.110	0.996	0.5	0.5172	104 %
6	7.00	**Sulfate**	BMB	0.468	1.945	7.5	7.3886	99 %
TOTAL:				1.28	13.70		15.71	



Peak Integration Report

Sample Name:	**BSpike 11705BS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 08:37**	*Operator:*	**Jeff Phifer**

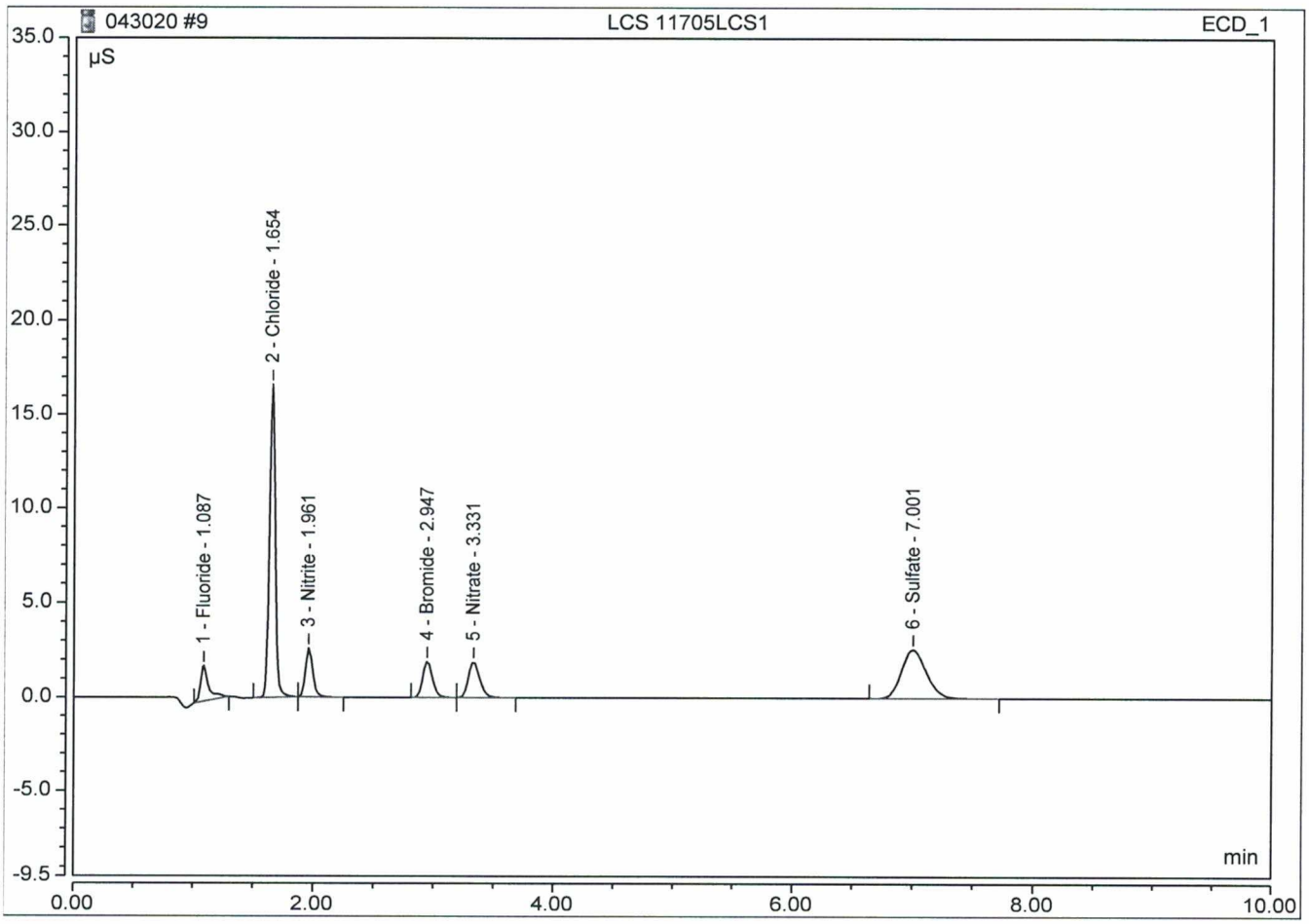
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.09	Fluoride	BMB	0.089	1.077	0.5429
2	1.65	Chloride	BMB	0.454	7.662	4.7702
3	1.96	Nitrite	BMB	0.091	1.271	0.4858
4	2.95	Bromide	BMB	0.073	0.768	2.0308
5	3.34	Nitrate	BMB	0.110	0.996	0.5172
6	7.00	Sulfate	BMB	0.468	1.945	7.3886
TOTAL:				1.28	13.72	15.74



Peak Integration Report

Sample Name:	**LCS 11705LCS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 08:50**	*Operator:*	**Jeff Phifer**

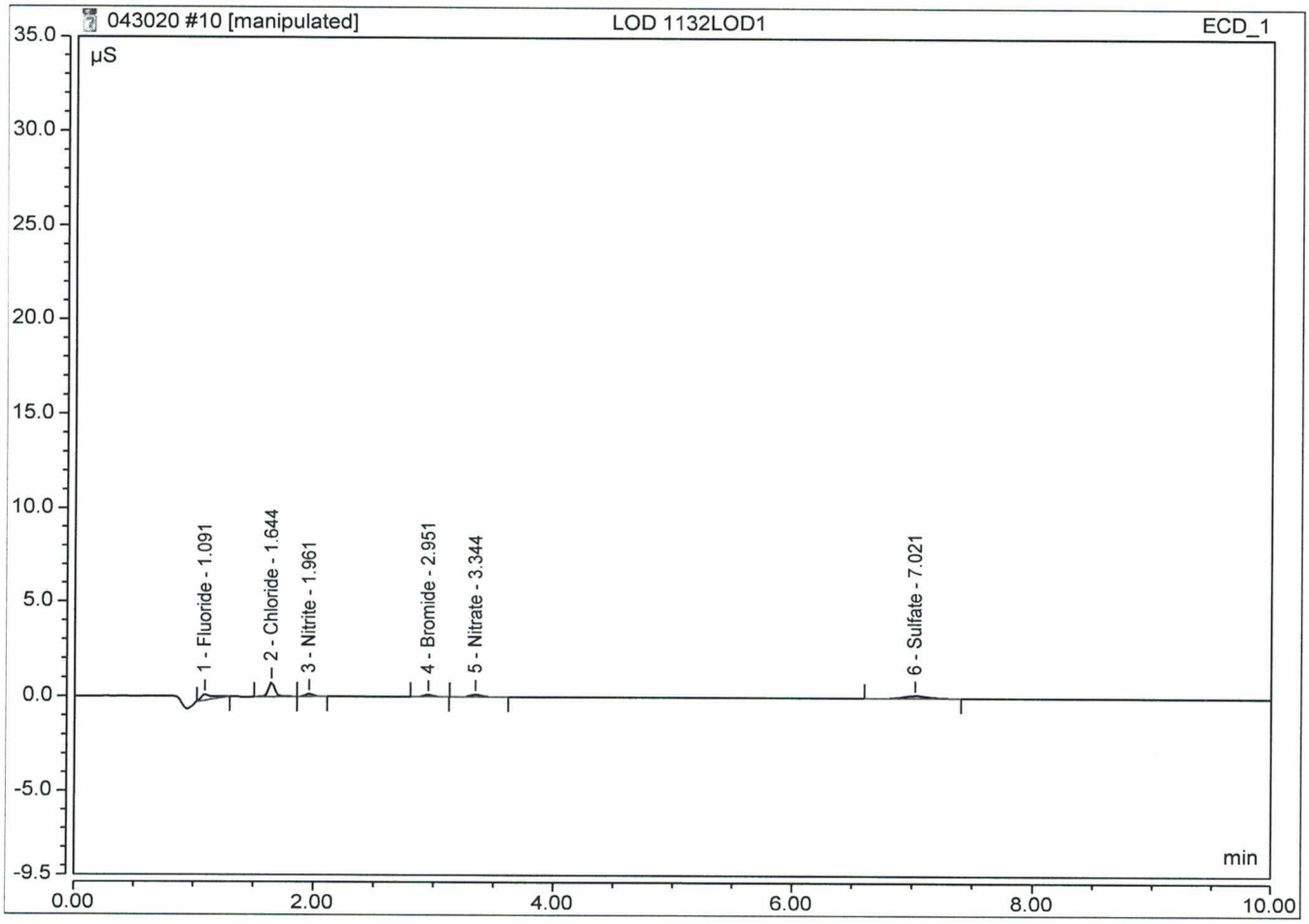
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount		
1	1.09	Fluoride	BMB	0.147	1.892	1	1.0185	102%
2	1.65	Chloride	BMB	0.973	16.632	10	9.9378	99%
3	1.96	Nitrite	BMB	0.185	2.598	1	0.9714	97%
4	2.95	Bromide	BMB	0.182	1.926	5	5.0342	101%
5	3.33	Nitrate	BMB	0.209	1.893	1	0.9807	98%
6	7.00	Sulfate	BMB	0.625	2.597	10	9.8563	98%
TOTAL:				2.32	27.54		27.80	



Peak Integration Report

Sample Name:	**LOD 1132LOD1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 09:03**	*Operator:*	**Jeff Phifer**

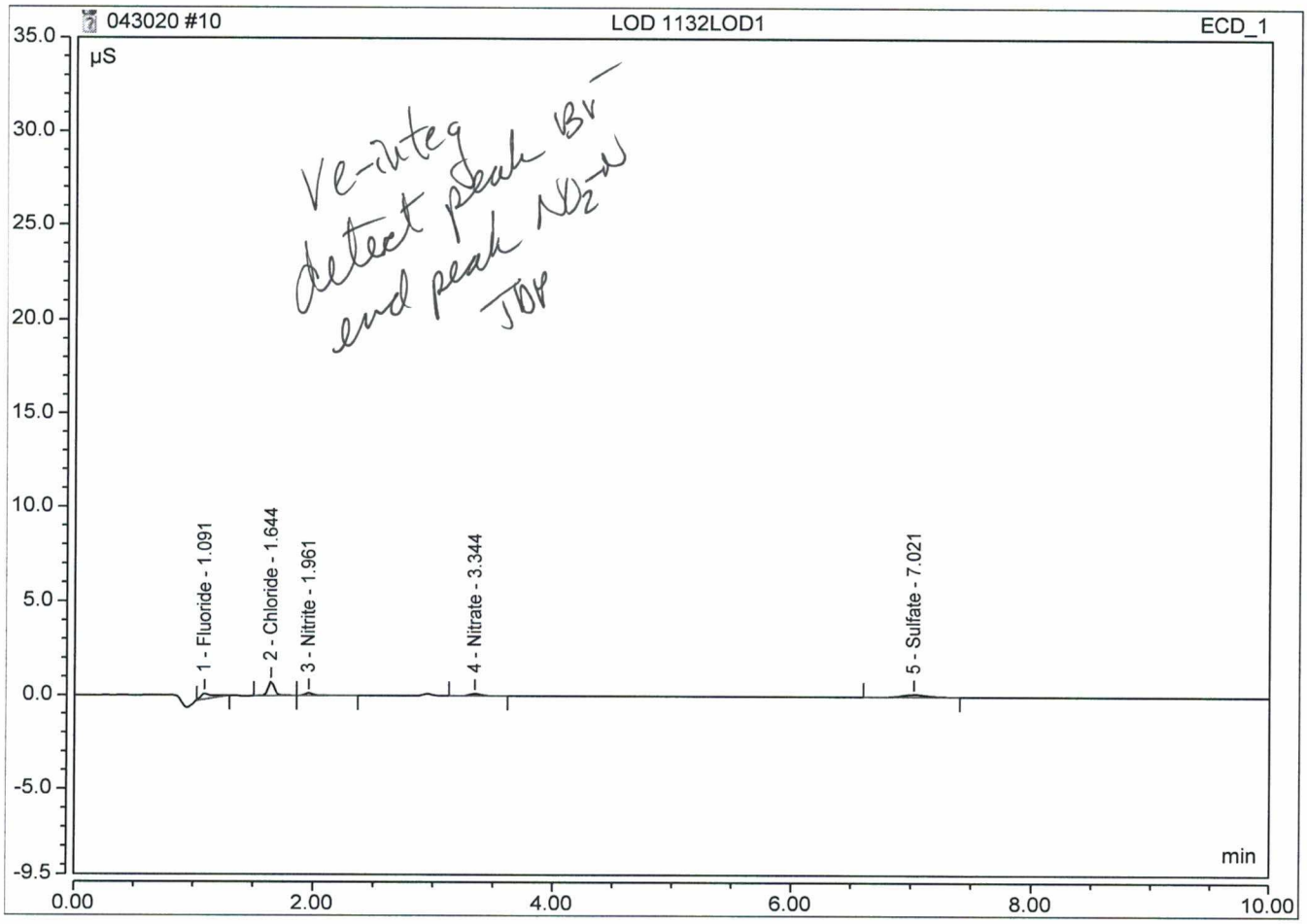
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount	
1	1.09	**Fluoride**	BMB	0.035	0.306	0.1	0.1000
2	1.64	**Chloride**	BMb	0.047	0.748	0.5	0.7133
3	1.96	**Nitrite**	bMB*	0.010	0.134	0.05	0.0620
4	2.95	**Bromide**	BMB*	0.010	0.101	0.25	0.2834
5	3.34	**Nitrate**	BMB	0.014	0.124	0.05	0.0681
6	7.02	**Sulfate**	BMB	0.035	0.144	0.5	0.6069
TOTAL:				0.15	1.56		1.83



Peak Integration Report

Sample Name:	**LOD 1132LOD1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 09:03**	*Operator:*	**Jeff Phifer**

No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.09	**Fluoride**	BMB	0.035	0.306	0.1000
2	1.64	**Chloride**	BMB	0.047	0.748	0.7133
3	1.96	**Nitrite**	BMB	0.010	0.135	0.0650
4	3.34	**Nitrate**	BMB	0.014	0.124	0.0681
5	7.02	**Sulfate**	BMB	0.035	0.144	0.6069
TOTAL:				0.14	1.46	1.55

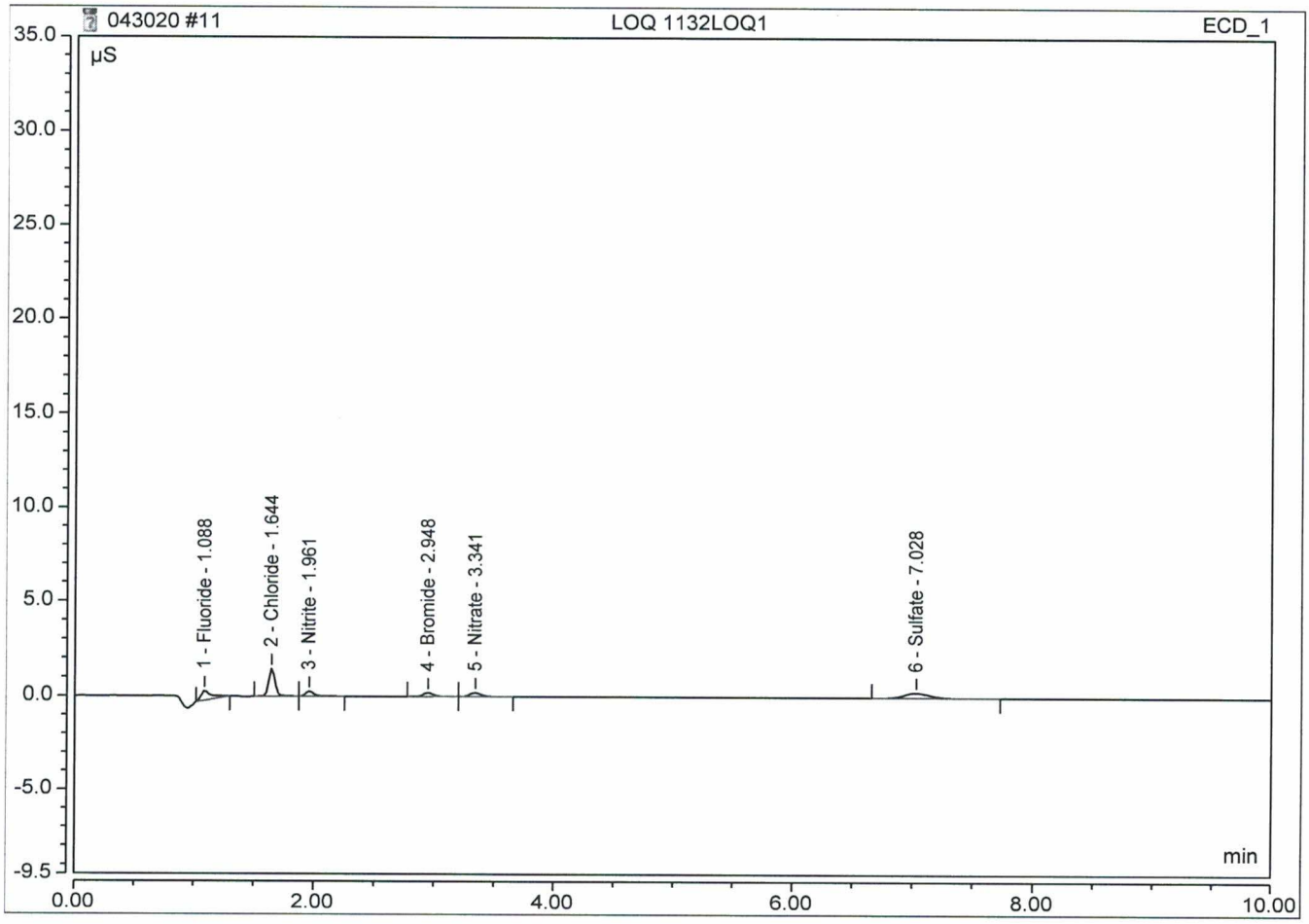


Re-integ
detect peak BV
end peak NO2-N
JDP

Peak Integration Report

Sample Name:	**LOQ 1132LOQ1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 09:16**	*Operator:*	**Jeff Phifer**

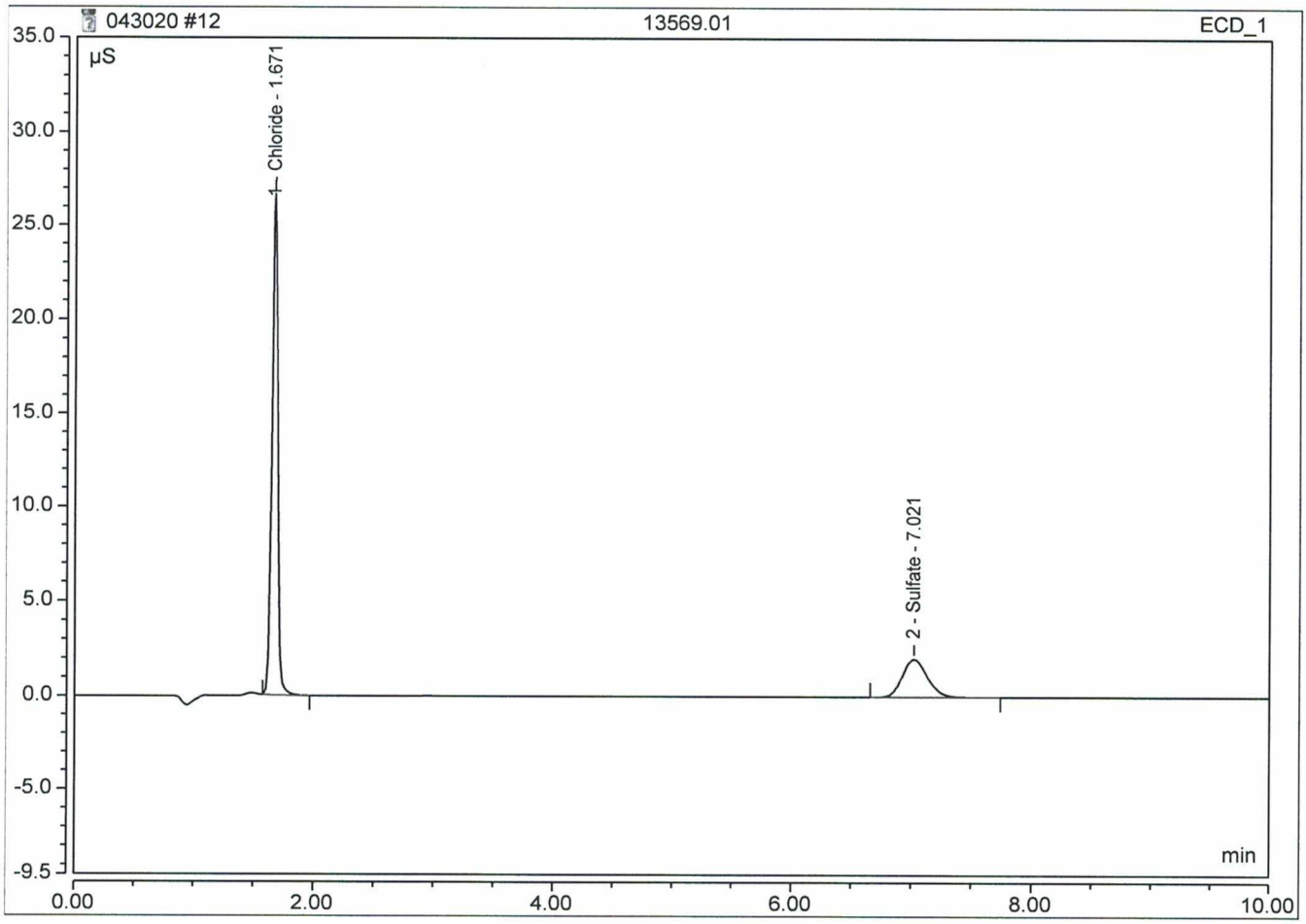
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount	
1	1.09	**Fluoride**	BMB	0.050	0.499	0.2	0.2250
2	1.64	**Chloride**	BMB	0.089	1.452	1	1.1358
3	1.96	**Nitrite**	BMB	0.019	0.259	0.1	0.1100
4	2.95	**Bromide**	BMB	0.019	0.198	0.5	0.5450
5	3.34	**Nitrate**	BMB	0.023	0.211	0.1	0.1133
6	7.03	**Sulfate**	BMB	0.067	0.274	1	1.1120
TOTAL:				0.27	2.89		3.24



Peak Integration Report

Sample Name:	**13569.01**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 09:28**	*Operator:*	**Jeff Phifer**

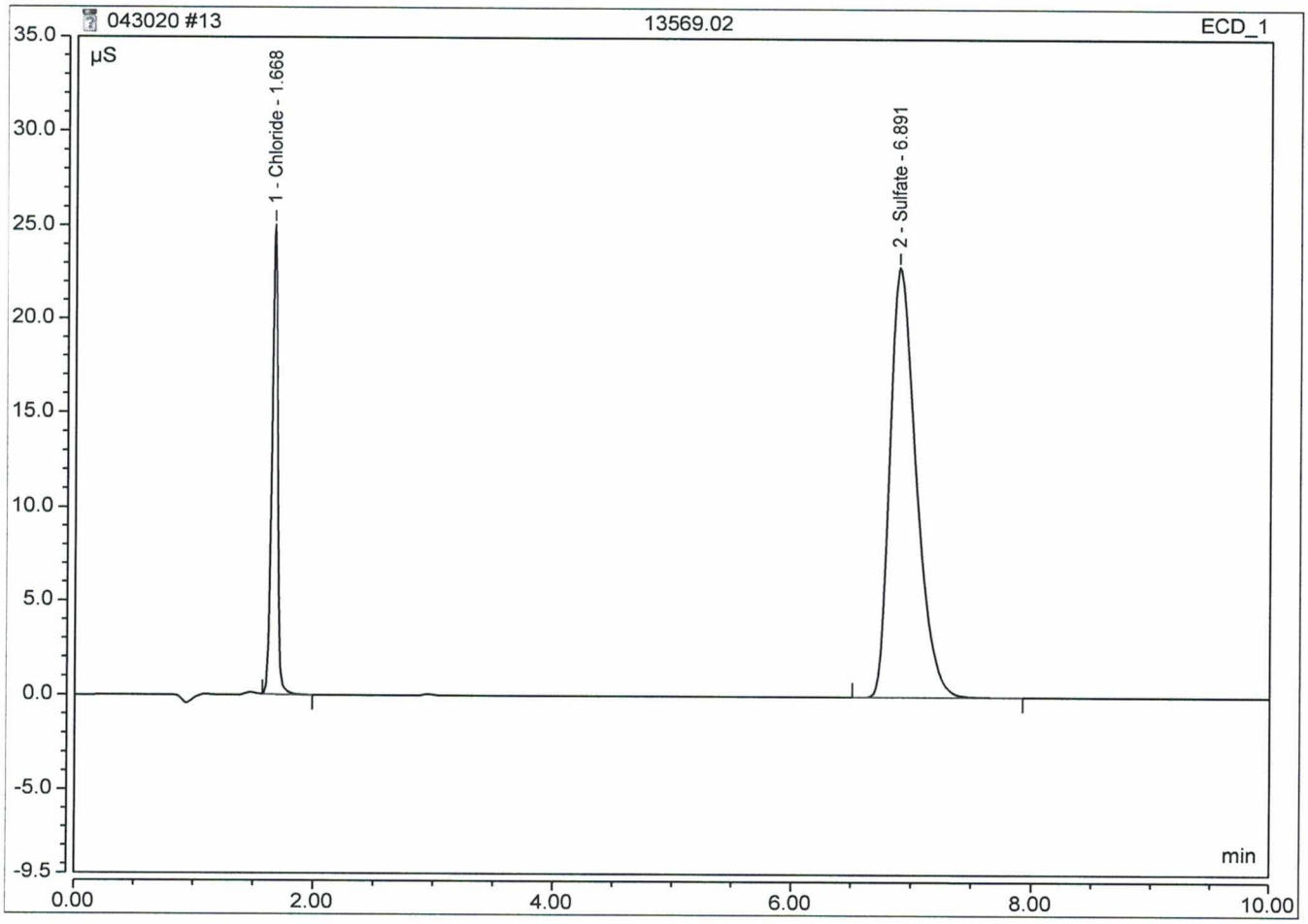
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.67	**Chloride**	BMB	1.540	26.631	77.9793
2	7.02	**Sulfate**	BMB	0.486	2.015	38.4065
TOTAL:				2.03	28.65	116.39



Peak Integration Report

Sample Name:	**13569.02**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 09:41**	*Operator:*	**Jeff Phifer**

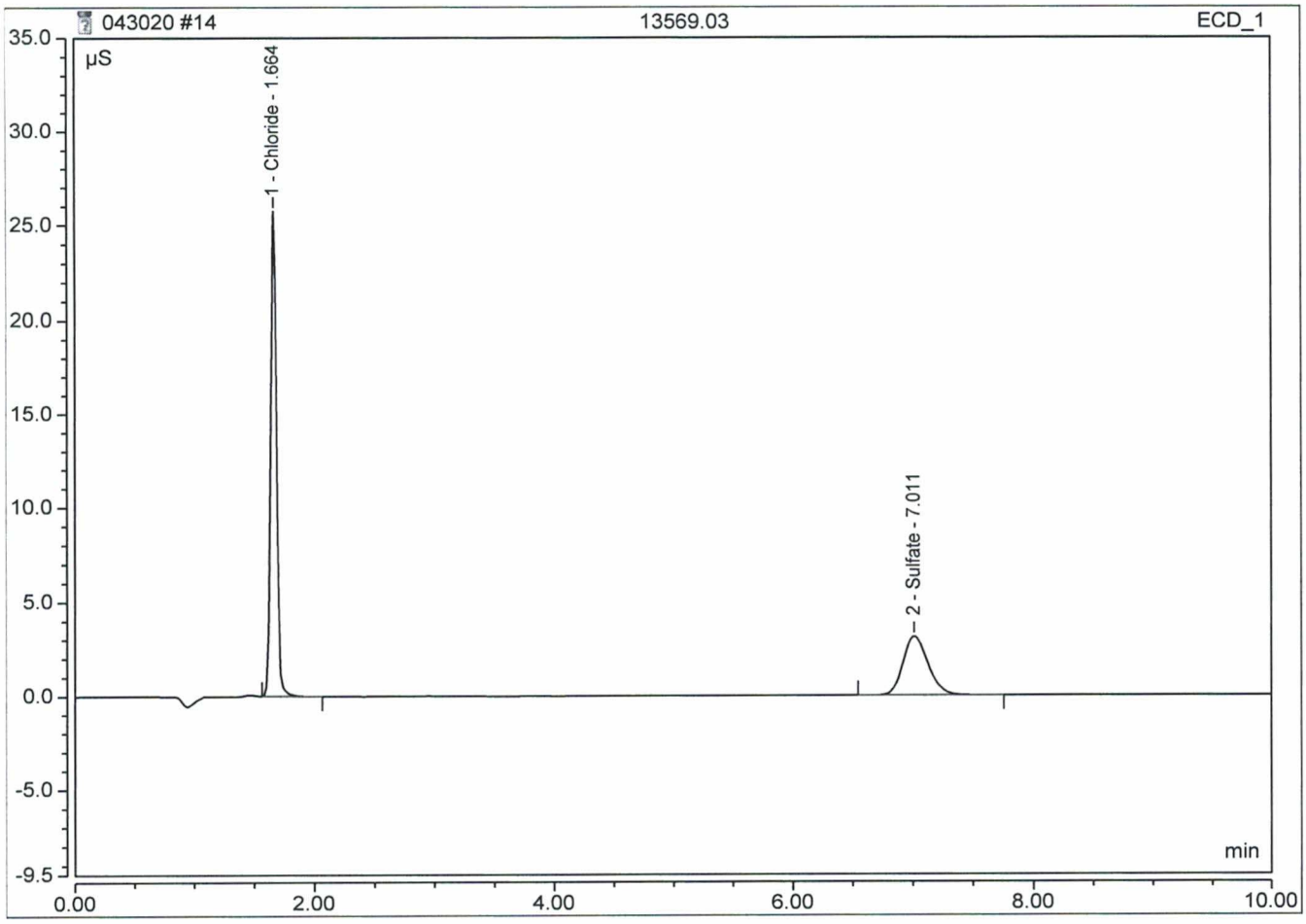
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.67	Chloride	BMB	1.447	25.011	73.3332
2	6.89	Sulfate	BMB	5.783	22.885	453.3998
TOTAL:				7.23	47.90	526.73



Peak Integration Report

Sample Name:	**13569.03**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 09:54**	*Operator:*	**Jeff Phifer**

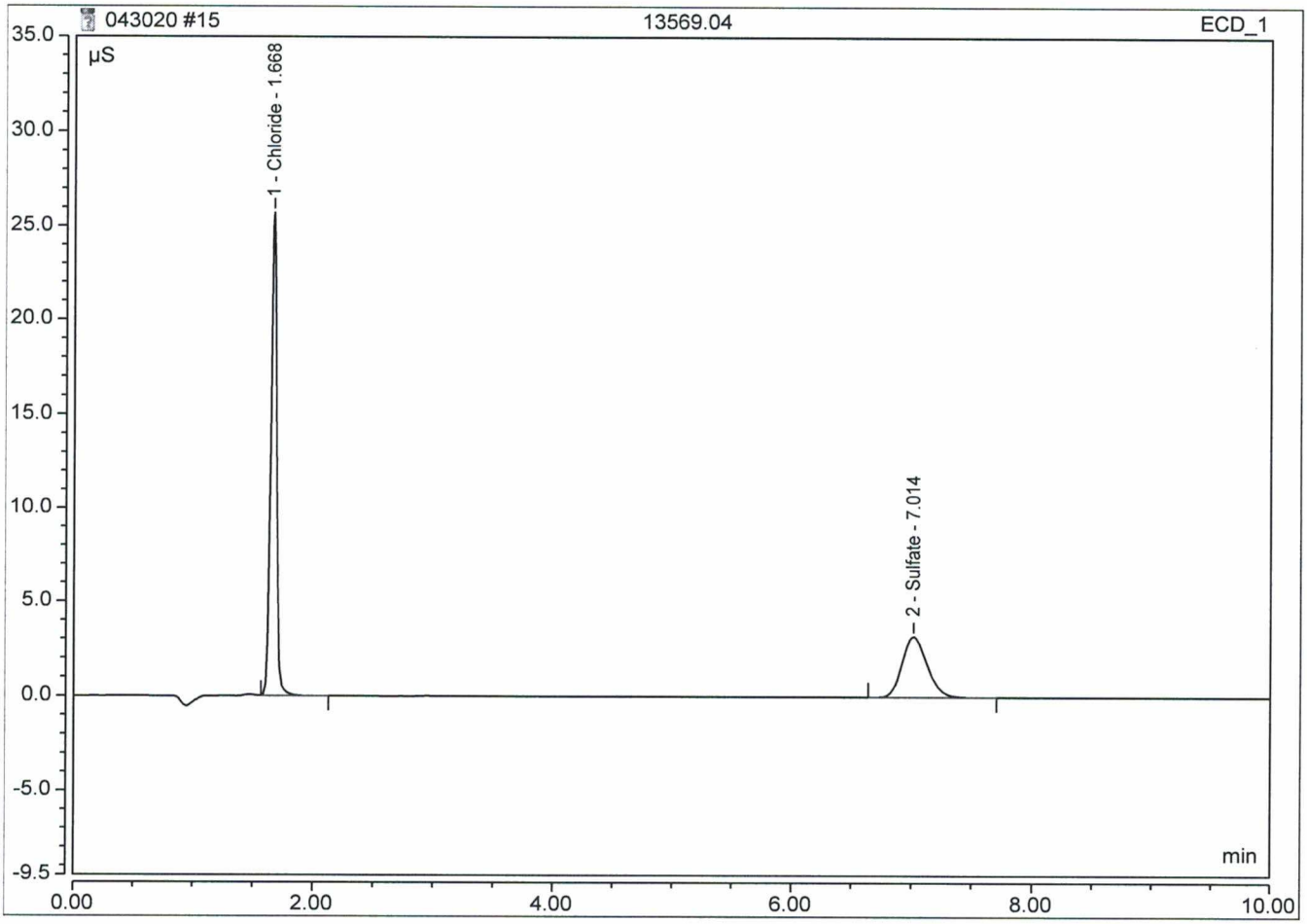
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.66	**Chloride**	BMB	1.493	25.721	75.6420
2	7.01	**Sulfate**	BMB	0.755	3.135	59.4759
TOTAL:				2.25	28.86	135.12



Peak Integration Report

Sample Name:	**13569.04**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 10:07**	*Operator:*	**Jeff Phifer**

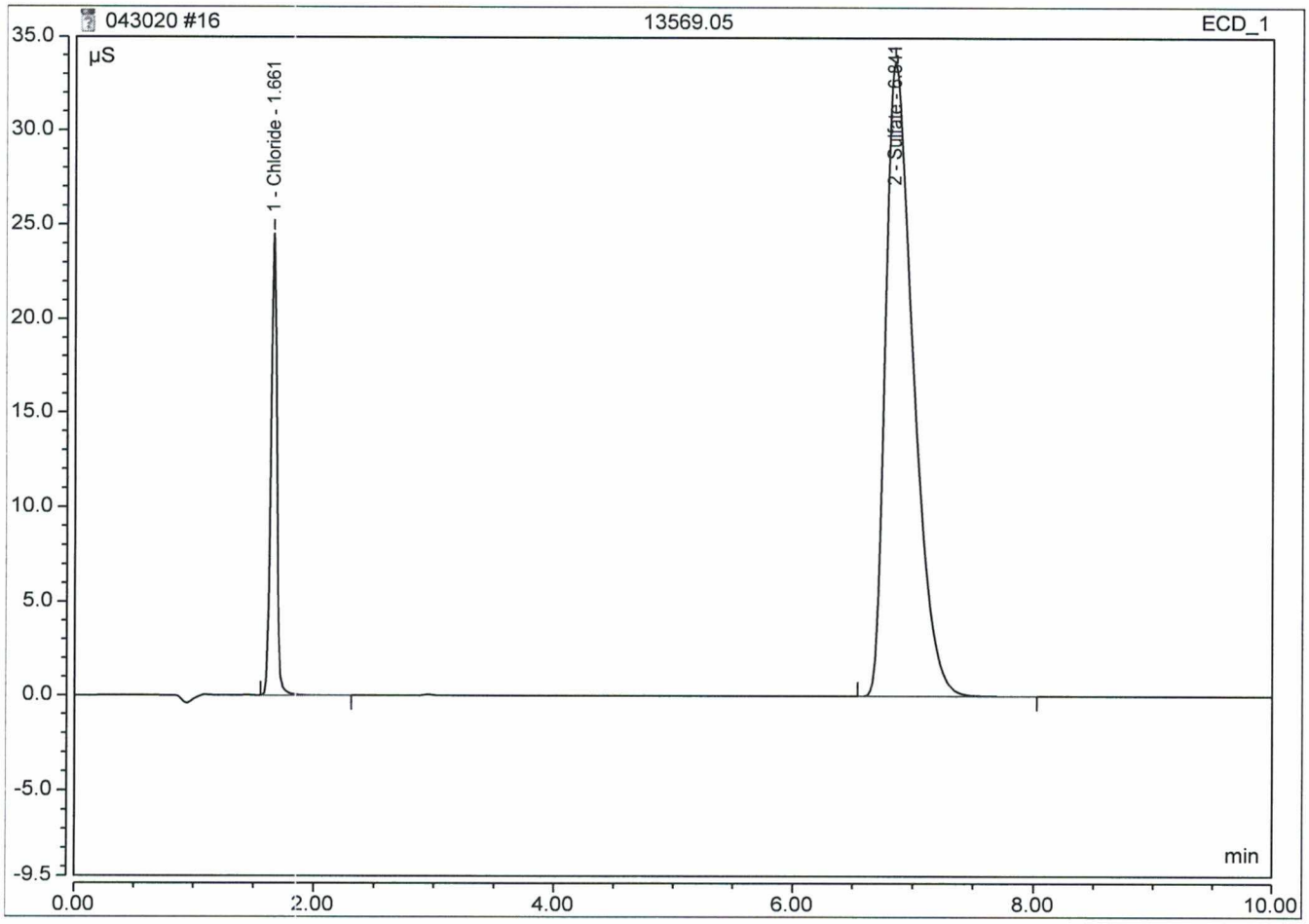
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.67	Chloride	BMB	1.494	25.707	75.6618
2	7.01	Sulfate	BMB	0.766	3.186	60.3266
TOTAL:				2.26	28.89	135.99



Peak Integration Report

Sample Name:	**13569.05**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 10:20**	*Operator:*	**Jeff Phifer**

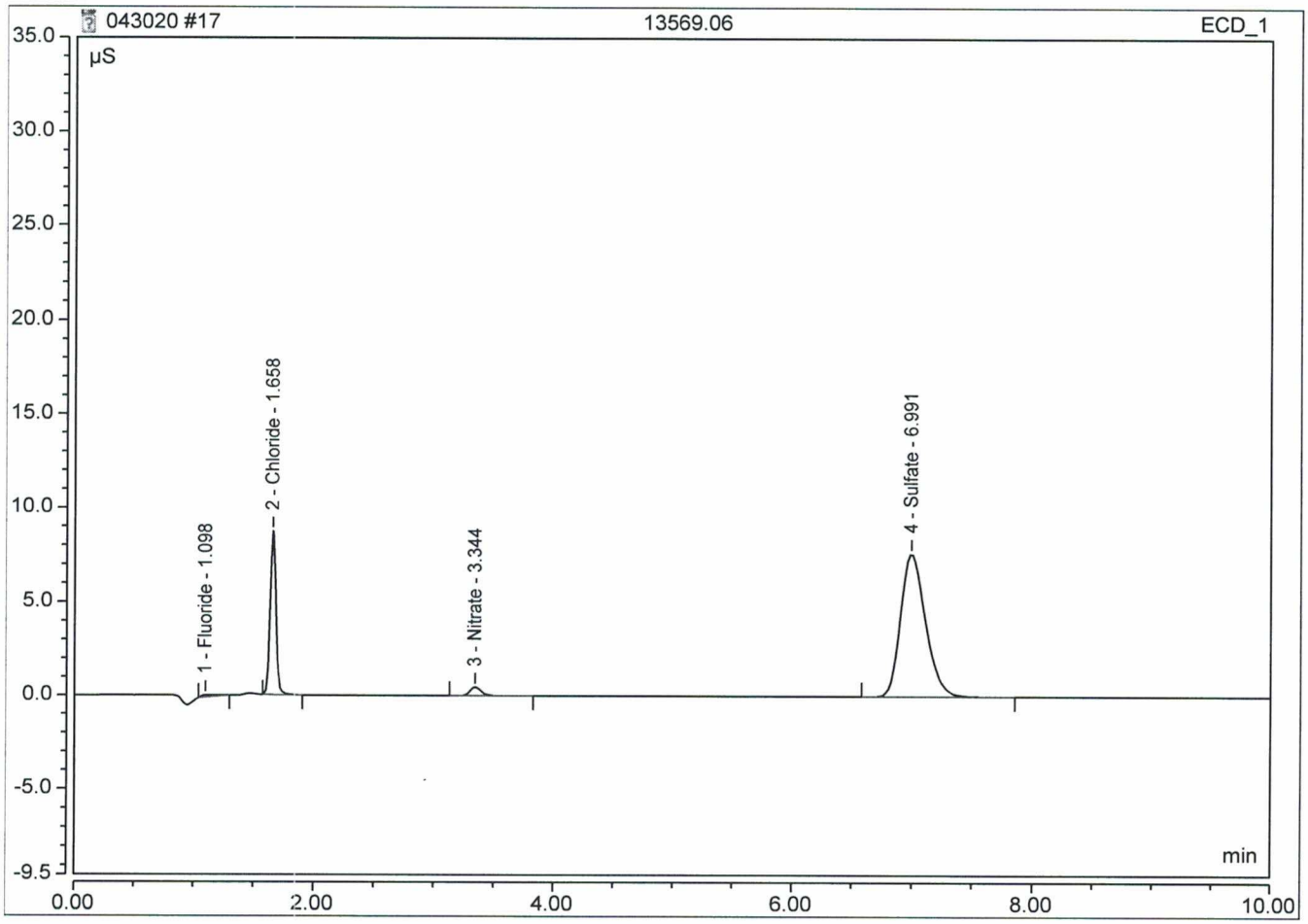
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.66	Chloride	BMB	1.440	24.523	72.9926
2	6.84	Sulfate	BMB	9.000	33.737	705.3862
TOTAL:				10.44	58.26	778.38



Peak Integration Report

Sample Name:	**13569.06**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 10:33**	*Operator:*	**Jeff Phifer**

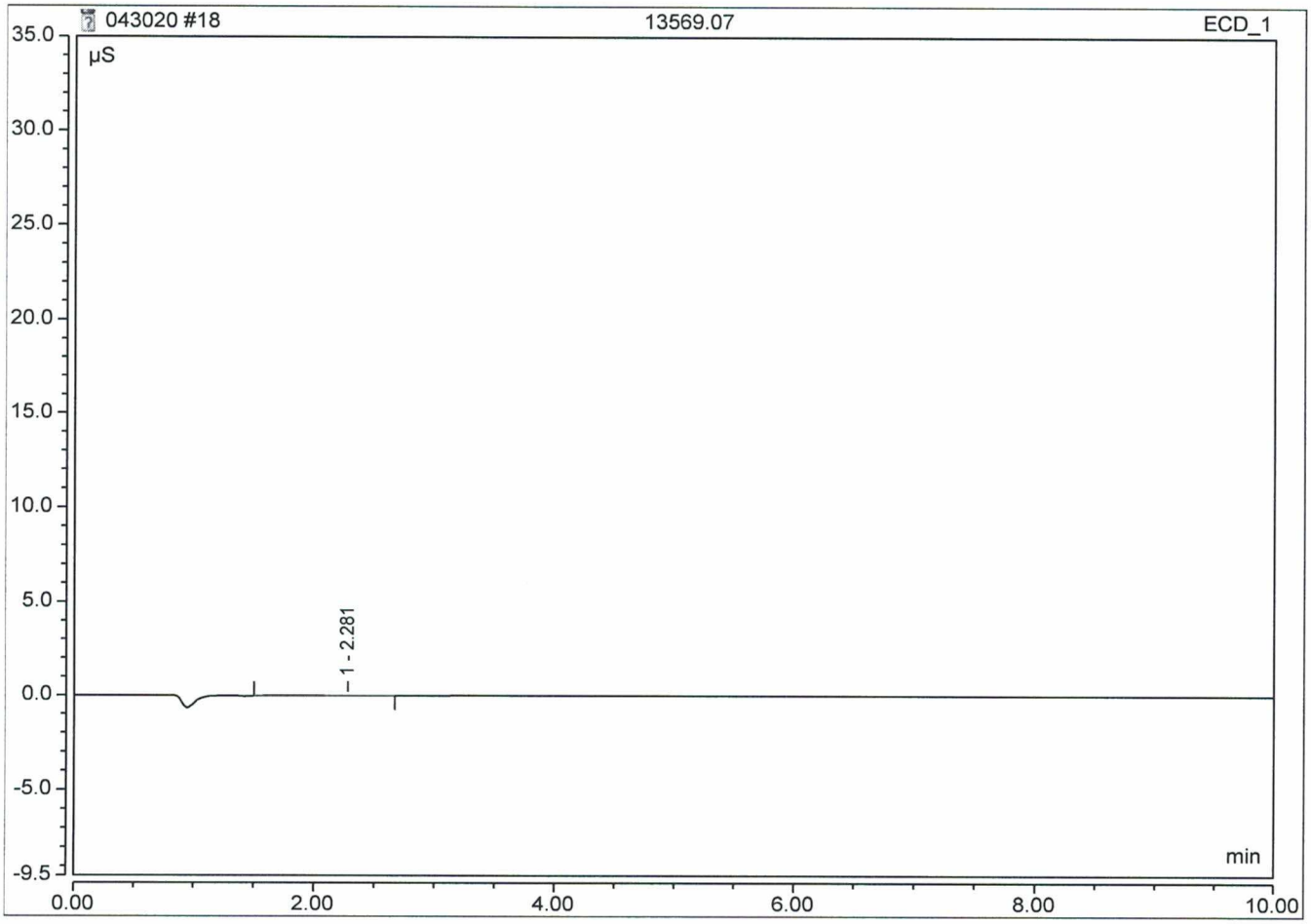
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.10	Fluoride	BMB	0.016	0.127	n.a.
2	1.66	Chloride	BMB	0.499	8.715	26.1121
3	3.34	Nitrate	BMB	0.051	0.461	1.2194
4	6.99	Sulfate	BMB	1.838	7.623	144.2898
TOTAL:				2.40	16.93	171.62



Peak Integration Report

Sample Name:	**13569.07**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**2.5000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 10:46**	*Operator:*	**Jeff Phifer**

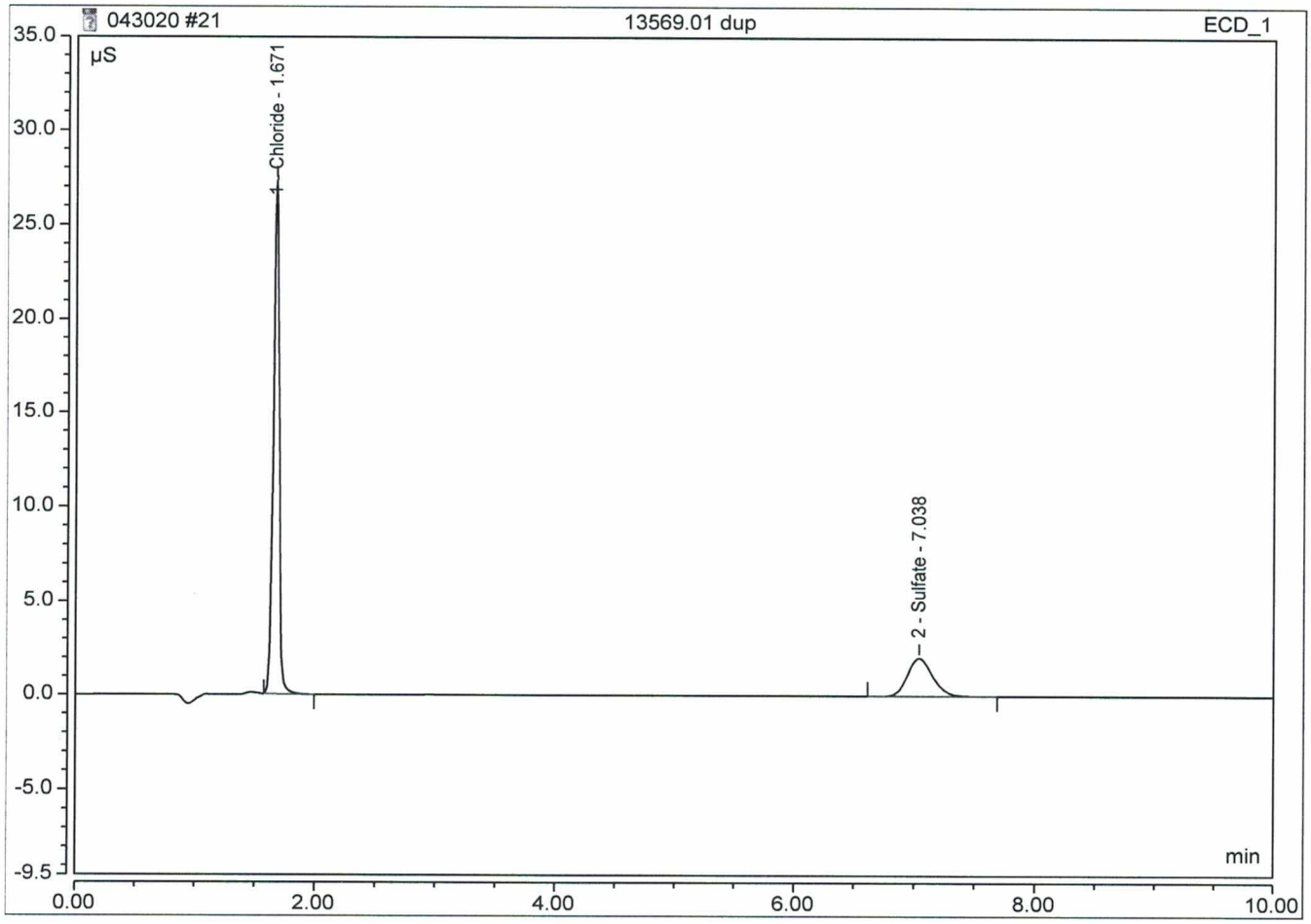
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	**13569.01 dup**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**5.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 11:24**	*Operator:*	**Jeff Phifer**

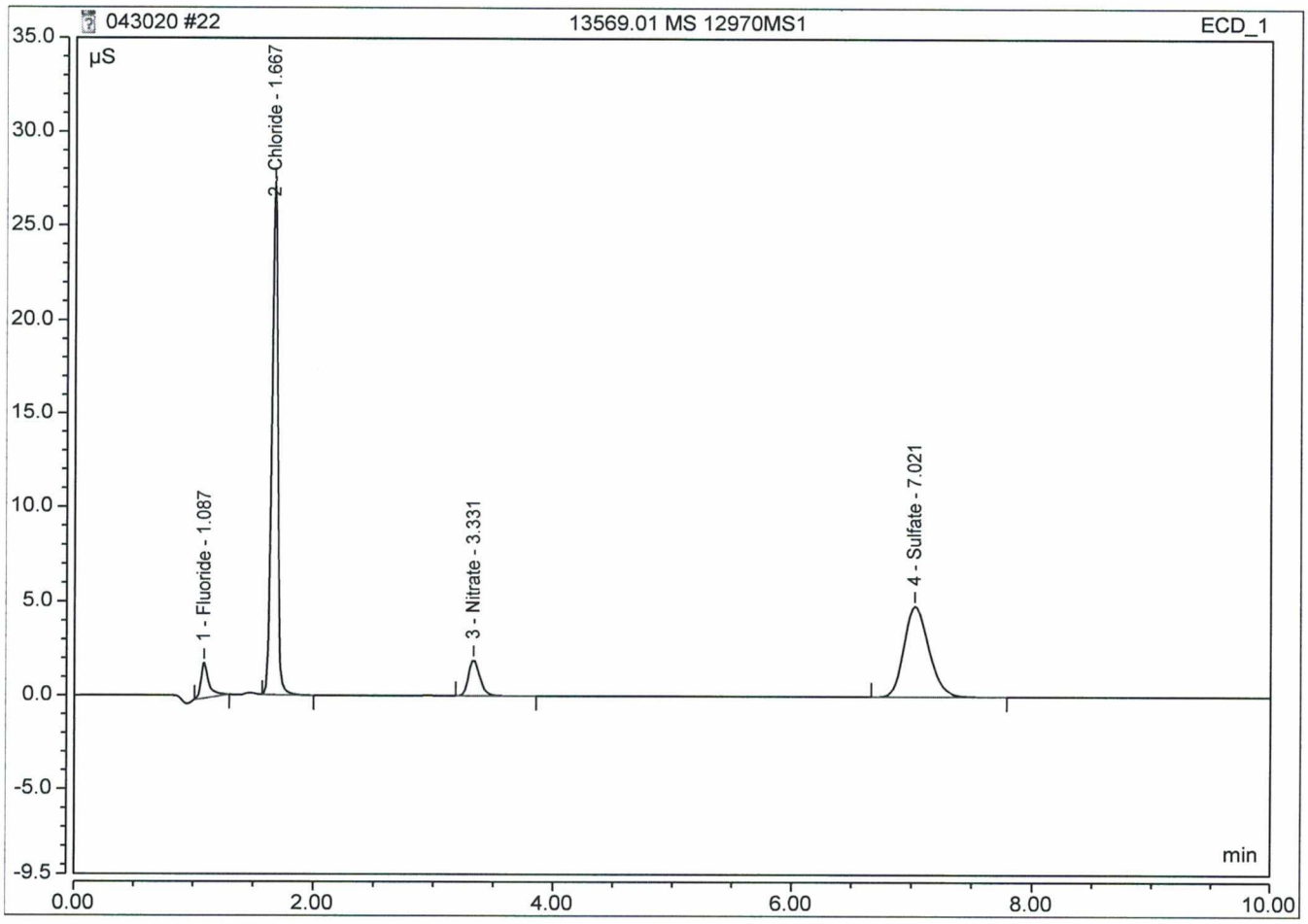
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.67	**Chloride**	BMB	1.583	27.278	80.0839
2	7.04	**Sulfate**	BMB	0.493	2.041	38.9128
TOTAL:				2.08	29.32	119.00



Peak Integration Report

Sample Name:	**13569.01 MS 12970MS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 11:37**	*Operator:*	**Jeff Phifer**

No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.09	**Fluoride**	BMB	0.143	1.907	1 0.9877 − MD = 99%
2	1.67	**Chloride**	BMB	1.586	27.276	16.0454
3	3.33	**Nitrate**	BMB	0.214	1.938	1 1.0033 − MD = 100%
4	7.02	**Sulfate**	BMB	1.163	4.837	10 18.2845 − 7.7 = 106%
TOTAL:				3.11	35.96	36.32

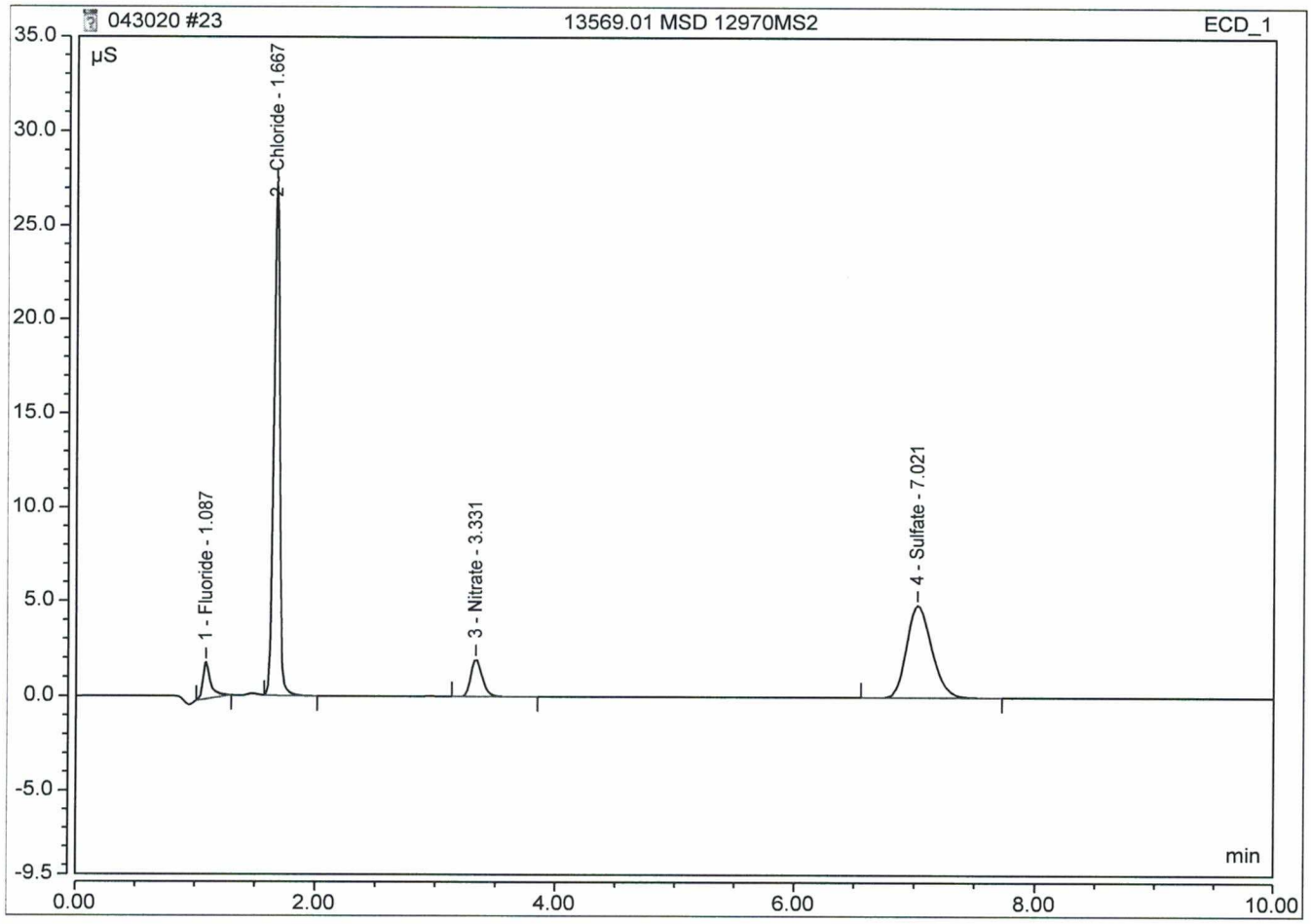


Peak Integration Report

Sample Name:	**13569.01 MSD 12970MS2**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 11:50**	*Operator:*	**Jeff Phifer**

No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.09	Fluoride	BMB	0.144	1.911	0.9901
2	1.67	Chloride	BMB	1.582	27.287	16.0142
3	3.33	Nitrate	BMB	0.215	1.945	1.0088
4	7.02	Sulfate	BMB	1.166	4.842	18.3253
TOTAL:				3.11	35.98	36.34

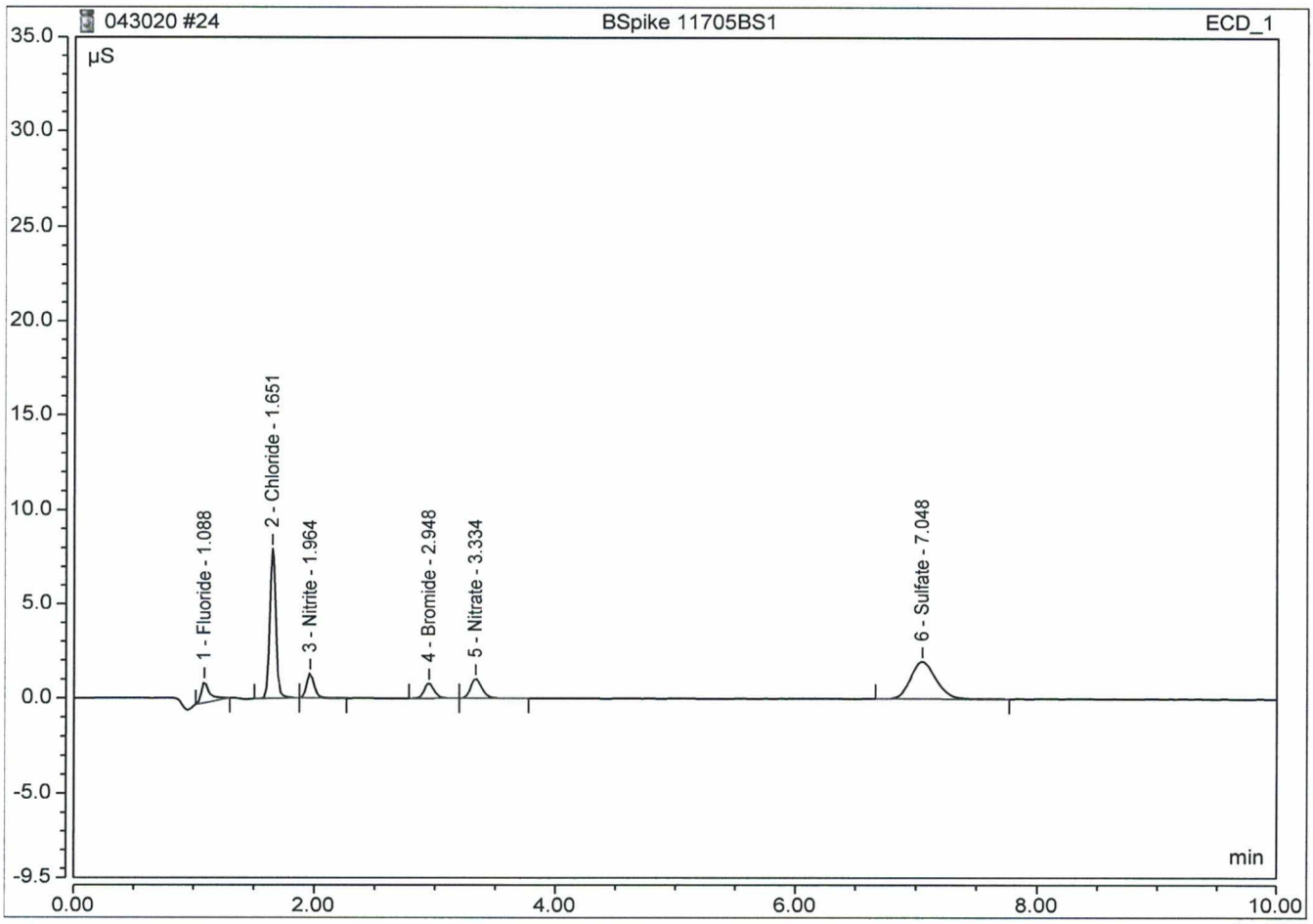
1 0.9901 − NB = 99%
1 16.0142
1 1.0088 − NB = 101%
10 18.3253 − 7.7 = 106%



Peak Integration Report

Sample Name:	**BSpike 11705BS1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Check Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**30-Apr-2020 / 12:03**	*Operator:*	**Jeff Phifer**

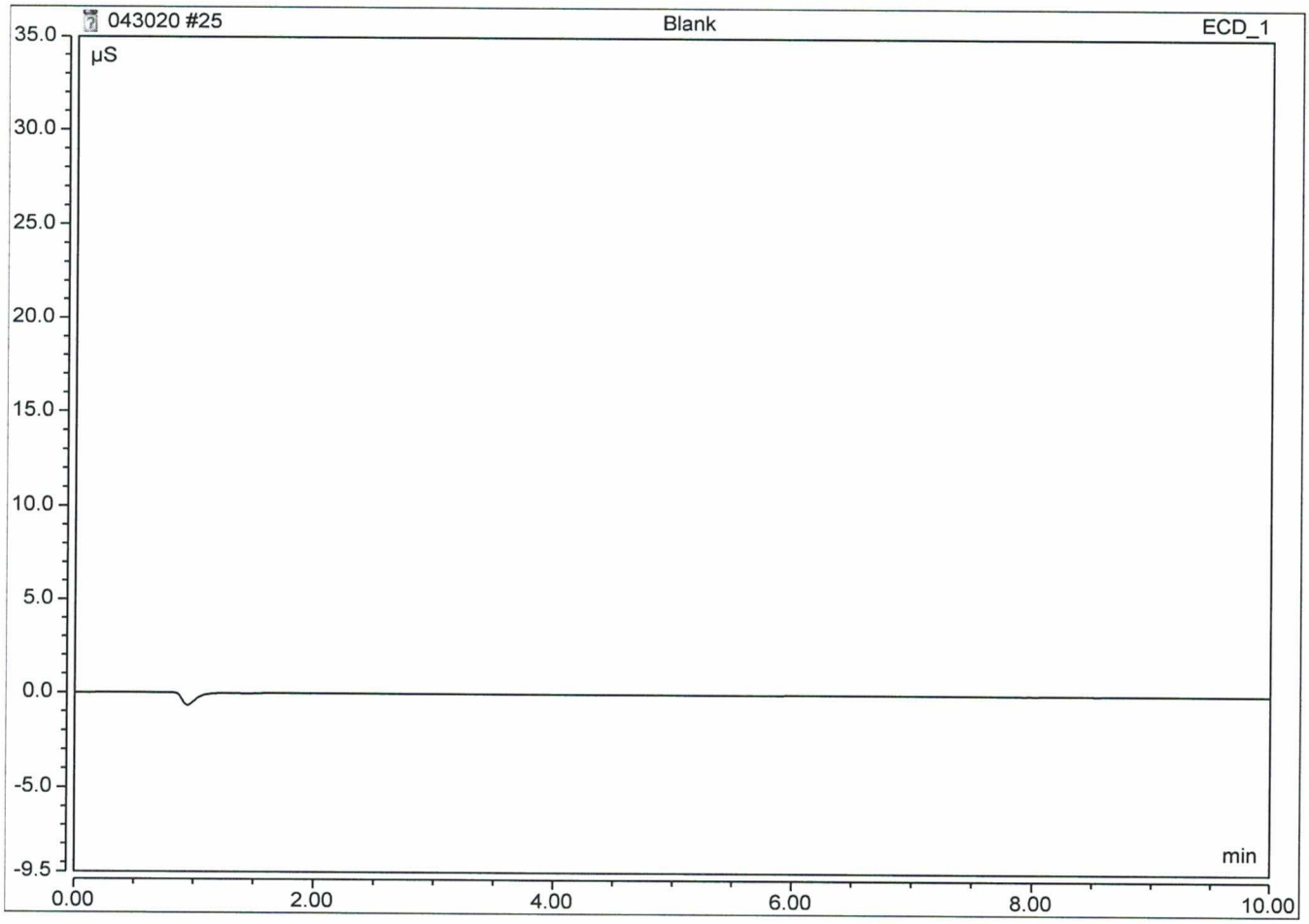
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount		
1	1.09	**Fluoride**	BMB	0.090	1.094	0.5	0.5512	110 %
2	1.65	**Chloride**	BMB	0.470	7.967	5	4.9306	98 %
3	1.96	**Nitrite**	BMB	0.094	1.309	0.5	0.4983	100 %
4	2.95	**Bromide**	BMB	0.076	0.794	2	2.0986	105 %
5	3.33	**Nitrate**	BMB	0.113	1.031	0.5	0.5348	106 %
6	7.05	**Sulfate**	BMB	0.477	1.972	7.5	7.5272	100 %
TOTAL:				1.32	14.17		16.14	



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:	**30-Apr-2020 / 12:16**	*Operator:*	**Jeff Phifer**

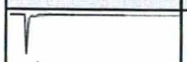
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Sequence: 031620
Last Update Operator: pcuser

ICS-1100B
ICSB Dionex IC / Meth 300.0

(new Calib)
all ions

ECD_1	Name	Type	Level	Position	Instrument Method	Processing Method	Status	Inject Time
	water blank	Unknown		1	Norm Method	Anion	Finished	3/16/2020 9:57:49 AM -0
	1130Cal1	Calibration Standard	01	2	Norm Method	Anion	Finished	3/16/2020 10:10:09 AM -
	1130Cal2	Calibration Standard	02	3	Norm Method	Anion	Finished	3/16/2020 10:23:01 AM -
	1130Cal3	Calibration Standard	03	4	Norm Method	Anion	Finished	3/16/2020 10:35:53 AM -
	1130Cal4	Calibration Standard	04	5	Norm Method	Anion	Finished	3/16/2020 10:48:45 AM -
	1130Cal5	Calibration Standard	05	6	Norm Method	Anion	Finished	3/16/2020 11:01:35 AM -

CAL ID# ICSB031620CAL

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	

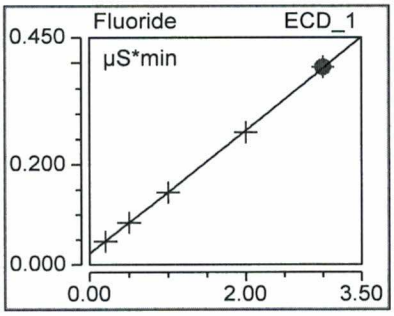
Calibration Batch Report
CAL ID# ICSB031620CAL

Sequence:	**031620**	*Injection Volu*	**2,500.00**
Instrument Method:	**Norm Method**	*Operator:*	**Jeff Phifer**
Inj. Date / Time:	**16-Mar-2020 / 11:01**	*Column:*	**AS4A-SC 040144**

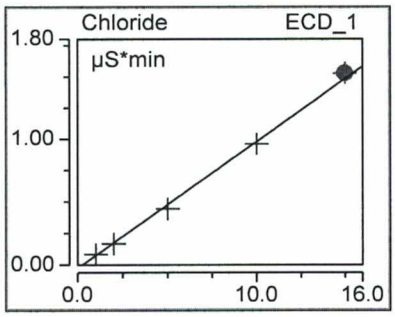
Calibration Summary

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	0.023	0.122	0.000	0.9999
Chloride	Area	Lin, WithOffset, 1/A	0.05	-0.025	0.100	0.000	0.9988
Nitrite	Area	Lin, WithOffset, 1/A	0.07	-0.002	0.193	0.000	0.9996
Bromide	Area	Lin, WithOffset, 1/A	0.16	-0.001	0.036	0.000	0.9999
Nitrate	Area	Lin, WithOffset, 1/A	0.18	-0.001	0.214	0.000	0.9997
Sulfate	Area	Lin, WithOffset, 1/A	0.51	-0.004	0.064	0.000	0.9997
		AVERAGE:		-0.0017	0.1217	0.0000	0.9996

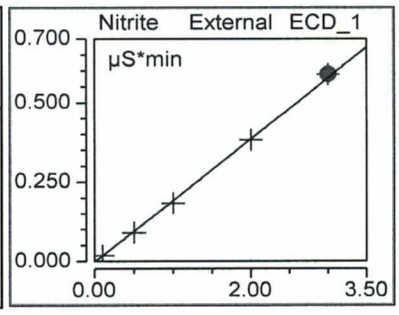
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Fluoride	Fluoride	Fluoride	Fluoride
1130Cal1	1.087	0.0469	0.474	0.199
1130Cal2	1.088	0.0842	1.010	0.505
1130Cal3	1.088	0.1447	1.902	0.999
1130Cal4	1.088	0.2638	3.720	1.974
1130Cal5	1.088	0.3918	5.690	3.022
Average	1.087			
Rel. Std. Dev.	0.007 %			



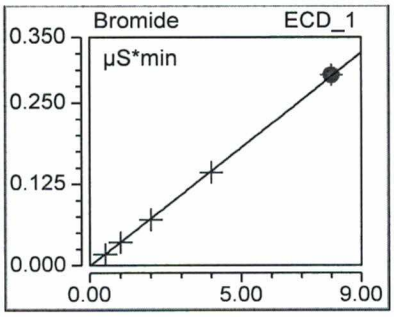
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Chloride	Chloride	Chloride	Chloride
1130Cal1	1.647	0.0837	1.369	1.083
1130Cal2	1.648	0.1692	2.803	1.934
1130Cal3	1.654	0.4442	7.527	4.674
1130Cal4	1.658	0.9621	16.388	9.834
1130Cal5	1.661	1.5282	25.842	15.474
Average	1.653			
Rel. Std. Dev.	0.363 %			



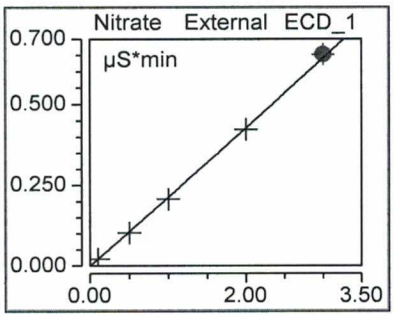
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Nitrite	Nitrite	Nitrite	Nitrite
1130Cal1	1.964	0.0180	0.249	0.106
1130Cal2	1.964	0.0909	1.255	0.483
1130Cal3	1.968	0.1837	2.564	0.963
1130Cal4	1.971	0.3820	5.338	1.989
1130Cal5	1.968	0.5890	8.308	3.060
Average	1.967			
Rel. Std. Dev.	0.144 %			



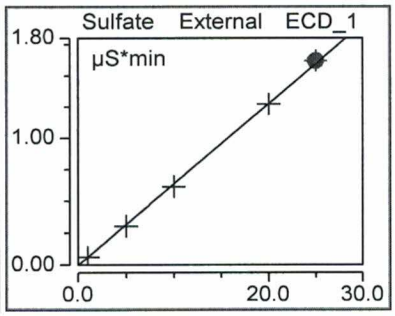
Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Bromide	Bromide	Bromide	Bromide
1130Cal1	2.957	0.0176	0.183	0.507
1130Cal2	2.954	0.0358	0.371	1.006
1130Cal3	2.958	0.0707	0.738	1.967
1130Cal4	2.961	0.1430	1.493	3.955
1130Cal5	2.938	0.2925	3.112	8.064
Average	2.953			
Rel. Std. Dev.	0.313 %			



Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Nitrate	Nitrate	Nitrate	Nitrate
1130Cal1	3.351	0.0215	0.195	0.105
1130Cal2	3.341	0.1029	0.922	0.486
1130Cal3	3.341	0.2071	1.848	0.972
1130Cal4	3.334	0.4230	3.741	1.982
1130Cal5	3.301	0.6525	5.776	3.055
Average	3.333			
Rel. Std. Dev.	0.575 %			



Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount ECD_1
	Sulfate	Sulfate	Sulfate	Sulfate
1130Cal1	7.057	0.0628	0.254	1.044
1130Cal2	7.048	0.3053	1.246	4.843
1130Cal3	7.028	0.6158	2.526	9.709
1130Cal4	7.018	1.2715	5.210	19.984
1130Cal5	7.011	1.6185	6.632	25.419
Average	7.032			
Rel. Std. Dev.	0.281 %			



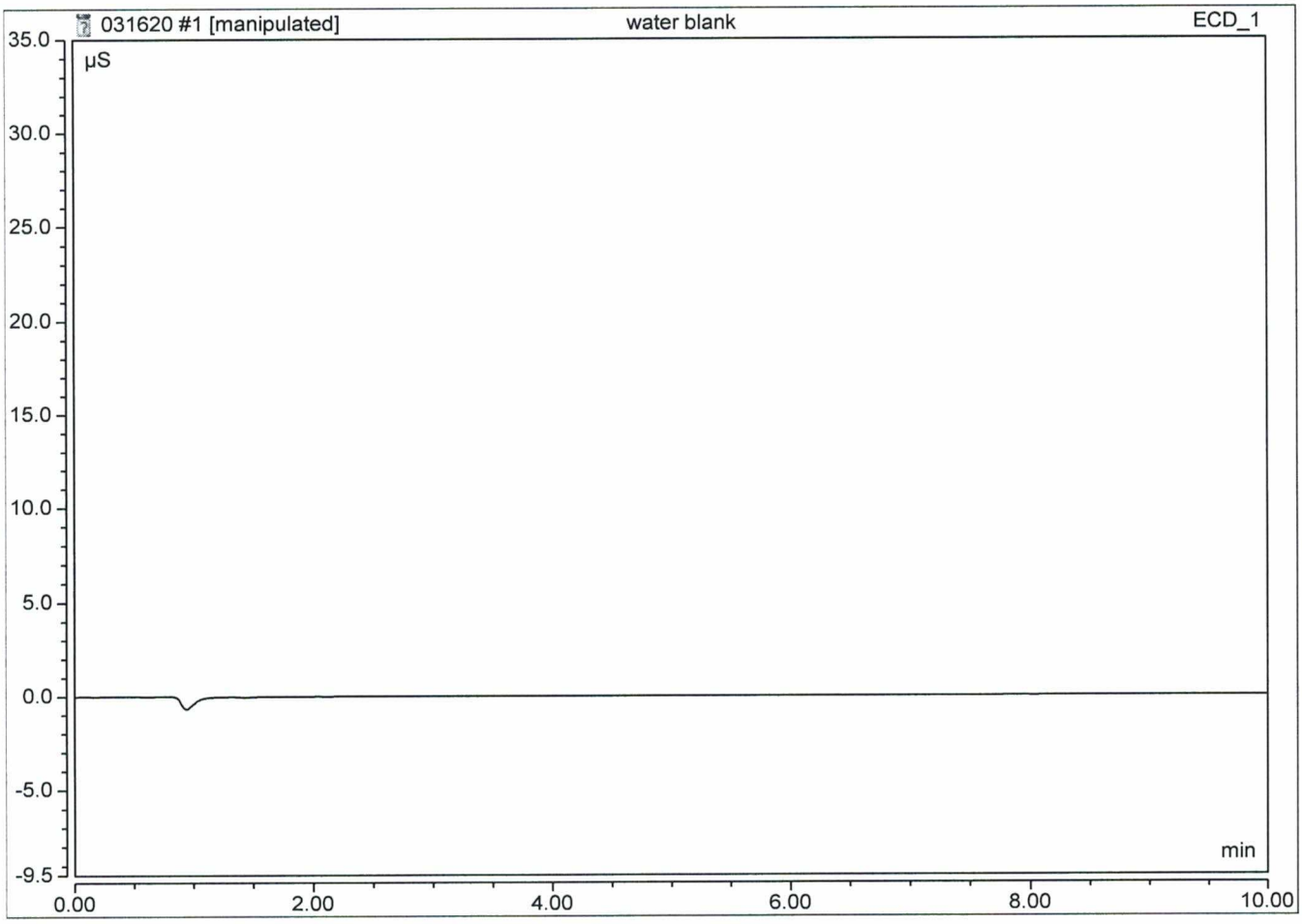
Norm Method	16/06/15 12:18	Jeff Phifer	**METHOD 300.0**	
Stage	Time	Command	Value	Comment
	min			
Instrument Setup				
	initial			
		Sampler.HomeNeedle		
		Sampler.ResetVials	1, 50	
		Pump_ECD.Pressure.UpperLimit	4500 [psi]	
		Sampler.DelayVolume	125 [µl]	
		Pump_ECD.%A.Equate	"Carb - BiCarb"	
		Pump_ECD.Pressure.LowerLimit	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				

JP 3.16.20

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:	**16-Mar-2020 / 09:57**	*Operator:*	**Jeff Phifer**

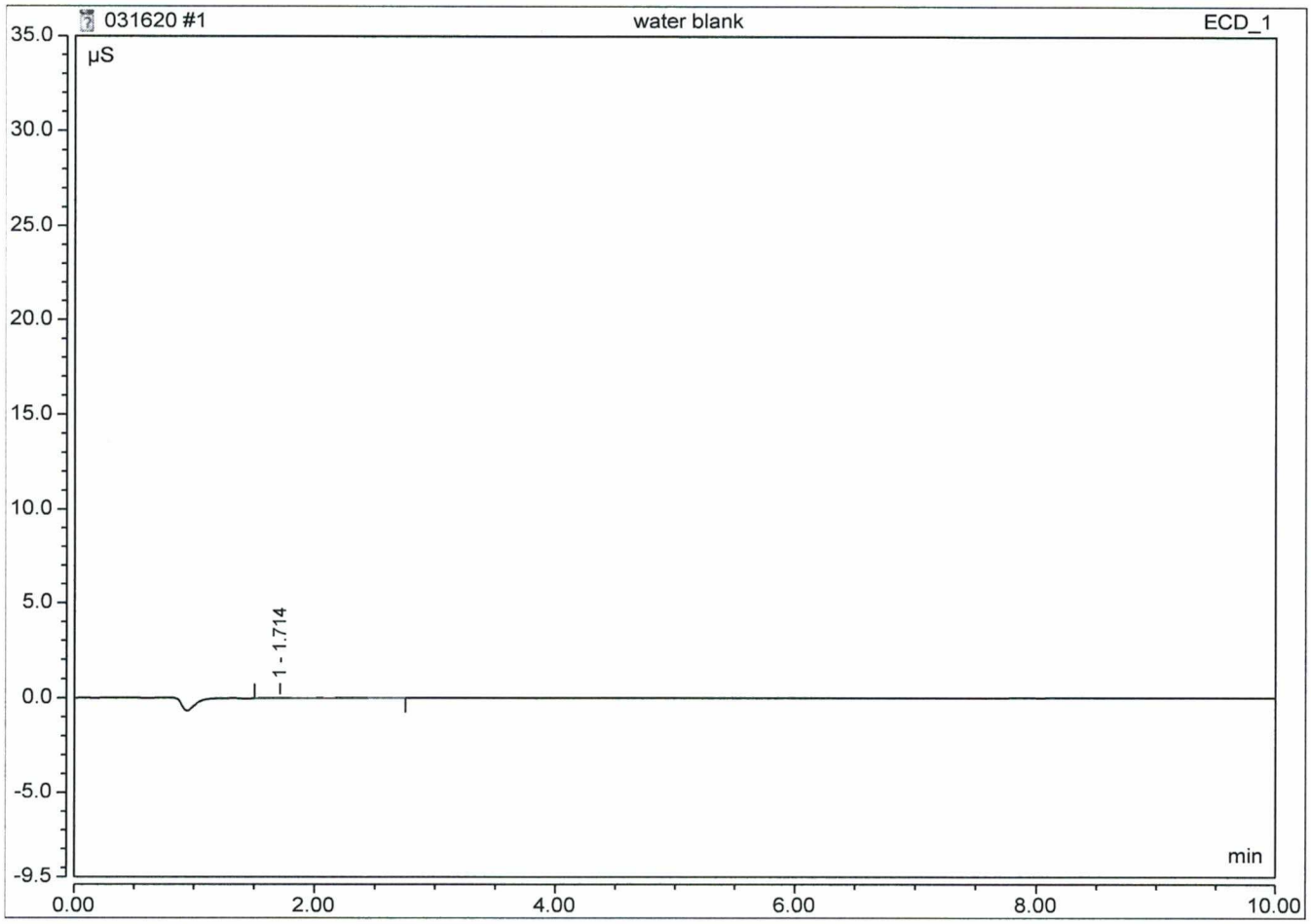
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	**water blank**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Unknown**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**16-Mar-2020 / 09:57**	*Operator:*	**Jeff Phifer**

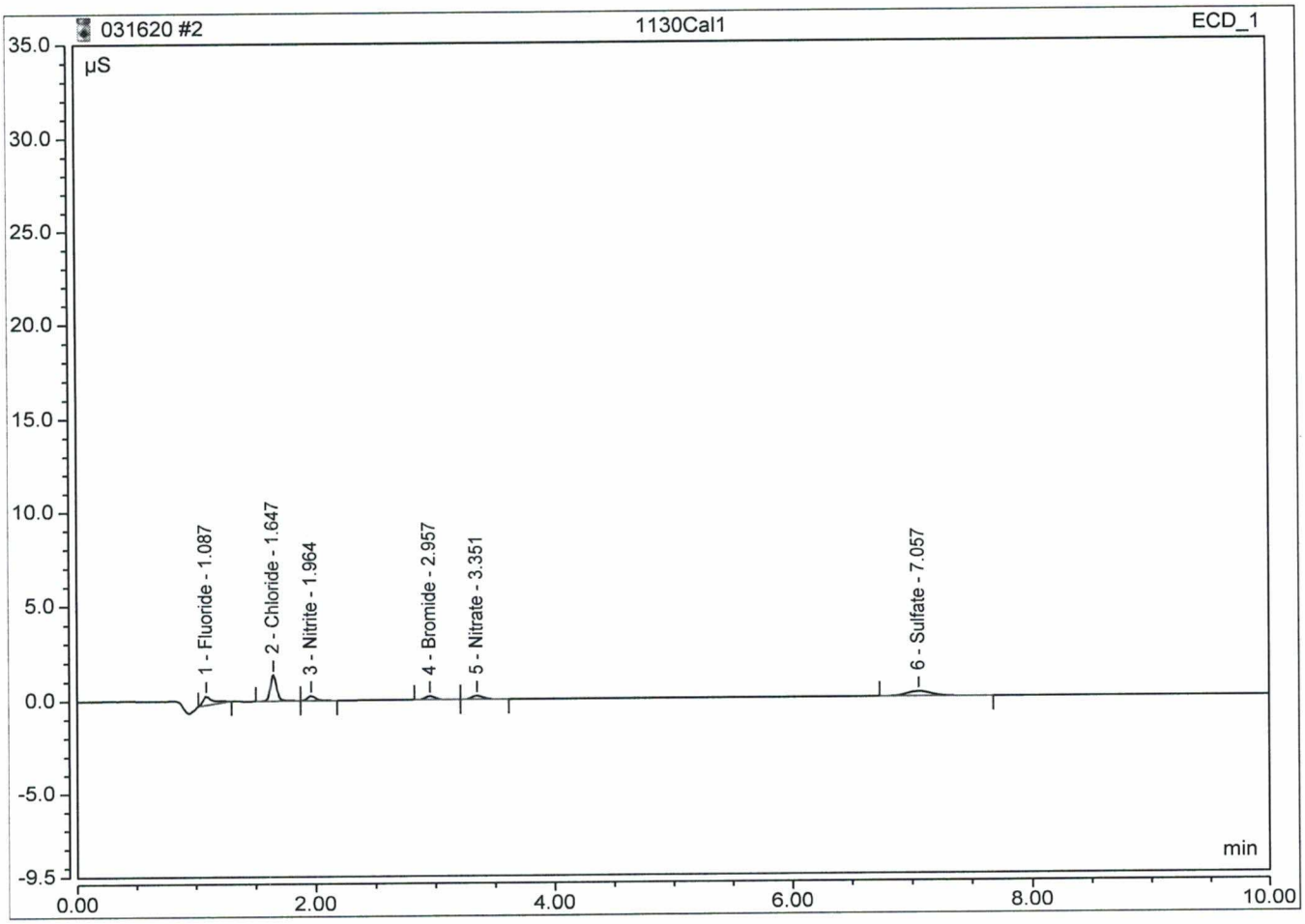
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount n.a.
TOTAL:				0.00	0.00	0.00



Peak Integration Report

Sample Name:	**1130Cal1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**16-Mar-2020 / 10:10**	*Operator:*	**Jeff Phifer**

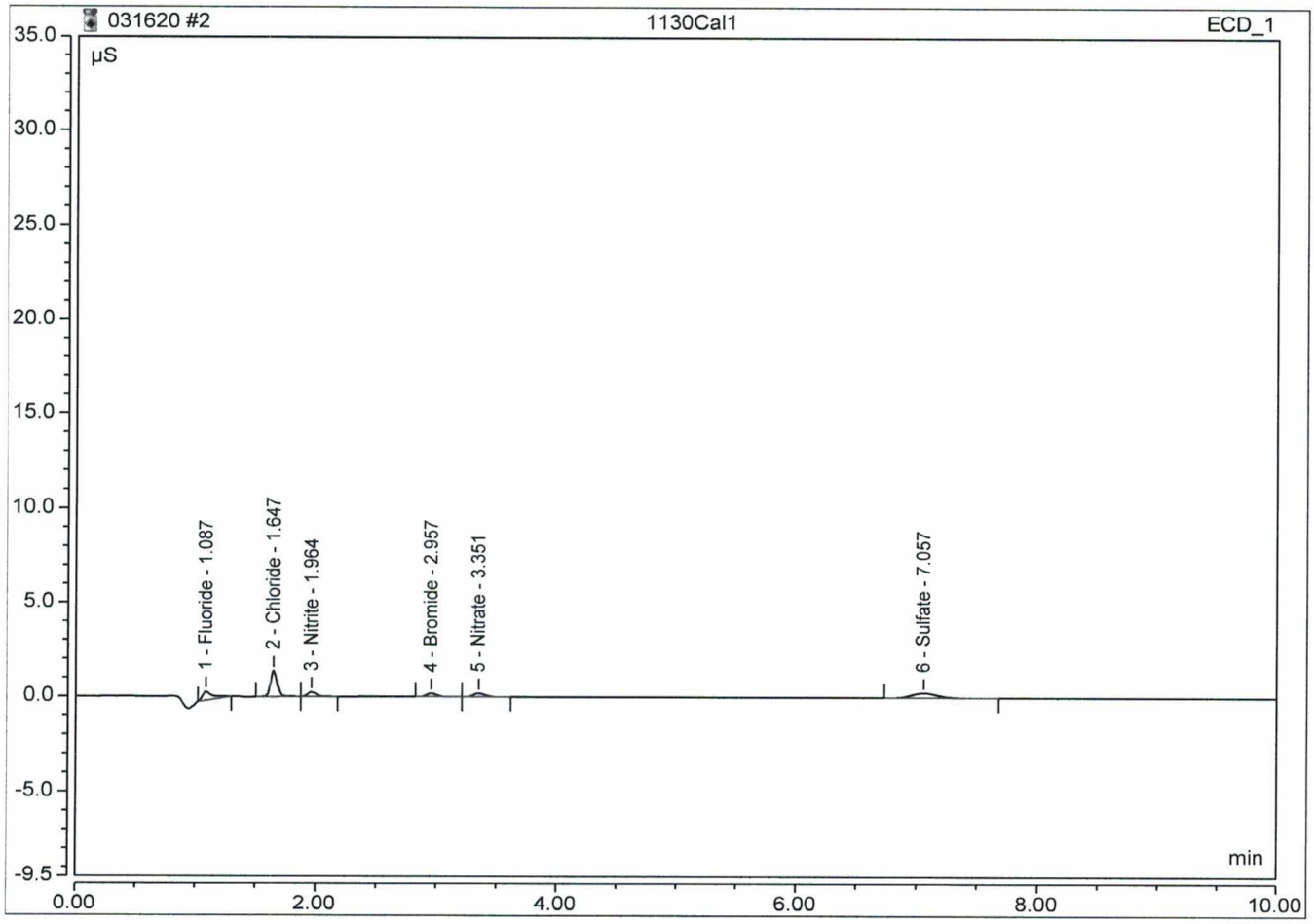
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount	
1	1.09	**Fluoride**	BMB	0.047	0.474	0.2	0.1992
2	1.65	**Chloride**	BMB	0.084	1.369	1	1.0830
3	1.96	**Nitrite**	BMB	0.018	0.249	0.1	0.1057
4	2.96	**Bromide**	BMB	0.018	0.183	0.5	0.5067
5	3.35	**Nitrate**	BMB	0.022	0.195	0.1	0.1047
6	7.06	**Sulfate**	BMB	0.063	0.254	1	1.0444
TOTAL:				0.25	2.72		3.04



Peak Integration Report

Sample Name:	**1130Cal1**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**16-Mar-2020 / 10:10**	*Operator:*	**Jeff Phifer**

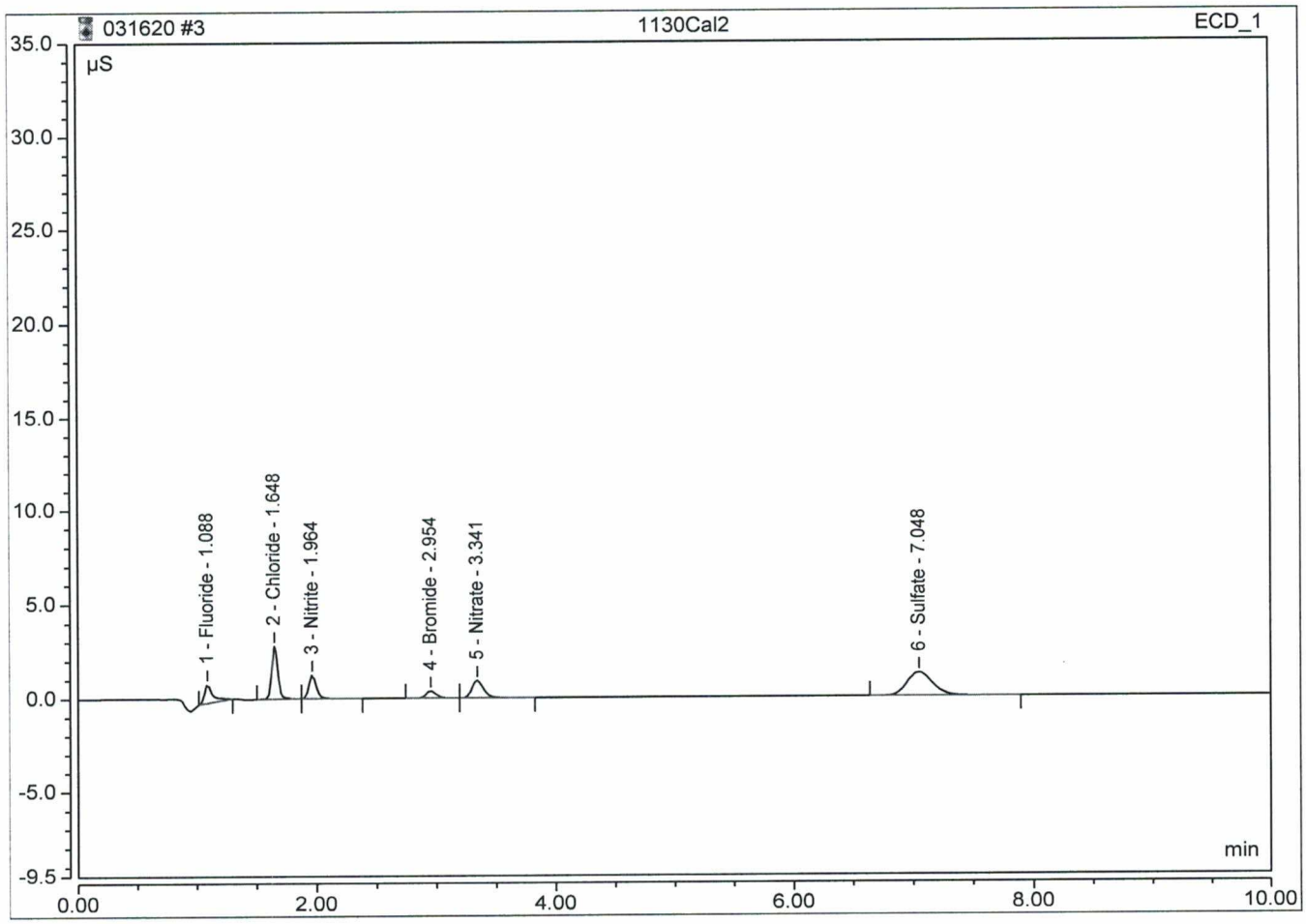
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.09	**Fluoride**	BMB	0.047	0.474	n.a.
2	1.65	**Chloride**	BMB	0.084	1.369	n.a.
3	1.96	**Nitrite**	BMB	0.018	0.249	n.a.
4	2.96	**Bromide**	BMB	0.018	0.183	n.a.
5	3.35	**Nitrate**	BMB	0.022	0.195	n.a.
6	7.06	**Sulfate**	BMB	0.063	0.254	n.a.
TOTAL:				0.25	2.72	0.00



Peak Integration Report

Sample Name:	**1130Cal2**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**16-Mar-2020 / 10:23**	*Operator:*	**Jeff Phifer**

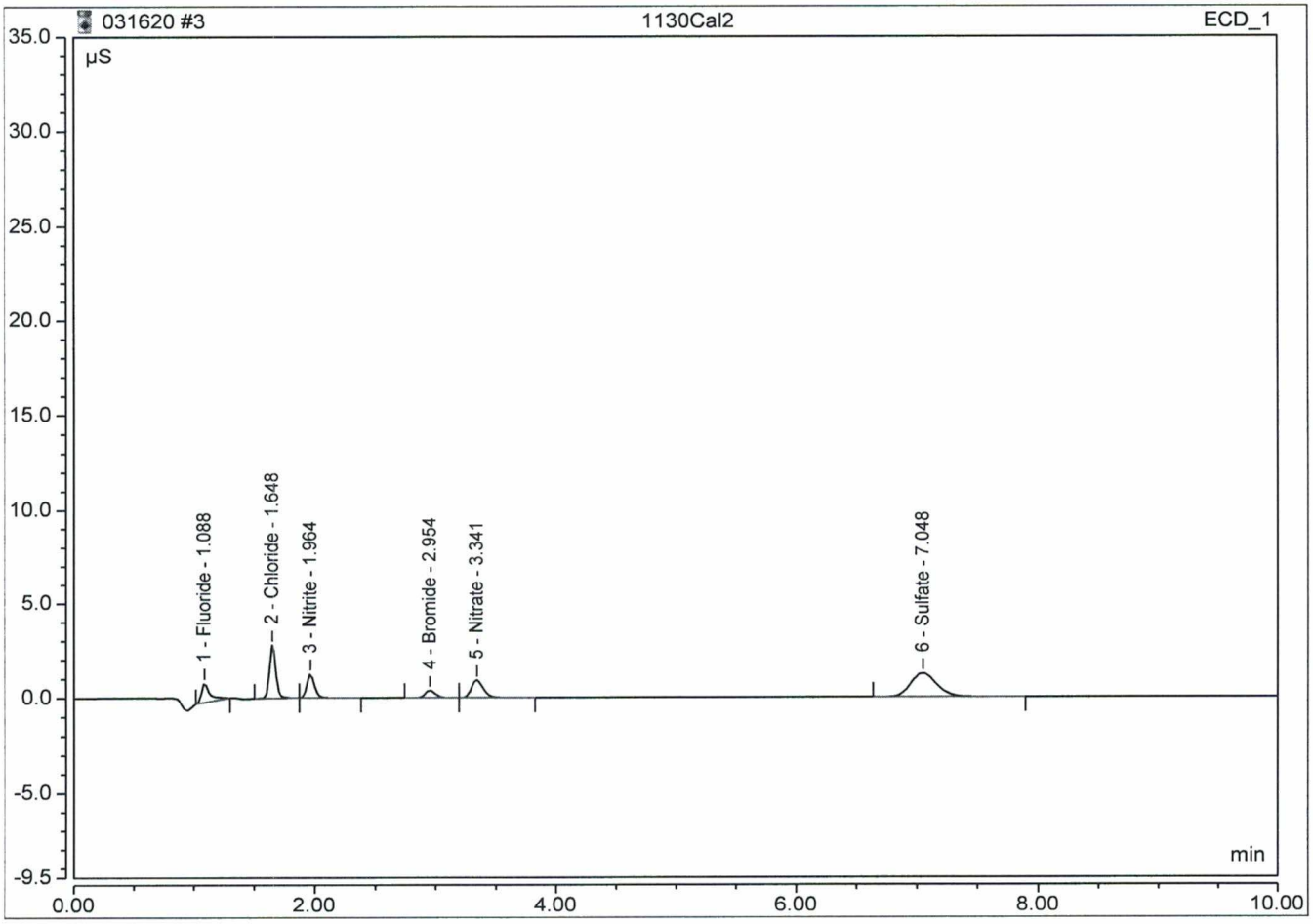
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.09	**Fluoride**	BMB	0.084	1.010	0.5 0.5050
2	1.65	**Chloride**	BMB	0.169	2.803	2 1.9341
3	1.96	**Nitrite**	BMB	0.091	1.255	0.5 0.4828
4	2.95	**Bromide**	BMB	0.036	0.371	1 1.0060
5	3.34	**Nitrate**	BMB	0.103	0.922	0.5 0.4855
6	7.05	**Sulfate**	BMB	0.305	1.246	5 4.8434
TOTAL:				0.79	7.61	9.26



Peak Integration Report

Sample Name:	**1130Cal2**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**16-Mar-2020 / 10:23**	*Operator:*	**Jeff Phifer**

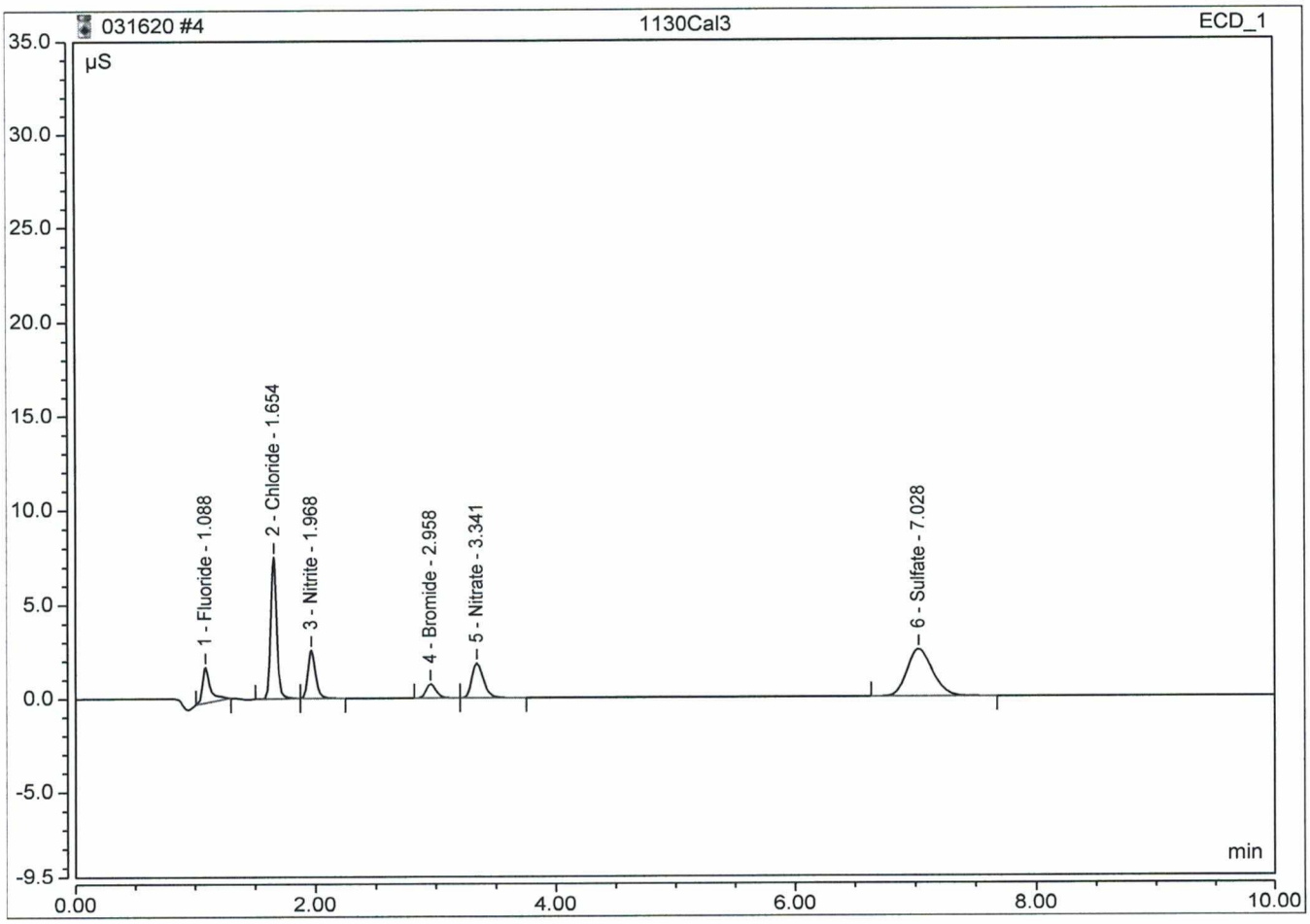
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.09	**Fluoride**	BMB	0.084	1.010	0.5000
2	1.65	**Chloride**	BMB	0.169	2.803	2.0000
3	1.96	**Nitrite**	BMB	0.091	1.255	0.5000
4	2.95	**Bromide**	BMB	0.036	0.371	1.0000
5	3.34	**Nitrate**	BMB	0.103	0.922	0.5000
6	7.05	**Sulfate**	BMB	0.305	1.246	5.0000
TOTAL:				0.79	7.61	9.50



Peak Integration Report

Sample Name:	**1130Cal3**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**16-Mar-2020 / 10:35**	*Operator:*	**Jeff Phifer**

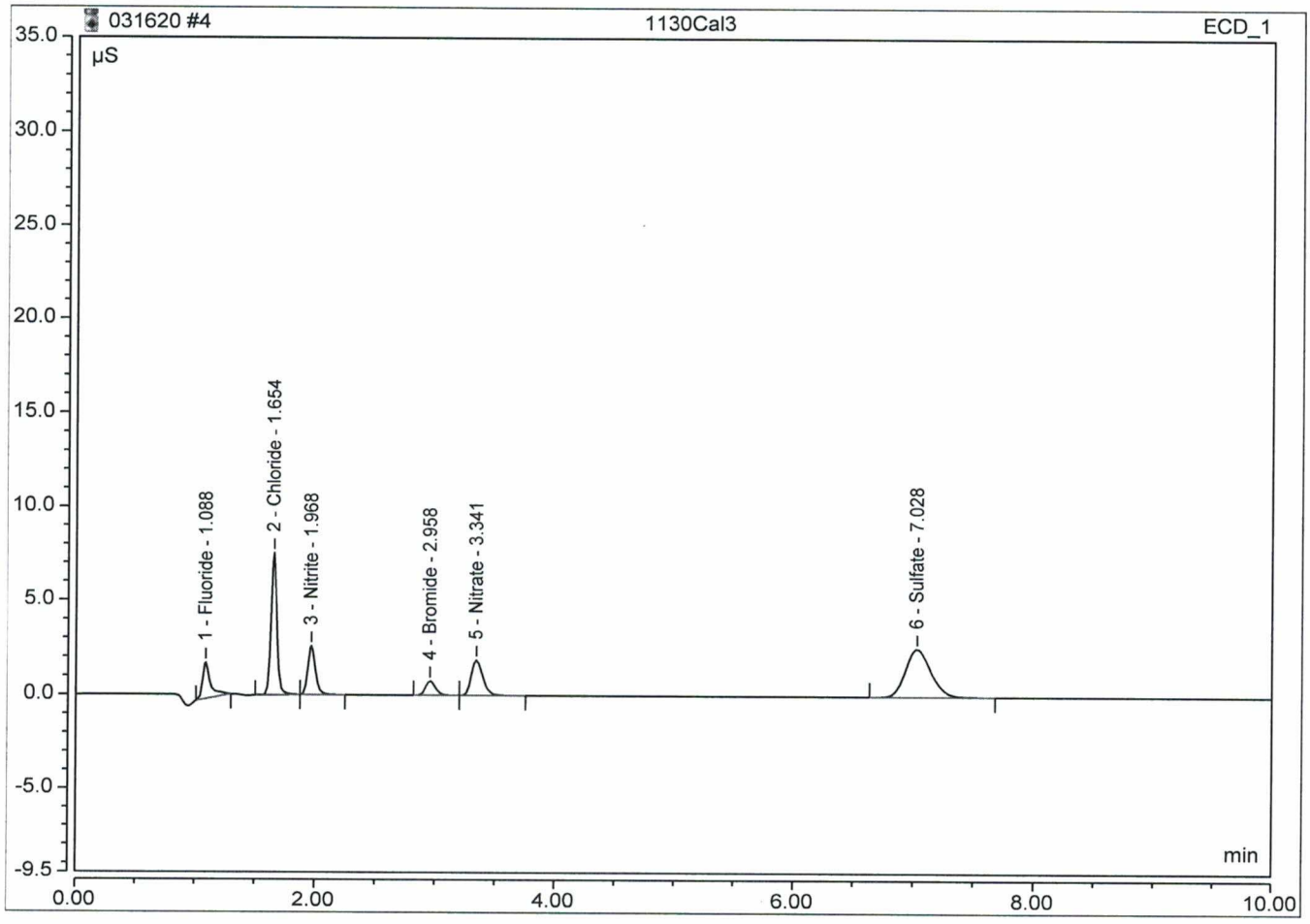
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.09	**Fluoride**	BMB	0.145	1.902	1 0.9994
2	1.65	**Chloride**	BMB	0.444	7.527	5 4.6743
3	1.97	**Nitrite**	BMB	0.184	2.564	1 0.9629
4	2.96	**Bromide**	BMB	0.071	0.738	2 1.9674
5	3.34	**Nitrate**	BMB	0.207	1.848	1 0.9723
6	7.03	**Sulfate**	BMB	0.616	2.526	10 9.7093
TOTAL:				1.67	17.10	19.29



Peak Integration Report

Sample Name:	**1130Cal3**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**16-Mar-2020 / 10:35**	*Operator:*	**Jeff Phifer**

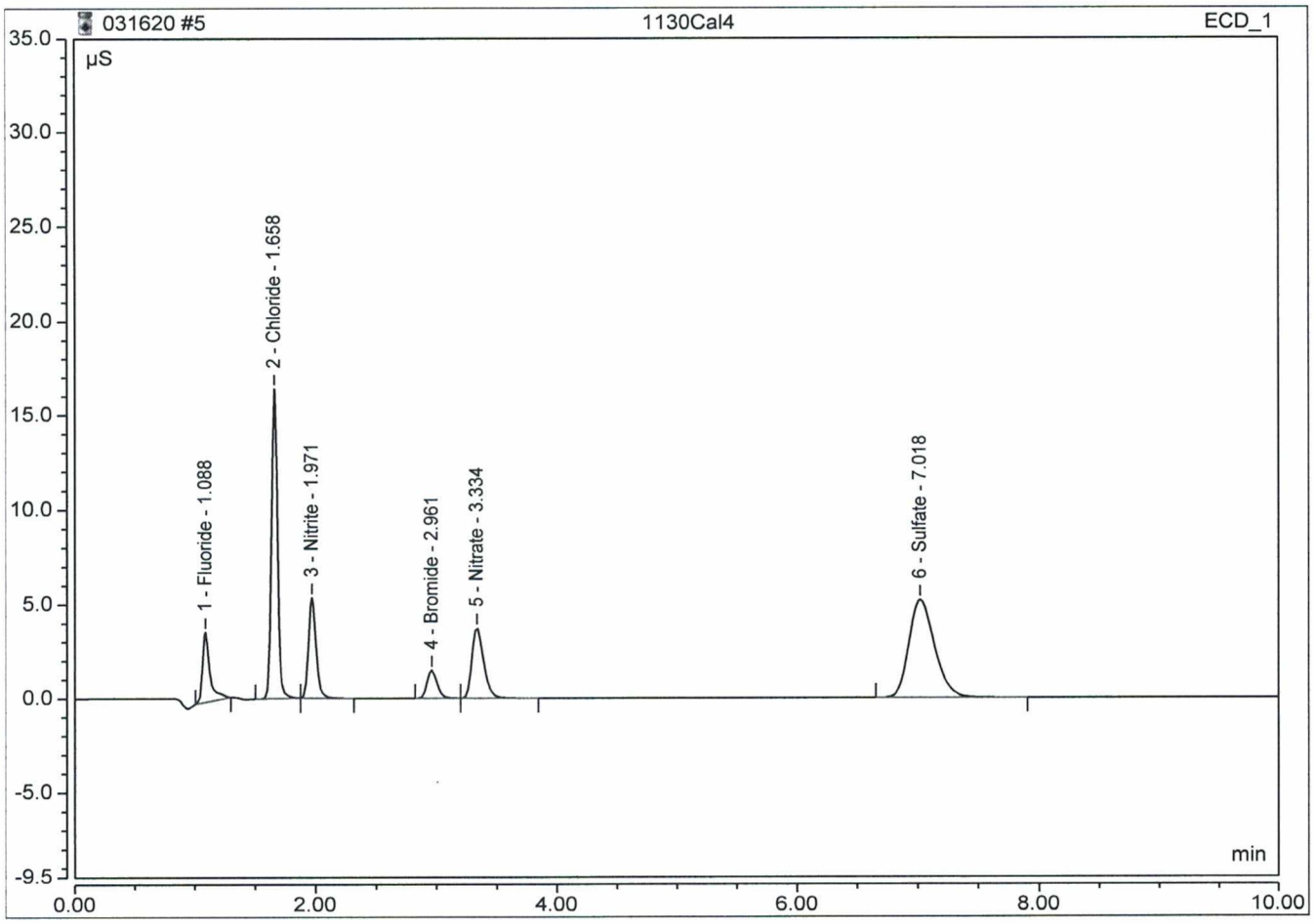
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.09	**Fluoride**	BMB	0.145	1.902	0.9971
2	1.65	**Chloride**	BMB	0.444	7.527	5.0227
3	1.97	**Nitrite**	BMB	0.184	2.564	1.0025
4	2.96	**Bromide**	BMB	0.071	0.738	1.9941
5	3.34	**Nitrate**	BMB	0.207	1.848	1.0030
6	7.03	**Sulfate**	BMB	0.616	2.526	10.0331
TOTAL:				1.67	17.10	20.05



Peak Integration Report

Sample Name:	**1130Cal4**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**16-Mar-2020 / 10:48**	*Operator:*	**Jeff Phifer**

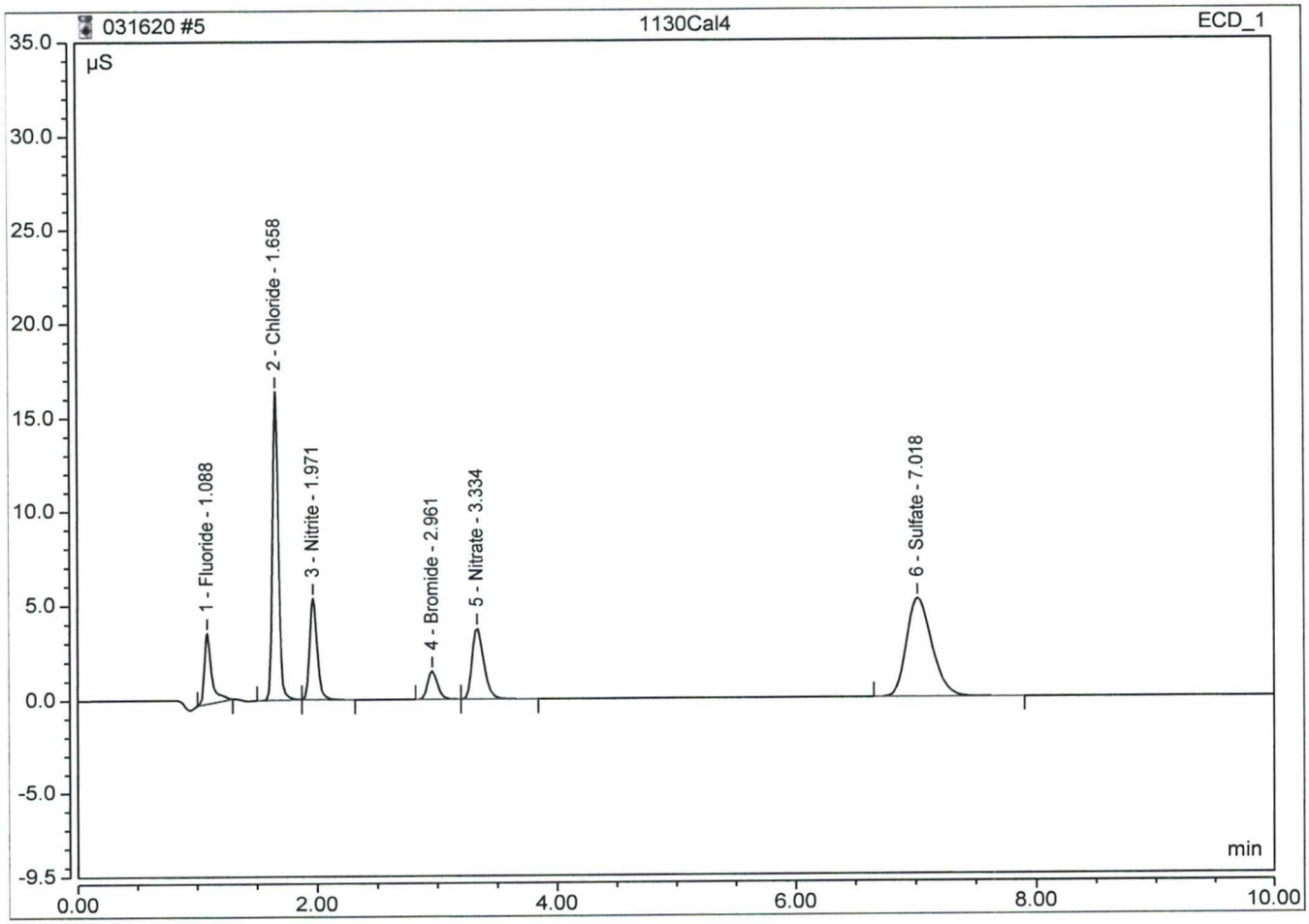
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount	
1	1.09	**Fluoride**	BMB	0.264	3.720	2	1.9744
2	1.66	**Chloride**	BMB	0.962	16.388	10	9.8345
3	1.97	**Nitrite**	BMB	0.382	5.338	2	1.9887
4	2.96	**Bromide**	BMB	0.143	1.493	4	3.9554
5	3.33	**Nitrate**	BMB	0.423	3.741	2	1.9822
6	7.02	**Sulfate**	BMB	1.272	5.210	20	19.9837
TOTAL:				3.45	35.89		39.72



Peak Integration Report

Sample Name:	**1130Cal4**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**16-Mar-2020 / 10:48**	*Operator:*	**Jeff Phifer**

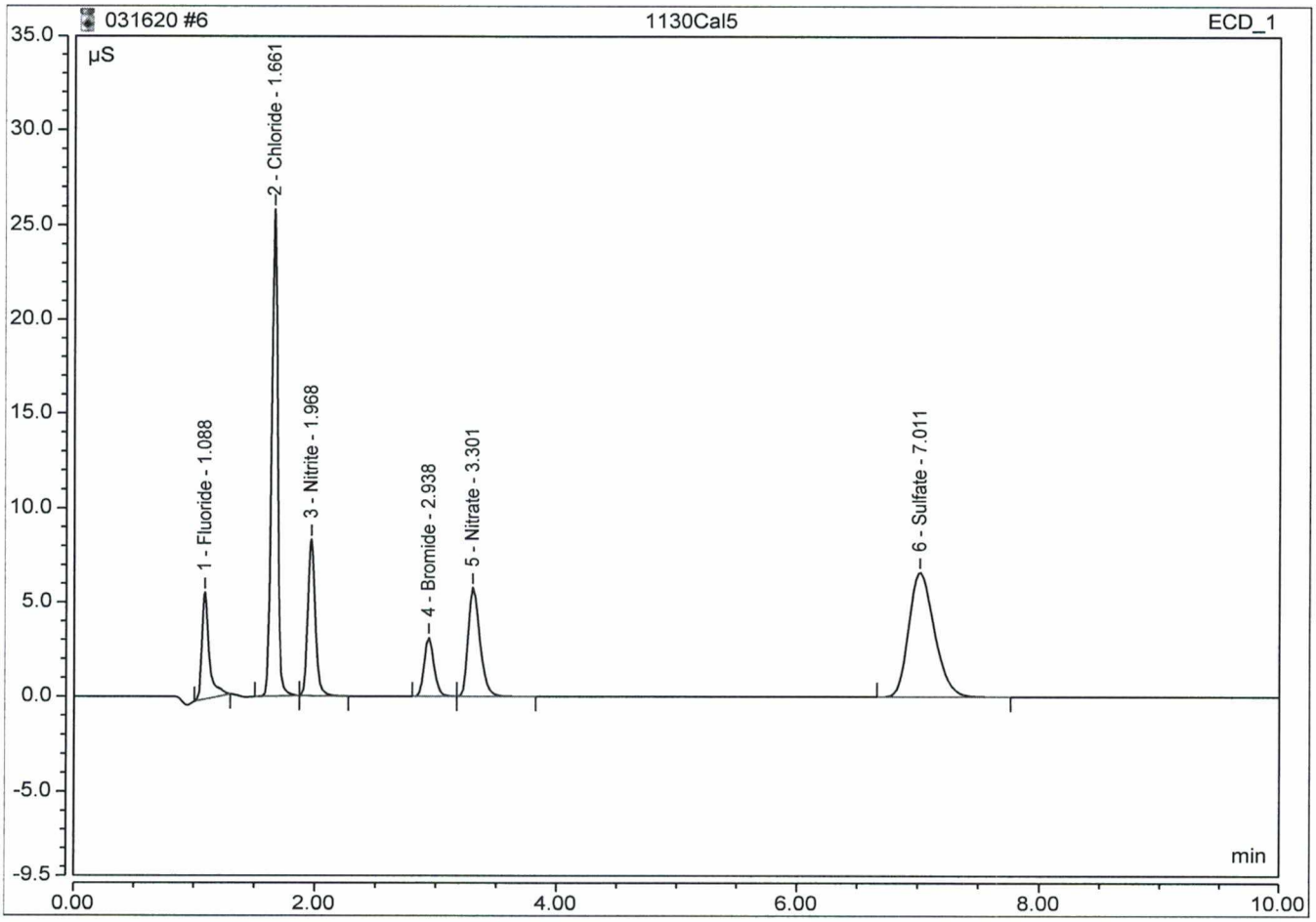
No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount
1	1.09	Fluoride	BMB	0.264	3.720	1.9908
2	1.66	Chloride	BMB	0.962	16.388	10.2059
3	1.97	Nitrite	BMB	0.382	5.338	2.0289
4	2.96	Bromide	BMB	0.143	1.493	4.0085
5	3.33	Nitrate	BMB	0.423	3.741	2.0191
6	7.02	Sulfate	BMB	1.272	5.210	20.2608
TOTAL:				3.45	35.89	40.51



Peak Integration Report

Sample Name:	**1130Cal5**	*Inj. Vol.:*	**2500.00**
Injection Type:	**Calibration Standard**	*Dilution Factor:*	**1.0000**
Program:	**Norm Method**	*Column:*	**AS4A-SC 040144**
Inj. Date / Time:	**16-Mar-2020 / 11:01**	*Operator:*	**Jeff Phifer**

No.	Time min	Peak Name	Peak Type	Area µS*min	Height µS	Amount	
1	1.09	**Fluoride**	BMB	0.392	5.690	3	3.0220
2	1.66	**Chloride**	BMB	1.528	25.842	15	15.4741
3	1.97	**Nitrite**	BMB	0.589	8.308	3	3.0599
4	2.94	**Bromide**	BMB	0.292	3.112	8	8.0645
5	3.30	**Nitrate**	BMB	0.653	5.776	3	3.0552
6	7.01	**Sulfate**	BMB	1.618	6.632	25	25.4192
TOTAL:				5.07	55.36		58.09



3/

Total Suspended Solids

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

Date Started: 30APR20 | Date Finished: 04MAY20
Time Started: 1940 | Time Finished: 1240
Analyst: AB | Reviewed by: BB
Batch ID: TSS200430 | Review Date: 5/11/2020
Temperature: 104°C | Balance ID: I1
Time in Oven: ~~16:00~~ 89:00 AB 04MAY20 | Oven ID/Thermometer ID: OV5/AC10848

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	F62UP	1000	0.1145	0.1141		-0.40 ND	1.00	N	
LCS Lot 8915-09	UQ	100	0.1157	0.1217		60	10.0		
13452.01	~~F62RS~~ R7 ~~UR~~	~~750~~ 50 ~~100~~	0.1144	0.1229		170	20.0		
Dup 13452.01	R8 ~~R6~~ ~~US~~	~~750~~ 50 ~~100~~	0.1153	0.1236		166	20.0		
13457.04	F62UT	650	0.1146	0.1231		13.08 13	1.54		
13481.01	UU	100	0.1149	0.1192		43	10.0		
13499.01	UV	400	0.1152	0.1253		25.25 25	2.50		
13521.01	UW	650	0.1204	0.1274		10.77 11	1.54		
13539.01	UX	1000	0.1136	0.1147		1.10 ND	1.00		
13568.01	UY	970	0.1194	0.1225		3.20 3	1.03		
13569.01	UZ	500	0.1212	0.1369		31.40 31	2.00		
.02	VO	950	0.1201	0.1227		2.74 ND	1.05		
.03	V1	950	0.1156	0.1171		1.58 ND	1.05		

AB 30APR20 AB

LCS value = 59.2 | Acceptance Criteria (mg/L): 46.9-67.0 3/C
% Rec = 101.4% | Acceptance Criteria (%): 79.2-113%
% RPD = 2.4% | Acceptance Criteria: ± 5% of average

C

Total Suspended Solids

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

Date Started: 05MAY20
Time Started: 1755
Analyst: AM
Batch ID: TSS200505
Temperature: 104°C
Time in Oven: 42:20

Date Finished: 07MAY20
Time Finished: 1215
Reviewed by: BB
Review Date: 5/11/2020
Balance ID: I1
Oven ID/Thermometer ID: OV5/AC10~~8648~~

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	f62V2	1000	0.1153	0.1150		-0.3 / ND	1.00	N	
LCS Lot 8915-09	V3	100	0.1200	0.1254		54	10.0		
13570.02	V4	75	0.1212	0.1297		113.3 / 113	13.3		
Dup 13570.02	V5	75	0.1152	0.1239		116	13.3		
13569.04	V6	1000	0.1151	0.1172		2.1 / ND	1.00		
05MAY20 .05	f62V7 250	250	0.1148	0.1551		161.4 / 161	4.00		
.06	f62V8	1000	0.1146	0.1158		1.2 / ND	1.00		
.07	V9	1000	0.1141	0.1138		-0.3 / ND	1.00		
13572.02	VA	50	0.1202	0.1257		110	20.0		
13575.01	VB	400	0.1198	0.1308		27.5 / 28	2.50		
.06	f62R2	200	0.1145	0.1248		51.5 / 52	5.00		
.07	R3	100	0.1153	0.1644		491	10.0		
.08	R4	500	0.1160	0.1278		23.6 / 24	2.00		

LCS value = 59.2 mg/L
% Rec = 91.2%
% RPD = 2.4%

Acceptance Criteria (mg/L): 46.9 – 67.0 mg/L
Acceptance Criteria (%): 79.2 – 113%
Acceptance Criteria: ± 5% of average

Total Dissolved Solids

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

Date Started: 29APR20 | Date Finished: 01MAY20

Time Started: 1610 | Time Finished: 1510

Analyst: [illegible] | Reviewed by: BB

Batch ID: TDS200429 | Review Date: 5/11/2020

Temperature: 180°C | Balance ID: I.7

Time in Oven: 47:00 | 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	A0500531	50	3.7995	3.7998			6/ND
LCS Lot 8200-09	532	25	3.8955	3.9014			236
13440.01	533	25	3.8150	3.9536			5540*/5544
Dup .01	534	25	3.8855	4.0233			5512
.02	535	25	3.7604	3.9193			6360*/6356
.03	536	25	3.8671	4.0168			5990*/5988
.04	537	25	3.8311	4.0203			7570*/7568
13569.01	538	50	3.8027	3.8391			728
.02	539	50	3.6943	3.7530			1170*/1174
.03	540	50	3.7806	3.8080			548
.04	541	50	3.7302	3.7575			546
.05	542	50	3.7591	3.8232			1280*/1282
.06	543	50	3.7115	3.7436			642

LCS value = 205 mg/L | Acceptance Criteria (mg/L): 160-250 mg/L

% Rec = 115.1% | Acceptance Criteria (%): 78.0-122%

% RPD = 0.6% | Acceptance Criteria: ± 5% of average

Total Dissolved Solids

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

Date Started: 01MAY20 | Date Finished: 05MAY20

Time Started: 1945 | Time Finished: 1250

Analyst: [illegible] | Reviewed by: BB

Batch ID: TDS200501 | Review Date: 5/11/2020

Temperature: 18/C | Balance ID: I1

Time in Oven: 89:05 | Oven ID/Thermometer ID: OV2/AC/10365

Merit #	Tin #	sample (mls)	Tin (grams)	dry solids + tin 180°C (grams)	reweigh 15 min. 180°C (grams)	Cond.	TDS (mg/L)
Blank	A0500544	50	3.7660	3.7664			8 / ND
LCS Lot 8915-09	545	25	3.7278	3.7341			252
13613.01	546	25	3.7519	3.8903			5540* / 5536
Dup .01	547	25	3.7156	3.8526			5480
.02	548	25	3.7304	3.8891			6350* / 6348
.03	549	25	3.7369	3.8305			3740* / 3744
.04	550	25	3.8077	3.9343			5060* / 5064
.05	551	25	3.7166	3.8043			3570* / 3508
.06	552	25	3.7131	3.8281			4600
13569.07	553	50	3.7868	3.7870			4 / ND
13586.01	554	50	3.8011	3.8232			442
.02	555	50	3.7628	3.7781			306
13607.01	556	50	3.6939	3.7493			1110* / 1108

LCS value = 242 mg/L | Acceptance Criteria (mg/L): 197-287 mg/L

% Rec = 104.1% | Acceptance Criteria (%): 81.4-119%

% RPD = 1.0% | 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 # _____ OF _____

134281

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Jennifer Caporale
COMPANY: BWL
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: FAX NO.: P.O. NO.:
E-MAIL ADDRESS: environmental-laboratory@lbwl.com QUOTE NO.:

INVOICE TO

CONTACT NAME: Kelly Gleason ☐ SAME
COMPANY: BWL
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	Metals, Hg	TSS	TDS, Cl^-, SO_4^{2-}, F^-	Radium 226	Radium 228
13569.01	4/28/20	1056	L004070-01 MW-1	WW	5	2		3					1	1	1	1	1
.02		1401	-02 MW-2														
.03		0831	-03 MW-4														
.04		0831	-04 MW-4 Duplicate														
.05		1910	-05 MW-5														
.06		1230	-06 MW-6														
.07		0725	-07 Field Blank	DI													

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☒ Sampler	DATE 4.29.20	TIME 1153
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 4/29/20	TIME 1153
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 4.3

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

Rev. 5.18.12

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: S13569 | 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
	04/28/20	1056	S13569.01	ww	2			2					✔	✔	* E903.1 Mod.
	04/28/20	1401	S13569.02	ww	2			2					✔	✔	** E904.0/SW 9320 Mod.
	04/28/20	0831	S13569.03	ww	2			2					✔	✔	
	04/28/20	0831	S13569.04	ww	2			2					✔	✔	Please use calculation product &
	04/28/20	1910	S13569.05	ww	2			2					✔	✔	provide Radium 226/228 combined
	04/28/20	1230	S13569.06	ww	2			2					✔	✔	results on the report
	04/28/20	0725	S13569.07 (Field Blank)	L	2			2					✔	✔	
															** Subcontracted to
															GEL Laboratories, Inc.
															2040 Savage Road
															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 DATE TIME
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

Merit Laboratories Login Checklist

Lab Set ID: S13569
Client: BWL01 (Board of Water & Light)
Project: Erickson GMP
Submitted: 04/29/2020 11:53 Login User: SRS

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

Phone: 517-702-6372 FAX: 517-702-6373
Email: Environmental_Laboratory@LBWL.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.3
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: S13569 Initials: SRS

Client: BWL01 (Board of Water & Light)

Project: Erickson GMP

Submitted: 04/29/2020 11:53 Login User:

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

Phone: 517-702-6372 FAX: 517-702-6373
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	
S13569.01	X								X					
S13569.01			X						X					
S13569.01			X						X					
S13569.02	X								X					
S13569.02			X						X					
S13569.02			X						X					
S13569.03	X								X					
S13569.03			X						X					
S13569.03			X						X					
S13569.04	X								X					
S13569.04			X						X					
S13569.04			X						X					
S13569.05	X								X					
S13569.05			X						X					
S13569.05			X						X					
S13569.06	X								X					
S13569.06			X						X					
S13569.06			X						X					
S13569.07	X								X					
S13569.07			X						X					
S13569.07			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: 517-702-6373
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: S13569 Location: BWL01 (Board of Water & Light) PO #: Login by: SRS
Project: Erickson GMP Backlog Note:
Submitted: 04/29/2020 11:53 Due Date: 05/13/2020 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
S13569.01	L004070-01 MW-1	Wastewater	04/28/2020 10:56	134281
S13569.02	L004070-02 MW-2	Wastewater	04/28/2020 14:01	134281
S13569.03	L004070-03 MW-4	Wastewater	04/28/2020 08:31	134281
S13569.04	L004070-04 MW-4 Duplicate	Wastewater	04/28/2020 08:31	134281
S13569.05	L004070-05 MW-5	Wastewater	04/28/2020 19:10	134281
S13569.06	L004070-06 MW-6	Wastewater	04/28/2020 12:30	134281
S13569.07	L004070-07 Field Blank	Water	04/28/2020 07:25	134281

Samples: S13569.01-07

Analysis Code	Analysis Title	Method	Units	Holding Date
2140WMS	Calcium	E200.8	mg/L	10/25/2020
2145WMS	Chromium	E200.8	mg/L	10/25/2020
2130WMS	Boron	E200.8	mg/L	10/25/2020
2115WMS	Arsenic	E200.8	mg/L	10/25/2020
2205WMS	Selenium	E200.8	mg/L	10/25/2020
2190WMS	Molybdenum	E200.8	mg/L	10/25/2020
2135WMS	Cadmium	E200.8	mg/L	10/25/2020
2110WMS	Antimony	E200.8	mg/L	10/25/2020
2120WMS	Barium	E200.8	mg/L	10/25/2020
2225WMS	Thallium	E200.8	mg/L	10/25/2020
2165WMS	Lead	E200.8	mg/L	10/25/2020
2125WMS	Beryllium	E200.8	mg/L	10/25/2020
2150WMS	Cobalt	E200.8	mg/L	10/25/2020
2170WMS	Lithium	E200.8	mg/L	10/25/2020
2185W	Mercury	E245.1	mg/L	05/26/2020
4630	Total Suspended Solids	SM2540D	mg/L	05/05/2020
4615	Total Dissolved Solids	SM2540C	mg/L	05/05/2020
4425W	Chloride	E300.0	mg/L	05/26/2020
4530W	Sulfate	E300.0	mg/L	05/26/2020
4455W	Fluoride (Undistilled)	E300.0	mg/L	05/26/2020
MISCSUB	Misc. Special Project			01/22/2023
1605W	Metal Digestion	SW3015A		10/25/2020
1605HGW	Mercury Digestion	E245.1		05/26/2020
SUBCONT	Subcontracting			01/22/2023

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

May 22, 2020

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

Re: Routine Analysis
Work Order: 510535
SDG: S13569

Dear John Laverty:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 04, 2020. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. This package is revised to include level IV fractions.

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. 4707.

Sincerely,

Samuel Hogan for
Katelyn Gray
Project Manager

Purchase Order: GELP19-0247
Enclosures

Table of Contents

General Narrative

This package is revised to include level IV fractions.

Case Narrative
for
Merit Laboratories, Inc.
SDG: S13569
Work Order: 510535

May 22, 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 May 04, 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
510535001	S13569.01
510535002	S13569.02
510535003	S13569.03
510535004	S13569.04
510535005	S13569.05
510535006	S13569.06
510535007	S13569.07 (Field Blank)

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) 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.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: Radiochemistry.

Samuel Hogan for
Katelyn Gray
Project Manager

Chain of Custody and Supporting Documentation

510535

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: S13569 | 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
	04/28/20	1056	S13569.01	ww	2			2					✓	✓	* E903.1 Mod.
	04/28/20	1401	S13569.02	ww	2			2					✓	✓	** E904.0/SW 9320 Mod.
	04/28/20	0831	S13569.03	ww	2			2					✓	✓	
	04/28/20	0831	S13569.04	ww	2			2					✓	✓	Please use calculation product &
	04/28/20	1910	S13569.05	ww	2			2					✓	✓	provide Radium 226/228 combined
	04/28/20	1230	S13569.06	ww	2			2					✓	✓	results on the report
	04/28/20	0725	S13569.07 (Field Blank)	L	2			2					✓	✓	
															** Subcontracted to
															GEL Laboratories, Inc.
															2040 Savage Road
															Charleston, SC 29407

RELINQUISHED BY: SIGNATURE/ORGANIZATION: [signature] ☐Sampler	DATE: 4/30/20	TIME: 1630	
RECEIVED BY: SIGNATURE/ORGANIZATION: GPS	DATE: 4/30/20	TIME: 1680	
RELINQUISHED BY: SIGNATURE/ORGANIZATION:	DATE:	TIME:	
RECEIVED BY: SIGNATURE/ORGANIZATION:	DATE:	TIME:	

RELINQUISHED BY: SIGNATURE/ORGANIZATION:	DATE:	TIME:	
RECEIVED BY: SIGNATURE/ORGANIZATION: [signature]	DATE: 5-4-20	TIME: 850	
SEAL NO.	SEAL INTACT YES☐ NO☐	INITIALS	NOTES: TEMP. ON ARRIVAL 21°C
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

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: MERI	SDG/AR/COC/Work Order: 510535
Received By: Stacy Boone	Date Received: 4-MAY-20
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 1Z 466 477 03 6247 5733

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): Ø 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: 21c
4	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: IR1-19 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?	✓			ID's and containers affected:
10	Date & time on COC match date & time on bottles?	✓			Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
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?			✓	
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 5/5/20 Page 1 of 1

GL-CHL-SR-001 Rev 6

List of current GEL Certifications as of 22 May 2020

State	Certification
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 #: S13569
Work Order #: 510535

Product: **Radium-226+Radium-228 Calculation**
Analytical Method: Calculation
Analytical Procedure: GL-RAD-D-003 REV# 44
Analytical Batch: 1994505

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

GEL Sample ID#	Client Sample Identification
510535001	S13569.01
510535002	S13569.02
510535003	S13569.03
510535004	S13569.04
510535005	S13569.05
510535006	S13569.06
510535007	S13569.07 (Field Blank)

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: **GFPC Ra228, Liquid**
Analytical Method: EPA 904.0/SW846 9320 Modified
Analytical Procedure: GL-RAD-A-009 REV# 17
Analytical Batch: 1994400

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

GEL Sample ID#	Client Sample Identification
510535001	S13569.01
510535002	S13569.02
510535003	S13569.03
510535004	S13569.04
510535005	S13569.05
510535006	S13569.06
510535007	S13569.07 (Field Blank)
1204555327	Method Blank (MB)
1204555328	510535004(S13569.04) Sample Duplicate (DUP)
1204555329	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: 1992354

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

GEL Sample ID#	Client Sample Identification
510535001	S13569.01
510535002	S13569.02
510535003	S13569.03
510535004	S13569.04
510535005	S13569.05
510535006	S13569.06
510535007	S13569.07 (Field Blank)
1204550964	Method Blank (MB)
1204550965	509722001(NonSDG) Sample Duplicate (DUP)
1204550966	509722001(NonSDG) Matrix Spike (MS)
1204550967	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 1204550966 (Non SDG 509722001MS) 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: S13569 GEL Work Order: 510535

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: 20 MAY 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: May 20, 2020

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

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

Client Sample ID: S13569.01
Sample ID: 510535001
Matrix: Waste Water
Collect Date: 28-APR-20 10:56
Receive Date: 04-MAY-20
Collector: Client

Project: MERI00119
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	0.518	+/-0.745	1.28	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.61	+/-0.864			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		1.10	+/-0.438	0.323	1.00	pCi/L			MXH8	05/08/20	1112	1992354	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"			91.9	(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: May 20, 2020

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

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

Client Sample ID:	S13569.02	Project:	MERI00119
Sample ID:	510535002	Client ID:	MERI001
Matrix:	Waste Water		
Collect Date:	28-APR-20 14:01		
Receive Date:	04-MAY-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	1.05	+/-0.780	1.19	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.86	+/-0.893			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.813	+/-0.434	0.500	1.00	pCi/L			MXH8	05/08/20	1112	1992354	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"			79.3	(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: May 20, 2020

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

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

Client Sample ID:	S13569.03	Project:	MERI00119
Sample ID:	510535003	Client ID:	MERI001
Matrix:	Waste Water		
Collect Date:	28-APR-20 08:31		
Receive Date:	04-MAY-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	1.08	+/-0.802	1.24	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.92	+/-0.885			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.839	+/-0.376	0.306	1.00	pCi/L			MXH8	05/08/20	1112	1992354	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"			88.3	(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: May 20, 2020

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

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

Client Sample ID: S13569.04
Sample ID: 510535004
Matrix: Waste Water
Collect Date: 28-APR-20 08:31
Receive Date: 04-MAY-20
Collector: Client

Project: MERI00119
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	1.38	+/-1.05	1.66	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		2.33	+/-1.13			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		0.953	+/-0.416	0.422	1.00	pCi/L			MXH8	05/08/20	1111	1992354	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"			85.3	(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: May 20, 2020

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

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

Client Sample ID: S13569.05
Sample ID: 510535005
Matrix: Waste Water
Collect Date: 28-APR-20 19:10
Receive Date: 04-MAY-20
Collector: Client

Project: MERI00119
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	0.187	+/-0.775	1.42	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		1.29	+/-0.921			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		1.10	+/-0.498	0.568	1.00	pCi/L			MXH8	05/08/20	1111	1992354	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"			89	(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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Certificate of Analysis

Report Date: May 20, 2020

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

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

Client Sample ID:	S13569.06	Project:	MERI00119
Sample ID:	510535006	Client ID:	MERI001
Matrix:	Waste Water		
Collect Date:	28-APR-20 12:30		
Receive Date:	04-MAY-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	0.384	+/-0.738	1.31	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.596	+/-0.779			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.212	+/-0.249	0.405	1.00	pCi/L			MXH8	05/08/20	1111	1992354	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"			88.2	(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: May 20, 2020

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

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

Client Sample ID:	S13569.07 (Field Blank)	Project:	MERI00119
Sample ID:	510535007	Client ID:	MERI001
Matrix:	Waste Water		
Collect Date:	28-APR-20 07:25		
Receive Date:	04-MAY-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	0.625	+/-0.790	1.34	3.00	pCi/L			JXK3	05/08/20	0855	1994400	1
Radium-226+Radium-228 Calculation "See Parent Products"													
Radium-226+228 Sum		0.890	+/-0.820			pCi/L		1	TON1	05/19/20	1204	1994505	2
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226	U	0.265	+/-0.222	0.289	1.00	pCi/L			MXH8	05/08/20	1144	1992354	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"			87.9	(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: May 20, 2020

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

Contact: **John Laverty**

Workorder: **510535**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 1994400										
QC1204555328 510535004 DUP										
Radium-228	U	1.38		2.09	pCi/L	40.9		(0% - 100%)	JXK3	05/08/20 08:55
	Uncertainty	+/-1.05		+/-0.918						
QC1204555329 LCS										
Radium-228	57.1			50.2	pCi/L		88	(75%-125%)		05/08/20 08:55
	Uncertainty			+/-3.24						
QC1204555327 MB										
Radium-228			U	0.416	pCi/L					05/08/20 08:55
	Uncertainty			+/-0.754						
Rad Ra-226										
Batch 1992354										
QC1204550965 509722001 DUP										
Radium-226		0.602		0.700	pCi/L	15.1		(0% - 100%)	MXH8	05/08/20 11:44
	Uncertainty	+/-0.337		+/-0.460						
QC1204550967 LCS										
Radium-226	27.1			27.9	pCi/L		103	(75%-125%)		05/08/20 11:43
	Uncertainty			+/-2.08						
QC1204550964 MB										
Radium-226			U	0.236	pCi/L					05/08/20 11:44
	Uncertainty			+/-0.288						
QC1204550966 509722001 MS										
Radium-226	27.1	0.602		30.0	pCi/L		109	(75%-125%)		05/08/20 12:31
	Uncertainty	+/-0.337		+/-2.53						

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: **510535**

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 1994400 Check-list

This check-list was completed on 11-MAY-20 by Nat Long

This batch was reviewed by Kenshalla Oston on 11-MAY-20 and Nat Long on 11-MAY-20.

Batch ID:	**Product:**	**Description:** Gas Flow Radium 228
1994400	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?		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 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: **1994400**
Analyst: Jennie Kill−Bowden (JXK3)
Method: EPA 904.0/SW846 9320 Modified
Lab SOP: GL−RAD−A−009 REV# 17
Instrument: GFC−51204863

Due Dates for Lab: 12−MAY−2020 **Package:** **SDG: 14−MAY−2020**

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1204555329	Radium−228 SPIKE	1918−A	.2	mL

#	Sample ID	Prep Date	Min RDL (pCi/L)	Aliquot (mL)	Ac−228 Ingrow (date)	Ac−228 Separation (date)
1	510382001	05−MAY−2020	3	300	05/06/20 13:58	05/08/20 07:10
2	510535001	05−MAY−2020	3	300	05/06/20 13:58	05/08/20 07:10
3	510535002	05−MAY−2020	3	300	05/06/20 13:58	05/08/20 07:10
4	510535003	05−MAY−2020	3	300	05/06/20 13:58	05/08/20 07:10
5	510535004	05−MAY−2020	3	300	05/06/20 13:58	05/08/20 07:10
6	510535005	05−MAY−2020	3	300	05/06/20 13:58	05/08/20 07:10
7	510535006	05−MAY−2020	3	300	05/06/20 13:58	05/08/20 07:10
8	510535007	05−MAY−2020	3	300	05/06/20 13:58	05/08/20 07:10
9	1204555327 MB	05−MAY−2020	3	300	05/06/20 13:58	05/08/20 07:10
10	1204555328 DUP (510535004)	05−MAY−2020	3	300	05/06/20 13:58	05/08/20 07:10
11	1204555329 LCS	05−MAY−2020	3	300	05/06/20 13:58	05/08/20 07:10

Reagent/Solvent Lot ID	Description	Amount
WORK 0487−G	Barium−133 TRACER	.1 mL
REGNT 2947553	RGF−Neodymium 500mg/L	.2 mL
REGNT 3015436.14	HNO3, JT Baker	5 mL
REGNT 3053163.4	RGF−Acetic Acid	10 mL
REGNT 3062070.5	RGF−Hydrofluoric Acid	4 mL
REGNT 3064966	RGF−50% Potassium Carbonate	2 mL
REGNT 3067699	7M Nitric Acid	25 mL
REGNT 3069758	Lot #DGA0012	2 g
REGNT 3069850	Barium Carrier Ra228 REG	1 mL
REGNT 3070133	RGF−2M Hydrochloric Acid	20 mL
REGNT 3071153	RGF−Neodymium Subtrate	5 mL
REGNT 3071232	1M Citric Acid	5 mL
REGNT 3072339	RGF−1.5M Ammonium Sulfate	10 mL

Comments:

Pipet Id: RAD−GFC−1795419
Data Entry Date2: 05−MAY−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 : 1994400
Analyst : JEN02186
Prep Date : 5/5/2020
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	510382001.1	0.3000	1.8459E-05	4/28/2020 11:00	299.8	3.33%	282.8	3.43%	0.1	0.000200
2	510535001.1	0.3000	1.8459E-05	4/28/2020 10:56	299.8	3.33%	275.4	3.48%	0.1	0.000200
3	510535002.1	0.3000	1.8459E-05	4/28/2020 14:01	299.8	3.33%	237.6	3.75%	0.1	0.000200
4	510535003.1	0.3000	1.8459E-05	4/28/2020 8:31	299.8	3.33%	264.6	3.55%	0.1	0.000200
5	510535004.1	0.3000	1.8459E-05	4/28/2020 8:31	299.8	3.33%	255.8	3.61%	0.1	0.000200
6	510535005.1	0.3000	1.8459E-05	4/28/2020 19:10	299.8	3.33%	266.8	3.53%	0.1	0.000200
7	510535006.1	0.3000	1.8459E-05	4/28/2020 12:30	299.8	3.33%	264.3	3.55%	0.1	0.000200
8	510535007.1	0.3000	1.8459E-05	4/28/2020 7:25	299.8	3.33%	263.6	3.56%	0.1	0.000200
9	1204555327.1	0.3000	1.8459E-05	5/5/2020 0:00	299.8	3.33%	231.3	3.80%	0.1	0.000200
10	1204555328.1	0.3000	1.8459E-05	4/28/2020 8:31	299.8	3.33%	243.1	3.70%	0.1	0.000200
11	1204555329.1	0.3000	1.8459E-05	5/5/2020 0:00	299.8	3.33%	281.0	3.44%	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	6C	60	9	98	1.633	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.821	0.990	1.057	94.3%	2.41%
2	7A	60	6	48	0.800	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	91.9%	2.42%
3	7B	60	11	38	0.633	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	79.3%	2.52%
4	7C	60	15	51	0.850	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	88.3%	2.45%
5	8A	60	9	77	1.283	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	85.3%	2.47%
6	9A	60	11	51	0.850	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	89.0%	2.44%
7	9B	60	1	42	0.700	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	88.2%	2.45%
8	9C	60	7	47	0.783	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.820	0.990	1.057	87.9%	2.45%
9	9D	60	6	34	0.567	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.999	0.821	0.990	1.057	77.1%	2.54%
10	10A	60	10	58	0.967	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.997	0.821	0.990	1.057	81.1%	2.50%
11	10C	60	17	984	16.400	5/8/2020 8:55	5/6/2020 13:58	5/8/2020 7:10	0.999	0.821	0.990	1.057	93.7%	2.41%

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	6/1/2019	5/31/2020	0.6546	0.01970	1.319	5/1/2020 11:50	1000
2	PIC	6/1/2019	5/31/2020	0.6638	0.00594	0.639	5/1/2020 11:50	1000
3	PIC	6/1/2019	5/31/2020	0.6492	0.00627	0.359	5/1/2020 11:50	1000
4	PIC	6/1/2019	5/31/2020	0.6585	0.00790	0.531	5/1/2020 11:50	1000
5	PIC	6/1/2019	5/31/2020	0.6425	0.01579	0.898	5/1/2020 11:51	1000
6	PIC	6/1/2019	5/31/2020	0.6820	0.00758	0.792	5/1/2020 11:51	1000
7	PIC	6/1/2019	5/31/2020	0.6541	0.00754	0.587	5/1/2020 11:51	1000
8	PIC	6/1/2019	5/31/2020	0.6473	0.00584	0.602	5/1/2020 11:51	1000
9	PIC	6/1/2019	5/31/2020	0.6557	0.02610	0.459	5/1/2020 11:51	1000
10	PIC	6/1/2019	5/31/2020	0.6631	0.00651	0.394	5/1/2020 10:58	1000
11	PIC	6/1/2019	5/31/2020	0.6602	0.00638	0.514	5/1/2020 10:58	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

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

LCS S/N : 1918-A
LCS Exp Date : 1/3/2021
LCS Activity (dpm/ml): 189.98
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	1.1291	0.7971	3	1.7530	**0.9978**	53.84%	0.3143	0.1689	1.0511	1.0817		SAMPLE				
2	0.7958	0.5619	3	1.2844	**0.5176**	73.46%	0.1610	0.1182	0.7448	0.7562		SAMPLE				
3	0.7069	0.4991	3	1.1886	**1.0451**	38.17%	0.2743	0.1045	0.7801	0.8239		SAMPLE				
4	0.7613	0.5375	3	1.2436	**1.0761**	38.09%	0.3190	0.1212	0.8016	0.8468		SAMPLE				
5	1.0500	0.7413	3	1.6615	**1.3787**	38.85%	0.3853	0.1493	1.0469	1.1044		SAMPLE				
6	0.8906	0.6288	3	1.4191	**0.1874**	210.89%	0.0580	0.1223	0.7746	0.7761		SAMPLE				
7	0.8072	0.5699	3	1.3098	**0.3844**	97.99%	0.1130	0.1107	0.7381	0.7445		SAMPLE				
8	0.8284	0.5849	3	1.3421	**0.6252**	64.50%	0.1813	0.1169	0.7897	0.8054		SAMPLE				
9	0.8109	0.5725	3	1.3383	**0.4161**	92.50%	0.1077	0.0995	0.7539	0.7615		MB				
10	0.7083	0.5001	3	1.1824	**2.0867**	22.58%	0.5727	0.1285	0.9176	1.0593	510535004.1	DUP	40.9%			
11	0.7018	0.4955	3	1.1489	**50.2102**	4.13%	15.8860	0.5233	3.2418	13.1243		LCS			57.0501	88.0%

1994400.xls

SampleID	Instr	Time (min.)	Alpha Counts	Beta Counts	Count Start Time	Count End Time	Machine	Batch ID
510382001	6C	60	9	98	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535001	7A	60	6	48	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535002	7B	60	11	38	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535003	7C	60	15	51	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535004	8A	60	9	77	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535005	9A	60	11	51	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535006	9B	60	1	42	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
510535007	9C	60	7	47	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
1204555327	9D	60	6	34	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
1204555328	10A	60	10	58	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400
1204555329	10C	60	17	984	5/8/2020 8:55	5/8/2020 9:55	PIC	1994400

ASSAY 8-May-20 7:30:59

Protocol	id	9	Ba-133_1
Time	limit		
Count	limit		
Isotope	Ba-133_1		
Protocol	date	5/8/2020	
Run	id.	1140	

Samp_ID	POS	RACK	BATCH	TIME	COUNTS	CPM	ERROR	% RECOVERY	COUNT TIME
REF	1	94	1	180	899.5	299.79	3.33		07:30:59
510382001	2	94	2	180	848.5	282.77	3.43	94.32	07:34:13
510535001	3	94	3	180	826.5	275.43	3.48	91.87	07:37:27
510535002	4	94	4	180	713	237.63	3.75	79.27	07:40:41
510535003	5	94	5	180	794	264.63	3.55	88.27	07:43:55
510535004	1	11	1	180	767.5	255.77	3.61	85.32	07:47:38
510535005	2	11	2	180	800.5	266.79	3.53	88.99	07:50:52
510535006	3	11	3	180	793	264.27	3.55	88.15	07:54:06
510535007	4	11	4	180	791	263.6	3.56	87.93	07:57:20
1204555327	5	11	5	180	694	231.28	3.8	77.15	08:00:34
1204555328	1	6	1	180	729.5	243.13	3.7	81.10	08:04:10
1204555329	2	6	2	180	843	280.96	3.44	93.72	08:07:24

END OF ASSAY

Continuing Calibration Data

Gas Flow Proportional Counter Checks for 08-May-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
LB4100E1	Above	Alpha bkg	08-May 04:12	60	0.667	-5.45E-2	0.290	+9.57
LB4100E2	Above	Beta bkg	08-May 04:12	60	2.183	0.950	2.756	+1.10
LB4100E3	Above	Alpha bkg	08-May 04:12	60	2.167	-4.47E-2	0.174	+57.59
LB4100E3	Above	Alpha eff	08-May 05:43	5	9456	8069	9112	+4.98
LB4100E3	Below	Alpha XTalk	08-May 05:43	5	0.215	0.219	0.280	-3.48
LB4100E3	Above	Beta bkg	08-May 04:12	60	2.100	-1.31E+0	6.766	-0.47
LB4100E3	Above	Beta XTalk	08-May 05:20	5	4.72E-4	8.54E-5	4.65E-4	+3.12
LB4100E4	Above	Alpha eff	08-May 05:43	5	10495	9271	10370	+3.68
LB4100E4	need 2nd	Alpha XTalk	08-May 05:43	5	0.229	0.227	0.265	-2.72
LB4100E4	Above	Beta bkg	08-May 06:24	60	2.533	0.326	2.646	+2.71
LB4100F1	Above	Beta bkg	08-May 04:12	60	4.267	0.531	1.960	+12.68
LB4100F1	need 2nd	Beta eff	08-May 05:20	5	40610	39670	44120	-1.73
LB4100F2	Above	Alpha eff	08-May 05:59	5	5791	4050	5774	+3.06
LB4100F2	need 2nd	Beta eff	08-May 05:20	5	16103	15950	17170	-2.25
LB4100G3	Above	Alpha eff	08-May 05:20	5	8127	6620	7779	+4.80
LB4100G3	Below	Alpha XTalk	08-May 05:20	5	0.299	0.309	0.375	-3.83
LB4100G3	Above	Beta bkg	08-May 04:12	60	3.750	0.810	1.674	+17.42
LB4100I2	Below	Beta eff	08-May 05:58	5	15556	15820	17140	-4.20
LB4100I3	Below	Alpha eff	08-May 05:52	5	8715	8847	10310	-3.54
LB4100I3	Below	Beta eff	08-May 06:29	5	13877	14200	16900	-3.72
LB4100I4	Below	Alpha eff	08-May 05:52	5	9689	9961	12040	-3.78
LB4100I4	Below	Beta eff	08-May 06:29	5	16349	17000	20440	-4.13
PIC2A	Above	Beta bkg	08-May 05:33	60	6.100	-6.28E-1	1.918	+12.86
PIC3C	Above	Alpha bkg	08-May 08:03	60	0.333	0.073	0.397	+1.82
PIC4B	Above	Alpha bkg	08-May 05:34	60	0.450	-5.36E-2	0.301	+5.52
PIC4B	Below	Alpha XTalk	08-May 05:25	5	0.298	0.298	0.434	-3.03
PIC6A	Above	Beta bkg	08-May 08:13	60	2.217	0.899	2.245	+2.87
PIC7D	Above	Alpha bkg	08-May 07:03	60	0.317	-3.52E-2	0.285	+3.60
PIC8D	Above	Beta bkg	08-May 07:03	60	2.833	-1.28E-1	2.383	+4.08

PIC12A	Above	Alpha bkg	08-May 07:16	60	0.800	-4.90E-2	0.296	+11.77
PIC12A	Above	Beta bkg	08-May 07:16	60	3.017	0.074	1.397	+10.35
PIC12D	Above	Beta bkg	08-May 08:24	60	2.133	0.482	2.608	+1.66
PIC13A	Below	Alpha eff	08-May 08:49	5	10362	10440	11160	-3.65
PIC14A	Above	Alpha bkg	08-May 08:24	60	0.367	-7.76E-2	0.378	+2.85
PIC14D	Above	Beta bkg	08-May 08:24	60	1.450	-1.63E-1	1.414	+3.14

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. Beinh-Harmon

Date 5-8-20

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: GFPC **Batch ID: 1994400**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
1204555327	MB	JXK3	PIC9D	MAY-08-20 08:55:04	DONE	25mm Filter	01-JUN-19 00:00
1204555328	DUP	JXK3	PIC10A	MAY-08-20 08:55:08	DONE	25mm Filter	01-JUN-19 00:00
1204555329	LCS	JXK3	PIC10C	MAY-08-20 08:55:12	DONE	25mm Filter	01-JUN-19 00:00
510382001	SAMPLE	JXK3	PIC6C	MAY-08-20 08:55:15	DONE	25mm Filter	01-JUN-19 00:00
510535001	SAMPLE	JXK3	PIC7A	MAY-08-20 08:55:23	DONE	25mm Filter	01-JUN-19 00:00
510535002	SAMPLE	JXK3	PIC7B	MAY-08-20 08:55:25	DONE	25mm Filter	01-JUN-19 00:00
510535003	SAMPLE	JXK3	PIC7C	MAY-08-20 08:55:30	DONE	25mm Filter	01-JUN-19 00:00
510535004	SAMPLE	JXK3	PIC8A	MAY-08-20 08:55:34	DONE	25mm Filter	01-JUN-19 00:00
510535005	SAMPLE	JXK3	PIC9A	MAY-08-20 08:55:38	DONE	25mm Filter	01-JUN-19 00:00
510535006	SAMPLE	JXK3	PIC9B	MAY-08-20 08:55:42	DONE	25mm Filter	01-JUN-19 00:00
510535007	SAMPLE	JXK3	PIC9C	MAY-08-20 08:55:48	DONE	25mm Filter	01-JUN-19 00:00

Lucas Cell Raw Data

Batch 1992354 Check-list

This check-list was completed on 11-MAY-20 by Lyndsey Pace

This batch was reviewed by Elizabeth Krouse on 09-MAY-20, Gregory Ramsay on 11-MAY-20 and Lyndsey Pace on 11-MAY-20.

Batch ID: 1992354

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: **1992354**
Analyst: Michael Hance (MXH8)
Method: EPA 903.1 Modified
Lab SOP: GL−RAD−A−008 REV# 15
Instrument: GFC−2525244

Due Dates for Lab: 12−MAY−2020 **Package:** **SDG: 14−MAY−2020**

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1204550967	Radium−226 SPIKE	1715−E	.1	mL
MS	1204550966	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	509722001	05−MAY−2020	1	500	05/05/20 13:20	705	05/08/20 07:35	05/08/20 10:35	1	15
2	509722002	05−MAY−2020	1	500	05/05/20 13:20	807	05/08/20 07:35	05/08/20 10:35	1	3
3	509722003	05−MAY−2020	1	500	05/05/20 13:20	101	05/08/20 08:10	05/08/20 11:12	1	13
4	510382001	05−MAY−2020	1	500	05/05/20 13:20	201	05/08/20 08:10	05/08/20 11:12	3	26
5	510535001	05−MAY−2020	1	500	05/05/20 13:20	306	05/08/20 08:10	05/08/20 11:12	1	27
6	510535002	05−MAY−2020	1	500	05/05/20 13:20	406	05/08/20 08:10	05/08/20 11:12	3	21
7	510535003	05−MAY−2020	1	500	05/05/20 13:20	501	05/08/20 08:10	05/08/20 11:12	1	22
8	510535004	05−MAY−2020	1	500	05/05/20 13:20	603	05/08/20 08:10	05/08/20 11:11	3	28
9	510535005	05−MAY−2020	1	500	05/05/20 13:20	706	05/08/20 08:10	05/08/20 11:11	5	31
10	510535006	05−MAY−2020	1	500	05/05/20 13:20	806	05/08/20 08:10	05/08/20 11:11	2	7
11	510535007	05−MAY−2020	1	500	05/05/20 13:20	106	05/08/20 08:40	05/08/20 11:44	1	8
12	1204550964 MB	05−MAY−2020	1	500	05/05/20 13:20	207	05/08/20 08:40	05/08/20 11:44	4	10
13	1204550965 DUP (509722001)	05−MAY−2020	1	500	05/05/20 13:20	307	05/08/20 08:40	05/08/20 11:44	3	16
14	1204550966 MS (509722001)	05−MAY−2020	1	500	05/05/20 13:20	404	05/08/20 08:40	05/08/20 12:31	1	545
15	1204550967 LCS	05−MAY−2020	1	500	05/05/20 13:20	601	05/08/20 08:40	05/08/20 11:43	1	689

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: 05−MAY−2020 00:00

Radium-226 Liquid

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

Batch : 1992354
Analyst : MIC02086
Prep Date : 5/5/2020
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	509722001.1	0.5000	2.0256E-05	4/15/2020 11:40	705	30	15	0.500	1	0.033	30	1.8190
2	509722002.1	0.5000	2.0256E-05	4/15/2020 11:45	807	30	3	0.100	1	0.033	30	1.4400
3	509722003.1	0.5000	2.0256E-05	4/15/2020 11:25	101	30	13	0.433	1	0.033	30	1.6775
4	510382001.1	0.5000	2.0256E-05	4/28/2020 11:00	201	30	26	0.867	3	0.100	30	1.8130
5	510535001.1	0.5000	2.0256E-05	4/28/2020 10:56	306	30	27	0.900	1	0.033	30	1.8401
6	510535002.1	0.5000	2.0256E-05	4/28/2020 14:01	406	30	21	0.700	3	0.100	30	1.7190
7	510535003.1	0.5000	2.0256E-05	4/28/2020 8:31	501	30	22	0.733	1	0.033	30	1.9440
8	510535004.1	0.5000	2.0256E-05	4/28/2020 8:31	603	30	28	0.933	3	0.100	30	2.0370
9	510535005.1	0.5000	2.0256E-05	4/28/2020 19:10	706	30	31	1.033	5	0.167	30	1.8320
10	510535006.1	0.5000	2.0256E-05	4/28/2020 12:30	806	30	7	0.233	2	0.067	30	1.8350
11	510535007.1	0.5000	2.0256E-05	4/28/2020 7:25	106	30	8	0.267	1	0.033	30	2.0437
12	1204550964.1	0.5000	2.0256E-05	5/5/2020 0:00	207	30	10	0.333	4	0.133	30	1.9650
13	1204550965.1	0.5000	2.0256E-05	4/15/2020 11:40	307	30	16	0.533	3	0.100	30	1.4343
14	1204550966.1	0.5000	2.0256E-05	4/15/2020 11:40	404	30	545	18.167	1	0.033	30	1.4090
15	1204550967.1	0.5000	2.0256E-05	5/5/2020 0:00	601	30	689	22.967	1	0.033	30	1.9070

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	5/5/2020 13:20	5/8/2020 7:35	5/8/2020 10:35	0.394	0.978	1.002	1.000
7.500%	3/31/2020	3/31/2021	5/5/2020 13:20	5/8/2020 7:35	5/8/2020 10:35	0.394	0.978	1.002	1.000
5.924%	5/1/2020	4/30/2021	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:12	0.396	0.977	1.002	1.000
8.000%	8/1/2019	7/31/2020	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:12	0.396	0.977	1.002	1.000
6.024%	1/20/2020	12/31/2020	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:12	0.396	0.977	1.002	1.000
3.600%	3/1/2020	1/31/2021	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:12	0.396	0.977	1.002	1.000
2.200%	6/1/2019	5/31/2020	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:12	0.396	0.977	1.002	1.000
8.000%	7/1/2019	6/30/2020	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:11	0.396	0.977	1.002	1.000
0.500%	11/1/2019	10/31/2020	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:11	0.396	0.977	1.002	1.000
3.200%	3/31/2020	3/31/2021	5/5/2020 13:20	5/8/2020 8:10	5/8/2020 11:11	0.396	0.977	1.002	1.000
5.285%	5/1/2020	4/30/2021	5/5/2020 13:20	5/8/2020 8:40	5/8/2020 11:44	0.399	0.977	1.002	1.000
4.300%	8/1/2019	7/31/2020	5/5/2020 13:20	5/8/2020 8:40	5/8/2020 11:44	0.399	0.977	1.002	1.000
1.764%	1/20/2020	12/31/2020	5/5/2020 13:20	5/8/2020 8:40	5/8/2020 11:44	0.399	0.977	1.002	1.000
2.400%	3/1/2020	1/31/2021	5/5/2020 13:20	5/8/2020 8:40	5/8/2020 12:31	0.399	0.971	1.002	1.000
4.600%	7/1/2019	6/30/2020	5/5/2020 13:20	5/8/2020 8:40	5/8/2020 11:43	0.399	0.977	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 : 6/18/2020
Spike Activity (dpm/ml): 300.31
Spike Volume Added: 0.10

LCS S/N : 1715-E
LCS Exp Date : 6/18/2020
LCS Activity (dpm/ml): 300.31
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	0.1416	0.1000	1	0.3289	**0.6016**	28.88%	0.4667	0.1333	0.3369	0.3514		SAMPLE				
2	0.1789	0.1263	1	0.4154	**0.1086**	100.28%	0.0667	0.0667	0.2128	0.2140		SAMPLE				
3	0.1526	0.1077	1	0.3543	**0.5556**	31.74%	0.4000	0.1247	0.3395	0.3548		SAMPLE				
4	0.2445	0.1726	1	0.4737	**0.9852**	24.74%	0.7667	0.1795	0.4521	0.4985		SAMPLE				
5	0.1391	0.0982	1	0.3230	**1.0973**	21.22%	0.8667	0.1764	0.4377	0.4832		SAMPLE				
6	0.2578	0.1820	1	0.4996	**0.8132**	27.45%	0.6000	0.1633	0.4338	0.4531		SAMPLE				
7	0.1316	0.0929	1	0.3057	**0.8389**	22.94%	0.7000	0.1599	0.3755	0.3962		SAMPLE				
8	0.2176	0.1536	1	0.4216	**0.9530**	23.66%	0.8333	0.1856	0.4160	0.4629		SAMPLE				
9	0.3123	0.2205	1	0.5681	**1.1020**	23.08%	0.8667	0.2000	0.4985	0.5233		SAMPLE				
10	0.1972	0.1392	1	0.4054	**0.2116**	60.09%	0.1667	0.1000	0.2488	0.2510		SAMPLE				
11	0.1245	0.0879	1	0.2892	**0.2646**	43.18%	0.2333	0.1000	0.2222	0.2271		SAMPLE				
12	0.2590	0.1829	1	0.4837	**0.2358**	62.51%	0.2000	0.1247	0.2883	0.2909		MB				
13	0.3074	0.2170	1	0.5956	**0.7001**	33.58%	0.4333	0.1453	0.4601	0.4717	509722001.1	DUP	15.1%			
14	0.1817	0.1283	1	0.4220	**29.9980**	4.92%	18.1333	0.7789	2.5255	5.2077	509722001.1	MS			27.0555	108.7%
15	0.1334	0.0942	1	0.3099	**27.8617**	5.98%	22.9333	0.8756	2.0850	5.1800		LCS			27.0548	103.0%

Continuing Calibration Data

Ludlum Alpha Scintillation Counter Checks for 08-MAY-2020

Short Name	Parmname	Run Time	Count Time	Counts	CPM	Stdev	Status	Comments
LUCAS1	EFF	07:10	1	1.25E+05	125022	-1.53		
LUCAS2	EFF	07:33	1	1.37E+05	136623	2.47		
LUCAS3	EFF	07:26	1	1.38E+05	137816	1.64		
LUCAS4	EFF	07:25	1	1.30E+05	129776	0.23		
LUCAS5	EFF	07:22	1	1.32E+05	132448	-0.04		
LUCAS6	EFF	07:21	1	1.34E+05	134434	-0.91		
LUCAS7	EFF	07:18	1	1.37E+05	136608	1.1		
LUCAS8	EFF	07:15	1	1.34E+05	134205	-1.08		

Reviewed by: Elizabeth Krouse **Date:** 08-MAY-20

GEL Laboratories LLC

Runlogs

Instrument Run Log

Instrument Type: LUCAS CELL DETECTOR **Batch ID: 1992354**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
509722001	SAMPLE	MXH8	LUCAS7	MAY-08-20 10:35:00	DONE	Lucas Cell	01-NOV-19 00:00
509722002	SAMPLE	MXH8	LUCAS8	MAY-08-20 10:35:00	DONE	Lucas Cell	31-MAR-20 00:00
510535004	SAMPLE	MXH8	LUCAS6	MAY-08-20 11:11:00	DONE	Lucas Cell	01-JUL-19 00:00
510535005	SAMPLE	MXH8	LUCAS7	MAY-08-20 11:11:00	DONE	Lucas Cell	01-NOV-19 00:00
510535006	SAMPLE	MXH8	LUCAS8	MAY-08-20 11:11:00	DONE	Lucas Cell	31-MAR-20 00:00
509722003	SAMPLE	MXH8	LUCAS1	MAY-08-20 11:12:00	DONE	Lucas Cell	01-MAY-20 00:00
510382001	SAMPLE	MXH8	LUCAS2	MAY-08-20 11:12:00	DONE	Lucas Cell	01-AUG-19 00:00
510535001	SAMPLE	MXH8	LUCAS3	MAY-08-20 11:12:00	DONE	Lucas Cell	20-JAN-20 00:00
510535002	SAMPLE	MXH8	LUCAS4	MAY-08-20 11:12:00	DONE	Lucas Cell	01-MAR-20 00:00
510535003	SAMPLE	MXH8	LUCAS5	MAY-08-20 11:12:00	DONE	Lucas Cell	01-JUN-19 00:00
1204550967	LCS	MXH8	LUCAS6	MAY-08-20 11:43:00	DONE	Lucas Cell	01-JUL-19 00:00
510535007	SAMPLE	MXH8	LUCAS1	MAY-08-20 11:44:00	DONE	Lucas Cell	01-MAY-20 00:00
1204550964	MB	MXH8	LUCAS2	MAY-08-20 11:44:00	DONE	Lucas Cell	01-AUG-19 00:00
1204550965	DUP	MXH8	LUCAS3	MAY-08-20 11:44:00	DONE	Lucas Cell	20-JAN-20 00:00
1204550966	MS	MXH8	LUCAS4	MAY-08-20 12:31:00	DONE	Lucas Cell	01-MAR-20 00:00

CHAIN OF CUSTODY

Environmental Laboratory
1232 Haco Drive
Lansing
Michigan, 48910

Phone: (517)702-6372

Lab Work Order Number L004070

Client Name		Project Name
BWL - Erickson Station		Erickson GMP
Client Contact		Project Number
Cheryl Louden		[none]
Address		Project Description
3725 S. Canal		
City		PO Number
Lansing		
State/Zip		Shipped By
MI, 48917		
Phone	Fax	Tracking Number
(517) 702-6396	(517) 702-6373	
Sampler		
Marc Wahrer		

Requested Analyses: Metals, Hg; TSS; TDS, Cl-, SO4-, F-; Radium 226; Radium 228; Field Data

Requested Turn Around

Rush requests subject to additional charge.

Rush requests subject to lab approval.

Sample Name or Field ID	Sampled Date	Sampled Time	Sample Type Grab/Composite	Matrix Code	Container Count	Preservation Code b	a									Sample Comments
MW-1	04/28/2020	10:56	G	GW	5	1	1	1	1	1	X					
MW-2	04/28/2020	14:01	G	GW	5	1	1	1	1	1	X					
MW-4	04/28/2020	08:31	G	GW	5	1	1	1	1	1	X					
MW-4 Duplicate - Field Duplicate	04/28/2020	08:31	G	GW	5	1	1	1	1	1						
MW-5	04/28/2020	19:10	G	GW	5	1	1	1	1	1	X					
MW-6	04/28/2020	12:30	G	GW	5	1	1	1	1	1	X					
Field Blank	04/28/2020	07:25	G	GW	5	1	1	1	1	1						

Relinquished By	Date/Time	Received By	Date/Time	
04/29/2020 08:37:36 am SigPlus1	4/29/2020 7:25	Kelly Gleason	4/29/2020 7:25	
Relinquished By	Date/Time	Received By	Date/Time	Comments
Relinquished By	Date/Time	Received By	Date/Time	

Cooler Numbers and Temperatures
Default Cooler at 1 ºC

Matrix Codes: GW=Ground Water

Preserv. Codes: a=None,b=0.5% HNO3

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

13 August 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
L005063	5/27/2020 6:25:00AM	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: 08/13/2020

Sample Name: MW-1

Lab #: L005063-01 Ground Water **Collected: 26-May-20 12:56** **By: Marc Wahrer**

Analyte	Result	Reporting Limit	Units	Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
Conductivity	1200	1.0	uS/cm	1		26-May-20 12:56	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		26-May-20 12:56	maw	FIELD	
Gallons Purged	3.00		Gallons	1		26-May-20 12:56	maw	FIELD	
Oxidation Reduction Potential	-28.50	-999.0	mV	1		26-May-20 12:56	maw	FIELD	
pH	6.6	7.0	pH Units	1		26-May-20 12:56	maw	SM 4500H+B	
Static Head Measurement	13.7		Feet	1		26-May-20 12:56	maw	FIELD	
Temperature	15		°C	1		26-May-20 12:56	maw	SM 2550B	
Turbidity	40	0.10	NTU	1		26-May-20 12:56	maw	SM 2130B	

Sample Name: MW-2

Lab #: L005063-02 Ground Water **Collected: 26-May-20 16:27** **By: Marc Wahrer**

Analyte	Result	Reporting Limit	Units	Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
Conductivity	1600	1.0	uS/cm	1		26-May-20 16:27	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		26-May-20 16:27	maw	FIELD	
Gallons Purged	3.00		Gallons	1		26-May-20 16:27	maw	FIELD	
Oxidation Reduction Potential	36.00	-999.0	mV	1		26-May-20 16:27	maw	FIELD	
pH	6.5	7.0	pH Units	1		26-May-20 16:27	maw	SM 4500H+B	
Static Head Measurement	17.6		Feet	1		26-May-20 16:27	maw	FIELD	
Temperature	14		°C	1		26-May-20 16:27	maw	SM 2550B	
Turbidity	8.3	0.10	NTU	1		26-May-20 16:27	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: 08/13/2020

Sample Name: MW-4

Lab #: L005063-03 Ground Water **Collected: 26-May-20 10:46** **By: Marc Wahrer**

Analyte	Result	Reporting Limit	Units	Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
Conductivity	890	1.0	uS/cm	1		26-May-20 10:46	maw	SM 2510B	
Dissolved oxygen	0.290	0.100	mg/L	1		26-May-20 10:46	maw	FIELD	
Gallons Purged	3.00		Gallons	1		26-May-20 10:46	maw	FIELD	
Oxidation Reduction Potential	-45.20	-999.0	mV	1		26-May-20 10:46	maw	FIELD	
pH	7.1	7.0	pH Units	1		26-May-20 10:46	maw	SM 4500H+B	
Static Head Measurement	14.6		Feet	1		26-May-20 10:46	maw	FIELD	
Temperature	14		°C	1		26-May-20 10:46	maw	SM 2550B	
Turbidity	0.26	0.10	NTU	1		26-May-20 10:46	maw	SM 2130B	

Sample Name: MW-5

Lab #: L005063-04 Ground Water **Collected: 26-May-20 17:05** **By: Marc Wahrer**

Analyte	Result	Reporting Limit	Units	Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
Conductivity	1900	1.0	uS/cm	1		26-May-20 17:05	maw	SM 2510B	
Dissolved oxygen	0.650	0.100	mg/L	1		26-May-20 17:05	maw	FIELD	
Gallons Purged	5.00		Gallons	1		26-May-20 17:05	maw	FIELD	
Oxidation Reduction Potential	28.70	-999.0	mV	1		26-May-20 17:05	maw	FIELD	
pH	7.0	7.0	pH Units	1		26-May-20 17:05	maw	SM 4500H+B	
Static Head Measurement	16.2		Feet	1		26-May-20 17:05	maw	FIELD	
Temperature	14		°C	1		26-May-20 17:05	maw	SM 2550B	
Turbidity	70	0.10	NTU	1		26-May-20 17:05	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: 08/13/2020

Sample Name: MW-6

Lab #: L005063-05 Ground Water **Collected: 26-May-20 14:51** **By: Marc Wahrer**

Analyte	Result	Reporting Limit	Units	Dilution	Regulatory Limit	Analysis Date/Time	By	Method	Notes
Conductivity	900	1.0	uS/cm	1		26-May-20 14:51	maw	SM 2510B	
Dissolved oxygen	ND	0.100	mg/L	1		26-May-20 14:51	maw	FIELD	
Gallons Purged	3.00		Gallons	1		26-May-20 14:51	maw	FIELD	
Oxidation Reduction Potential	102.4	-999.0	mV	1		26-May-20 14:51	maw	FIELD	
pH	6.4	7.0	pH Units	1		26-May-20 14:51	maw	SM 4500H+B	
Static Head Measurement	16.6		Feet	1		26-May-20 14:51	maw	FIELD	
Temperature	14		°C	1		26-May-20 14:51	maw	SM 2550B	
Turbidity	18	0.10	NTU	1		26-May-20 14:51	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: 08/13/2020

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.

MERIT LABORATORIES, INC.
2680 EAST LANSING DRIVE EAST LANSING • MICHIGAN • 48823
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BOARD OF WATER & LIGHT

ERICKSON GMP

SDG Batch:

14264

Pages 1 - 254

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FULL SERVICE ANALYTICAL TESTING FIELD SERVICES • CONSULTING • TRAINING

BOARD OF WATER & LIGHT

PROJECT:
ERICKSON GMP

SDG Batch:
14264.01

Prepared by:
Merit Laboratories, Inc.

July 29, 2020

Laboratory Name: Merit Laboratories, Inc.
City / State: East Lansing, MI
Sample Delivery Group: S14264.01 - .07

Deliverable	References		Pages		Checklist	
	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	150		
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**			151	167		
Sequence / Injection Log		F.0			☑	☐
Data Sheet		F. I			☑	☐
Initial Calibration and Calibration Verification		F. IIA			☑	☐
CRDL Standards		F. IIB			☐	☐
Blanks		F. III			☑	☐
Spike Sample Recovery		F. VA			☑	☐
Post-Digest Spike Sample Recovery		F. VB			☑	☐
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**			168	246		
Bench Sheet - sample and QC sample evaluation					☑	☐
Calibration Curve - data and evaluation					☑	☐
7. **Total Suspended Solids Data**			247	248		
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**			249	249		
Bench Sheet - sample and QC sample evaluation					☑	☐
9. **Shipping / Receiving Documents**			250	254		
Chain-of-Custody					☑	☐
Sample log-in sheet					☑	
Sample Receipt					☑	☐
10. **Subcontracted Analysis Report**						
GEL Laboratories – Radiological Analysis (Total Pages 51)					☑	☐

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CASE NARRATIVE
CLIENT: BOARD OF WATER & LIGHT
PROJECT: ERICKSON GMP
Merit IDs: S14264.01-S14264.07

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 (05/27/2020). 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."

07/29/2020

Barb Ball — Date

QA Officer

Analytical Laboratory Report

Supplemental Report

Report ID: S14264.01(02)
Generated on 06/25/2020
Replaces report S14264.01(01) generated on 06/05/2020

Report to

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

Phone: 517-702-6372 FAX: 517-702-6373
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): S14264.01-S14264.07
Project: Erickson GMP
Collected Date(s): 05/26/2020
Submitted Date/Time: 05/27/2020 11:18
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)

Report Narrative

All analyses completed
All metal results are reported as totals.

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

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S14264.01	L005063-01 MW-1	Wastewater	05/26/20 12:56
S14264.02	L005063-02 MW-2	Wastewater	05/26/20 16:27
S14264.03	L005063-03 MW-4	Wastewater	05/26/20 10:46
S14264.04	L005063-05 MW-5	Wastewater	05/26/20 17:05
S14264.05	L005063-06 MW-6	Wastewater	05/26/20 14:51
S14264.06	L005063-06 MW-4 Duplicate	Wastewater	05/26/20 10:46
S14264.07	L005063-07 Field Blank	Water	05/26/20 08:05

Lab Sample ID: S14264.01
Sample Tag: L005063-01 MW-1
Collected Date/Time: 05/26/2020 12:56
Matrix: Wastewater
COC Reference: 124126

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/29/20 11:00	JRH	
Metal Digestion	Completed	SW3015A	05/28/20 19:00	JRH	

Inorganics

Method: E300.0, Run Date: 05/28/20 09:53, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 05/28/20 09:04, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	52	10	0.13	mg/L	10	16887-00-6	
Sulfate	69	10	1.0	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	794	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/27/20 18:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	45	3	1	mg/L	2.78		

Metals

Method: E200.8, Run Date: 05/29/20 13:05, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	180	2.5	0.433	mg/L	50	7440-70-2	

Method: E200.8, Run Date: 05/28/20 20:16, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.000300	mg/L	5	7440-36-0	
Arsenic	0.005	0.002	0.000650	mg/L	5	7440-38-2	
Barium	0.150	0.005	0.000400	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000150	mg/L	5	7440-41-7	
Boron	0.27	0.04	0.00450	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000100	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000750	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000150	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.0000500	mg/L	5	7439-92-1	
Lithium*	0.023	0.005	0.00135	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000350	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00190	mg/L	5	7782-49-2	

Lab Sample ID: S14264.01 (continued)

Sample Tag: L005063-01 MW-1

Method: E200.8, Run Date: 05/28/20 20:16, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:38, 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: 06/19/20 09:26, 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: S14264.02
Sample Tag: L005063-02 MW-2
Collected Date/Time: 05/26/2020 16:27
Matrix: Wastewater
COC Reference: 124126

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/29/20 11:00	JRH	
Metal Digestion	Completed	SW3015A	05/28/20 19:00	JRH	

Inorganics

Method: E300.0, Run Date: 05/28/20 09:17, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	68	10	0.13	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 05/28/20 10:06, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 05/28/20 12:55, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	386	25	2.6	mg/L	25	14808-79-8	

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,180	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/27/20 18:15, Analyst: ASB

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

Metals

Method: E200.8, Run Date: 05/29/20 13:10, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	256	2.5	0.433	mg/L	50	7440-70-2	

Method: E200.8, Run Date: 05/28/20 20:18, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.000300	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000650	mg/L	5	7440-38-2	
Barium	0.043	0.005	0.000400	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000150	mg/L	5	7440-41-7	
Boron	3.38	0.04	0.00450	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000100	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000750	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000150	mg/L	5	7440-48-4	

b-Value detected less than reporting limit, but greater than MDL

Lab Sample ID: S14264.02 (continued)

Sample Tag: L005063-02 MW-2

Method: E200.8, Run Date: 05/28/20 20:18, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lead	Not detected	0.003	0.0000500	mg/L	5	7439-92-1	
Lithium*	0.047	0.005	0.00135	mg/L	5	7439-93-2	
Molybdenum	0.008	0.005	0.000350	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00190	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:40, 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: 06/19/20 09:26, 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: S14264.03
Sample Tag: L005063-03 MW-4
Collected Date/Time: 05/26/2020 10:46
Matrix: Wastewater
COC Reference: 124126

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/29/20 11:00	JRH	
Metal Digestion	Completed	SW3015A	05/28/20 19:00	JRH	

Inorganics

Method: E300.0, Run Date: 05/28/20 10:19, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 05/28/20 09:30, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	72	10	0.13	mg/L	10	16887-00-6	
Sulfate	57	10	1.0	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	566	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/27/20 18:15, Analyst: ASB

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

Metals

Method: E200.8, Run Date: 05/29/20 13:12, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	115	2.5	0.433	mg/L	50	7440-70-2	

Method: E200.8, Run Date: 05/28/20 20:20, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.000300	mg/L	5	7440-36-0	
Arsenic	0.006	0.002	0.000650	mg/L	5	7440-38-2	
Barium	0.165	0.005	0.000400	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000150	mg/L	5	7440-41-7	
Boron	0.06	0.04	0.00450	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000100	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000750	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000150	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.0000500	mg/L	5	7439-92-1	
Lithium*	0.009	0.005	0.00135	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000350	mg/L	5	7439-98-7	

b-Value detected less than reporting limit, but greater than MDL

Lab Sample ID: S14264.03 (continued)

Sample Tag: L005063-03 MW-4

Method: E200.8, Run Date: 05/28/20 20:20, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Selenium	Not detected	0.005	0.00190	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:42, 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: 06/19/20 09:59, 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: S14264.04
Sample Tag: L005063-05 MW-5
Collected Date/Time: 05/26/2020 17:05
Matrix: Wastewater
COC Reference: 124126

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/29/20 11:00	JRH	
Metal Digestion	Completed	SW3015A	05/28/20 19:00	JRH	

Inorganics

Method: E300.0, Run Date: 05/28/20 09:42, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	82	10	0.13	mg/L	10	16887-00-6	

Method: E300.0, Run Date: 05/28/20 10:31, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 05/28/20 13:07, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfate	930	100	10	mg/L	100	14808-79-8	

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	1,770	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/27/20 18:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	21	3	1	mg/L	1.11		

Metals

Method: E200.8, Run Date: 05/29/20 13:15, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	320	2.5	0.433	mg/L	50	7440-70-2	

Method: E200.8, Run Date: 05/28/20 20:22, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.000300	mg/L	5	7440-36-0	
Arsenic	0.002	0.002	0.000650	mg/L	5	7440-38-2	
Barium	0.056	0.005	0.000400	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000150	mg/L	5	7440-41-7	
Boron	5.19	0.04	0.00450	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000100	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000750	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000150	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.0000500	mg/L	5	7439-92-1	

Lab Sample ID: S14264.04 (continued)

Sample Tag: L005063-05 MW-5

Method: E200.8, Run Date: 05/28/20 20:22, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Lithium*	0.051	0.005	0.00135	mg/L	5	7439-93-2	
Molybdenum	0.051	0.005	0.000350	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00190	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:47, 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: 06/19/20 09:59, 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: S14264.05
Sample Tag: L005063-06 MW-6
Collected Date/Time: 05/26/2020 14:51
Matrix: Wastewater
COC Reference: 124126

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/29/20 11:00	JRH	
Metal Digestion	Completed	SW3015A	05/28/20 19:00	JRH	

Inorganics

Method: E300.0, Run Date: 05/28/20 10:44, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 05/28/20 09:55, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	24	10	0.13	mg/L	10	16887-00-6	
Sulfate	123	10	1.0	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	598	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/27/20 18:15, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Suspended Solids	6	3	1	mg/L	1.00		

Metals

Method: E200.8, Run Date: 05/29/20 13:17, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	143	2.5	0.433	mg/L	50	7440-70-2	

Method: E200.8, Run Date: 05/28/20 20:27, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.000300	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000650	mg/L	5	7440-38-2	
Barium	0.050	0.005	0.000400	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000150	mg/L	5	7440-41-7	
Boron	0.49	0.04	0.00450	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000100	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000750	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000150	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.0000500	mg/L	5	7439-92-1	
Lithium*	0.038	0.005	0.00135	mg/L	5	7439-93-2	
Molybdenum	0.021	0.005	0.000350	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00190	mg/L	5	7782-49-2	

Lab Sample ID: S14264.05 (continued)

Sample Tag: L005063-06 MW-6

Method: E200.8, Run Date: 05/28/20 20:27, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:49, 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: 06/19/20 09:59, 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: S14264.06
Sample Tag: L005063-06 MW-4 Duplicate
Collected Date/Time: 05/26/2020 10:46
Matrix: Wastewater
COC Reference: 124126

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/29/20 11:00	JRH	
Metal Digestion	Completed	SW3015A	05/28/20 19:00	JRH	

Inorganics

Method: E300.0, Run Date: 05/28/20 10:57, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	1.0	0.13	mg/L	5	16984-48-8	

Method: E300.0, Run Date: 05/28/20 10:08, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	72	10	0.13	mg/L	10	16887-00-6	
Sulfate	56	10	1.0	mg/L	10	14808-79-8	

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Dissolved Solids	562	20	2	mg/L	2		

Method: SM2540D, Run Date: 05/27/20 18:15, Analyst: ASB

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

Metals

Method: E200.8, Run Date: 05/29/20 13:19, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	114	2.5	0.433	mg/L	50	7440-70-2	

Method: E200.8, Run Date: 05/28/20 20:29, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.000300	mg/L	5	7440-36-0	
Arsenic	0.007	0.002	0.000650	mg/L	5	7440-38-2	
Barium	0.168	0.005	0.000400	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000150	mg/L	5	7440-41-7	
Boron	0.06	0.04	0.00450	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000100	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000750	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000150	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.0000500	mg/L	5	7439-92-1	
Lithium*	0.009	0.005	0.00135	mg/L	5	7439-93-2	
Molybdenum	0.005	0.005	0.000350	mg/L	5	7439-98-7	

b-Value detected less than reporting limit, but greater than MDL

Lab Sample ID: S14264.06 (continued)

Sample Tag: L005063-06 MW-4 Duplicate

Method: E200.8, Run Date: 05/28/20 20:29, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Selenium	Not detected	0.005	0.00190	mg/L	5	7782-49-2	
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:51, 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: 06/19/20 09:59, 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: S14264.07
Sample Tag: L005063-07 Field Blank
Collected Date/Time: 05/26/2020 08:05
Matrix: Water
COC Reference: 124126

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Plastic	HNO3	Yes	2.2	IR
2	1L Plastic	None	Yes	2.2	IR
1	125ml Plastic	HNO3	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	E245.1	05/29/20 11:00	JRH	
Metal Digestion	Completed	SW3015A	05/28/20 19:00	JRH	

Inorganics

Method: E300.0, Run Date: 05/28/20 11:10, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Fluoride (Undistilled)	Not detected	0.5	0.06	mg/L	2.5	16984-48-8	

Method: E300.0, Run Date: 05/28/20 10:21, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloride	Not detected	2.5	0.03	mg/L	2.5	16887-00-6	
Sulfate	Not detected	2.5	0.26	mg/L	2.5	14808-79-8	

Method: SM2540C, Run Date: 06/01/20 17:10, Analyst: ASB

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

Method: SM2540D, Run Date: 05/29/20 12:27, 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: 05/29/20 12:58, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium*	Not detected	0.5	0.0433	mg/L	5	7440-70-2	

Method: E200.8, Run Date: 05/28/20 20:31, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Antimony	Not detected	0.005	0.000300	mg/L	5	7440-36-0	
Arsenic	Not detected	0.002	0.000650	mg/L	5	7440-38-2	
Barium	Not detected	0.005	0.000400	mg/L	5	7440-39-3	
Beryllium	Not detected	0.001	0.000150	mg/L	5	7440-41-7	
Boron	Not detected	0.04	0.00450	mg/L	5	7440-42-8	
Cadmium	Not detected	0.0005	0.000100	mg/L	5	7440-43-9	
Chromium	Not detected	0.005	0.000750	mg/L	5	7440-47-3	
Cobalt	Not detected	0.005	0.000150	mg/L	5	7440-48-4	
Lead	Not detected	0.003	0.0000500	mg/L	5	7439-92-1	
Lithium*	Not detected	0.005	0.00135	mg/L	5	7439-93-2	
Molybdenum	Not detected	0.005	0.000350	mg/L	5	7439-98-7	
Selenium	Not detected	0.005	0.00190	mg/L	5	7782-49-2	

Lab Sample ID: S14264.07 (continued)

Sample Tag: L005063-07 Field Blank

Method: E200.8, Run Date: 05/28/20 20:31, Analyst: JRH (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Thallium	Not detected	0.002	0.000100	mg/L	5	7440-28-0	

Method: E245.1, Run Date: 06/01/20 16:53, 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: 06/19/20 09:59, 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: S14264.01(02)
Report Date: 06/25/2020
Project: Erickson GMP
Lab Sample ID(s): S14264.01-S14264.07

Report to:

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

Sample ID	Sample Tag	Collected	Matrix	Analysis Departments
S14264.01	L005063-01 MW-1	05/26/2020 12:56	Wastewater	Inorganics, Metals
S14264.02	L005063-02 MW-2	05/26/2020 16:27	Wastewater	Inorganics, Metals
S14264.03	L005063-03 MW-4	05/26/2020 10:46	Wastewater	Inorganics, Metals
S14264.04	L005063-05 MW-5	05/26/2020 17:05	Wastewater	Inorganics, Metals
S14264.05	L005063-06 MW-6	05/26/2020 14:51	Wastewater	Inorganics, Metals
S14264.06	L005063-06 MW-4 Duplicate	05/26/2020 10:46	Wastewater	Inorganics, Metals
S14264.07	L005063-07 Field Blank	05/26/2020 08:05	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-S14264-01
Generated on 07/09/2020

Report to

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

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

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): S14264.01-S14264.07
Project: Erickson GMP
Submitted Date/Time: 05/27/2020 11:18
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
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S14264.01

Sample Tag: L005063-01 MW-1

Collected Date/Time: 05/26/2020 12:56

Matrix: Wastewater

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	05/28/20 09:04	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 09:53	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 09:04	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B	TSS200527B	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 13:05	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:38	HG2-HG3-20-0601A	HGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:16	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

Lab Sample ID: S14264.02

Sample Tag: L005063-02 MW-2

Collected Date/Time: 05/26/2020 16:27

Matrix: Wastewater

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	05/28/20 09:17	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 10:06	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 12:55	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B	TSS200527B	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 13:10	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:40	HG2-HG3-20-0601A	HGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:18	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

Lab Sample ID: S14264.03

Sample Tag: L005063-03 MW-4

Collected Date/Time: 05/26/2020 10:46

Matrix: Wastewater

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	05/28/20 09:30	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 10:19	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 09:30	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B	TSS200527B	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 13:12	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:42	HG2-HG3-20-0601A	HGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:20	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

Lab Sample ID: S14264.04

Sample Tag: L005063-05 MW-5

Collected Date/Time: 05/26/2020 17:05

Matrix: Wastewater

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	05/28/20 09:42	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 10:31	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 13:07	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B	TSS200527B	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 13:15	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:47	HG2-HG3-20-0601A	HGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:22	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

Lab Sample ID: S14264.05

Sample Tag: L005063-06 MW-6

Collected Date/Time: 05/26/2020 14:51

Matrix: Wastewater

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	05/28/20 09:55	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 10:44	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 09:55	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B	TSS200527B	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 13:17	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:49	HG2-HG3-20-0601A	HGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:27	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

Lab Sample ID: S14264.06

Sample Tag: L005063-06 MW-4 Duplicate

Collected Date/Time: 05/26/2020 10:46

Matrix: Wastewater

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	05/28/20 10:08	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 10:57	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 10:08	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B	TSS200527B	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 13:19	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:51	HG2-HG3-20-0601A	HGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:29	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

Lab Sample ID: S14264.07

Sample Tag: L005063-07 Field Blank

Collected Date/Time: 05/26/2020 08:05

Matrix: Water

COC Reference: 124126

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chloride	E300.0	05/28/20 10:21	CL200528-W1-A	CL200528-W1-A	No	BLK/LCS/MS/MSD/DU
Fluoride (Undistilled)	E300.0	05/28/20 11:10	FL200528-W1-B	FL200528-W1-B	No	BLK/LCS/MS/MSD/DU
Sulfate	E300.0	05/28/20 10:21	SFT200528-W1-A	SFT200528-W1-A	No	BLK/LCS/MS/MSD/DU
Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A	TDS200601A	No	BLK/LCS/DUP
Total Suspended Solids	SM2540D	05/29/20 12:27	TSS200529	TSS200529	No	BLK/LCS/DUP
Metals						
Antimony	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Arsenic	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Barium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Beryllium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Boron	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cadmium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Calcium	E200.8	05/29/20 12:58	MT5-20-0529A	MTD-052820-3	No	BLK/LCS/MS/MSD
Chromium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Cobalt	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lead	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Lithium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Mercury	E245.1	06/01/20 16:53	HG2-HG3-20-0601A	HGD-052920-1	No	BLK/LCS/MS/MSD
Molybdenum	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Selenium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD
Thallium	E200.8	05/28/20 20:31	MT5-20-0528A	MTD-052820-3	No	BLK/LCS/MS/MSD

Inorganics, Prep Batch ID: CL200528-W1-A

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Chloride	E300.0	05/28/20 09:04	CL200528-W1-A
S14264.02	Chloride	E300.0	05/28/20 09:17	CL200528-W1-A
S14264.03	Chloride	E300.0	05/28/20 09:30	CL200528-W1-A
S14264.04	Chloride	E300.0	05/28/20 09:42	CL200528-W1-A
S14264.05	Chloride	E300.0	05/28/20 09:55	CL200528-W1-A
S14264.06	Chloride	E300.0	05/28/20 10:08	CL200528-W1-A
S14264.07	Chloride	E300.0	05/28/20 10:21	CL200528-W1-A

Inorganics, Prep Batch ID: FL200528-W1-B

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Fluoride (Undistilled)	E300.0	05/28/20 09:53	FL200528-W1-B
S14264.02	Fluoride (Undistilled)	E300.0	05/28/20 10:06	FL200528-W1-B
S14264.03	Fluoride (Undistilled)	E300.0	05/28/20 10:19	FL200528-W1-B
S14264.04	Fluoride (Undistilled)	E300.0	05/28/20 10:31	FL200528-W1-B
S14264.05	Fluoride (Undistilled)	E300.0	05/28/20 10:44	FL200528-W1-B
S14264.06	Fluoride (Undistilled)	E300.0	05/28/20 10:57	FL200528-W1-B
S14264.07	Fluoride (Undistilled)	E300.0	05/28/20 11:10	FL200528-W1-B

Inorganics, Prep Batch ID: SFT200528-W1-A

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Sulfate	E300.0	05/28/20 09:04	SFT200528-W1-A
S14264.02	Sulfate	E300.0	05/28/20 12:55	SFT200528-W1-A
S14264.03	Sulfate	E300.0	05/28/20 09:30	SFT200528-W1-A
S14264.04	Sulfate	E300.0	05/28/20 13:07	SFT200528-W1-A
S14264.05	Sulfate	E300.0	05/28/20 09:55	SFT200528-W1-A
S14264.06	Sulfate	E300.0	05/28/20 10:08	SFT200528-W1-A
S14264.07	Sulfate	E300.0	05/28/20 10:21	SFT200528-W1-A

Inorganics, Prep Batch ID: TDS200601A

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A
S14264.02	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A
S14264.03	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A
S14264.04	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A
S14264.05	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A
S14264.06	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A
S14264.07	Total Dissolved Solids	SM2540C	06/01/20 17:10	TDS200601A

Inorganics, Prep Batch ID: TSS200527B

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B
S14264.02	Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B
S14264.03	Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B
S14264.04	Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B
S14264.05	Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B
S14264.06	Total Suspended Solids	SM2540D	05/27/20 18:15	TSS200527B

Inorganics, Prep Batch ID: TSS200529

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.07	Total Suspended Solids	SM2540D	05/29/20 12:27	TSS200529

Metals, Prep Batch ID: HGD-052920-1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Mercury	E245.1	06/01/20 16:38	HG2-HG3-20-0601A
S14264.02	Mercury	E245.1	06/01/20 16:40	HG2-HG3-20-0601A
S14264.03	Mercury	E245.1	06/01/20 16:42	HG2-HG3-20-0601A
S14264.04	Mercury	E245.1	06/01/20 16:47	HG2-HG3-20-0601A
S14264.05	Mercury	E245.1	06/01/20 16:49	HG2-HG3-20-0601A
S14264.06	Mercury	E245.1	06/01/20 16:51	HG2-HG3-20-0601A
S14264.07	Mercury	E245.1	06/01/20 16:53	HG2-HG3-20-0601A

Metals, Prep Batch ID: MTD-052820-3

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.01	Antimony	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Arsenic	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Barium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Beryllium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Boron	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Cadmium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Calcium	E200.8	05/29/20 13:05	MT5-20-0529A
S14264.01	Chromium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Cobalt	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Lead	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Lithium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Molybdenum	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Selenium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.01	Thallium	E200.8	05/28/20 20:16	MT5-20-0528A
S14264.02	Antimony	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Arsenic	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Barium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Beryllium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Boron	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Cadmium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Calcium	E200.8	05/29/20 13:10	MT5-20-0529A
S14264.02	Chromium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Cobalt	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Lead	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Lithium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Molybdenum	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Selenium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.02	Thallium	E200.8	05/28/20 20:18	MT5-20-0528A
S14264.03	Antimony	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Arsenic	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Barium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Beryllium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Boron	E200.8	05/28/20 20:20	MT5-20-0528A

Metals, Prep Batch ID: MTD-052820-3 (continued)

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.03	Cadmium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Calcium	E200.8	05/29/20 13:12	MT5-20-0529A
S14264.03	Chromium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Cobalt	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Lead	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Lithium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Molybdenum	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Selenium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.03	Thallium	E200.8	05/28/20 20:20	MT5-20-0528A
S14264.04	Antimony	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Arsenic	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Barium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Beryllium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Boron	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Cadmium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Calcium	E200.8	05/29/20 13:15	MT5-20-0529A
S14264.04	Chromium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Cobalt	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Lead	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Lithium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Molybdenum	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Selenium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.04	Thallium	E200.8	05/28/20 20:22	MT5-20-0528A
S14264.05	Antimony	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Arsenic	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Barium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Beryllium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Boron	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Cadmium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Calcium	E200.8	05/29/20 13:17	MT5-20-0529A
S14264.05	Chromium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Cobalt	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Lead	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Lithium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Molybdenum	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Selenium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.05	Thallium	E200.8	05/28/20 20:27	MT5-20-0528A
S14264.06	Antimony	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Arsenic	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Barium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Beryllium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Boron	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Cadmium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Calcium	E200.8	05/29/20 13:19	MT5-20-0529A
S14264.06	Chromium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Cobalt	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Lead	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Lithium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Molybdenum	E200.8	05/28/20 20:29	MT5-20-0528A

Metals, Prep Batch ID: MTD-052820-3 (continued)

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S14264.06	Selenium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.06	Thallium	E200.8	05/28/20 20:29	MT5-20-0528A
S14264.07	Antimony	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Arsenic	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Barium	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Beryllium	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Boron	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Cadmium	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Calcium	E200.8	05/29/20 12:58	MT5-20-0529A
S14264.07	Chromium	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Cobalt	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Lead	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Lithium	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Molybdenum	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Selenium	E200.8	05/28/20 20:31	MT5-20-0528A
S14264.07	Thallium	E200.8	05/28/20 20:31	MT5-20-0528A

Form 0: Sequence Log

Data Set ID: MT5-20-0528A
Analysis Date: 05/28/20

Instrument ID: PE NEXION 2
Analyst: JRH

Filename	*Run Time*	*Sample ID*	*Matrix*	*QC Type*
001	18:26:15 Thu 28-May-20	Blank	Liquid	
002	18:28:29 Thu 28-May-20	Std-0.0001	Liquid	
003	18:30:43 Thu 28-May-20	Std-0.0005	Liquid	
004	18:32:57 Thu 28-May-20	Std-0.001	Liquid	
005	18:35:11 Thu 28-May-20	Std-0.005	Liquid	
006	18:37:26 Thu 28-May-20	Std-0.02	Liquid	
007	18:39:40 Thu 28-May-20	Std-0.05	Liquid	
008	18:41:54 Thu 28-May-20	Std-0.2	Liquid	
009	18:44:23 Thu 28-May-20	rinse	Liquid	
010	19:06:40 Thu 28-May-20	ICV-0.1	Liquid	ICV
011	19:11:03 Thu 28-May-20	CCV-0.1	Liquid	CCV
012	19:13:54 Thu 28-May-20	rinse	Liquid	
013	19:18:23 Thu 28-May-20	CCB	Liquid	CCB
014	19:21:13 Thu 28-May-20	ICB	Liquid	ICB
015	19:23:28 Thu 28-May-20	BS-0.0001	Liquid	BS
016	19:25:42 Thu 28-May-20	BS-0.0005	Liquid	BS
017	19:30:30 Thu 28-May-20	Solu-AB	Liquid	AB
018	19:32:45 Thu 28-May-20	Solu-AA	Liquid	AA
019	19:37:35 Thu 28-May-20	052820_3 LCS-0.05	Liquid	LCS
020	19:39:49 Thu 28-May-20	Rinse	Liquid	
021	19:42:04 Thu 28-May-20	052820_3 LRB	Liquid	LRB
022	19:52:04 Thu 28-May-20	BS-0.001	Liquid	BS
023	19:55:15 Thu 28-May-20	14291.01 dil	Liquid	S
024	19:57:49 Thu 28-May-20	14291.01s	Liquid	
025	20:00:03 Thu 28-May-20	Rinse	Liquid	
026	20:02:45 Thu 28-May-20	14291.02s	Liquid	
027	20:11:40 Thu 28-May-20	14291.02s	Liquid	S
028	20:13:54 Thu 28-May-20	14291.03s	Liquid	S
029	20:16:08 Thu 28-May-20	14264.01s	Liquid	S
030	20:18:22 Thu 28-May-20	14264.02s	Liquid	S
031	20:20:35 Thu 28-May-20	14264.03s	Liquid	S
032	20:22:49 Thu 28-May-20	14264.04s	Liquid	S
033	20:25:05 Thu 28-May-20	14264.04s	Liquid	DIL
034	20:27:19 Thu 28-May-20	14264.05s	Liquid	S
035	20:29:33 Thu 28-May-20	14264.06s	Liquid	S
036	20:31:47 Thu 28-May-20	14264.07s	Liquid	S
037	20:34:01 Thu 28-May-20	14264.07 MS-0.05	Liquid	MS
038	20:36:15 Thu 28-May-20	14264.07 MSD	Liquid	MSD
039	20:39:55 Thu 28-May-20	CCV2-0.1	Liquid	CCV
040	20:42:46 Thu 28-May-20	Rinse	Liquid	
041	20:47:15 Thu 28-May-20	CCB2	Liquid	CCB